

# Genuine Metaris Gear Product Technical Catalog

Pumps & Components - MH Series Bearing & Bushing Style



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# Metaris MH Series Units

## How to Specify and Code

This catalog contains codes for the most widely used models only; **other assembly codes are available from our sales representatives.**

## Single Units & Multiple Units

Metaris pumps and motors are available as single units or multiple assemblies. The full assembly code for the finished unit combines individual codes for shaft end cover, port end cover, gear housing, and drive shaft. The code is preceded by the letter "P" for **PUMP** or "M" for **MOTOR**, and the letter "A", "B", or "C" for **MODEL**.

Note the examples below.

### Single Unit

Assembly Code:

**MHM50A-842-BE-OL15-43**

- |                    |             |
|--------------------|-------------|
| 1. Motor           | <b>M</b>    |
| 2. Series          | <b>50</b>   |
| 3. Model           | <b>A</b>    |
| 4. Shaft End Cover | <b>842</b>  |
| 5. Port End Cover  | <b>BE</b>   |
| 6. Gear Housing    | <b>OL15</b> |
| 7. Drive Shaft     | <b>43</b>   |

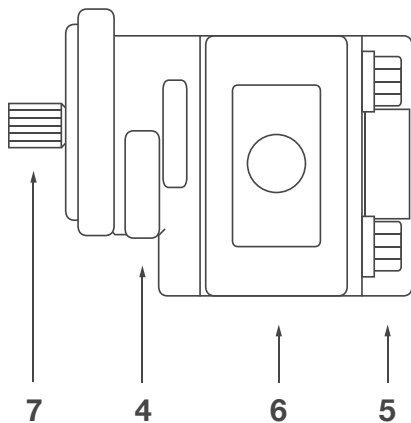
### Multiple Unit

Assembly Code:

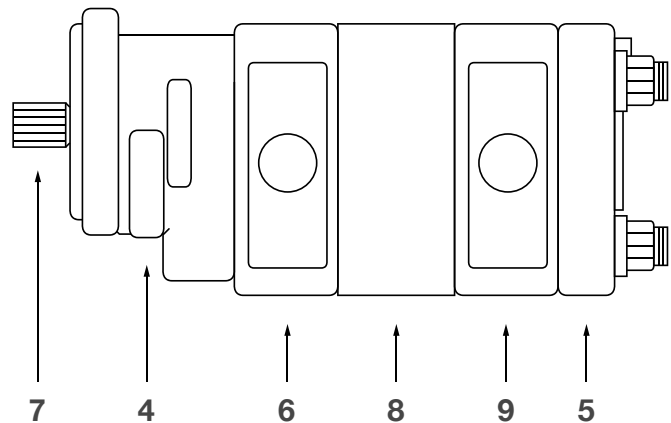
**MHP75B-178-BI-OK15-7-C-OK12-1**

- |                      |             |
|----------------------|-------------|
| 1. Pump              | <b>P</b>    |
| 2. Series            | <b>75</b>   |
| 3. Model             | <b>B</b>    |
| 4. Shaft End Cover   | <b>178</b>  |
| 5. Port End Cover    | <b>BI</b>   |
| 6. Gear Housing      | <b>OK15</b> |
| 7. Drive Shaft       | <b>7</b>    |
| 8. Bearing Carrier   | <b>C</b>    |
| 9. Gear Housing      | <b>OK12</b> |
| 10. Connecting Shaft | <b>1</b>    |

### MHM50 SINGLE MOTOR



### MHP75 MULTIPLE PUMP

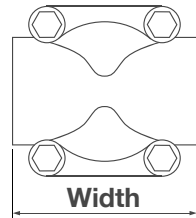


# Metaris MH Series Units

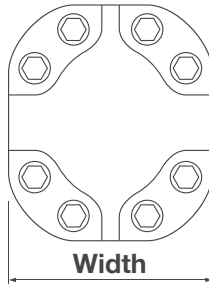
## How to Identify Metaris Hydraulic Pumps & Motors

1. Look at the unit from the Port End; see which example it matches the closest. Include the shape.
2. Measure the overall width of the unit, then match the width to the chart beside the Port End Cover.
3. Note: Identification size may differ with different porting.

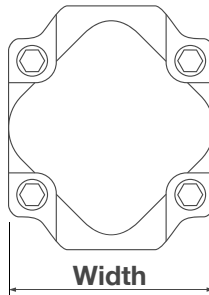
### Port End Cover



| SERIES          | MH315            | MH330            | MH350            | MH365            |
|-----------------|------------------|------------------|------------------|------------------|
| SIDE PORT WIDTH | 4.25<br>(107.95) | 6.68<br>(169.67) | 7.12<br>(180.85) | 7.38<br>(187.45) |
| UNPORTED WIDTH  | 4.00<br>(101.6)  | 4.81<br>(122.17) | 5.75<br>(146.05) | 6.25<br>(158.75) |



| SERIES | MH37X            | MH75/76          |
|--------|------------------|------------------|
| WIDTH  | 5.12<br>(130.05) | 6.13<br>(155.70) |

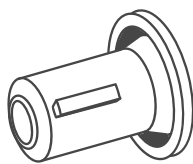


| SERIES | MH15             | MH20           | MH25X            | MH30/31          | MH50/51          |
|--------|------------------|----------------|------------------|------------------|------------------|
| WIDTH  | 4.38<br>(111.25) | 4.5<br>(114.3) | 4.94<br>(125.48) | 4.81<br>(122.17) | 4.94<br>(125.48) |

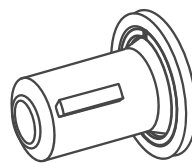
*Dimensions are in inches (millimeters).*

### Shaft End Cover

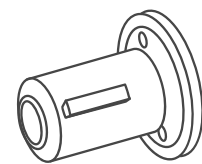
Look at the Shaft End and compare it to the views below. Select the shaft type of your unit.



**No Retainer  
Outboard Bearing**  
Series: MH30, 31, 50, 51



**With  
Outboard Bearing**  
Series: MH30, 31, 50, 51

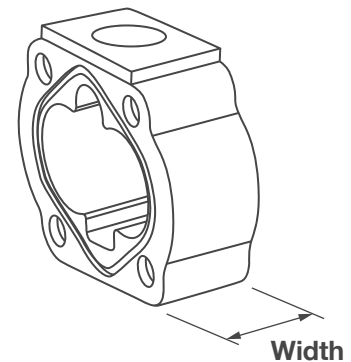


**Screw-in  
Retainer**  
Series: MH25X, 37X

# Metaris MH Series Units

## How to Identify Metaris Hydraulic Pumps & Motors

1. Look at the unit from the Port End; see which example it matches the closest. Include the shape.
2. Measure the overall width of the unit, then match the width to the chart beside the Port End Cover on the previous page.
3. Note: Identification size may differ with different porting.



## Gear Housing

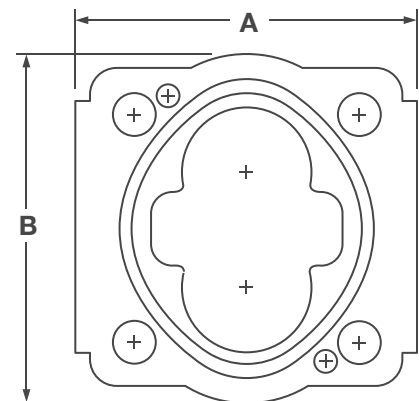
For Series MH31, MH51, MH76 - the only way to determine this series is to disassemble the unit and look for dowel pins.

| MH20, 25, 30, 31, 50, 51 |              |             |             |             |             |             |             |             |
|--------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| HOUSING WIDTH            | 1.25 (31.75) | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) | 2.5 (63.5)  | 2.75 (69.9) | 3 (76.2)    |
| GEAR WIDTH               | 0.5 (12.7)   | 0.75 (19.1) | 1 (25.4)    | 1.25 (31.8) | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) |
| MH37X, 75, 76            |              |             |             |             |             |             |             |             |
| HOUSING WIDTH            | 1.5 (38.1)   | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) | 2.5 (63.5)  | 2.75 (69.9) | 3 (76.2)    | 4 (101.6)   |
| GEAR WIDTH               | 0.5 (12.7)   | 0.75 (19.1) | 1 (25.4)    | 1.25 (31.8) | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | 3 (76.2)    |
| MH315                    |              |             |             |             |             |             |             |             |
| HOUSING WIDTH            | 0.9 (22.9)   | 1.15 (29.2) | 1.4 (35.6)  | 1.65 (41.9) | 1.9 (48.3)  | 2.15 (54.6) | 2.4 (61.0)  | n/a         |
| GEAR WIDTH               | 0.5 (12.7)   | 0.75 (19.1) | 1 (25.4)    | 1.25 (31.8) | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | n/a         |
| MH330                    |              |             |             |             |             |             |             |             |
| HOUSING WIDTH            | 1 (25.4)     | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) | 2.5 (63.5)  | n/a         | n/a         |
| GEAR WIDTH               | 0.5 (12.7)   | 1 (25.4)    | 1.25 (31.8) | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | n/a         | n/a         |
| MH350                    |              |             |             |             |             |             |             |             |
| HOUSING WIDTH            | 1 (25.4)     | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) | 2.5 (63.5)  | 2.75 (69.9) | 3 (76.2)    |
| GEAR WIDTH               | 0.5 (12.7)   | 1 (25.4)    | 1.25 (31.8) | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) | 2.5 (63.5)  |
| MH365                    |              |             |             |             |             |             |             |             |
| HOUSING WIDTH            | 1.5 (38.1)   | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) | 2.5 (63.5)  | 2.75 (69.9) | 3 (76.2)    | n/a         |
| GEAR WIDTH               | 1 (25.4)     | 1.25 (31.8) | 1.5 (38.1)  | 1.75 (44.5) | 2 (50.8)    | 2.25 (57.2) | 2.5 (63.5)  | n/a         |

Dimensions are in inches (millimeters).

| GEAR HOUSING DIMS | A                             | B            |
|-------------------|-------------------------------|--------------|
| MH15              | 5.38 (136.7)                  | 5.00 (127.0) |
| MH20              | 5.50 (139.7)                  | 5.00 (127.0) |
| MH25              | 5.44 (138.2)<br>6.60 (167.6)* | 6.00 (152.4) |
| MH30/31           | 5.44 (138.2)                  | 5.78 (146.8) |
| MH37              | 6.62 (168.1)                  | 7.31 (185.7) |
| MH50/51           | 5.44 (138.2)<br>6.60 (167.6)* | 6.00 (152.4) |

| GEAR HOUSING DIMS | A            | B            |
|-------------------|--------------|--------------|
| MH75/76           | 7.62 (193.5) | 7.88 (200.2) |
| MH315             | 4.00 (101.6) | 4.75 (120.7) |
| MH330             | 4.81 (122.2) | 5.88 (149.4) |
| MH350             | 5.75 (146.1) | 6.00 (152.4) |
| MH365             | 6.25 (158.8) | 7.25 (184.2) |



\*22 & 25 Gear Size

Dimensions are in inches (millimeters).

# Metaris MH Series Units

## Single Unit Approximate Weight

| MODEL   | GEAR WIDTH |         |         |         |         |         |         |         |         |         |         |
|---------|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|         | 1/2"       | 3/4"    | 1"      | 1-1/4"  | 1-1/2"  | 1-3/4"  | 2"      | 2-1/4"  | 2-1/2"  | 2-3/4"  | 3"      |
| MH15    | 24 (11)    | 25 (11) | 26 (12) | 28 (13) | 29 (13) | 31 (14) | 33 (15) | -       | -       | -       | -       |
| MH20    | 24 (11)    | 25 (11) | 26 (12) | 28 (13) | 29 (13) | 31 (14) | 33 (15) | -       | -       | -       | -       |
| MH25    | 36 (16)    | 39 (18) | 42 (19) | 44 (20) | 45 (20) | 47 (21) | 48 (22) | 50 (23) | 52 (24) | -       | -       |
| MH30/31 | 30 (14)    | 31 (14) | 32 (15) | 33 (15) | 34 (15) | 35 (16) | 36 (16) | -       | 39 (18) | -       | -       |
| MH37    | 52 (24)    | 54 (24) | 56 (25) | 58 (26) | 60 (27) | 62 (28) | 65 (29) | 68 (31) | 71 (32) | -       | 78 (35) |
| MH50/51 | 37 (17)    | 40 (18) | 43 (20) | 45 (20) | 46 (21) | 48 (22) | 49 (22) | 51 (23) | 54 (24) | -       | -       |
| MH75/76 | 67 (30)    | 70 (32) | 72 (33) | 74 (34) | 76 (34) | 79 (36) | 82 (37) | 85 (39) | 88 (40) | -       | 92 (42) |
| MH315   | 16 (7)     | 17 (8)  | 18 (8)  | 19 (7)  | 20 (9)  | 21 (10) | 22 (10) | -       | -       | -       | -       |
| MH330   | -          | 35 (16) | 36 (16) | 37 (17) | 39 (18) | 40 (18) | 41 (19) | -       | -       | -       | -       |
| MH350   | -          | 50 (23) | 51 (23) | 53 (24) | 54 (24) | 56 (25) | 57 (26) | 59 (27) | 60 (27) | -       | -       |
| MH365   | -          | -       | 56 (25) | 59 (27) | 61 (28) | 64 (29) | 66 (30) | 69 (31) | 71 (32) | 74 (34) | 76 (34) |
| MHC101  | -          | -       | -       | -       | -       | -       | 67 (30) | -       | 69 (31) | -       | -       |
| MHC102  | -          | -       | -       | -       | -       | -       | 68 (31) | -       | 70 (32) | -       | -       |
| MHG101  | -          | 31 (14) | -       | -       | 35 (16) | -       | 38 (17) | -       | -       | -       | -       |
| MHG102  | -          | 31 (14) | -       | -       | 35 (16) | -       | 38 (17) | -       | -       | -       | -       |

Weights are in Pounds. (Kgs).

## Multiple Unit Approximate Weight

| MODEL   | GEAR WIDTH |         |         |         |         |         |         |         |         |         |         |
|---------|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|         | 1/2"       | 3/4"    | 1"      | 1-1/4"  | 1-1/2"  | 1-3/4"  | 2"      | 2-1/4"  | 2-1/2"  | 2-3/4"  | 3"      |
| MH15    | 21 (10)    | 22 (10) | 23 (10) | 24 (11) | 25 (11) | 26 (12) | 28 (13) | -       | -       | -       | -       |
| MH20    | 21 (10)    | 22 (10) | 23 (10) | 24 (11) | 25 (11) | 26 (12) | 28 (13) | -       | -       | -       | -       |
| MH25    | 29 (13)    | 30 (14) | 32 (15) | 33 (15) | 35 (16) | 36 (16) | 37 (17) | 41 (19) | 44 (20) | -       | -       |
| MH30/31 | 23 (10)    | 24 (11) | 26 (12) | 27 (12) | 28 (13) | 30 (14) | 31 (14) | -       | -       | -       | -       |
| MH37    | 43 (20)    | 45 (20) | 47 (21) | 50 (23) | 53 (24) | 56 (25) | 59 (27) | 62 (28) | 65 (29) | -       | 68 (31) |
| MH50/51 | 30 (14)    | 31 (14) | 33 (15) | 34 (15) | 36 (16) | 37 (17) | 38 (17) | 42 (19) | 45 (20) | -       | -       |
| MH75/76 | 54 (24)    | 57 (26) | 60 (27) | 63 (29) | 65 (29) | 67 (30) | 69 (31) | 71 (32) | 74 (34) | -       | 76 (34) |
| MH315   | 16 (7)     | 17 (8)  | 18 (8)  | 19 (7)  | 20 (9)  | 21 (10) | 22 (10) | -       | -       | -       | -       |
| MH330   | -          | 31 (14) | 33 (15) | 34 (15) | 35 (16) | 37 (17) | 38 (17) | 39 (18) | 40 (18) | -       | -       |
| MH350   | -          | 50 (23) | 51 (23) | 53 (24) | 54 (24) | 56 (25) | 57 (26) | 59 (27) | 60 (27) | -       | -       |
| MH365   | -          | -       | 56 (25) | 59 (27) | 61 (28) | 64 (29) | 66 (30) | 69 (31) | 71 (32) | 74 (34) | 76 (34) |

Weights are in Pounds. (Kgs).

**Note:** For the total weight of a multiple unit add the weight from the column of the single unit and the multiple unit column. (e.g. MH15 single unit 3/4" gear width is 25 pounds plus MH15 multiple unit 3/4" gear width is 22 pounds total weight is 47 pounds)

For total weight in kilograms divide total weight in pounds by 2.2 = weight in kilograms (e.g. 47 pounds ÷ 2.2 = 21.36 kilograms)

## **Metaris MH Series Units**

### **PL Factor**

Each section of a multiple unit should be regarded as a single unit with corresponding delivery and power input requirements. Since the entire input horsepower is fed through a common drive shaft, the power delivered to or from the unit is limited by the physical strength of the shaft. This limit is defined as a “PL” factor, “P” being the operating pressure and “L” being the summation of the total gear widths.

In multiple units the “PL” must be calculated for the first connecting shaft as well as the drive shaft. Each style or type of shaft has a unique “PL” factor as noted in the table with the performance data.

**Pressure x Total Gear Width = PL**

# MH101/102 Series Dump Pumps

## Features

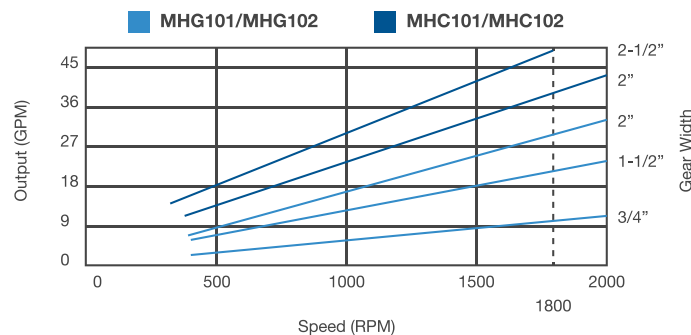
Genuine Metaris Dump Pumps are known for their ruggedness, reliability and interchangeability. Available in both the 101 Remote Mount and the 102 Direct Mount configurations and C or G frames, these pumps offer cast iron construction, a variety of displacements and “Air Shift” capabilities.

- Remote Mount, Direct Mount and Dual Pressure Options
- 3 Piece Cast Iron Construction
- High Pressure Shaft Seals
- Direct Acting Relief C/W Load Check
- Pressure Balance Thrust Plates
- Heavy Duty Roller Bearing
- Two or Three Line Hook-up
- Optional Airshift Control
- Factory set Relief Pressure at 2000 psi
- Optional Mounting Bracket
- Dowelled for Higher Pressure



## Specifications

| SERIES        | REMOTE MOUNT | DIRECT MOUNT | FLOW AT 1800 RPM<br>(GPM/LPM) |           |            |            | MAX RPM | MAX PRESSURE<br>(PSI/BAR) |
|---------------|--------------|--------------|-------------------------------|-----------|------------|------------|---------|---------------------------|
|               |              |              | 3/4"                          | 1-1/2"    | 2"         | 2-1/2"     |         |                           |
| <b>MH101G</b> | X            |              | 9.5 / 36                      | 21 / 79.5 | 29 / 109.3 | -          | 1800    | 2500 / 173                |
| <b>MH101C</b> | X            |              | -                             | -         | 39 / 147   | 48 / 180.5 | 1800    | 2500 / 173                |
| <b>MH102G</b> |              | X            | 9.5 / 36                      | 21 / 79.5 | 29 / 109.3 |            | 1800    | 2500 / 173                |
| <b>MH102C</b> |              | X            |                               |           | 39 / 147   | 48 / 180.5 | 1800    | 2500 / 173                |

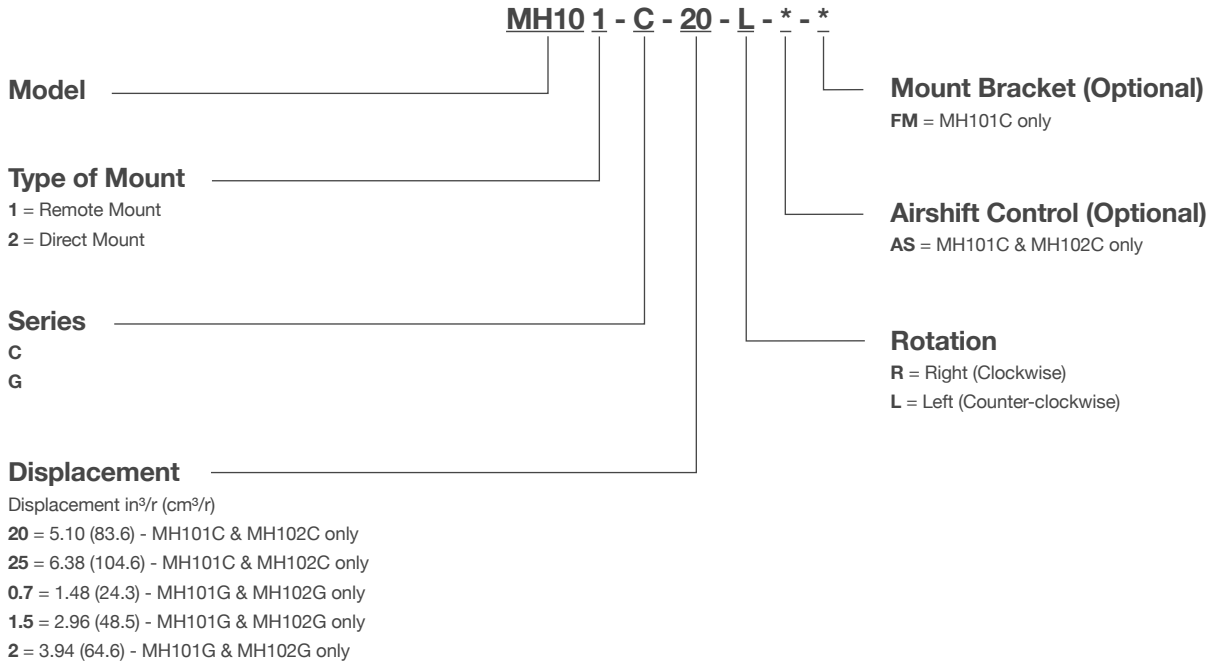


Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.



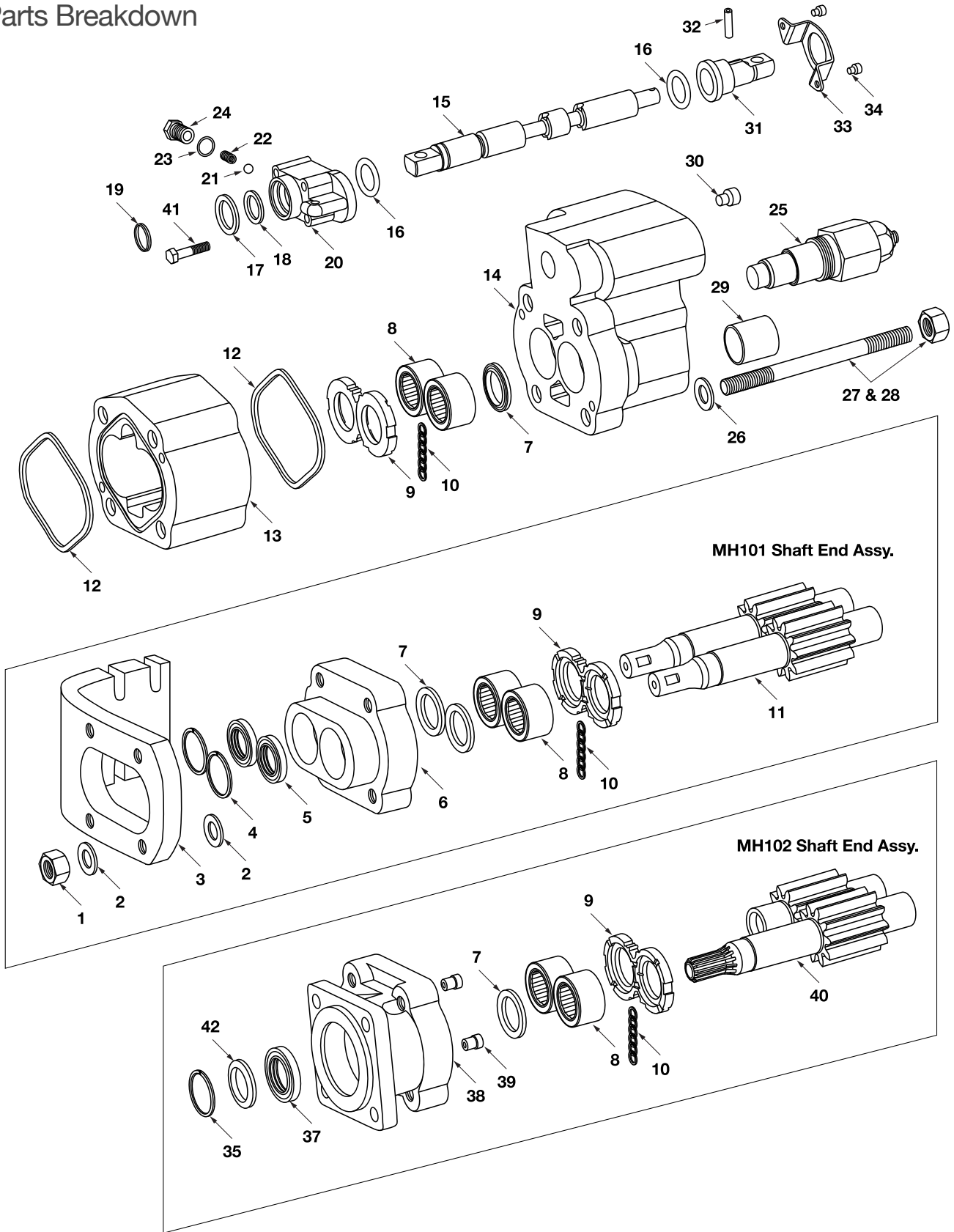
# MH101/102 Series Dump Pumps

## Model Code Breakdown



# MH101C/102C Series Dump Pumps

## Parts Breakdown

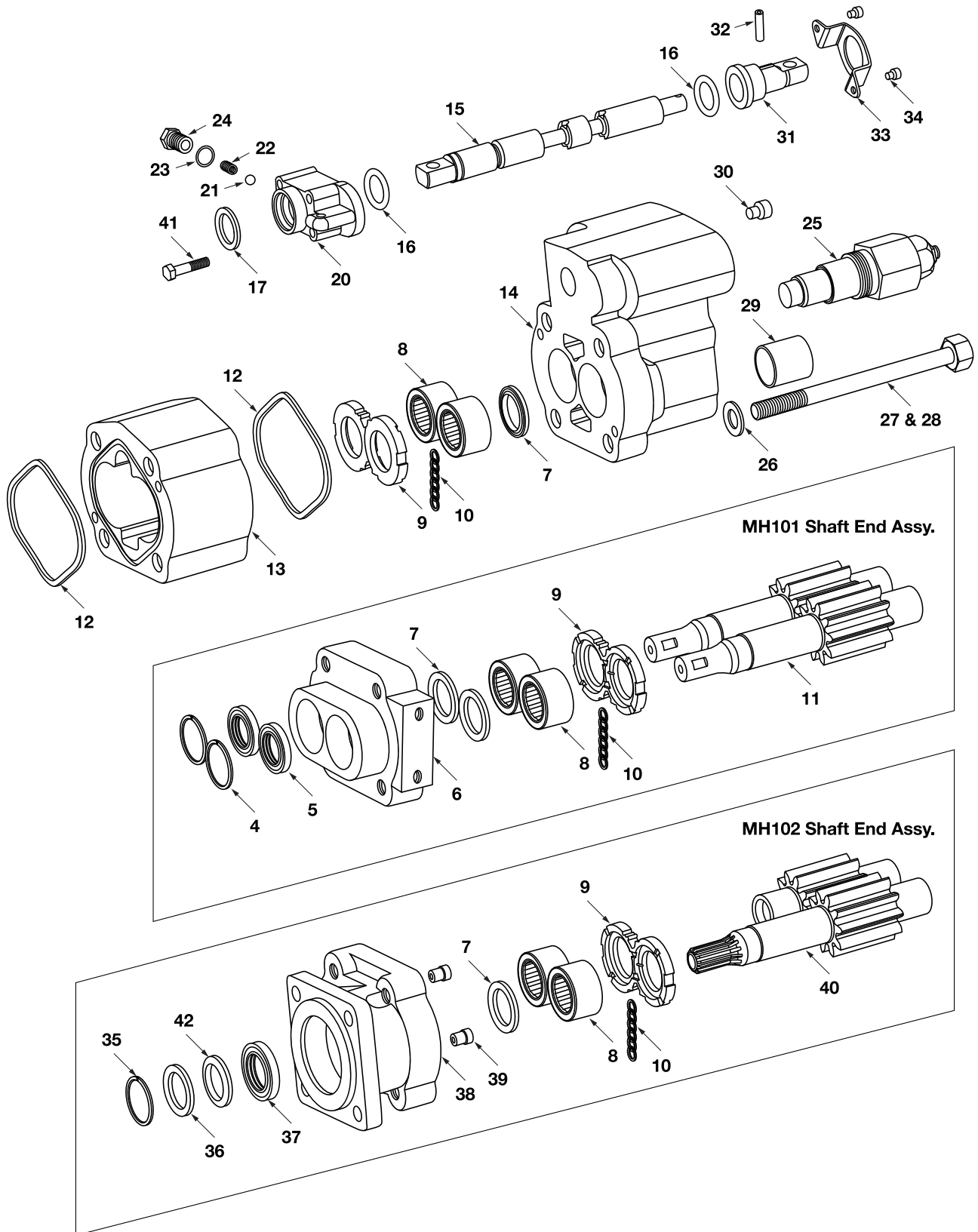


MH101 Shaft End Assy.

MH102 Shaft End Assy.

# MH101G/102G Series Dump Pumps

## Parts Breakdown



# MH101/102 Series Dump Pumps

## Parts Breakdown

| DRAWING NO. | DESCRIPTION               | MHG SERIES    |              | MHC SERIES    |              |
|-------------|---------------------------|---------------|--------------|---------------|--------------|
|             |                           | METARIS #     | ALTERNATE #  | METARIS #     | ALTERNATE #  |
| 1           | MHC ONLY HEX NUT          | -             | -            | X42-11-16000  | 391-1451-076 |
| 2           | MHC ONLY WASHER           | -             | -            | X45-10-17005  | 391-3784-028 |
| 3           | MHC101 BRACKET (OPTIONAL) | -             | -            | A11-96-39999  | 314-0100-005 |
| 4           | MH101 SNAP RING           | X05-01-45080  | 391-2681-487 | X05-03-50120  | 391-2681-493 |
| 5           | MH101 LIP SEAL            | X84-36-02709  | 391-2883-119 | X84-36-03009  | 391-2883-096 |
| 6           | MH101 SHAFT END COVER     | A13-10-21100  | 308-5016-201 | A11-10-21100  | 314-5039-201 |
| 7           | RING SEAL                 | X81-76-02706  | 91-2585-006  | X81-76-03305  | 391-2585-009 |
| 8           | ROLLER BEARING            | X03-24-12743  | 391-0381-068 | X03-24-13349  | 391-0381-059 |
| 9           | THRUST PLATE              | A30-70-10000  | 391-2185-013 | A25-70-10000  | 391-2185-012 |
| 10          | POCKET SEAL               | X85-11-00002  | 391-2882-086 | X85-11-00002  | 391-2882-050 |
| 11          | MH101 SHAFT & GEAR SET    | A13-50-XX221  | 312-29XX-842 | A11-50-XX131  | 314-29XX-640 |
| 12          | GEAR HOUSING GASKET       | X85-11-09203  | 391-2884-019 | X85-11-10803  | 391-2884-021 |
| 13          | GEAR HOUSING              | A13-32-XX000  | 308-80XX-901 | A11-32-XX000  | 314-80XX-100 |
| 14a         | MH101 PORT END COVER      | Special Order | 308-3910-902 | A11-22-01431  | 314-3910-903 |
| 14b         | MH102 PORT END COVER      | Special Order | 308-3910-901 | A12-22-01431  | 314-3910-904 |
| 15          | SPOOL VALVE               | A13-75-15000  | 308-4000-001 | A11-75-15000  | 314-4000-001 |
| 16          | O-RING                    | X86-11-01903  | 391-1985-014 | X81-11-02504  | 391-2881-103 |
| 17          | DETENT HOUSING WIPER SEAL | M4022883152   | 391-2883-152 | M4022883147   | 391-2883-147 |
| 18          | MHC ONLY RETAINER RING    | -             | -            | X45-19-26003  | 391-3782-126 |
| 19          | MHC ONLY SNAP RING        | -             | -            | X05-04-24160  | 391-2688-003 |
| 20          | DETENT CAP                | A13-96-14176  | 308-4000-102 | A11-96-14891  | 314-0100-003 |
| 21          | DETENT BALL               | X03-90-10008  | 391-0282-009 | M4022089009   | 391-0282-009 |
| 22          | DETENT SPRING             | A13-95-00000  | 391-3581-383 | A13-95-00000  | 391-3581-383 |
| 23          | LOCK WASHER               | X45-17-15004  | 391-3788-002 | X45-17-15004  | 391-3788-002 |
| 24          | DETENT RETAINER           | A11-60-40000  | 391-2583-079 | A11-60-40000  | 391-2583-079 |
| 25          | RELIEF VALVE              | A13-75-13000  | 355-9001-197 | A11-75-13000  | 355-9001-067 |
| 26          | WASHER                    | X45-19-15005  | 391-3782-146 | X45-19-17005  | 391-3784-029 |
| 27a         | CAP SCREW/ROD / MH101-20  | X41-11-14140  | 391-1401-382 | X41-11-XXXXX  | 391-1401-111 |
| 27b         | CAP SCREW/ROD / MH101-25  | -             | -            | X41-11-16191  | 391-1401-110 |
| 28a         | CAP SCREW/ROD / MH102-20  | X41-11-14140  | 391-1401-382 | Special Order | 391-1425-433 |
| 28b         | CAP SCREW/ROD / MH102-25  | -             | -            | Special Order | 391-1425-432 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A13-50-XX221 changes to A13-50-15221 for 1.5" gear size  
 Housing no. A13-32-XX000 changes to A13-32-15000 for a 1.5" housing size  
 No porting sizes have been indicated all porting must be specified when ordering parts.

# MH101/102 Series Dump Pumps

## Parts Breakdown

| DRAWING NO. | DESCRIPTION                                   | MHG SERIES   |              | MHC SERIES   |              |
|-------------|---|--------------|--------------|--------------|--------------|
|             |   | METARIS #    | ALTERNATE #  | METARIS #    | ALTERNATE #  |
| 29          | OPTIONAL SLEEVE                               | A11-92-32370 | 391-3283-052 | A11-92-32370 | 391-3283-052 |
| 30          | PIPE PLUG                                     | X02-02-23190 | 391-2282-003 | X02-02-23250 | 391-2282-006 |
| 31          | SPOOL END CAP                                 | A13-96-23249 | 391-1881-072 | A11-96-23869 | 391-1881-073 |
| 32          | SPIRAL PIN                                    | A00-94-30525 | 391-2085-009 | A00-94-30525 | 391-2085-009 |
| 33          | BRACKET                                       | A13-96-34168 | 391-0981-007 | A11-96-34884 | 391-0981-010 |
| 34          | S.H.C. SCREW                                  | X41-22-06010 | 391-1402-063 | X41-22-06010 | 391-1402-063 |
| 35          | MH102 SNAP RING                               | X05-03-56200 | 391-2686-063 | X05-03-77250 | 391-2686-065 |
| 36          | MH102 SPACER                                  | A30-92-38520 | 391-3383-069 | -            | -            |
| 37          | MH102 LIP SEAL                                | X84-36-02709 | 391-2883-119 | X84-36-03309 | 391-2883-115 |
| 38          | MH102 SHAFT END COVER                         | A20-10-21420 | 308-5030-201 | A50-10-21420 | 313-5033-201 |
| 39          | CHECK VALVES                                  | A00-75-11000 | 391-3681-001 | A00-75-11000 | 391-3681-001 |
| 40          | MH102 SHAFT & GEAR SET 7/8" X 13 TOOTH SPLINE | A30-50-XX221 | 312-29XX-130 | A50-50-XX221 | 314-29XX-130 |
| 41a         | CAP SCREW (Not Shown) MHG-Qty 2, MHC-Qty 4    | X41-12-06019 | 391-1433-020 | X41-11-08044 | 391-1401-082 |
| 42          | MH102 SEAL RETAINER                           | A20-60-10000 | 391-3381-040 | A50-60-10000 | 391-3383-087 |
| Not Shown   | SHAFT KEY                                     | X01-01-61032 | 391-1781-021 | X01-01-61032 | 391-1781-021 |
| Not Shown   | SEAL RETAINER                                 | A13-60-10000 | 391-2183-124 | -            | -            |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

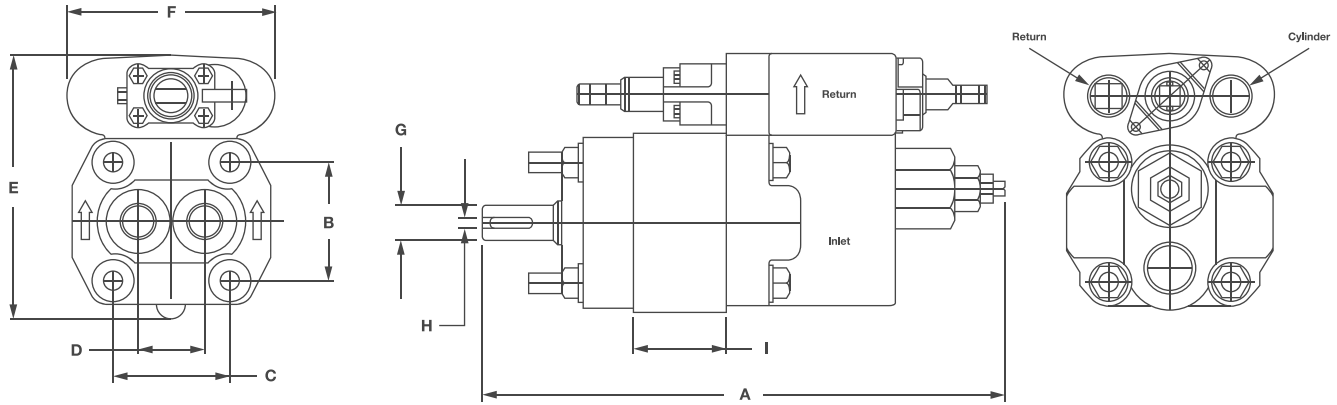
For example: Gear set no. A13-50-XX221 changes to A13-50-15221 for 1.5" gear size  
Housing no. A13-32-XX000 changes to A13-32-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH101 Series Dump Pumps

## Dimensions

Dimensions are in inches (millimeters).

- Weight: 31 - 70 lbs



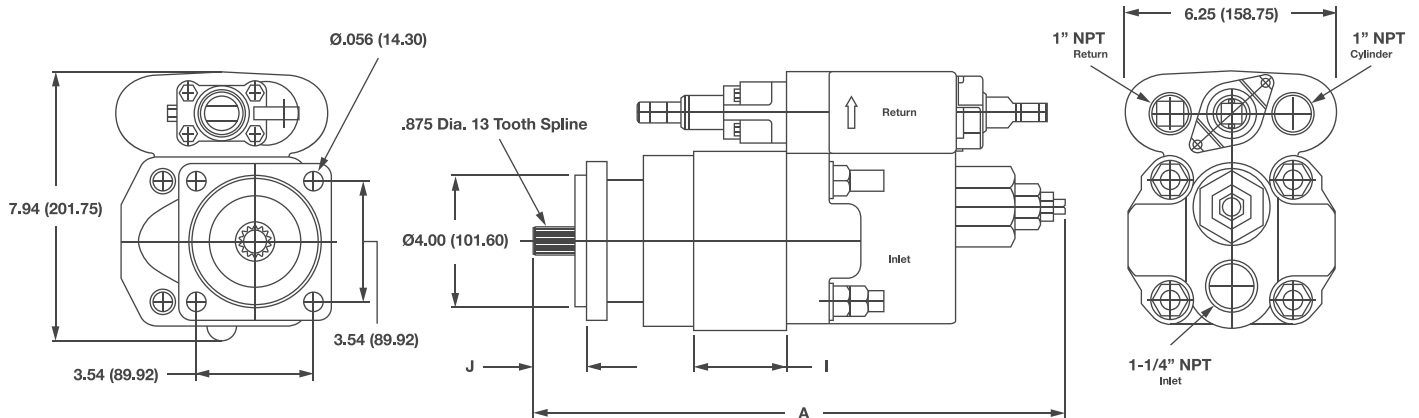
| SERIES | A            | B          | C           | D           | E           | F            | G        | H          | I (25)      | I (20)      | I (1.5)    | I (.75)  |
|--------|--------------|------------|-------------|-------------|-------------|--------------|----------|------------|-------------|-------------|------------|----------|
| MHC101 | 13.12+GW     | 3.6 (91.4) | 3.56 (90.4) | 2 (50.8)    | 7.9 (201.7) | 6.25 (158.8) | 1 (25.4) | .25 (6.35) | 3.25 (82.6) | 2.75 (69.9) | -          | -        |
| MHG101 | 10.6 (269.2) | -          | -           | 1.75 (44.5) | 6.1 (154.9) | 5.3 (134.6)  | 1 (25.4) | .25 (6.35) | -           | 2 (50.8)    | .75 (19.1) | 1 (25.4) |

# MH102 Series Dump Pumps

## Dimensions

Dimensions are in inches (millimeters).

- Weight: 31 - 70 lbs



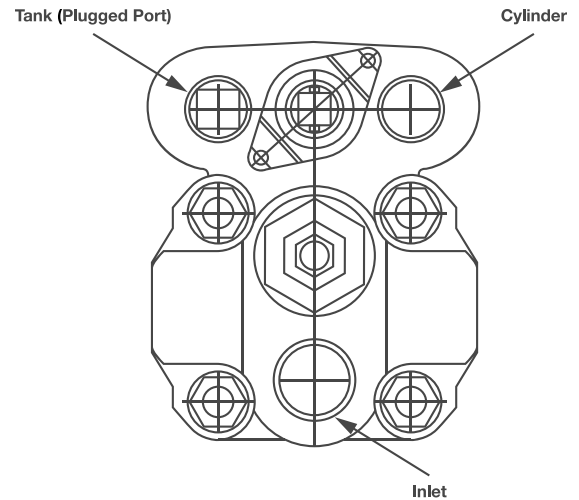
| SERIES | A        | B | C | D | E            | F            | G           | H | I (25)      | I (20)      | I (1.5)    | I (.75)  | J           |
|--------|----------|---|---|---|--------------|--------------|-------------|---|-------------|-------------|------------|----------|-------------|
| MHC102 | 13.62+GW | - | - | - | 7.94 (201.7) | 6.25 (158.8) | .875 (22.2) | - | 3.25 (82.6) | 2.75 (69.9) | -          | -        | 1.62 (41.1) |
| MHG102 | 11.38+GW | - | - | - | 7.94 (201.7) | 6.25 (158.8) | .875 (22.2) | - | -           | 2 (50.8)    | .75 (19.1) | 1 (25.4) | 1.31 (33.3) |

# MH101/102 Series Dump Pumps

## Installation and Operation

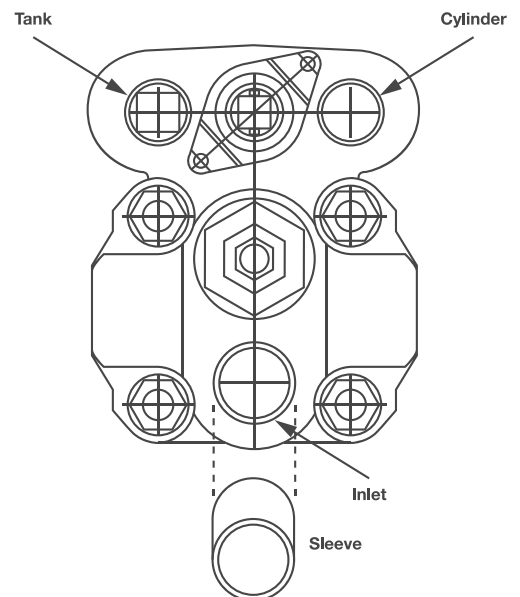
### TWO LINE INSTALLATION

- One line to the cylinder
- One line to the supply line of the reservoir
- Tank port on the pump is plugged
- When the spool is in neutral, oil recirculates internally
- When the spool is in the raised position, oil is routed to the cylinder port to raise the cylinder
- When the spool is in the lower position, oil flow from the cylinder is routed back through the relief back to the inlet of the pump
- **NOTE: For intermittent use only**



### THREE LINE INSTALLATION

- One line to the cylinder
- One line to the supply line of the reservoir
- One line to the return line of the reservoir
- The sleeve is installed in the inlet port of the pump
- **NOTE: For intermittent or continuous use**



### WHEN INSTALLING AIR SHIFTERS

- Lubricate all moving parts before assembly
- Do not over tighten the mounting bolts
- Operate the spool by air to inspect proper movement



# MH15 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets

## Specifications

| MH15       |        | DISPLACEMENT         |                        | MAX PRESSURE |       | MAX RPM |
|------------|--------|----------------------|------------------------|--------------|-------|---------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |         |
| .50        | 1/2"   | .69                  | (11.3)                 | 2000         | (137) | 2400    |
| .75        | 3/4"   | 1.07                 | (17.5)                 | 2000         | (137) | 2400    |
| 1.00       | 1"     | 1.38                 | (22.6)                 | 2000         | (137) | 2400    |
| 1.25       | 1-1/4" | 1.73                 | (28.3)                 | 2000         | (137) | 2400    |
| 1.50       | 1-1/2" | 2.08                 | (34.1)                 | 2000         | (137) | 2400    |
| 1.75       | 1-3/4" | 2.42                 | (39.7)                 | 2000         | (137) | 2400    |
| 2.00       | 2"     | 2.70                 | (44.2)                 | 2000         | (137) | 2400    |



# MH15 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10

**MHP - 15 - A - 1 - 07 - WE - AB - 10 - 12 - DH - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

1 = Pump w/ Shaft Bearing (Clockwise Rotation)  
2 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
3 = Pump w/ Shaft Bearing (Double Rotation)  
9 = Motor w/ Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

00 = Pad Mount                      07 = SAE 2-Bolt "B" Mount  
02 = Round Flange 6-Bolt        05 = 4-Bolt 3-3/4" "A" Mount  
01 = SAE 2-Bolt "A" Mount        10 = 4-Bolt Round

### Port End Cover <sup>5</sup>

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 19 for Bearing Carrier options

### Shaft Type <sup>8</sup>

3 = 6 Tooth Spline .997 Maj. Dia. x 2-1/2" Ext  
12 = SAE "C" 14 Tooth Spline 1.250" Dia.  
11 = 1" Dia. Keyed Shaft  
25 = 1.250" Dia. Keyed Shaft (Special Order)

### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|             |              |              |              |              |              |             |
|-------------|--------------|--------------|--------------|--------------|--------------|-------------|
| 05<br>(.69) | 07<br>(1.07) | 10<br>(1.38) | 12<br>(1.73) | 15<br>(2.08) | 17<br>(2.42) | 20<br>(2.7) |
|-------------|--------------|--------------|--------------|--------------|--------------|-------------|

### Gear Housing <sup>6</sup>

See following page for Gear Housing options

#### NPT Codes

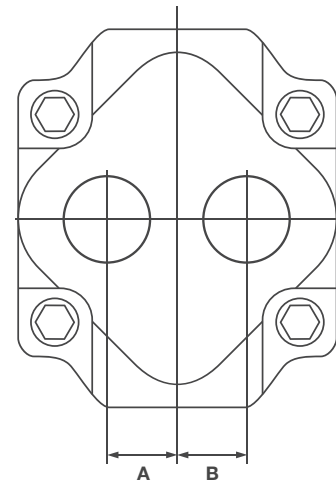
| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| BE           | BI           | None      | None  | n/a  | n/a  |
| WE           | WI           | 3/8"      | 3/8"  | 1.25 | 1.25 |
| CE           | CI           | None      | 1/2"  | n/a  | 1.25 |
| FE           | FI           | 1/2"      | None  | 1.25 | n/a  |
| GE           | GI           | 1/2"      | 1/2"  | 1.25 | 1.25 |
| HE           | HI           | 1/2"      | 3/4"  | 1.25 | 1.25 |
| KE           | KI           | 3/4"      | 1/2"  | 1.25 | 1.25 |
| JE           | JI           | 3/4"      | None  | 1.25 | n/a  |
| DE           | DI           | None      | 3/4"  | n/a  | 1.25 |
| LE           | LI           | 3/4"      | 3/4"  | 1.25 | 1.25 |
| VE           | VI           | 3/4"      | 1"    | 1.25 | 1.25 |
| TE           | TI           | 1"        | 3/4"  | 1.41 | 1.41 |
| NE           | NI           | 1"        | None  | 1.25 | n/a  |
| ME           | MI           | None      | 1"    | n/a  | 1.25 |
| PE           | PI           | 1"        | 1"    | 1.25 | 1.25 |
| SE           | SI           | 1/2"      | 1"    | 1.25 | 1.25 |
| RE           | RI           | 1"        | 1/2"  | 1.25 | 1.25 |

Orientation is viewed from the shaft end

#### ORB Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| MO           | MU           | None      | 1/2"  | n/a  | 1.25 |
| LO           | LU           | 1/2"      | None  | 1.25 | n/a  |
| NO           | NU           | 1/2"      | 1/2"  | 1.25 | 1.25 |
| TO           | TU           | None      | 5/8"  | n/a  | 1.25 |
| SO           | SU           | 5/8"      | None  | 1.25 | n/a  |
| VO           | VU           | 5/8"      | 5/8"  | 1.25 | 1.25 |
| DO           | DU           | None      | 3/4"  | n/a  | 1.25 |
| CO           | CU           | 3/4"      | None  | 1.25 | n/a  |
| FO           | FU           | 3/4"      | 3/4"  | 1.25 | 1.25 |
| RO           | RU           | 1/2"      | 5/8"  | 1.25 | 1.25 |
| PO           | PU           | 5/8"      | 1/2"  | 1.25 | 1.25 |
| HO           | HU           | 1/2"      | 3/4"  | 1.25 | 1.25 |
| KO           | KU           | 3/4"      | 1/2"  | 1.25 | 1.25 |

Orientation is viewed from the shaft end



# MH15 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| AP   | 1/2"      | None     | x | x | x  |    |    |    |    |
| AC   | None      | 1/2"     | x | x | x  |    |    |    |    |
| EC   | 1/2"      | 1/2"     | x | x | x  |    |    |    |    |
| ED   | 1/2"      | 3/4"     |   |   | x  | x  | x  |    |    |
| EH   | 3/4"      | 1/2"     |   |   | x  | x  | x  |    |    |
| AR   | 3/4"      | None     |   | x | x  | x  | x  | x  |    |
| AF   | None      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| ER   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| ET   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |
| EU   | 3/4"      | 1"       |   |   |    |    | x  | x  |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| IQ   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |
| AT   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| AH   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| IL   | 1"        | 1"       |   |   |    | x  | x  | x  | x  |
| IM   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| IS   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| AV   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |
| AJ   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  |
| IT   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |

#### ORB Codes

| Code | Port Size |       | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|-------|---|---|----|----|----|----|----|
|      | Left      | Right |   |   |    |    |    |    |    |
| AB   | None      | None  | x | x | x  | x  | x  | x  | x  |
| UC   | None      | 1/2"  |   |   | x  | x  | x  |    |    |
| UP   | 1/2"      | None  |   |   | x  | x  | x  |    |    |
| YC   | 1/2"      | 1/2"  |   |   | x  | x  | x  | x  | x  |
| UD   | None      | 5/8"  |   |   | x  | x  |    |    |    |
| UQ   | 5/8"      | None  |   |   | x  | x  | x  | x  |    |
| YK   | 5/8"      | 5/8"  |   |   | x  | x  |    |    |    |
| UF   | None      | 3/4"  |   |   | x  | x  | x  | x  |    |
| UR   | 3/4"      | None  |   |   |    |    | x  | x  | x  |
| YR   | 3/4"      | 3/4"  |   |   |    |    | x  | x  | x  |
| UG   | None      | 7/8"  |   |   |    |    | x  | x  | x  |
| US   | 7/8"      | None  |   |   |    |    | x  |    |    |
| YZ   | 7/8"      | 7/8"  |   |   |    |    | x  | x  | x  |
| YD   | 1/2"      | 5/8"  |   |   |    |    | x  | x  | x  |
| YJ   | 5/8"      | 1/2"  |   |   | x  | x  | x  |    |    |
| YL   | 5/8"      | 3/4"  |   |   | x  | x  | x  | x  |    |
| YQ   | 3/4"      | 5/8"  |   |   | x  | x  | x  | x  |    |
| YS   | 3/4"      | 7/8"  |   |   |    |    | x  | x  | x  |
| YX   | 7/8"      | 3/4"  |   |   |    |    | x  | x  | x  |

#### Flange Codes











| Code | Port Size |        | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|--------|---|---|----|----|----|----|----|
|      | Left      | Right  |   |   |    |    |    |    |    |
| AB   | None      | None   | x | x | x  | x  | x  | x  | x  |
| OC   | None      | 1/2"   |   | x | x  |    |    |    |    |
| OP   | 1/2"      | None   |   | x | x  |    |    |    |    |
| ZC   | 1/2"      | 1/2"   |   | x | x  |    |    |    |    |
| OF   | None      | 3/4"   |   |   | x  | x  | x  | x  |    |
| OR   | 3/4"      | None   |   |   | x  | x  | x  | x  |    |
| ZR   | 3/4"      | 3/4"   |   |   | x  | x  | x  | x  |    |
| OH   | None      | 1"     |   |   |    | x  | x  | x  | x  |
| OT   | 1"        | None   |   |   |    | x  | x  | x  | x  |
| RL   | 1"        | 1"     |   |   |    | x  | x  | x  | x  |
| OJ   | None      | 1-1/4" |   |   |    |    | x  | x  | x  |
| OV   | 1-1/4"    | None   |   |   |    |    | x  | x  | x  |
| RT   | 1-1/4"    | 1-1/4" |   |   |    |    | x  | x  | x  |
| ZT   | 3/4"      | 1"     |   |   |    | x  | x  | x  |    |
| RJ   | 1"        | 3/4"   |   |   |    | x  | x  | x  |    |
| RM   | 1"        | 1-1/4" |   |   |    |    | x  | x  | x  |
| RS   | 1-1/4"    | 1"     |   |   |    |    | x  | x  | x  |
| ZF   | 1/2"      | 3/4"   |   |   | x  |    |    |    |    |
| ZP   | 3/4"      | 1/2"   |   |   | x  |    |    |    |    |

# MH15 Series Bearing Pump









## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

*NPT Codes*

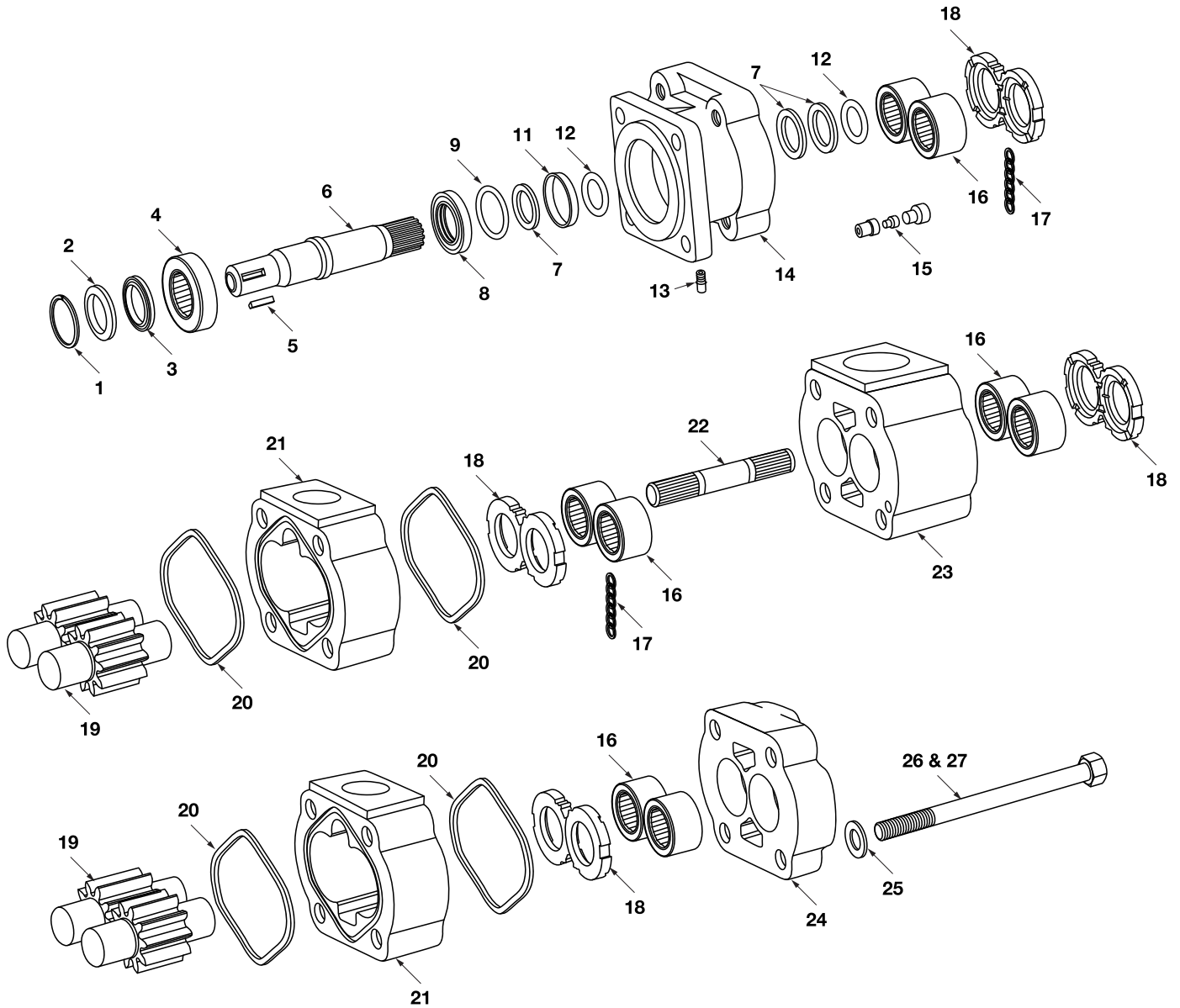
| In             | Out            | CW (Left)  | CCW (Right)  |
|----------------|----------------|--|--|
| None           | None           |  B  |  B  |
| 1-1/2"<br>None | None<br>1-1/2" |  TL |  TJ |
| 1-1/2"<br>1"   | 1"<br>1-1/2"   |  XS |  XT |
| 1"             | 1"             |  DH |  HD |
| 1-1/4"         | 1-1/4"         |  BF |  FB |

*SAE O-ring Codes*

| In             | Out            | CW (Left)  | CCW (Right)  |
|----------------|----------------|--|--|
| 1-1/2"<br>None | None<br>1-1/2" |  TH |  TM |
| 1-1/2"<br>1"   | 1"<br>1-1/2"   |  TK |  TN |
| 1"             | 1"             |  QD |  DQ |
| 1-1/4"         | 1-1/4"         |  NV |  VN |

# MH15 Series

## Parts Breakdown



# MH15 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION   | METARIS #     | ALTERNATE #  |
|-------------|---|---------------|--------------|
| 1           | SPIROL LOCK   | X05-03-56200  | 391-2686-063 |
| 2a          | BEARING SEAL  | Special Order | 391-3181-003 |
| 2b          | BEARING SEAL  | Special Order | 391-3181-007 |
| 3a          | BEARING RETAINER  | X89-86-02803  | 391-2687-001 |
| 3b          | BEARING RETAINER  | X89-86-03003  | 391-2687-002 |
| 4a          | SHAFT BEARING   | X03-17-12552  | 391-0381-045 |
| 4b          | SHAFT BEARING   | X03-17-12562  | 391-0381-051 |
| 5a          | SHAFT DRIVE KEY   | X01-01-61044  | 391-1781-020 |
| 5b          | SHAFT DRIVE KEY   | X01-01-61032  | 391-1781-021 |
| 5c          | SHAFT DRIVE KEY   | X01-01-61025  | 391-1781-025 |
| 5d          | SHAFT DRIVE KEY   | X01-01-81238  | 391-1781-045 |
| 6a          | 0.875" DIA. KEYED SHAFT (1/4" x 1/4" x 1") (TYPE 2)                 | A15-50-00121  | 302-1134-016 |
| 6b          | 6 TOOTH SPLINE 0.987" DIA (TYPE 3)                                  | A15-50-00731  | 302-1134-020 |
| 6c          | 6 TOOTH SPLINE 0.997" DIA. Long. (TYPE 9)                           | Special Order | 302-1134-023 |
| 6d          | 1" KEYED SHAFT (1/4" x 3/8" x 1") (TYPE 11)                         | A15-50-00131  | 302-1134-026 |
| 6e          | 0.875" KEYED SHAFT (1/4" X 3/8" X 1-1/4") (TYPE 8)                  | A15-50-00129  | 302-1134-021 |
| 6f          | 0.625" KEYED SHAFT (5/32" x 15/64" x 3/4") (TYPE 13)                | A15-50-00111  | 302-1134-019 |
| 6g          | 0.875" KEYED SHAFT MALE THREADED END (1/4" x 3/8" x 7/8") (TYPE 15) | A15-50-00127  | 302-1134-025 |
| 6h          | 0.875" DIA. 13 TOOTH SPLINE (TYPE 16)                               | A15-50-00221  | 302-1134-028 |
| 6i          | 0.750" DIA. KEYED SHAFT (3/16" x 9/32" x 7/8") (TYPE 17)            | A15-50-00169  | 302-1134-004 |
| 6j          | 0.999" KEYED SHAFT (1/4" x 3/8" 2 1/4") (TYPE 18)                   | A15-50-00134  | 302-1134-027 |
| 6k          | 1.250" DIA. 14 TOOTH SPLINE SHAFT (TYPE 19)                         | A15-50-00249  | 302-1134-002 |
| 6l          | 0.750" DIA. KEYED SHAFT (1/4" x 3/8" x 2") (TYPE 20)                | A15-50-00161  | 302-1134-005 |
| 6m          | 1.250" KEYED SHAFT (5/16" x 15/32" x 1 3/8") (TYPE 25)              | Special Order | 302-1134-009 |
| 6n          | 0.875" DIA. KEYED SHAFT 1/4" x 3/8" x 1 1/4" (TYPE 31)              | Special Order | 302-1134-022 |
| 6o          | 0.750" DIA. KEYED SHAFT (3/16" x 3/16" x 2") (TYPE 32)              | A15-50-00164  | 302-1134-013 |
| 6p          | 0.874" DIA KEYED SHAFT (3/16" X 9/32" X 1-1/4") (TYPE 37)           | A15-50-00124  | 302-1134-032 |
| 6q          | 0.625" DIA. 9 TOOTH SPLINE SHAFT (TYPE 96)                          | A15-50-00211  | 302-1134-039 |
| 7a          | BEARING SPACER  | A15-92-28520  | 391-3181-001 |
| 7b          | BEARING SPACER  | A15-92-38800  | 391-3181-007 |
| 7c          | BEARING SPACER  | A15-92-22620  | 391-3181-012 |
| 7d          | BEARING SPACER  | A15-92-22520  | 391-3181-020 |
| 8           | PUMP SHAFT SEAL   | X83-11-02108  | 391-2883-048 |
| 9           | O RING SEAL   | X81-11-03102  | 391-2881-215 |
| 10          | SHAFT O-RING BACKUP RING  | A15-82-36020  | 391-2681-247 |
| 11          | SEAL RETAINER   | A15-60-10000  | 391-2584-020 |
| 12          | SHAFT SEAL O RING   | X81-15-02204  | 391-2881-260 |

# MH15 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION                                      | METARIS #          | ALTERNATE #  |
|------------------|--|--------------------|--------------|
| 13a              | GREASE FITTING STR.                              | X02-09-22030       | 391-1281-005 |
| 13b              | GREASE FITTING 45 DEG.                           | Special Order      | 391-1281-012 |
| 14a              | PAD MOUNT S.E.C.                                 | A15-10-21100       | 302-5095-201 |
| 14b              | 2 BOLT B PILOT S.E.C. (4" or 101.6 mm pilot)     | A15-10-21221       | 302-5025-202 |
| 14c              | 4 BOLT B PILOT S.E.C. (4" or 101.6 mm pilot)     | A15-10-21420       | 302-5035-201 |
| 14d              | 6 BOLT ROUND S.E.C.                              | A15-10-21650       | 302-5045-201 |
| 14e              | 2 BOLT A PILOT S.E.C. (3 1/4" or 82.55 mm pilot) | A15-10-21210       | 302-5025-201 |
| 14f              | 4 BOLT ROUND S.E.C.                              | A15-10-21450       | 302-5045-202 |
| 15               | CHECK VALVE                                      | A00-75-11000       | 391-3681-001 |
| 16               | NEEDLE BEARING (Ø 1.625" O.D.)                   | X03-25-12841       | 391-0381-062 |
| 17               | THRUST PLATE POCKET SEAL                         | X85-11-00002       | 391-2882-050 |
| 18               | THRUST PLATE                                     | A15-70-10000       | 391-2185-007 |
| 19               | GEAR SET ONLY                                    | A15-50-XX000       | 302-28XX-000 |
| 20               | BODY GASKET                                      | X85-11-09203       | 391-2884-019 |
| 21               | PUMP & MOTOR GEAR HOUSING                        | A15-32-XX000       | 302-80XX-100 |
| 22               | CONNECTING SHAFT                                 | A15-50-00500       | 302-1133-001 |
| 23               | BLANK BEARING CARRIER                            | A15-40-00000       | 302-7300-100 |
| 24               | PORT END COVER                                   | A15-22-00000       | 302-3100-100 |
| 25               | FLAT WASHER (1/2")                               | X45-19-13005       | 391-3782-027 |
| 26               | BOLT (1/2"-UNC)                                  | See Fasteners Page |              |
| 27               | NUTS (1/2"-UNC)                                  | X42-11-13011       | 391-1471-051 |
| <b>Not Shown</b> | DRAIN PIPE PLUG                                  | X02-03-32110       | 391-2286-004 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

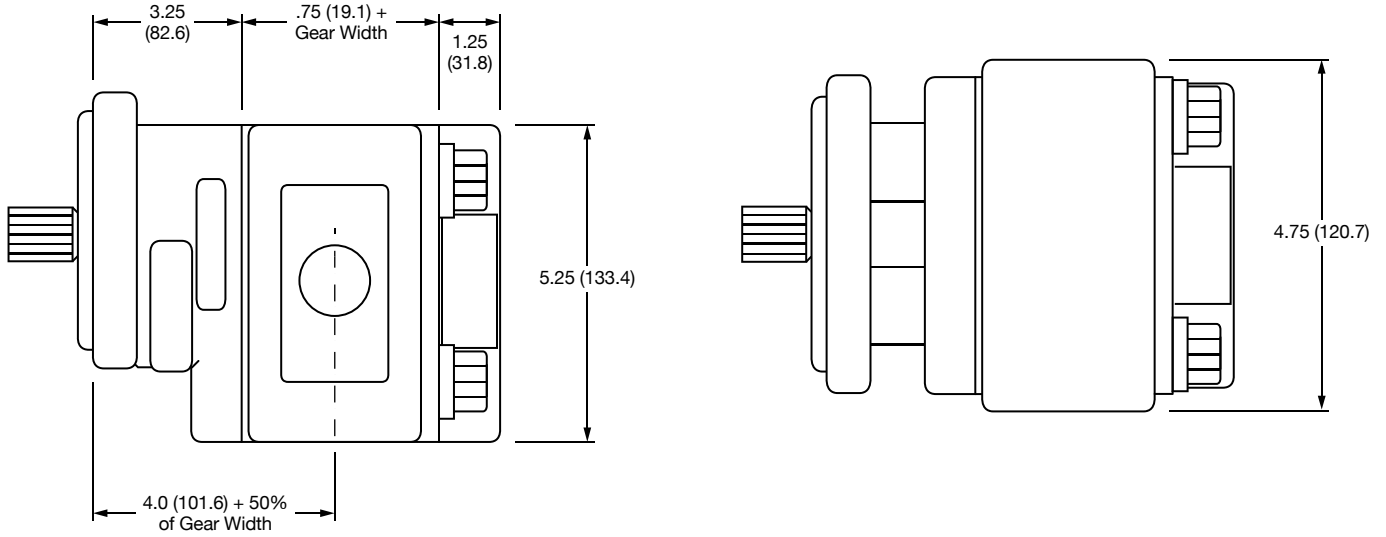
For example: Gear set no. A15-50-XX221 changes to A15-50-15221 for 1.5" gear size  
 Housing no. A15-32-XX000 changes to A15-32-15000 for a 1.5" housing size  
 No porting sizes have been indicated all porting must be specified when ordering parts.

# MH15 Series

## Dimensions

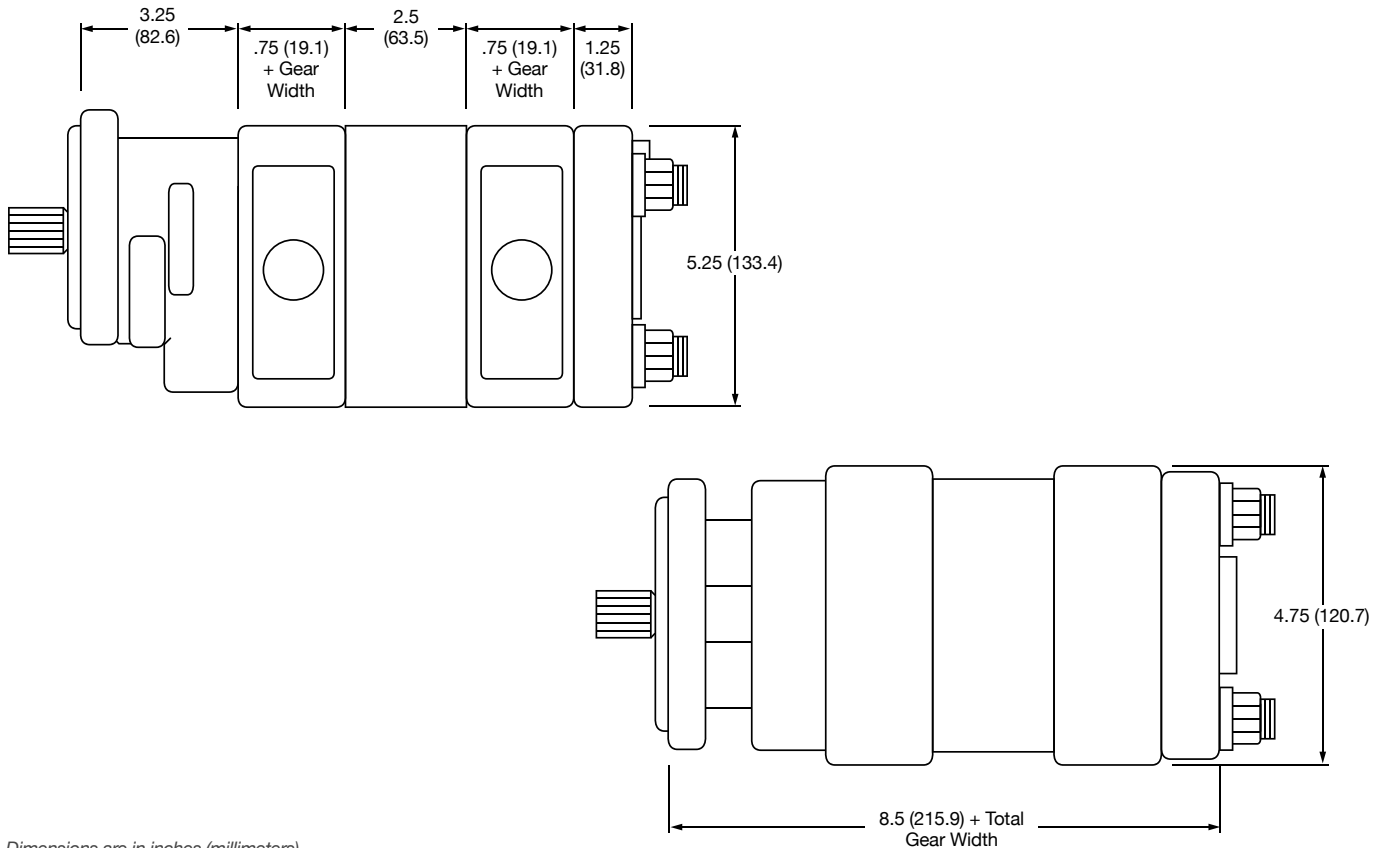
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH20 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH20       |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .50        | 1/2"   | .99                  | (16.1)                 | 3000         | (207) |
| .75        | 3/4"   | 1.48                 | (24.2)                 | 3000         | (207) |
| 1.00       | 1"     | 1.97                 | (32.3)                 | 3000         | (207) |
| 1.25       | 1-1/4" | 2.46                 | (40.4)                 | 3000         | (207) |
| 1.50       | 1-1/2" | 2.96                 | (48.4)                 | 3000         | (207) |
| 1.75       | 1-3/4" | 3.45                 | (56.5)                 | 2500         | (172) |
| 2.00       | 2"     | 3.94                 | (64.6)                 | 2500         | (172) |



# MH20 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |             |             |           |
|-----------|----------------------|-------------|-------------|-------------|-----------|
|           | 1"                   | 1-1/4"      | 1-1/2"      | 1-3/4"      | 2"        |
| 900       | 6.5 / 24.5           | 8 / 30      | 10 / 38     | 12 / 45.5   | 13.5 / 51 |
| 1200      | 9 / 34               | 11.5 / 43.5 | 14 / 53     | 16 / 60.5   | 18.5 / 70 |
| 1500      | 11.5 / 43.5          | 14.5 / 55   | 17.5 / 66   | 20.5 / 77.5 | 23.5 / 89 |
| 1800      | 14 / 53              | 18 / 68     | 21.5 / 81.5 | 25 / 94.5   | 29 / 110  |
| 2100      | 16.5 / 62.5          | 21 / 79.5   | 25 / 94.5   | 29.5 / 112  | 34 / 129  |
| 2400      | 19 / 72              | 24 / 91     | 29 / 110    | 34 / 129    | 39 / 148  |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 9 / 34               | 550 / 6.5                   | 13 / 49              | 870 / 10                    | 17 / 64.5            | 1150 / 13                   |
| 1200      | 13 / 49              | 550 / 6.5                   | 18 / 68              | 870 / 10                    | 23.5 / 89            | 1150 / 13                   |
| 1600      | 16 / 60.5            | 550 / 6.5                   | 23 / 87              | 860 / 10                    | 30.5 / 115           | 1140 / 13                   |
| 2000      | 19.5 / 74            | 550 / 6.5                   | 28 / 106             | 850 / 10                    | 37 / 140             | 1125 / 13                   |

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

## MH20 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 13,000   | 5,500     |
| SAE "BB" Keyed   | 8,600    | 5,500     |
| SAE "B" Spline   | 8,300    | 5,500     |
| SAE "B" Keyed    | 5,700    | 5,500     |
| SAE "C" Spline   | *        | *         |
| SAE "C" Keyed    | *        | *         |
| Connecting Shaft |          | 5,500     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH20 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10  
**MHP - 20 - A - 1 - 07 - WE - AB - 10 - 12 - DH - \* - \* - \***

### Type <sup>1</sup>

**MHP** = Pump  
**MHM** = Motor

### Unit <sup>2</sup>

**A** = Single Unit  
**B** = Tandem Unit  
**C** = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

**1** = Pump w/o Shaft Bearing (Clockwise Rotation)  
**2** = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
**3** = Pump w/o Shaft Bearing (Double Rotation)  
**4** = Pump w/ Shaft Bearing (Clockwise Rotation)  
**5** = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
**6** = Pump w/ Shaft Bearing (Double Rotation)  
**8** = Motor w/ Shaft Bearing & 1/4" Drain Port  
**9** = Motor w/o Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

**27** = 4-Bolt Cloverleaf Mount (Type 2)    **94** = SAE 2-Bolt "A" Mount (Type 1)  
**42** = SAE 4-Bolt "B" Mount (Type 1)    **96** = SAE 2-Bolt "B" Mount (Type 2)  
**46** = SAE 2/4-Bolt "B" Mount (Type 1)    **97** = SAE 2-Bolt "B" Mount (Type 1)

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A   | B   |
|--------------|--------------|-----------|-------|-----|-----|
|              |              | Left      | Right |     |     |
| BE   BY      | BI   BY      | None      | None  | n/a | n/a |
| KE   KY      | KI   KY      | 3/4"      | None  | n/a | 1.4 |
| LE   LY      | LI   LY      | None      | 3/4"  | 1.4 | n/a |
| ME   MY      | MI   MY      | 3/4"      | 3/4"  | 1.4 | 1.4 |
| QU   QQ      | QO   QQ      | 1"        | 1"    | 1.4 | 1.4 |
| AI           | AI           | 3/4"      | 1"    | 1.4 | 1.4 |
| EI           | EI           | 1"        | 3/4"  | 1.4 | 1.4 |

↑ ↑ ↑ ↑    With Support Studs  
 ↑            Without Support Studs  
 Orientation is viewed from the shaft end

#### ORB Codes

| Single Units | Tandem Units | Port Size |       | A   | B   |
|--------------|--------------|-----------|-------|-----|-----|
|              |              | Left      | Right |     |     |
| CE   CY      | CI   CY      | 3/4"      | None  | n/a | 1.4 |
| DE   DY      | DI   DY      | None      | 3/4"  | 1.4 | n/a |
| FE   FY      | FI   FY      | 3/4"      | 3/4"  | 1.4 | 1.4 |
| GE   GY      | GI   GY      | 1"        | 3/4"  | 1.4 | 1.4 |
| HE   HY      | HI   HY      | 3/4"      | 1"    | 1.4 | 1.4 |
| JE   JY      | JI   JY      | 1"        | 1"    | 1.4 | 1.4 |
| MA   YO      | MU   YO      | 1"        | None  | n/a | 1.4 |
| RA   RO      | SU   RO      | None      | 1"    | 1.4 | n/a |

↑ ↑ ↑ ↑    With Support Studs  
 ↑            Without Support Studs  
 Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
**1** = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 29 for Bearing Carrier options

### Shaft Type <sup>8</sup>

**07** = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)  
**12** = Keyed Shaft .75" Dia. x 1.56 Key (Cont. Only)  
**15** = SAE "B" Keyed .875 Dia. w/ 5/8"-18 Thd (Cont. Only)  
**25** = SAE "B" 13 Tooth Spline .88" Dia.  
**30** = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key  
**43** = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key  
**95** = SAE "A" 9 Tooth Spline .62" Dia.  
**65** = SAE "B" Spline Type 2  
**66** = SAE "B" Keyed Type 2  
**98** = SAE "BB" 15 Tooth Spline 1" Dia.

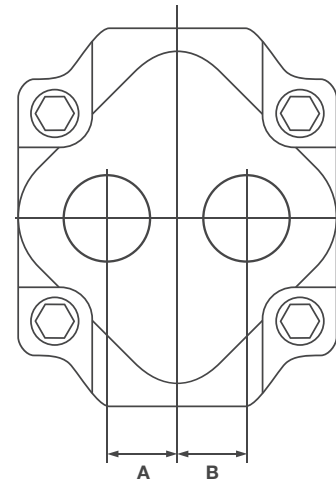
### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

| 05<br>(.99) | 07<br>(1.48) | 10<br>(1.97) | 12<br>(2.46) | 15<br>(2.96) | 17<br>(3.45) | 20<br>(3.94) |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options



# MH20 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| IL   | 1/2"      | None     | x | x | x  |    |    |    |    |
| IM   | None      | 1/2"     | x | x | x  |    |    |    |    |
| IR   | 1/2"      | 1/2"     | x | x |    |    |    |    |    |
| IC   | 3/4"      | None     |   | x | x  | x  | x  | x  | x  |
| ID   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| IF   | 3/4"      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| IG   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |
| IH   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |
| IK   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |
| YC   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| YD   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| YF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |
| YG   | 1"        | 1-1/4" * |   |   | x  | x  | x  | x  | x  |
| YH   | 1"        | 1-1/2"   |   |   |    |    | x  | x  | x  |
| YJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| YK   | 1-1/2"    | 1"       |   |   |    |    | x  | x  | x  |
| IA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |
| IB   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  |
| YL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| YN   | 3/4"      | None     |   | x | x  | x  | x  | x  | x  |
| YQ   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| YS   | 3/4"      | 3/4"     |   |   | x  | x  |    | x  | x  |
| YT   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   |    |    |    | x  | x  |
| YV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| YW   | 1-1/4"    | 3/4"     |   |   |    |    |    | x  | x  |
| SL   | 1"        | None     |   |   |    | x  | x  | x  | x  |
| RQ   | None      | 1"       |   |   |    | x  | x  | x  | x  |
| MP   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| VY   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| IX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    |    | x  | x  |
| UI   | None      | 1-1/4" * |   |   |    |    |    | x  | x  |
| PF   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  |

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| UC   | 3/4"      | None     |   | x | x  | x  | x  | x  | x  |
| UD   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| UF   | 3/4"      | 1/2"     |   | x | x  | x  | x  | x  |    |
| UG   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |
| UH   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  | x  |
| UJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |
| UK   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  | x  |
| OC   | 1"        | None     |   |   |    | x  | x  | x  | x  |
| OD   | None      | 1"       |   |   |    | x  | x  | x  | x  |
| OF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |
| OG   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| OH   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| OJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  |
| OK   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| OA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  |
| OB   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| OL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |
| OM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| OP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| OE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  |
| OU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  |

# MH20 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### O.D. Tube Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| EC   | 3/4"      | None     |   | x | x  | x  | x  | x  | x  |
| ED   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| EF   | 3/4"      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| EG   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |
| EH   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  | x  |
| IN   | 3/4"      | 1-1/2"   |   |   |    |    |    | x  | x  |
| EJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |
| EK   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  | x  |
| IP   | 1-1/2"    | 3/4"     |   |   |    |    |    | x  | x  |
| EZ   | 7/8"      | None     |   |   |    | x  |    |    |    |
| EL   | 7/8"      | 1"       |   |   | x  |    |    |    |    |
| EM   | 1"        | 7/8"     |   |   | x  |    |    |    |    |
| AC   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| AD   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| AF   | 1"        | 1"       |   |   |    | x  | x  | x  | x  |
| AG   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| AH   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| AJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  |
| AK   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| AA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  |
| AO   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| AL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |
| AM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| AP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| AE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  |
| AU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

#### Metric S.F. Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| VN   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |
| VQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |
| VS   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  |    |
| VT   | 3/4"      | 1"       |   |   | x  | x  | x  | x  |    |
| RV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| RU   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  |    |
| RW   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  |    |
| UL   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| UR   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| UM   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| VU   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| UX   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  |
| HO   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| VO   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| NO   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |
| UO   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  |
| PO   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |
| QO   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| SO   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| UY   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  |
| TO   | None      | 1-1/2" * |   |   |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

#### Metric Str. Thd. Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| EN   | 3/4"      | None     |   |   | x  | x  | x  |    |    |
| TQ   | None      | 3/4"     |   |   | x  | x  | x  |    |    |
| ES   | 3/4"      | 3/4"     |   |   | x  | x  |    |    |    |
| ET   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |
| EV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| NL   | 1"        | None     |   |   | x  | x  | x  |    |    |
| ER   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| CM   | 1"        | 1"       |   |   |    | x  | x  |    |    |
| VE   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| EX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| PA   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  |
| QA   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  |
| SA   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    |    | x  |

\* Low Pressure Inlet Porting

# MH20 Series Bearing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

NPT Codes

| In                         | Out                | CW (Left)                | CCW (Right)             |
|----------------------------|--------------------|--------------------------|-------------------------|
| None<br>None               | None<br>None       | <br>C<br>A               | <br>D<br>J              |
| 1"<br>1-1/4"               | None<br>None       | <br>TB<br>VB             | <br>BT<br>BV            |
| 1"<br>1-1/4"<br>1-1/4"     | 3/4"<br>3/4"<br>1" | <br>TX<br>VX<br>VZ       | <br>XT<br>XV<br>ZV      |
| 1-1/4"<br>1-1/4"<br>1-1/2" | 3/4"<br>1"<br>1"   | <br>TJ<br>VJ<br>VK<br>KW | <br>JT<br>JV<br>KV<br>- |
| 1"                         | 3/4"               | <br>ZX                   | <br>XZ                  |
| 1"                         | 3/4"               | <br>ZS                   | <br>SZ                  |

SAE O-ring Codes

| In   | Out                              | CW (Left)                      | CCW (Right)                          |
|--|----------------------------------|--------------------------------|--------------------------------------|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None             | <br>CB<br>DB<br>FB             | <br>BC<br>BD<br>BF                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | <br>CJ<br>DJ<br>FJ<br>DK<br>FK | <br>JP<br>JC<br>JD<br>JF<br>KD<br>KF |
| 1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2"         | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | <br>CR<br>DR<br>FR<br>DS<br>FS | <br>RC<br>RD<br>RF<br>SD<br>SF       |
| 1"   | 3/4"                             | <br>KJ                         | <br>JK                               |
| 1"   | 3/4"                             | <br>KX                         | <br>XK                               |

SAE Split Flange Codes

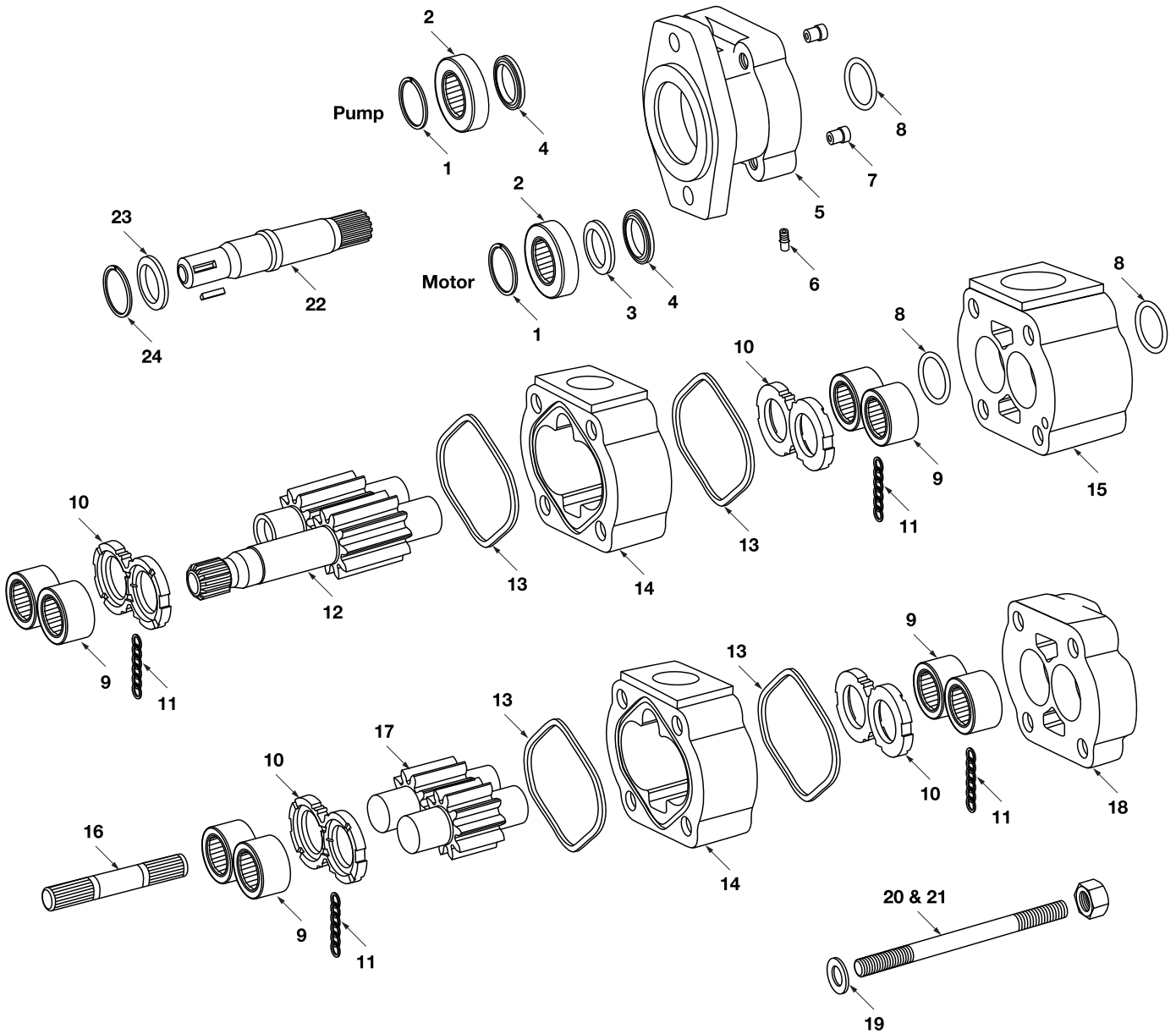
| In                             | Out                        | CW (Left)                | CCW (Right)              |
|--------------------------------|----------------------------|--------------------------|--------------------------|
| 1"<br>1-1/4"                   | None<br>None               | <br>LB<br>MB             | <br>BL<br>BM             |
| None<br>1"<br>1-1/4"<br>1-1/4" | 3/4"<br>3/4"<br>3/4"<br>1" | <br>BR<br>LR<br>MR<br>MS | <br>RB<br>RL<br>RM<br>SM |
| 1"<br>1-1/4"<br>1-1/4"         | 3/4"<br>3/4"<br>1"         | <br>LX<br>MX<br>MZ       | <br>XL<br>XM<br>ZM       |
| 1"                             | 3/4"                       | <br>SR                   | <br>RS                   |
| 1"                             | 3/4"                       | <br>RZ                   | <br>ZR                   |

Motors Only Codes

| In   | Out  | Dual                                       |  |
|--|--|--|--|
| None   | None   | <br>B                                      |  |
| 1"<br>1-1/4"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4" | 1"<br>1-1/4"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4" | <br>TT<br>VV<br>CC<br>BB<br>FF<br>LL<br>MM | NPT<br>NPT<br>SAE O-Ring<br>SAE O-Ring<br>SAE O-Ring<br>SAE Split Flange<br>SAE Split Flange |

# MH20 Series

## Parts Breakdown



# MH20 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION   | METARIS #    | ALTERNATE #  |
|-------------|---|--------------|--------------|
| 1           | SHAFT BEARING SNAP RING   | X05-03-56200 | 391-2686-063 |
| 2a          | BEARING SPACER (IN PLACE OF SHAFT BEARING)                          | A30-92-38520 | 391-3383-069 |
| 2b          | INPUT SHAFT BEARING   | X03-16-12552 | 391-0381-040 |
| 3           | MOTOR SEAL RETAINER USED WITH SHAFT BEARING OR SPACER               | A20-60-10000 | 391-3381-040 |
| 4a          | PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY                            | X89-11-02508 | 391-2883-107 |
| 4b          | MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY                           | X84-36-02509 | 391-2883-126 |
| 4c          | PUMP LIP SEAL FOR SHAFT END COVER                                   | X83-11-02708 | 391-2883-058 |
| 4d          | MOTOR LIP SEAL  | X84-36-02709 | 391-2883-119 |
| 5a          | 20 6 BOLT ROUND WITH 2.625" OR 66.67 mm PILOT PUMP S.E.C. TYPE 05   | A20-10-21650 | 308-5043-201 |
| 5b          | 20 PAD PILOT PUMP TYPE 2 S.E.C. TYPE 10                             | A20-10-22100 | 308-5016-203 |
| 5c          | 20 4 BOLT CLOVERLEAF PILOT TYPE 2 PUMP S.E.C. TYPE 27               | A20-10-22460 | 308-5036-201 |
| 5d          | 20 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)        | A20-10-21420 | 308-5030-201 |
| 5e          | 20 2/4 BOLT B PILOT PUMP S.E.C. TYPE 46 (4" or 101.6 mm pilot)      | A20-10-21320 | 308-5053-202 |
| 5f          | 20 2 BOLT A PILOT PUMP S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)    | A20-10-21210 | 308-5020-204 |
| 5g          | 20 2 BOLT B PILOT PUMP S.E.C. TYPE 97 (4" or 101.6 mm pilot)        | A20-10-21220 | 308-5020-201 |
| 5h          | 20 2 BOLT B PILOT TYPE 2 PUMP S.E.C. TYPE 96 (4" or 101.6 mm pilot) | A20-10-22220 | 308-5029-205 |
| 5i          | 20 6 BOLT ROUND WITH 2.625" or 66.67 mm PILOT MOTOR S.E.C. TYPE 05  | A20-10-41650 | 308-5043-401 |
| 5j          | 20 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)       | A20-10-41420 | 308-5030-401 |
| 5k          | 20 2/4 BOLT B PILOT MOTOR S.E.C. TYPE 46 (4" or 101.6 mm pilot)     | A20-10-41320 | 308-5053-402 |
| 5l          | 20 2 BOLT A PILOT MOTOR S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)   | A20-10-41210 | 308-5020-404 |
| 5m          | 20 2 BOLT B PILOT MOTOR S.E.C. TYPE 97 (4" or 101.6 mm pilot)       | A20-10-41220 | 308-5020-401 |
| 6           | CASE DRAIN PLUG   | X02-03-22060 | 391-2282-056 |
| 7a          | CHECK VALVE MOTOR   | A00-75-11000 | 391-3681-001 |
| 7b          | PRESSURE PLUG PUMP  | X02-03-32110 | 391-2286-004 |
| 8           | RING SEAL   | X81-76-02706 | 391-2585-006 |
| 9           | ROLLER BEARING (Ø 1.687" O.D.)                                      | X03-24-12743 | 391-0381-068 |
| 10          | PUMP & MOTOR THRUST PLATE   | A30-70-10000 | 391-2185-013 |
| 11          | POCKET SEAL   | X85-11-00002 | 391-2882-086 |
| 12a         | SHAFT & GEAR TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)              | A30-50-XX125 | 312-29XX-730 |
| 12b         | SHAFT & GEAR TYPE 25 (0.875" Ø - 13-Tooth spline)                   | A30-50-XX225 | 312-29XX-230 |
| 12c         | SHAFT & GEAR TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)           | A30-50-XX135 | 312-29XX-740 |
| 12d         | SHAFT & GEAR TYPE 67 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)       | A30-50-XX132 | 312-29XX-940 |
| 12e         | SHAFT & GEAR TYPE 66 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)       | A30-50-XX126 | 312-29XX-930 |
| 12f         | SHAFT & GEAR TYPE 65 TYPE 2 (0.875" Ø - 13-Tooth spline)            | A30-50-XX226 | 312-29XX-430 |
| 13          | PUMP & MOTOR HOUSING GASKET   | X85-11-09203 | 391-2884-019 |
| 14          | PUMP & MOTOR GEAR HOUSING   | A20-32-XX000 | 308-80XX-100 |
| 15a         | 20 MOTOR BEARING CARRIER BLANK                                      | A20-40-00000 | 308-7300-100 |

# MH20 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION   | METARIS #          | ALTERNATE #  |
|-------------|---|--------------------|--------------|
| 15b         | 20 PUMP BEARING CARRIER WITH COMMON PASSAGE                                   | A20-40-20000       | 308-7363-100 |
| 16          | CONNECTING SHAFT  | A30-50-00500       | 312-1133-001 |
| 17          | GEAR SET ONLY   | A30-50-XX000       | 312-28XX-000 |
| 18          | 20 PUMP & MOTOR PORT END COVER  | A20-22-00000       | 308-3100-100 |
| 19          | FLAT WASHER (9/16")   | X45-19-15005       | 391-3782-146 |
| 20          | BOLTS / STUDS (9/16" UNC)   | See Fasteners Page |              |
| 21          | HEX NUT (9/16" UNC)   | X42-11-14012       | 391-1451-115 |
| 22a         | CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)                   | A30-50-00121       | 312-1500-300 |
| 22b         | CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)                   | A30-50-00124       | 312-1135-192 |
| 22c         | CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14-tooth spline, Continental only)       | A30-50-00241       | 312-1135-133 |
| 22d         | CONTINENTAL SHAFT TYPE 25 ( 0.875" Ø - 13-Tooth spline)                       | A30-50-00221       | 312-1135-138 |
| 22e         | CONTINENTAL SHAFT TAPERED TYPE 32 (Clutch pump shaft with woodruff key)       | Special Order      | 312-1500-001 |
| 22f         | CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)                | A30-50-00131       | 312-1500-400 |
| 22g         | CONTINENTAL SHAFT TYPE 43 Long (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)           | A30-50-00134       | 312-1135-193 |
| 22h         | CONTINENTAL SHAFT TYPE 12 (0.750" Ø x 3/16" x 3/16" 1 9/16" key)              | A30-50-00169       | 312-1135-152 |
| 22i         | CONTINENTAL SHAFT THREADED & KEYED END TYPE 15 (5/8"-18UNF+1/4"x3/8"x7/8"key) | A30-50-00127       | 312-1135-171 |
| 22j         | CONTINENTAL SHAFT TYPE 95 (0.625" Ø x 9-tooth spline)                         | A30-50-00211       | 312-1000-200 |
| 23          | CONTINENTAL SHAFT BRG. RETAINER SNAP RING                                     | X05-02-28110       | 391-2685-011 |
| 24          | CONTINENTAL SHAFT BRG. RETAINER   | A20-60-20000       | 312-0100-002 |
| Not Shown   | SHAFT KEY FOR TYPE 12 SHAFT   | X01-02-50540       | 391-1781-075 |
| Not Shown   | SHAFT KEY FOR TYPE 43 & 67 SHAFT  | X01-01-61032       | 391-1781-021 |
| Not Shown   | SHAFT KEY FOR TYPE 30 & 66 SHAFT  | X01-01-61025       | 391-1781-025 |
| Not Shown   | SHAFT KEY FOR TYPE Spl. SHAFT   | X01-01-61044       | 391-1781-020 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A30-50-XX000 changes to A30-50-15000 for 1.5" gear size  
 Housing no. A20-32-XX000 changes to A20-32-15000 for a 1.5" housing size  
 No porting sizes have been indicated all porting must be specified when ordering parts.

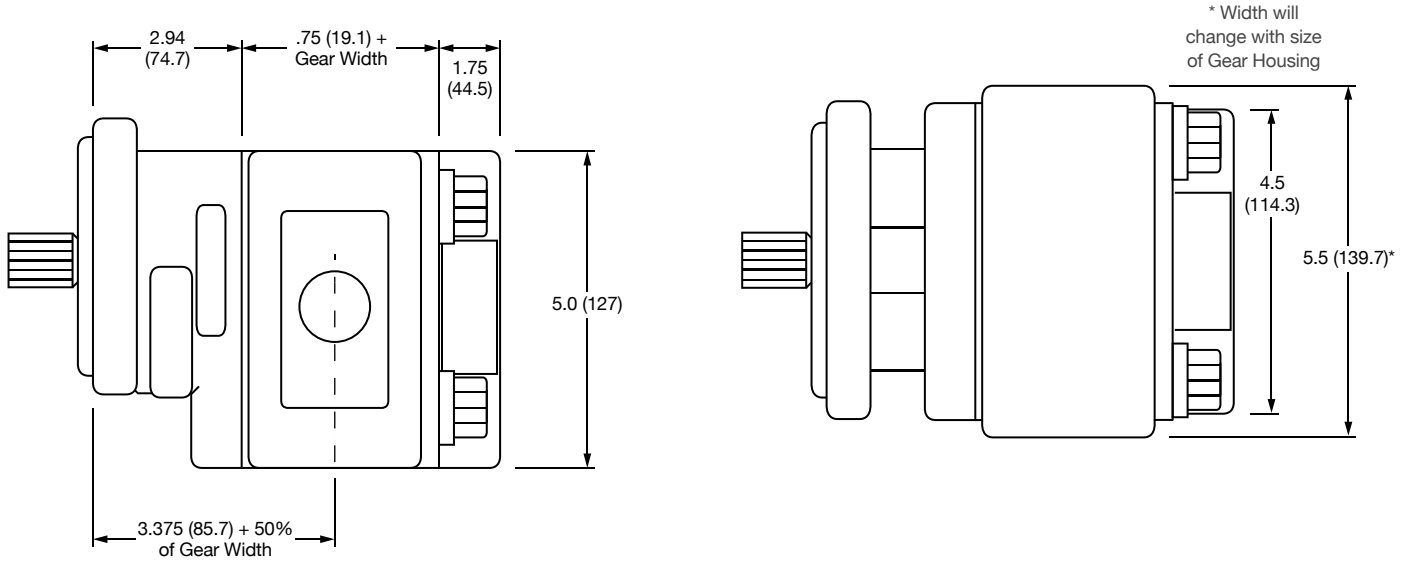


# MH20 Series

## Dimensions

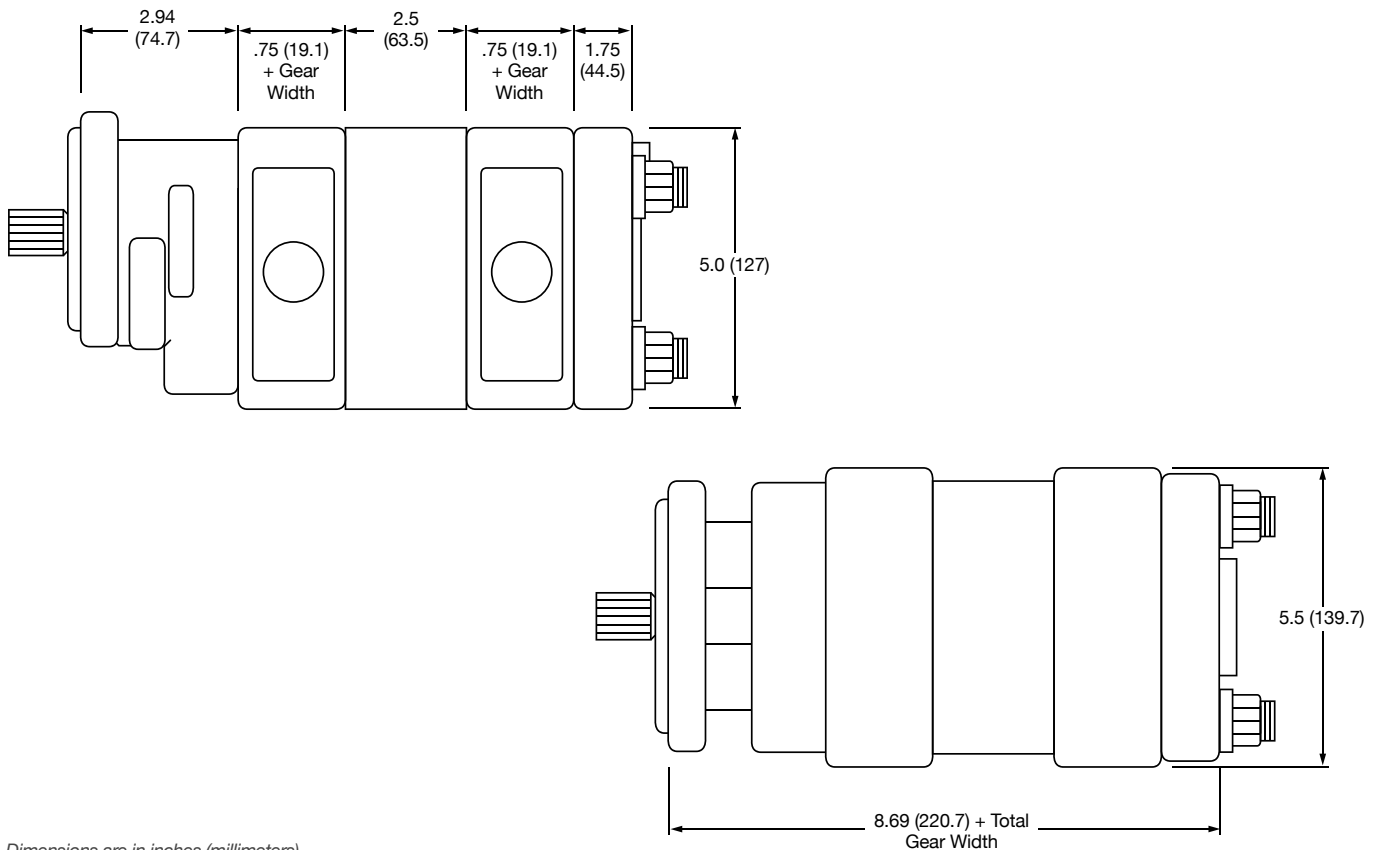
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH25 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 2500 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 2500 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH25       |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .75        | 3/4"   | 1.91                 | (31.3)                 | 2500         | (172) |
| 1.00       | 1"     | 2.55                 | (41.8)                 | 2500         | (172) |
| 1.25       | 1-1/4" | 3.19                 | (52.3)                 | 2500         | (172) |
| 1.50       | 1-1/2" | 3.83                 | (62.8)                 | 2500         | (172) |
| 1.75       | 1-3/4" | 4.46                 | (73.1)                 | 2000         | (137) |
| 2.00       | 2"     | 5.10                 | (83.6)                 | 2000         | (137) |
| 2.25       | 2-1/4" | 5.74                 | (94.1)                 | 2000         | (137) |
| 2.50       | 2-1/2" | 6.38                 | (104.5)                | 2000         | (137) |

# MH25 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |            |            |            |            |            |
|-----------|----------------------|-------------|------------|------------|------------|------------|------------|
|           | 1"                   | 1-1/4"      | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"     | 2-1/2"     |
| 900       | 8.5 / 32             | 10.5 / 39.5 | 13 / 49    | 15 / 57    | 17.5 / 66  | 20 / 75.5  | 22 / 83.5  |
| 1200      | 12 / 46.5            | 15 / 57     | 18 / 68    | 21 / 79.5  | 24 / 91    | 27 / 102   | 30 / 114   |
| 1500      | 15 / 57              | 19 / 72     | 23 / 87    | 27 / 102   | 31 / 117   | 35 / 132   | 39 / 146   |
| 1800      | 18 / 68              | 23 / 87     | 27.5 / 104 | 32.5 / 123 | 37.5 / 142 | 42 / 159   | 47 / 178   |
| 2100      | 21.5 / 81.5          | 27 / 102    | 32.5 / 123 | 38.5 / 146 | 44 / 167   | 48.5 / 187 | 55 / 208   |
| 2400      | 25 / 94.5            | 31 / 117    | 37 / 140   | 44 / 167   | 51 / 193   | 57 / 216   | 63.5 / 240 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             | 2-1/2"               |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 10.5 / 40            | 670 / 7.5                   | 15.5 / 58.5          | 1070 / 12.5                 | 21 / 79.5            | 1450 / 16.5                 | 26 / 98.5            | 1850 / 21.5                 |
| 1200      | 15.5 / 58.5          | 680 / 8                     | 22.5 / 85            | 1075 / 12.5                 | 30.5 / 115           | 1450 / 16.5                 | 37.5 / 142           | 1840 / 21                   |
| 1600      | 20 / 75.5            | 670 / 7.5                   | 30 / 114             | 1045 / 12                   | 40 / 151             | 1440 / 16.5                 | 49.5 / 187           | 1750 / 20                   |
| 2000      | 25 / 94.5            | 660 / 7.5                   | 37 / 140             | 1030 / 12                   | 49 / 185             | 1415 / 16.5                 | 61.5 / 233           | 1720 / 20                   |

**Note:** Input Flow @ 2000psi | Output Torque @ 140 bar

## MH25 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 9,900    | 8,000     |
| SAE "BB" Keyed   | 6,600    | 6,600     |
| SAE "B" Spline   | 6,400    | 6,400     |
| SAE "B" Keyed    | 5,750    | 5,750     |
| SAE "C" Spline   | 13,850   | 8,000     |
| SAE "C" Keyed    | 13,000   | 8,000     |
| Connecting Shaft |          | 8,000     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH25 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10

**MHP - 25 - X - 1 - 07 - WE - AB - 10 - 25 - DH - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

X = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

- 1 = Pump w/ Single Shaft Bearing (Clockwise Rotation) *Type 1 or 2*
- 2 = Pump w/ Single Shaft Bearing (Counter-clockwise Rot) *Type 1 or 2*
- 3 = Pump w/ Single Shaft Bearing (Double Rotation) *Type 1 or 2*
- 4 = Pump w/ Double Shaft Bearing (Clockwise Rotation) *Type 3*
- 5 = Pump w/ Double Shaft Bearing (Counter-clockwise Rot) *Type 3*
- 6 = Pump w/ Double Shaft Bearing (Double Rotation) *Type 3*
- 7 = Motor w/ Single Shaft Bearing & 1/4" Drain Port *Type 1 or 2*
- 8 = Motor w/ Double Shaft Bearing & 1/4" Drain Port *Type 3*
- 9 = Motor w/ Single Shaft Bearing & No Drain Port *Type 1 or 2*

### Shaft End Cover <sup>4</sup>

- 00 = Pad Mount (*Type 1 or 3*)
- 01 = Modified Pad Mount (*Type 1*)
- 03 = Round Flange 6-Bolt (*Type 1*)
- 04 = Round Flange 4-Bolt 2.883 Pilot (*Type 2*)
- 05 = Round Flange 6-Bolt 6.625 Pilot (*Type 2*)
- 07 = Round Flange 4-Bolt 2.883 Pilot (*Type 2*)
- 40 = 4-Bolt SQ. 3.249 Pilot (*Type 1*)
- 42 = SAE 4-Bolt "B" Mount (*Type 1 or 3*)
- 43 = SAE 4-Bolt "B" Mount w/ 2 Drains (*Type 1*)
- 78 = SAE 4-Bolt "C" Mount (*Type 1 or 3*)
- 95 = SAE 2-Bolt "B" Mount w/ 2 Drains (*Type 1*)
- 97 = SAE 2-Bolt "B" Mount (*Type 1 or 3*)
- 98 = SAE 2-Bolt "C" Mount (*Type 1*)

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| BE   BY      | BI   BJ      | None      | None  | n/a  | n/a  |
| FE   FY      | FI   FJ      | 3/4"      | None  | n/a  | 1.38 |
| CE   CY      | CI   CJ      | None      | 3/4"  | 1.38 | n/a  |
| GE   GY      | GI   GJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |

#### BSPP Ring Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| AE   AY      | AI   AJ      | 3/4"      | None  | n/a  | 1.38 |
| QE   QY      | QI   QJ      | None      | 3/4"  | 1.38 | n/a  |
| SE   SY      | SI   SJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |



#### O-ring Codes

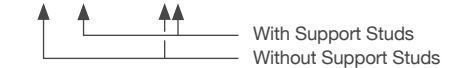
| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| HE   HY      | HI   HJ      | 1/2"      | None  | n/a  | 1.38 |
| DE   DY      | DI   DJ      | None      | 1/2"  | 1.38 | n/a  |
| JE   JY      | JI   JI      | 1/2"      | 1/2"  | 1.38 | 1.38 |
| UE   UY      | UI   UJ      | 5/8"      | None  | n/a  | 1.38 |
| NE   NY      | NI   NJ      | None      | 5/8"  | 1.38 | n/a  |
| KE   KY      | KI   KJ      | 3/4"      | None  | n/a  | 1.38 |
| LE   LY      | LI   LJ      | None      | 3/4"  | 1.38 | n/a  |
| ME   MY      | MI   MJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |



Orientation is viewed from the shaft end

#### Metric Str. Thd Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| EB   YB      | IB   YB      | 5/8"      | None  | n/a  | 1.38 |
| EF   YF      | IF   YF      | None      | 5/8"  | 1.38 | n/a  |
| EV   YV      | IV   YV      | 5/8"      | 5/8"  | 1.38 | 1.38 |
| EE   EY      | EI   EY      | 3/4"      | 5/8"  | n/a  | 1.38 |
| VE   VY      | VI   VY      | 5/8"      | 3/4"  | 1.38 | n/a  |
| TE   TY      | TI   TY      | 3/4"      | None  | n/a  | 1.38 |
| WE   WY      | WI   WY      | None      | 3/4"  | 1.38 | n/a  |
| XE   XY      | XI   XY      | 3/4"      | 3/4"  | 1.38 | 1.38 |



Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 39 for Bearing Carrier options

### Shaft Type <sup>8</sup>

- 03 = 6 Tooth Spline 1.1096" Dia. x 2-1/8" Ext. (*Type 1*)
- 07 = SAE "C" 14 Tooth Spline 1.250" Dia. (*Type 1*)
- 11 = SAE "C" Keyed 1.250" Dia. (*Type 1*)
- 25 = SAE "B" 13 Tooth Spline .88" Dia. (*Type 1*)
- 30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key (*Type 1*)
- 38 = .8745" Dia. Keyed 1-7/16" Ext. x 1-1/4" Key (*Type 1*)
- 39 = .8745" Dia. Keyed 2-15/16" Ext. (*Type 1*)
- 43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key (*Type 1*)
- 45 = .8745" Dia. Keyed 2-13/32" Ext. x 1-1/4" Key (*Type 2*)
- 47 = .9996" Dia. Keyed x 1-1/4" Ext. (*Type 2*)
- 48 = SAE "B" 13 Tooth Spline .875" Dia. (*Type 2*)
- 53 = SAE "C" 14 Tooth Spline 1.250" Dia. (*Type 2*)
- 61 = 1.250" Dia. Keyed x 1-1/2" Keyed (*Type 2*)
- 73 = 1.249" Dia. Keyed, Drilled & Tapped x 1-1/2" (*Type 3*)
- 76 = .999" Dia. Keyed Grooved x 1-1/2" Keyed (*Type 3*)

### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

| 07     | 10     | 12     | 15     | 17     | 20     | 22     | 25     |
|--------|--------|--------|--------|--------|--------|--------|--------|
| (1.91) | (2.55) | (3.19) | (3.83) | (4.46) | (5.10) | (5.74) | (6.38) |

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options

# MH25 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| AP   | 1/2"      | None     |   | x |    |    |    |    |    |    |    |
| AC   | None      | 1/2"     |   | x |    |    |    |    |    |    |    |
| EC   | 1/2"      | 1/2"     |   | x | x  |    |    |    |    |    |    |
| ED   | 1/2"      | 3/4"     |   | x |    |    |    |    |    |    |    |
| EH   | 3/4"      | 1/2"     |   | x |    |    |    |    |    |    |    |
| AR   | 3/4"      | None     |   | x | x  | x  | x  | x  | x  |    |    |
| AF   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |    |    |
| ER   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  | x  | x  |
| ET   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |
| EU   | 3/4"      | 1-1/4"   |   |   |    |    |    | x  | x  |    | x  |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  | x  | x  |
| IQ   | 1-1/4"    | 3/4"     |   |   |    |    |    | x  | x  |    | x  |
| AT   | 1"        | None     |   |   | x  | x  | x  | x  | x  | x  | x  |
| AH   | None      | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |
| IL   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |
| IM   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| IS   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| IY   | 1-1/2"    | 1"       |   |   |    |    |    |    | x  | x  | x  |
| AV   | 1-1/4" *  | None     |   |   |    |    |    | x  | x  | x  | x  |
| AJ   | None      | 1-1/4" * |   |   |    |    |    |    | x  | x  | x  |
| IT   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| IU   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    |    | x  | x  |
| IZ   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    | x  | x  |
| JC   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    | x  | x  |
| AW   | 1-1/2" *  | None     |   |   |    |    |    |    |    | x  | x  |
| AK   | None      | 1-1/2" * |   |   |    |    |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| EM   | None      | 3/4"     |   |   | x  | x  | x  |    |    |    |    |
| EA   | 3/4"      | None     |   |   | x  | x  | x  |    |    |    |    |
| EJ   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  | x  |    |
| EK   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   | x  | x  | x  | x  |    |    |    |
| EN   | 1"        | 3/4"     |   |   | x  | x  |    |    |    |    |    |
| YW   | 1-1/4"    | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| EP   | 1"        | None     |   |   |    |    | x  | x  | x  |    |    |
| IH   | None      | 1"       |   |   |    |    | x  | x  | x  |    |    |
| EQ   | 1"        | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| ES   | 1"        | 1-1/4" * |   |   |    |    | x  |    |    |    |    |
| IR   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| ID   | 1-1/2"    | 1"       |   |   |    |    |    |    |    |    | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |    |    |
| JB   | None      | 1-1/4" * |   |   |    |    |    |    |    |    | x  |
| IE   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |
| IQ   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    |    |    | x  |
| IS   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |
| JV   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Metric Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| ZQ   | 1"        | 1"       |   |   |    |    | x  |    |    |    |    |
| ZS   | 1"        | 1-1/4"   |   |   |    | x  |    |    |    |    |    |
| ZD   | 1-1/2"    | 1"       |   |   |    |    | x  |    |    |    |    |
| ZE   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  |    |    |    |    |
| OA   | 1-1/4"    | 1-1/2"   |   |   |    |    |    |    |    | x  |    |
| RF   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    |    | x  |    |    |
| RW   | None      | 1-1/2" * |   |   |    |    |    |    | x  |    |    |
| RV   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  |
| RG   | 1-1/2"    | 2" *     |   |   |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

# MH25 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### ORB Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| UP   | 1/2"      | None     |   | x | x  |    | x  |    |    |    |    |
| UC   | None      | 1/2"     |   | x | x  |    | x  |    |    |    |    |
| YC   | 1/2"      | 1/2"     |   | x | x  | x  | x  |    |    |    |    |
| YD   | 1/2"      | 5/8"     |   | x | x  |    | x  |    |    |    |    |
| YJ   | 5/8"      | 1/2"     |   | x | x  |    | x  |    |    |    |    |
| UQ   | 5/8"      | None     |   |   | x  | x  | x  |    |    |    |    |
| UD   | None      | 5/8"     |   |   | x  | x  | x  |    |    |    |    |
| YK   | 5/8"      | 5/8"     |   |   | x  | x  | x  |    | x  |    |    |
| YL   | 5/8"      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| YQ   | 3/4"      | 5/8"     |   |   | x  | x  | x  | x  |    |    |    |
| UR   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |    |    |
| UF   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| YR   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  | x  | x  |
| YS   | 3/4"      | 7/8"     |   |   |    |    |    |    |    | x  |    |
| YT   | 3/4"      | 1"       |   |   | x  |    |    |    |    |    |    |
| YX   | 7/8"      | 3/4"     |   |   |    |    |    |    |    | x  |    |
| VJ   | 1"        | 3/4"     |   |   | x  |    |    |    |    |    |    |
| US   | 7/8"      | None     |   |   |    | x  | x  | x  | x  | x  | x  |
| UG   | None      | 7/8"     |   |   |    | x  | x  | x  | x  | x  | x  |
| YZ   | 7/8"      | 7/8"     |   |   |    | x  | x  | x  | x  | x  | x  |
| VC   | 7/8"      | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| VK   | 1"        | 7/8"     |   |   |    | x  | x  | x  | x  | x  | x  |
| UT   | 1"        | None     |   |   |    | x  | x  | x  | x  | x  | x  |
| UH   | None      | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| VL   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| VM   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| VN   | 1"        | 1-1/2" * |   |   |    |    |    | x  |    |    |    |
| VS   | 1-1/4"    | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| VG   | 1-1/2" *  | 1"       |   |   |    |    |    | x  |    |    |    |
| UV   | 1-1/4"    | None     |   |   |    |    |    |    | x  | x  | x  |
| UJ   | None      | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| VT   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| VU   | 1-1/4"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| VZ   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| UW   | 1-1/2"    | None     |   |   |    |    |    |    |    | x  |    |
| UK   | None      | 1-1/2"   |   |   |    |    |    |    |    | x  |    |
| WC   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| OP   | 1/2"      | None     |   | x |    |    |    | x  |    |    |    |
| OC   | None      | 1/2"     |   | x |    |    |    | x  |    |    |    |
| ZC   | 1/2"      | 1/2"     |   |   |    |    |    | x  |    |    |    |
| ZF   | 1/2"      | 3/4"     |   |   |    |    | x  | x  | x  | x  | x  |
| ZP   | 3/4"      | 1/2"     |   |   |    |    | x  | x  | x  | x  | x  |
| OR   | 3/4"      | None     |   |   |    | x  | x  | x  | x  | x  | x  |
| OF   | None      | 3/4"     |   |   |    | x  | x  | x  | x  | x  | x  |
| ZR   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  | x  | x  |
| ZT   | 3/4"      | 1"       |   |   | x  |    | x  | x  | x  | x  | x  |
| ZU   | 3/4"      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| RJ   | 1"        | 3/4"     |   |   | x  |    | x  | x  | x  | x  | x  |
| RQ   | 1-1/4" *  | 3/4"     |   |   |    |    | x  | x  | x  | x  | x  |
| OT   | 1"        | None     |   |   | x  | x  | x  | x  | x  | x  | x  |
| OH   | None      | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |
| RL   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| RM   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  | x  |
| RN   | 1"        | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| OS   | 1"        | 2"       |   |   |    |    |    |    |    | x  | x  |
| RS   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| RY   | 1-1/2" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| OZ   | 2"        | 1"       |   |   |    |    |    |    |    | x  | x  |
| OV   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  | x  | x  |
| OJ   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  | x  |
| RT   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| RU   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| RX   | 1-1/4"    | 2" *     |   |   |    |    |    |    | x  | x  | x  |
| RZ   | 1-1/2" *  | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| SG   | 2" *      | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| OW   | 1-1/2" *  | None     |   |   |    |    | x  | x  | x  | x  | x  |
| OK   | None      | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| SC   | 1-1/2"    | 1-1/2"   |   |   |    |    |    | x  | x  | x  | x  |
| SD   | 1-1/2"    | 2" *     |   |   |    |    |    |    | x  | x  | x  |
| SH   | 2" *      | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| OX   | 2" *      | None     |   |   |    |    |    |    | x  |    |    |
| OL   | None      | 2" *     |   |   |    |    |    |    | x  |    |    |

\* Low Pressure Inlet Porting

# MH25 Series Bearing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

*NPT Codes*

| In     | Out    | CW (Left) | CCW (Right) |
|--------|--------|-----------|-------------|
| None   | None   | B         | B           |
| 1-1/2" | None   | TL        | TJ          |
| None   | 1-1/2" |           |             |
| 1-1/2" | 1"     | XS        | XT          |
| 1"     | 1-1/2" |           |             |
| 1"     | 1"     | DH        | HD          |
| 1-1/4" | 1-1/4" | BF        | FB          |

*SAE O-ring Codes*

| In     | Out    | CW (Left) | CCW (Right) |
|--------|--------|-----------|-------------|
| 1-1/2" | None   | TH        | TM          |
| None   | 1-1/2" |           |             |
| 1-1/2" | 1"     | TK        | TN          |
| 1"     | 1-1/2" |           |             |
| 1"     | 1"     | QD        | DQ          |
| 1-1/4" | 1-1/4" | NV        | VN          |

*SAE Split Flange Codes*

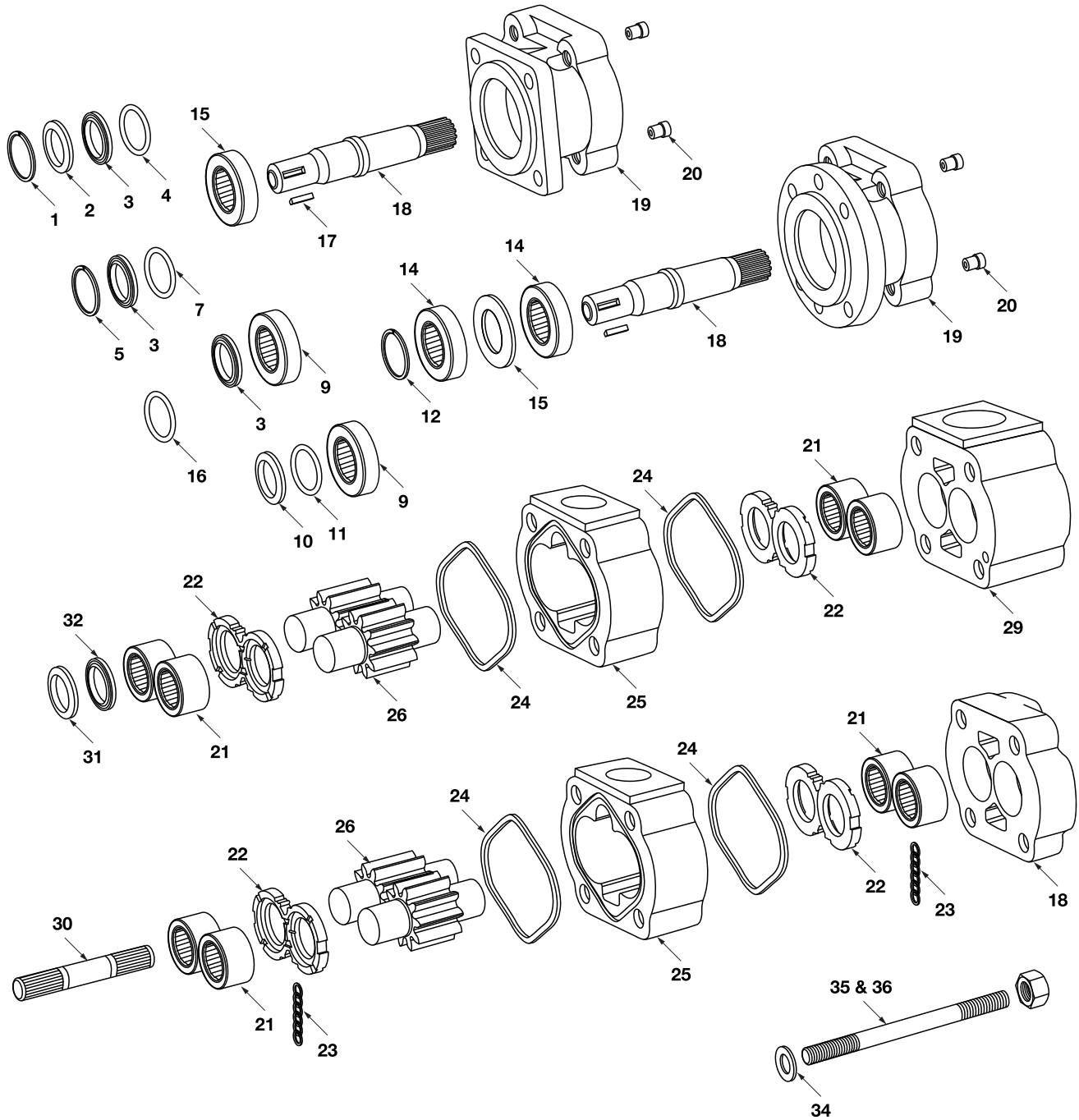
| In     | Out    | CW (Left) | CCW (Right) |
|--------|--------|-----------|-------------|
| 1-1/2" | None   | FB        | FT          |
| None   | 1-1/2" |           |             |
| 1-1/2" | 1"     | XV        | XW          |
| 1"     | 1-1/2" |           |             |
| 1"     | 1"     | LP        | PL          |
| 1-1/4" | 1-1/4" | GL        | LG          |

*Motors Only Codes*

| In     | Out    | Dual |                  |
|--------|--------|------|------------------|
| None   | None   | B    |                  |
| 1"     | 1"     | TT   | NPT              |
| 1-1/4" | 1-1/4" | VV   | NPT              |
| 1-1/2" | 1-1/2" | WW   | NPT              |
| 1"     | 1"     | CC   | SAE O-Ring       |
| 1-1/4" | 1-1/4" | BB   | SAE O-Ring       |
| 1-1/2" | 1-1/2" | FF   | SAE O-Ring       |
| 1"     | 1"     | LL   | SAE Split Flange |
| 1-1/4" | 1-1/4" | MM   | SAE Split Flange |

# MH25 Series

## Parts Breakdown





# MH25 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|------------------|--|--------------|--------------|
| 1a               | RETAINER RING  | A25-60-50002 | 391-2581-009 |
| 1b               | RETAINER RING  | A25-60-30001 | 391-2581-003 |
| 2                | SEAL RETAINER  | A25-60-10001 | 391-2584-016 |
| 3a               | DOUBLE LIP PUMP SEAL ( FOR TYPE 1 S.E.C.)                          | X83-11-03008 | 391-2883-055 |
| 3b               | HI PRESSURE SHAFT SEAL ( FOR TYPE 1 S.E.C.)                        | X84-36-03009 | 391-2883-096 |
| 3c               | PUMP LIP SEAL ( FOR TYPE 2 S.E.C.)                                 | X83-11-02508 | 391-2883-057 |
| 3d               | DOUBLE LIP PUMP SEAL TYPE 3 TYPE                                   | X83-11-03508 | 391-2883-052 |
| 3e               | MOTOR SHAFT SEAL FOR TYPE 1 S.E.C.)                                | X84-36-03009 | 391-2883-096 |
| 4                | O RING   | X81-11-05704 | 391-2881-120 |
| 5                | RETAINER RING TYPE 3   | A25-60-50001 | 391-2581-001 |
| 7                | O RING (L 3006-47)   | X81-11-06304 | 391-2881-141 |
| 8a               | BEARING SLEEVE   | A25-60-30003 | 391-3281-004 |
| 8b               | BEARING SLEEVE   | A25-60-30002 | 391-2584-024 |
| 9                | SHAFT ROLLER BEARING   | X03-24-12541 | 391-0381-058 |
| 10               | SHAFT SEAL BACK UP RING  | A25-82-46020 | 391-2681-248 |
| 11               | SHAFT SEAL O RING  | X81-11-02504 | 391-2881-261 |
| 12               | RETAINING RING TYPE 2  | X05-03-56200 | 391-2686-063 |
| 13               | SHAFT BEARING RACE   | X03-40-12552 | 391-0383-001 |
| 14               | THRUST BEARING   | X03-40-12552 | 391-0383-002 |
| 15               | THRUST WASHER  | X03-33-13064 | 391-0384-008 |
| <b>Not Shown</b> | TAPERED ROLLER BEARING SPACER TYPE 3                               | A25-92-51640 | 391-3381-007 |
| 16               | BEARING SLEEVE O RING  | X81-11-04403 | 391-2881-203 |
| 17a              | DRIVE KEY TYPE 30 & 70 SHAFT                                       | X01-01-61025 | 391-1781-025 |
| 17b              | DRIVE KEY TYPE 2 & 84 SHAFT  | X01-01-61044 | 391-1781-020 |
| 17c              | DRIVE KEY TYPE 20 & 43 & 47 & 52 SHAFT                             | X01-01-61032 | 391-1781-021 |
| 17d              | DRIVE KEY TYPE 38 & 39 & 45 SHAFT                                  | X01-01-50732 | 391-1781-027 |
| 17e              | DRIVE KEY TYPE 11 & 61 & 101 SHAFT                                 | X01-01-81238 | 391-1781-045 |
| 17f              | DRIVE KEY TYPE 58 SHAFT  | X01-01-50719 | 391-1781-032 |
| 17g              | DRIVE KEY TYPE 73 SHAFT  | X01-01-81257 | 391-1781-008 |
| 17h              | DRIVE KEY TYPE 76 SHAFT  | X01-01-61038 | 391-1781-019 |
| <b>Not Shown</b> | 0.133" THICK SPACER FOR TYPE 3 SHAFTS                              | A25-92-25392 | 391-3383-016 |
| <b>Not Shown</b> | 0.128" THICK SPACER FOR TYPE 3 SHAFTS                              | A25-92-25391 | 391-3383-015 |
| <b>Not Shown</b> | SHAFT BEARING RETAINING RING                                       | X05-02-28110 | 391-2685-011 |
| 18a              | 13 Tooth spline 0.873" dia. 16/32 pitch (TYPE 25) TYPE 1           | A25-50-00221 | 303-1135-028 |
| 18b              | SAE B KEYED 7/8" dia. (KEY SIZE 0.25" W X 1" L ) (TYPE 30) TYPE 1  | A25-50-00121 | 303-1135-001 |
| 18c              | KEYED 1.1247" dia.(KEY SIZE 1/4" X 3/8" X 1 3/4" ) (TYPE 2) TYPE 1 | A25-50-00151 | 303-1135-032 |
| 18d              | 6 Tooth Spline 1.109" dia. .275" tooth (TYPE 3) TYPE 1             | A25-50-00791 | 303-1135-002 |

# MH25 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #     | ALTERNATE #  |
|-------------|--|---------------|--------------|
| 18e         | 6 Tooth Spline 1.120" dia. .275" tooth (TYPE 6) TYPE 1                             | A25-50-00751  | 303-1135-035 |
| 18f         | 6 Tooth Spline 1.120" dia. grooved .275" tooth (TYPE 19) TYPE 1                    | A25-50-00759  | 303-1135-057 |
| 18g         | KEYED 0.9846" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 20) TYPE 1                | A25-50-00174  | 303-1135-010 |
| 18h         | KEYED 0.8745" dia. (KEY SIZE 3/16" X 9/32" X 1 1/4") (TYPE 38) TYPE 1              | A25-50-00124  | 303-1135-030 |
| 18i         | KEYED 0.8745" dia. (KEY SIZE 3/16" X 9/32" X 1 1/4") (TYPE 39) TYPE 1              | A25-50-00129  | 303-1135-031 |
| 18j         | 6 Tooth Spline 0.8730" dia. .214" tooth (TYPE 40) TYPE 1                           | A25-50-00721  | 303-1135-006 |
| 18k         | 6 Tooth Spline 0.9846" dia. .246" tooth (TYPE 42) TYPE 1                           | Special Order | 303-1135-037 |
| 18l         | KEYED .9996" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 43) TYPE 1                 | A25-50-00131  | 303-1135-012 |
| 18m         | 14 Tooth Spline 1.228" dia. 12/24 pitch -SAE C Spline (TYPE 7) TYPE 1              | A25-50-00241  | 303-1135-021 |
| 18n         | KEYED 1.249" dia. (KEY SIZE 5/16" X 15/32" X 1 1/2 ) (TYPE 11 ) TYPE 1             | A25-50-00141  | 303-1135-023 |
| 18o         | 17 Tooth Spline 1.249" dia. 16/32 pitch (TYPE 49) TYPE 1                           | Special Order | 303-1135-014 |
| 18p         | KEYED 0.9846" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 52) TYPE 1                | A25-50-00171  | 303-1135-009 |
| 18q         | 6 Tooth Spline 1.248" dia. .236" tooth (TYPE 63) TYPE 1                            | A25-50-00741  | 303-1135-033 |
| 18r         | 6 Tooth Spline 0.9997" dia. .248" tooth (TYPE 94) TYPE 1                           | A25-50-00731  | 303-1135-058 |
| 18s         | KEYED 0.8745" dia. (KEY SIZE 3/16" X 9/32" X 1 1/4") (TYPE 45) TYPE 2              | A25-50-00122  | 303-1135-015 |
| 18t         | 6 Tooth Spline 0.9846" dia. .246" tooth (TYPE 46) TYPE 2                           | A25-50-00772  | 303-1135-013 |
| 18u         | KEYED 0.9996" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 47) TYPE 2                | A25-50-00132  | 303-1135-011 |
| 18v         | 13 Tooth spline 0.873" dia. 16/32 pitch (TYPE 48) TYPE 2                           | A25-50-00222  | 303-1135-004 |
| 18w         | 14 Tooth Spline 1.248" dia. 12/24 pitch -SAE C Spline (TYPE 53) TYPE 2             | A25-50-00242  | 303-1135-062 |
| 18x         | 14 Tooth Spline 1.248" dia. 12/24 pitch (TYPE 55) TYPE 2                           | A25-50-00249  | 303-1135-007 |
| 18y         | KEYED 0.7495" dia. (KEY SIZE 3/16" X 9/32" X 7/8") (TYPE 58) TYPE 2                | A25-50-00162  | 303-1135-022 |
| 18z         | KEYED 1.250" dia. (KEY SIZE 5/16" X 15/32" X 1 1/2") (TYPE 61) TYPE 2              | A25-50-00142  | 303-1135-029 |
| 18aa        | KEYED 0.9846" dia. (KEY SIZE 1/4" X 3/8" X 1") (TYPE 70) TYPE 2                    | A25-50-00172  | 303-1135-040 |
| 18bb        | 6 Tooth Spline 0.8730" dia. .214" tooth (TYPE 99) TYPE 2                           | A25-50-00722  | 303-1135-072 |
| 18cc        | KEYED 1.250" dia. + Int. Thread 1/2" -13 Thd (double brg.) (TYPE 73) TYPE 3        | A25-50-00143  | 303-1135-049 |
| 18dd        | KEYED 0.999" dia. grooved (KEY SIZE 1/4" X 3/8" X 1 1/2") (TYPE 76) TYPE 3         | A25-50-00133  | 303-1135-019 |
| 18ee        | 6 Tooth Spline 1.1235" dia. grooved .277" tooth (TYPE 82) TYPE 3                   | Special Order | 303-1135-041 |
| 18ff        | KEYED 0.8745" dia. Grooved (KEY SIZE .311" X .124" X 1.187") (TYPE 83) TYPE 3      | Special Order | 303-1135-038 |
| 18gg        | KEYED 1.1247" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") (TYPE 84) TYPE 3                | A25-50-00153  | 303-1135-047 |
| 18hh        | KEYED 1.250" dia. (KEY SIZE .31" X .47" X 1.50") (TYPE 101) TYPE 3                 | Special Order | 303-1500-501 |
| 19a         | 25 S.E.C. PAD MOUNT PUMP TYPE 1 TYPE 100 / 200 / 300                               | A25-10-21100  | 303-5011-202 |
| 19b         | 25 S.E.C. MODIFIED PAD MOUNT PUMP TYPE 1 TYPE 101 / 201 / 301                      | A25-10-41101  | 303-5011-401 |
| 19c         | 25 S.E.C. 2 BOLT B MOUNT (SPL.) TYPE 1 TYPE 102 / 202 / 302 (4" or 101.6 mm pilot) | A25-10-21222  | 303-5021-205 |
| 19d         | 25 S.E.C. 6 BOLT ROUND 3.148" PILOT TYPE 1 TYPE 103 / 203 / 303                    | A25-10-21650  | 303-5041-201 |
| 19e         | 25 S.E.C. 4 BOLT SQ 4.748" PILOT TYPE 1 TYPE 106 / 206 / 306                       | Special Order | 303-5031-203 |
| 19f         | 25 S.E.C. 4 BOLT SQ 3.249" PILOT TYPE 1 TYPE 140 / 240 / 340                       | Special Order | 303-5031-406 |
| 19g         | 25 S.E.C. 4 BOLT SQ 3.748 PILOT TYPE 1 TYPE 141 / 241 / 341                        | Special Order | 303-5031-402 |

# MH25 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #     | ALTERNATE #  |
|-------------|--|---------------|--------------|
| 19h         | 25 S.E.C. 4 BOLT B MOUNT TYPE 1 TYPE 142 / 241 / 342 (4" or 101.6 mm pilot)    | A25-10-21420  | 303-5031-201 |
| 19i         | 25 S.E.C. 4 BOLT C MOUNT TYPE 1 TYPE 178 / 278 / 378 (5" or 127 mm pilot)      | A25-10-21430  | 303-5031-202 |
| 19j         | 25 S.E.C. 2 BOLT B MOUNT TYPE 1 TYPE 197 / 297 / 397 (4" or 101.6 mm pilot)    | A25-10-21221  | 303-5021-203 |
| 19k         | 25 S.E.C. 2 BOLT C MOUNT TYPE 1 TYPE 198 / 298 / 398 (5" or 127 mm pilot)      | A25-10-21231  | 303-5021-204 |
| 19l         | 25 S.E.C. PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 700                            | A25-10-41102  | 303-5011-404 |
| 19m         | 25 S.E.C. MODIFIED PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 701                   | Special Order | 303-5011-403 |
| 19n         | 25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 742 (4" or 101.6 mm pilot)     | A25-10-41422  | 303-5031-407 |
| 19o         | 25 S.E.C. 4 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 778 (5" or 127 mm pilot)       | A25-10-41430  | 303-5031-403 |
| 19p         | 25 S.E.C. 2 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 797 (4" or 101.6 mm pilot)     | A25-10-41222  | 303-5021-403 |
| 19q         | 25 S.E.C. 2 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 798 (5" or 127 mm pilot)       | A25-10-41232  | 303-5021-405 |
| 19r         | 25 S.E.C. PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 900                            | A25-10-21100  | 303-5011-202 |
| 19s         | 25 S.E.C. MODIFIED PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 901                   | A25-10-41101  | 303-5011-401 |
| 19t         | 25 S.E.C. 2 BOLT B MOUNT (SPL.) WITH DRAIN TYPE 1 TYPE 902                     | A25-10-21222  | 303-5021-205 |
| 19u         | 25 S.E.C. 6 BOLT ROUND 3.148" PILOT WITH DRAIN TYPE 1 TYPE 903                 | A25-10-21650  | 303-5041-201 |
| 19v         | 25 S.E.C. 4 BOLT SQ 4.748" PILOT WITH DRAIN TYPE 1 TYPE 906                    | Special Order | 303-5031-203 |
| 19w         | 25 S.E.C. 4 BOLT SQ 3.748" PILOT WITH DRAIN TYPE 1 TYPE 941                    | Special Order | 303-5031-402 |
| 19x         | 25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 942 (4" or 101.6 mm pilot)     | A25-10-21420  | 303-5031-201 |
| 19y         | 25 S.E.C. 4 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 978 (5" or 127 mm pilot)       | A25-10-21430  | 303-5031-202 |
| 19z         | 25 S.E.C. 2 BOLT C WITH 2 DRAINS TYPE 1 TYPE 993 (5" or 127 mm pilot)          | A25-10-41231  | 303-5021-404 |
| 19aa        | 25 S.E.C. 2 BOLT B WITH 2 DRAINS TYPE 1 TYPE 995 (4" or 101.6 mm pilot)        | A25-10-41221  | 303-5021-402 |
| 19bb        | 25 S.E.C. 2 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 997 (4" or 101.6 mm pilot)     | A25-10-21221  | 303-5021-203 |
| 19cc        | 25 S.E.C. 2 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 998 (5" or 127 mm pilot)       | A25-10-21231  | 303-5021-204 |
| 19dd        | 25 S.E.C. 6 BOLT ROUND 2.625" PILOT TYPE 2 TYPE 305                            | A25-10-22650  | 303-5043-202 |
| 19ee        | 25 S.E.C. 4 BOLT ROUND 2.883" PILOT TYPE 2 TYPE 304                            | A25-10-22452  | 303-5043-204 |
| 19ff        | 25 S.E.C. 4 BOLT ROUND 2.883" PILOT TYPE 2 TYPE 307 (53 25 SHAFT)              | A25-10-22451  | 303-5043-203 |
| 19gg        | 25 S.E.C. 6 BOLT ROUND 2.625" WITH DRAIN PILOT TYPE 2 TYPE 705                 | A25-10-42650  | 303-5043-404 |
| 19hh        | 25 S.E.C. 6 BOLT ROUND 2.625" PILOT WITH DRAIN TYPE 2 TYPE 905                 | A25-10-22650  | 303-5043-202 |
| 19ii        | 25 S.E.C. 4 BOLT ROUND 2.883" PILOT WITH DRAIN TYPE 2 TYPE 904                 | A25-10-22452  | 303-5043-204 |
| 19jj        | 25 S.E.C. 4 BOLT ROUND 2.883" PILOT WITH DRAIN TYPE 2 TYPE 907                 | A25-10-22451  | 303-5043-203 |
| 19kk        | 25 S.E.C. PAD MOUNT PUMP WITH DRAIN TYPE 3 TYPE 600 / 800                      | A25-10-23100  | 303-5012-201 |
| 19ll        | 25 S.E.C. 4 BOLT C MOUNT WITH DRAIN TYPE 3 TYPE 678 / 878 (5" or 127 mm pilot) | A25-10-23430  | 303-5039-204 |
| 19mm        | 25 S.E.C. 2 BOLT B MOUNT WITH DRAIN TYPE 3 TYPE 697/897 (4" or 101.6 mm pilot) | A25-10-23220  | 303-5022-202 |
| 19nn        | 25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 3 TYPE 842 (4" or 101.6 mm pilot)     | A25-10-23420  | 303-5022-201 |
| 19oo        | 25 S.E.C. 4 BOLT B MOUNT WITH 2 DRAINS TYPE 3 TYPE 843 (4" or 101.6 mm pilot)  | A25-10-41421  | 303-5022-401 |
| 19pp        | 25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 3 TYPE 642 (4" or 101.6 mm pilot)     | A25-10-23420  | 303-5022-201 |
| 20a         | CHECK VALVE  | A00-75-11000  | 391-3681-001 |
| 20b         | PRESSURE PLUG  | X02-03-32110  | 391-2286-004 |

# MH25 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION                                       | METARIS #          | ALTERNATE #  |
|------------------|---|--------------------|--------------|
| 21               | ROLLER BEARING (Ø 1.625" O.D.)                    | X03-24-13349       | 391-0381-059 |
| 22               | PUMP & MOTOR THRUST PLATE                         | A25-70-10000       | 391-2185-012 |
| 23               | POCKET SEAL                                       | X85-11-00002       | 391-2882-050 |
| 24               | PUMP & MOTOR HOUSING GASKET                       | X85-11-10803       | 391-2884-021 |
| 25               | PUMP & MOTOR GEAR HOUSING                         | A25-32-XX000       | 303-80XX-100 |
| 26               | GEAR SET ONLY                                     | A25-50-XX000       | 303-28XX-000 |
| 27               | ROLL PIN  | A00-94-30310       | 391-2084-020 |
| 28               | SHAFT BUSHING TYPE 3                              | X03-00-32531       | 391-0481-003 |
| 29a              | PUMP BEARING CARRIER WITH COMMON PASSAGE          | A25-40-20000       | 303-7383-100 |
| 29b              | MOTOR BEARING CARRIER BLANK                       | A25-40-00000       | 303-7300-100 |
| 30               | CONNECTING SHAFT                                  | A25-50-00500       | 303-1133-001 |
| 31               | SHAFT BUSHING                                     | X03-00-32532       | 391-0481-002 |
| 32               | CONICAL SPRING                                    | A25-95-00000       | 391-3581-176 |
| 33               | PUMP & MOTOR PORT END COVER                       | A25-22-00000       | 303-3100-100 |
| 34               | FLAT WASHER (5/8")                                | X45-10-17005       | 391-3784-028 |
| 35               | BOLT & STUDS (5/8"-UNC)                           | See Fasteners Page |              |
| 36               | HEX NUT (5/8"-UNC)                                | X42-11-16000       | 391-1451-076 |
| <b>Not Shown</b> | CASE DRAIN PLUG 1/4" NPT                          | X02-03-22060       | 391-2282-056 |
| <b>Not Shown</b> | INPUT SHAFT SNAP RING FOR TYPE 2 SHAFTS           | X05-04-23170       | 391-2688-012 |
| <b>Not Shown</b> | INPUT SHAFT THRUST WASHER USED WITH TYPE 2 SHAFTS | X45-10-27002       | 391-3785-005 |
| <b>Not Shown</b> | INPUT SHAFT RETAINER RING FOR TYPE 2 SHAFTS       | A25-60-20000       | 391-2585-001 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

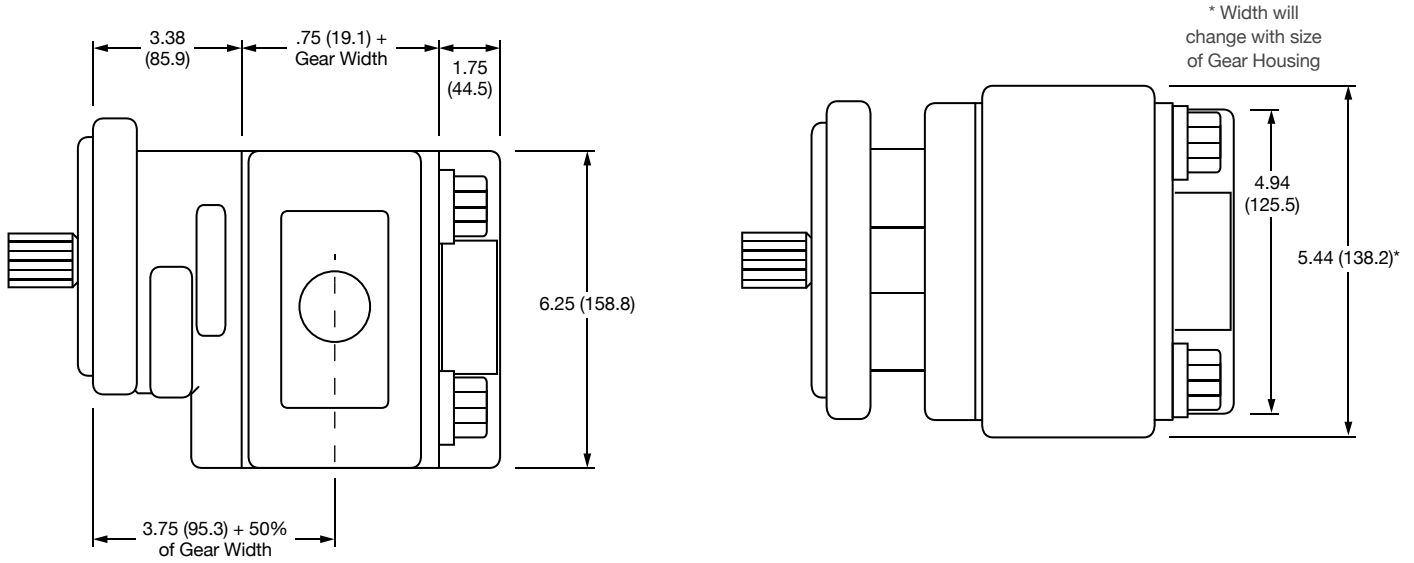
For example: Gear set no. A25-50-XX000 changes to A25-50-15000 for 1.5" gear size  
 Housing no. A25-32-XX000 changes to A25-32-15000 for a 1.5" housing size  
 No porting sizes have been indicated all porting must be specified when ordering parts.

# MH25 Series

## Dimensions

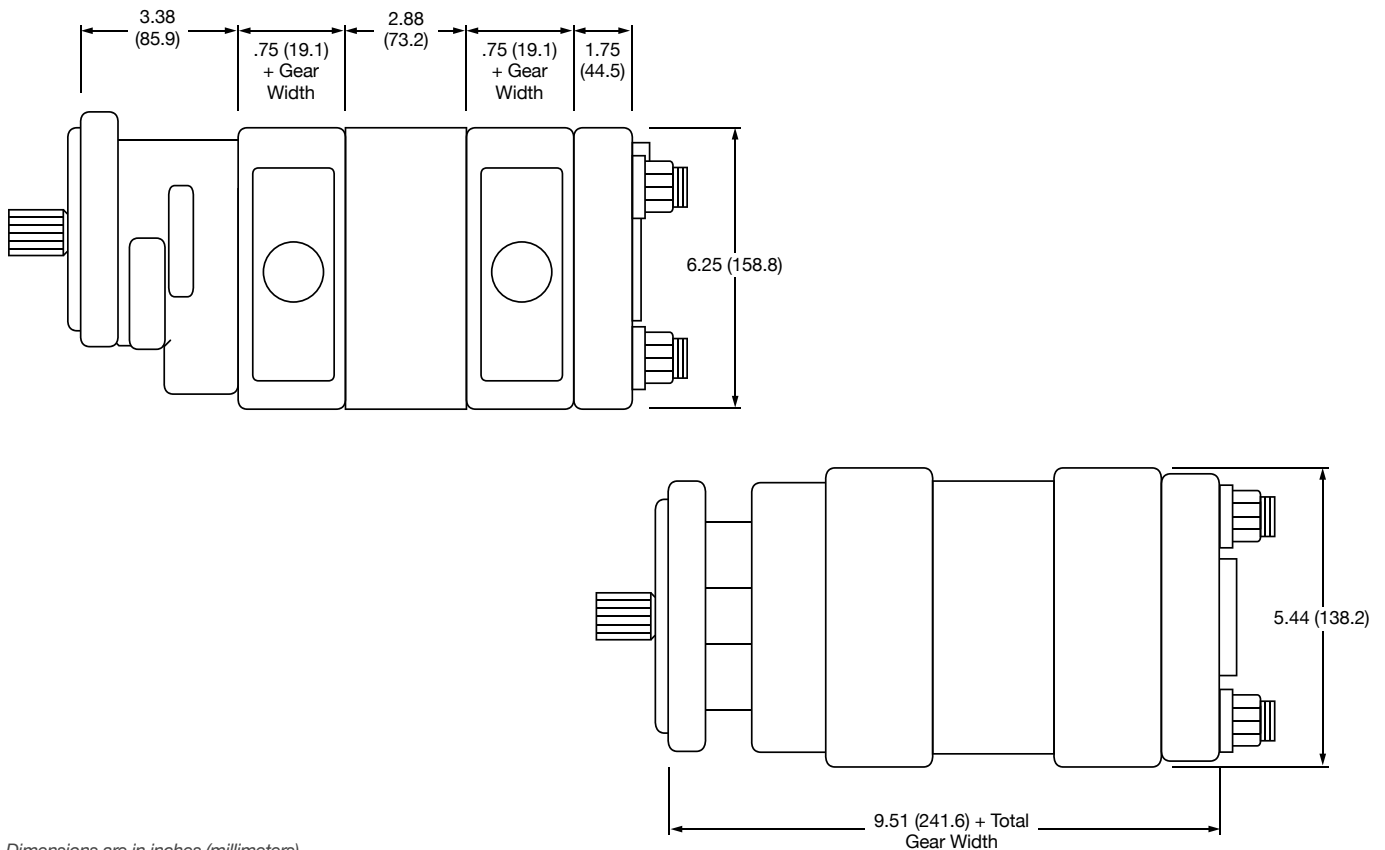
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH30 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH30       |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .50        | 1/2"   | .99                  | (16.1)                 | 2500         | (172) |
| .75        | 3/4"   | 1.48                 | (24.2)                 | 2500         | (172) |
| 1.00       | 1"     | 1.97                 | (32.3)                 | 2500         | (172) |
| 1.25       | 1-1/4" | 2.46                 | (40.4)                 | 2500         | (172) |
| 1.50       | 1-1/2" | 2.96                 | (48.4)                 | 2500         | (172) |
| 1.75       | 1-3/4" | 3.45                 | (56.5)                 | 2250         | (145) |
| 2.00       | 2"     | 3.94                 | (64.6)                 | 2250         | (145) |

# MH30 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |             |             |           |
|-----------|----------------------|-------------|-------------|-------------|-----------|
|           | 1"                   | 1-1/4"      | 1-1/2"      | 1-3/4"      | 2"        |
| 900       | 6.5 / 24.5           | 8 / 30      | 10 / 38     | 12 / 45.5   | 13.5 / 51 |
| 1200      | 9 / 34               | 11.5 / 43.5 | 14 / 53     | 16 / 60.5   | 18.5 / 70 |
| 1500      | 11.5 / 43.5          | 14.5 / 55   | 17.5 / 66   | 20.5 / 77.5 | 23.5 / 89 |
| 1800      | 14 / 53              | 18 / 68     | 21.5 / 81.5 | 25 / 94.5   | 29 / 110  |
| 2100      | 16.5 / 62.5          | 21 / 79.5   | 25 / 94.5   | 29.5 / 112  | 34 / 129  |
| 2400      | 19 / 72              | 24 / 91     | 29 / 110    | 34 / 129    | 39 / 148  |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 9 / 34               | 550 / 6.5                   | 13 / 49              | 870 / 10                    | 17 / 64.5            | 1150 / 13                   |
| 1200      | 13 / 49              | 550 / 6.5                   | 18 / 68              | 870 / 10                    | 23.5 / 89            | 1150 / 13                   |
| 1600      | 16 / 60.5            | 550 / 6.5                   | 23 / 87              | 860 / 10                    | 30.5 / 115           | 1140 / 13                   |
| 2000      | 19.5 / 74            | 550 / 6.5                   | 28 / 106             | 850 / 10                    | 37 / 140             | 1125 / 13                   |

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

## MH30 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 13,000   | 5,500     |
| SAE "BB" Keyed   | 8,600    | 5,500     |
| SAE "B" Spline   | 8,300    | 5,500     |
| SAE "B" Keyed    | 5,700    | 5,500     |
| SAE "C" Spline   | *        | *         |
| SAE "C" Keyed    | *        | *         |
| Connecting Shaft |          | 5,500     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH30 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1 2 3 4 5 6 7 8 9 6 7 10  
**MHP - 30 - A - 1 - 07 - ME - AB - 10 - 12 - DB - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
3 = Pump w/o Shaft Bearing (Double Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
6 = Pump w/ Shaft Bearing (Double Rotation)  
8 = Motor w/ Shaft Bearing & 1/4" Drain Port  
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

00 = Pad Mount                                92 = 76/31 Piggyback Mount  
05 = 6-Bolt Fling 3.25" Dia. Bolt Circle    94 = SAE 2-Bolt "A" Mount  
42 = SAE 4-Bolt "B" Mount                    96 = SAE 2-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount                    97 = SAE 2-Bolt "B" Mount (Type 1)  
91 = 31/51 Piggyback Mount

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 51 for Bearing Carrier options

### Shaft Type <sup>8</sup>

07 = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)  
12 = Keyed Shaft .75" Dia. x 1.56 Key (Cont. Only)  
15 = SAE "B" Keyed .875 Dia. w/ 5/8"-18 Thd (Cont. Only)  
25 = SAE "B" 13 Tooth Spline .88" Dia.  
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key  
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key  
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2  
66 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key Type 2  
67 = SAE "B" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key Type 2  
68 = 6 Tooth Spline .1" Dia.  
95 = SAE "A" 9 Tooth Spline .62" Dia.  
98 = SAE "BB" 15 Tooth Spline 1" Dia.

### Gear Size <sup>7</sup>

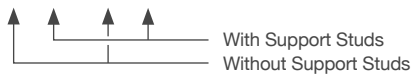
Code / Displacement (in<sup>3</sup>/r)

|             |              |              |              |              |              |              |              |              |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 05<br>(.99) | 07<br>(1.48) | 10<br>(1.97) | 12<br>(2.46) | 15<br>(2.96) | 17<br>(3.45) | 20<br>(3.94) | 22<br>(4.43) | 25<br>(4.93) |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| BE   BY      | BI   BY      | None      | None  | n/a  | n/a  |
| KE   KY      | KI   KY      | 3/4"      | None  | n/a  | 1.25 |
| LE   LY      | LI   LY      | None      | 3/4"  | 1.25 | n/a  |
| ME   MY      | MI   MY      | 3/4"      | 3/4"  | 1.25 | 1.25 |



Orientation is viewed from the shaft end

#### O-ring Codes

| Single Units | Tandem Units | Port Size |        | A    | B    |
|--------------|--------------|-----------|--------|------|------|
|              |              | Left      | Right  |      |      |
| GU           | GU           | 1-1/4"    | 1"     | 1.38 | 1.38 |
| HU           | HU           | 1"        | 1-1/4" | 1.38 | 1.38 |
| TU           | TU           | 1-1/4"    | 1"     | 1.38 | 1.38 |
| XU           | XU           | 1"        | 1-1/4" | 1.38 | 1.38 |

Orientation is viewed from the shaft end

#### ORB Codes

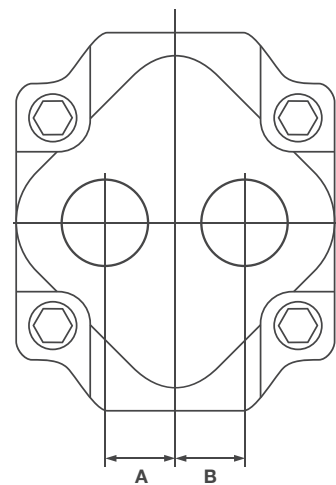
| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| CE   CY      | CI   CY      | 3/4"      | None  | n/a  | 1.25 |
| CA   CO      | CU   CO      | 3/4"      | None  | n/a  | 1.38 |
| DE   DY      | DI   DY      | None      | 3/4"  | 1.25 | n/a  |
| DA   DO      | DU   DO      | None      | 3/4"  | 1.25 | n/a  |
| FE   FY      | FI   FY      | 3/4"      | 3/4"  | 1.25 | 1.25 |
| JA   BO      | JU   BO      | 3/4"      | 3/4"  | 1.38 | 1.38 |
| GE   GY      | GI   GY      | 1"        | 3/4"  | 1.25 | 1.38 |
| KA           | KU           | 1"        | 3/4"  | 1.38 | 1.38 |
| HE   HY      | HI   HY      | 3/4"      | 1"    | 1.38 | 1.25 |
| LA           | LU           | 3/4"      | 1"    | 1.38 | 1.38 |
| MA   YO      | MU   YO      | 1"        | None  | n/a  | 1.38 |
| RA   RO      | SU   RO      | None      | 1"    | 1.38 | n/a  |
| JE   JY      | JI   JY      | 1"        | 1"    | 1.38 | 1.38 |
| ZA   ZO      | ZU   ZO      | 1"        | 1"    | 1.38 | 1.38 |



Orientation is viewed from the shaft end

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options





# MH30 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| IL   | 1/2"      | None     | x | x |    |    |    |    |    |
| IM   | None      | 1/2"     | x | x |    |    |    |    |    |
| IR   | 1/2"      | 1/2"     | x | x |    |    |    |    |    |
| IC   | 3/4"      | None     |   |   | x  | x  | x  | x  | x  |
| ID   | None      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| IF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| IG   | 3/4"      | 1"       |   |   | x  | x  | x  | x  |    |
| IH   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| IK   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |
| YC   | 1"        | None     |   |   | x  | x  | x  | x  |    |
| YD   | None      | 1"       |   |   | x  | x  | x  | x  |    |
| YF   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| YG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| YH   | 1"        | 1-1/2"   |   |   |    |    | x  | x  | x  |
| YJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| YK   | 1-1/2"    | 1"       |   |   |    |    | x  | x  | x  |
| IA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |
| IB   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  |
| YL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  |
| YM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  |
| YP   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  |
| YA   | 1-1/2" *  | None     |   |   |    |    |    |    | x  |
| YB   | None      | 1-1/2" * |   |   |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| YN   | 3/4"      | None     |   | x | x  | x  | x  | x  | x  |
| YQ   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| YS   | 3/4"      | 3/4"     |   |   | x  | x  |    | x  | x  |
| YT   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   |    |    |    | x  | x  |
| YV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| YW   | 1-1/4"    | 3/4"     |   |   |    |    |    | x  | x  |
| SL   | 1"        | None     |   |   |    | x  | x  | x  | x  |
| RQ   | None      | 1"       |   |   |    | x  | x  | x  | x  |
| MP   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| VY   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| IX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    |    | x  | x  |
| UI   | None      | 1-1/4" * |   |   |    |    |    | x  | x  |
| PF   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| UC   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |
| UD   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |
| UF   | 3/4"      | 3/4"     |   | x | x  | x  | x  |    |    |
| UG   | 3/4"      | 1"       |   | x | x  | x  | x  |    |    |
| UH   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  | x  |
| UJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |
| UK   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  | x  |
| OC   | 1"        | None     |   |   |    |    | x  | x  | x  |
| OD   | None      | 1"       |   |   |    | x  | x  | x  | x  |
| OF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |
| OG   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| OH   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| OJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  |
| OK   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| OA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  |
| OB   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| OL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |
| OM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| OP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| OE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  |
| OU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

# MH30 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### O.D. Tube Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| EC   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |
| ED   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |
| EF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| EG   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |
| EH   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  |    |
| IN   | 3/4"      | 1-1/2"   |   |   |    |    |    |    | x  |
| EJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |
| EK   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |
| IP   | 1-1/2"    | 3/4"     |   |   |    |    |    |    | x  |
| EZ   | 7/8"      | None     |   |   |    | x  |    |    |    |
| EL   | 7/8"      | 1"       |   |   | x  | x  |    |    |    |
| EM   | 1"        | 7/8"     |   |   | x  | x  |    |    |    |
| AC   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| AD   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| AF   | 1"        | 1"       |   |   |    |    | x  | x  | x  |
| AG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| AH   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| AJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| AK   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| AA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  |    |
| AO   | None      | 1-1/4" * |   |   |    | x  | x  | x  |    |
| AL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  |
| AM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| AP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| AE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  |
| AU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

#### Metric Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| VN   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |
| VQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |
| VS   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  |    |
| VT   | 3/4"      | 1"       |   |   | x  | x  | x  | x  |    |
| RV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| RU   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  |    |
| RW   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  |    |
| UL   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| UR   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| UM   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| VU   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| UX   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  |
| HO   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| VO   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| NO   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |
| UO   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  |
| PO   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |
| QO   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| SO   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| UY   | 1-1/2" *  | None     |   |   |    |    | x  | x  |    |
| TO   | None      | 1-1/2" * |   |   |    |    | x  | x  |    |

\* Low Pressure Inlet Porting

#### Metric Str. Thd. Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| EN   | 3/4"      | None     |   |   | x  | x  | x  |    |    |
| TQ   | None      | 3/4"     |   |   | x  | x  | x  |    |    |
| ES   | 3/4"      | 3/4"     |   |   | x  | x  |    |    |    |
| ET   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |
| EV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| NL   | 1"        | None     |   |   | x  | x  | x  |    |    |
| ER   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| CM   | 1"        | 1"       |   |   |    | x  | x  |    |    |
| VE   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| EX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| PA   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  |
| QA   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  |
| SA   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    |    | x  |













\* Low Pressure Inlet Porting

# MH30 Series Bearing Pump











## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>











NPT Codes

| In                         | Out                | CW (Left)   | CCW (Right)   |
|----------------------------|--------------------|---|---|
| None<br>None               | None<br>None       | <br>C<br>A               | <br>D<br>J         |
| 1"<br>1-1/4"               | None<br>None       | <br>TB<br>VB             | <br>BT<br>BV       |
| 1"<br>1-1/4"<br>1-1/4"     | 3/4"<br>3/4"<br>1" | <br>TX<br>VX<br>VZ       | <br>XT<br>XV<br>ZV |
| 1-1/4"<br>1-1/4"<br>1-1/2" | 3/4"<br>1"<br>1"   | <br>TJ<br>VJ<br>VK<br>KW | <br>JT<br>JV<br>KV |
| 1"                         | 3/4"               | <br>ZX                   | <br>XZ             |
| 1"                         | 3/4"               | <br>ZS                 | <br>SZ           |



SAE Split Flange Codes

| In   | Out                                      | CW (Left)   | CCW (Right)   |
|--|--|---|---|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None                     | <br>LB<br>MB<br>NB                   | <br>BL<br>BM<br>BN                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>3/4"<br>1"<br>1" | <br>BR<br>LR<br>MR<br>NR<br>MS<br>NS | <br>RB<br>RL<br>RM<br>RN<br>SM<br>SN |
| 1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2"         | 3/4"<br>3/4"<br>3/4"<br>1"<br>1"         | <br>LX<br>MX<br>NX<br>MZ<br>NZ       | <br>XL<br>XM<br>XN<br>ZM<br>ZN       |
| 1"   | 3/4"                                     | <br>SR                               | <br>RS                               |
| 1"   | 3/4"                                     | <br>RZ                             | <br>ZR                             |

SAE O-ring Codes

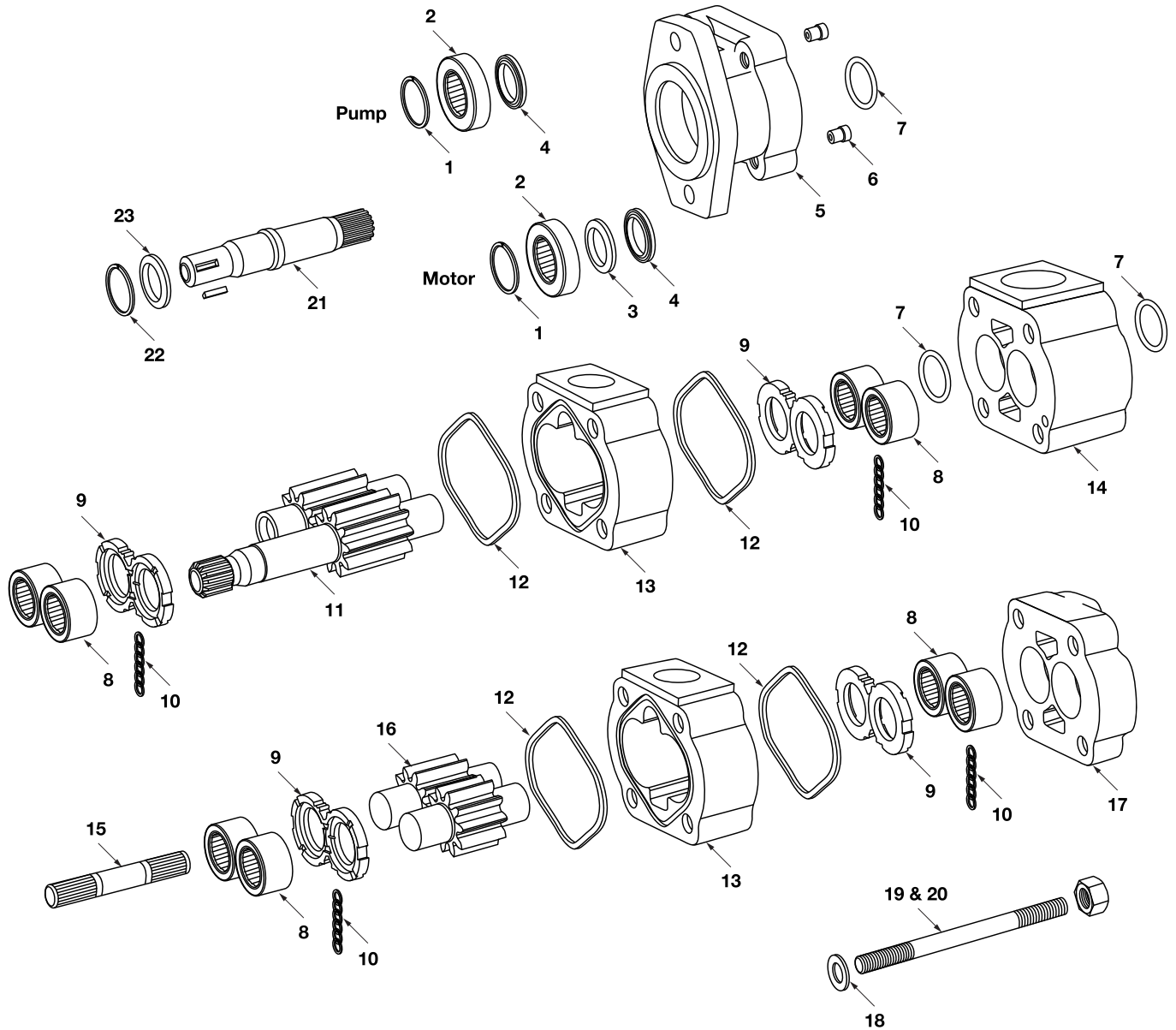
| In   | Out                                      | CW (Left)   | CCW (Right)   |
|--|--|---|---|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None                     | <br>CB<br>DB<br>FB             | <br>BC<br>BD<br>BF                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>3/4"<br>1"<br>1" | <br>CJ<br>DJ<br>FJ<br>DK<br>FK | <br>JP<br>JC<br>JD<br>JF<br>KD<br>KF |
| 1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2"         | 3/4"<br>3/4"<br>3/4"<br>1"<br>1"         | <br>CR<br>DR<br>FR<br>DS<br>FS | <br>RC<br>RD<br>RF<br>SD<br>SF       |
| 1"   | 3/4"                                     | <br>KJ                         | <br>JK                               |
| 1"   | 3/4"                                     | <br>KX                         | <br>XK                               |

Motors Only Codes

| In   | Out  | Dual  |  |
|--|--|---|--|
| None   | None   | <br>B  |  |
| 1"<br>1-1/4"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | 1"<br>1-1/4"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | <br>TT<br>VV<br>CC<br>BB<br>FF<br>LL<br>MM<br>NN | NPT<br>NPT<br>SAE O-Ring<br>SAE O-Ring<br>SAE O-Ring<br>SAE Split Flange<br>SAE Split Flange<br>SAE Split Flange |

# MH30 Series

## Parts Breakdown



# MH30 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION   | METARIS #    | ALTERNATE #  |
|-------------|---|--------------|--------------|
| 1           | SHAFT BEARING SNAP RING   | X05-03-56200 | 391-2686-063 |
| 2a          | INPUT SHAFT BEARING   | X03-16-12552 | 391-0381-040 |
| 2b          | BEARING SPACER ( IN PLACE OF SHAFT BEARING )                          | A30-92-38520 | 391-3383-069 |
| 3           | MOTOR SEAL RETAINER USED WITH SHAFT BEARING OR SPACER                 | A20-60-10000 | 391-3381-040 |
| 4a          | PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY                              | X89-11-02508 | 391-2883-107 |
| 4b          | PUMP LIP SEAL FOR PIGGY BACK 76/31 SHAFT END COVER                    | X83-11-03308 | 391-2883-103 |
| 4c          | MOTOR LIP SEAL  | X84-36-02709 | 391-2883-119 |
| 4d          | MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY                             | X84-36-02509 | 391-2883-126 |
| 5a          | 30 PAD PILOT PUMP S.E.C. TYPE 00                                      | A30-10-21100 | 312-5013-201 |
| 5b          | 30 6 BOLT ROUND WITH 2.625" or 66,67 mm PILOT PUMP S.E.C. TYPE 05     | A30-10-21651 | 312-5043-201 |
| 5c          | 30 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)          | A30-10-21420 | 312-5033-201 |
| 5d          | 30 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)            | A30-10-21430 | 312-5033-202 |
| 5e          | 30 2 BOLT A PILOT PUMP S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)      | A30-10-21210 | 312-5023-205 |
| 5f          | 30 2 BOLT B PILOT PUMP S.E.C. TYPE 97 (4" or 101.6 mm pilot)          | A30-10-21220 | 312-5023-202 |
| 5g          | 30 2 BOLT B (TYPE 2) PILOT PUMP S.E.C. TYPE 96 (4" or 101.6 mm pilot) | A30-10-22220 | 312-5029-201 |
| 5h          | 30/50 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91                     | A02-10-21500 | 312-5029-210 |
| 5i          | 75/30 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92                     | A03-10-21500 | 312-5026-204 |
| 5j          | 30 2/4 BOLT B PILOT PUMP S.E.C. TYPE 46 (4" or 101.6 mm pilot)        | A30-10-21320 | 312-5053-202 |
| 5k          | 30 PAD PILOT MOTOR S.E.C. TYPE 00                                     | A30-10-41100 | 312-5013-401 |
| 5l          | 30 6 BOLT ROUND WITH 2,625" or 66,67 mm PILOT MOTOR S.E.C. TYPE 05    | A30-10-41650 | 312-5043-601 |
| 5m          | 30 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)         | A30-10-41420 | 312-5033-601 |
| 5n          | 30 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)           | A30-10-41430 | 312-5033-402 |
| 5o          | 30 2 BOLT A PILOT MOTOR S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)     | A30-10-41210 | 312-5023-405 |
| 5p          | 30 2 BOLT B PILOT MOTOR S.E.C. TYPE 97 (4" or 101.6 mm pilot)         | A30-10-41220 | 312-5023-402 |
| 5q          | 30 2/4 BOLT B PILOT MOTOR S.E.C. TYPE 46 (4" or 101.6 mm pilot)       | A30-10-41320 | 312-5053-402 |
| 6a          | CHECK VALVE MOTOR   | A00-75-11000 | 391-3681-001 |
| 6b          | PRESSURE PLUG PUMP  | X02-03-32110 | 391-2286-004 |
| 7           | RING SEAL   | X81-76-02706 | 391-2585-006 |
| 8           | ROLLER BEARING (Ø 1.687" O.D.)  | X03-24-12743 | 391-0381-068 |
| 9           | PUMP & MOTOR THRUST PLATE   | A30-70-10000 | 391-2185-013 |
| 10          | POCKET SEAL   | X85-11-00002 | 391-2882-086 |
| 11a         | SHAFT & GEAR TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)                | A30-50-XX125 | 312-29XX-730 |
| 11b         | SHAFT & GEAR TYPE 25 ( 0.875" Ø - 13-Tooth spline)                    | A30-50-XX225 | 312-29XX-230 |
| 11c         | SHAFT & GEAR TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)             | A30-50-XX135 | 312-29XX-740 |
| 11d         | SHAFT & GEAR TYPE 66 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)         | A30-50-XX126 | 312-29XX-930 |
| 11e         | SHAFT & GEAR TYPE 65 TYPE 2 ( 0.875" Ø - 13-Tooth spline)             | A30-50-XX226 | 312-29XX-430 |
| 12          | PUMP & MOTOR HOUSING GASKET   | X85-11-10104 | 391-2884-050 |

# MH30 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #          | ALTERNATE #  |
|-------------|--|--------------------|--------------|
| 13          | PUMP & MOTOR GEAR HOUSING  | A31-32-XX000       | 312-80XX-100 |
| 14a         | MOTOR BEARING CARRIER BLANK  | A30-40-00000       | 312-7300-100 |
| 14b         | PUMP BEARING CARRIER WITH COMMON PASSAGE   | A30-40-20000       | 312-7373-100 |
| 15          | CONNECTING SHAFT   | A30-50-00500       | 312-1133-001 |
| 16          | GEAR SET ONLY  | A30-50-XX000       | 312-28XX-000 |
| 17a         | PUMP & MOTOR PORT END COVER  | A30-22-00000       | 312-3200-100 |
| 17b         | 30 PUMP & MOTOR PORT END COVER LARGER PORTING  | A30-27-00000       | 312-3400-100 |
| 17c         | 30/30 PIGGY BACK PORT END COVER  | A01-22-03000       | 312-5029-213 |
| 18          | FLAT WASHER  | X45-10-17005       | 391-3784-028 |
| 19          | BOLTS / STUDS  | See Fasteners Page |              |
| 20          | HEX NUT  | X42-11-16000       | 391-1451-076 |
| 21a         | CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)                          | A30-50-00121       | 312-1500-300 |
| 21b         | CONTINENTAL SHAFT TYPE 30 Long (0.875" Ø x 1/4" x 3/8" x 1" key)                     | A30-50-00124       | 312-1135-192 |
| 21c         | CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14-tooth spline, Continental only)              | A30-50-00241       | 312-1135-133 |
| 21d         | CONTINENTAL SHAFT TYPE 25 (0.875" Ø - 13-Tooth spline)                               | A30-50-00221       | 312-1135-138 |
| 21e         | CONTINENTAL SHAFT TAPERED TYPE 32 (Clutch pump shaft with woodruff key)              | Special Order      | 312-1500-001 |
| 21f         | CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)                       | A30-50-00131       | 312-1500-400 |
| 21g         | CONTINENTAL SHAFT TYPE 43 Long (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)                  | A30-50-00134       | 312-1135-193 |
| 21h         | CONTINENTAL SHAFT TYPE 12 (0.750" Ø x 3/16" x 3/16" 1 9/16" key)                     | A30-50-00169       | 312-1135-152 |
| 21i         | CONTINENTAL SHAFT THREADED & KEYED END TYPE 15 (5/8"-18UNF + 1/4" x 3/8" x 7/8" key) | A30-50-00127       | 312-1135-171 |
| 21j         | CONTINENTAL SHAFT TYPE 95 (0.625" Ø x 9-tooth spline)                                | A30-50-00211       | 312-1000-200 |
| 22          | CONTINENTAL SHAFT BRG. RETAINER SNAP RING  | X05-02-28110       | 391-2685-011 |
| 23          | CONTINENTAL SHAFT BRG. RETAINER  | A20-60-20000       | 312-0100-002 |
| Not Shown   | SEAL RETAINER FOR 50/50 & 30/50 PIGGY BACK PUMP S.E.C.                               | A30-60-10001       | 391-2584-063 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                                      | X81-11-04704       | 391-2881-124 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                                      | X81-11-05704       | 391-2881-120 |
| Not Shown   | SEAL RETAINER FOR 75/50 & 75/30 PIGGY BACK PUMP S.E.C.                               | A50-60-10003       | 391-2585-013 |
| Not Shown   | CASE DRAIN PLUG  | X02-03-22060       | 391-2282-056 |
| Not Shown   | PUMP & PIGGY BACK 31/31 S.E.C.LIP SEAL   | X83-11-02708       | 391-2883-058 |
| Not Shown   | SHAFT KEY FOR TYPE 12 SHAFT  | X01-02-50540       | 391-1781-075 |
| Not Shown   | SHAFT KEY FOR TYPE 43 & 67 SHAFT   | X01-01-61032       | 391-1781-021 |
| Not Shown   | SHAFT KEY FOR TYPE 30 & 66 SHAFT   | X01-01-61025       | 391-1781-025 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A30-50-XX000 changes to A30-50-15000 for 1.5" gear size  
Housing no. A31-32-XX000 changes to A31-32-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH30 Series

## Parts Breakdown

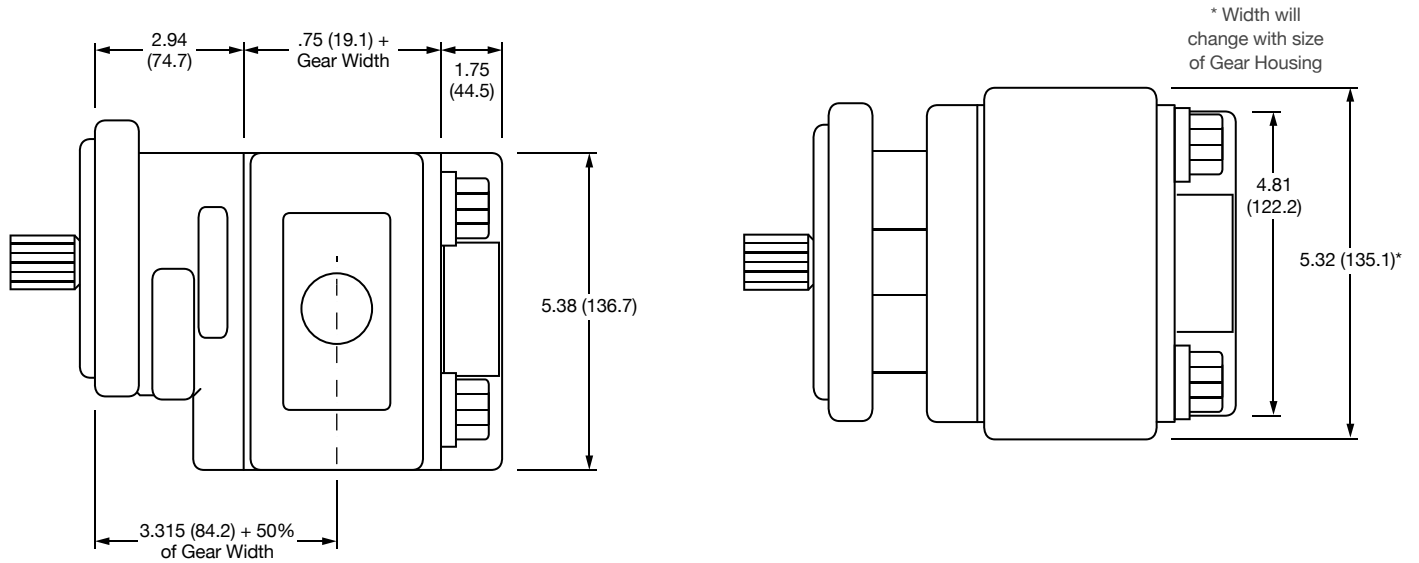
| DRAWING NO.      | DESCRIPTION                       | METARIS #    | ALTERNATE #  |
|------------------|-----------------------------------|--------------|--------------|
| <b>Not Shown</b> | SHAFT KEY FOR TYPE Spl. SHAFT     | X01-01-61044 | 391-1781-020 |
| <b>Not Shown</b> | 30/30 PIGGY BACK CONNECTING SHAFT | A01-50-00400 | 312-1133-002 |
| <b>Not Shown</b> | 50/30 PIGGY BACK CONNECTING SHAFT | A02-50-00400 | 312-1133-003 |
| <b>Not Shown</b> | 75/30 PIGGY BACK CONNECTING SHAFT | A03-50-00400 | 316-1133-003 |

# MH30 Series

## Dimensions

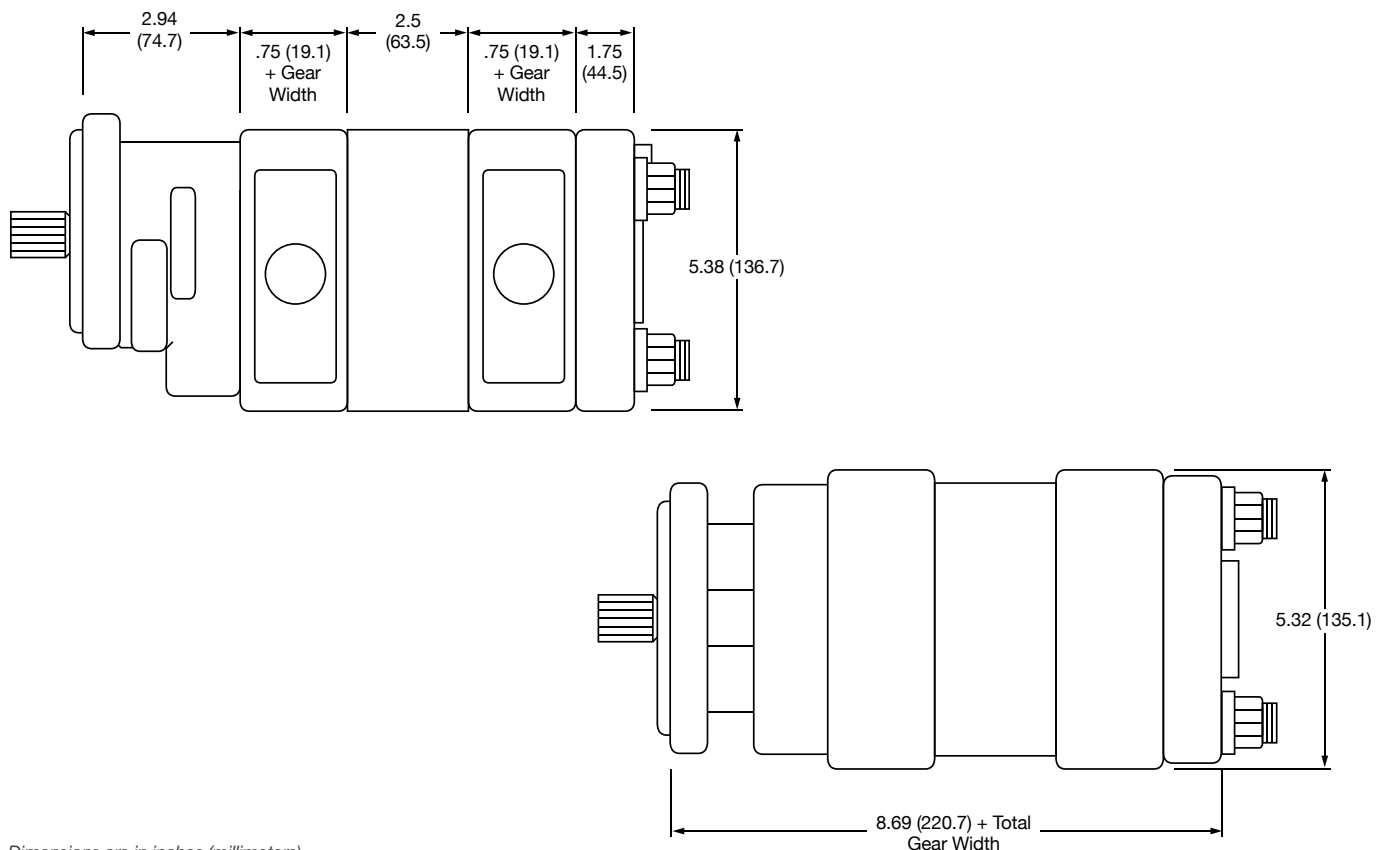
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).



# MH31 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH31       |        | DISPLACEMENT         |                        | MAX PRESSURE (DOWELLED) |       |
|------------|--------|----------------------|------------------------|-------------------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI                     | BAR   |
| .50        | 1/2"   | .99                  | (16.1)                 | 3000                    | (207) |
| .75        | 3/4"   | 1.48                 | (24.2)                 | 3000                    | (207) |
| 1.00       | 1"     | 1.97                 | (32.3)                 | 3000                    | (207) |
| 1.25       | 1-1/4" | 2.46                 | (40.4)                 | 3000                    | (207) |
| 1.50       | 1-1/2" | 2.96                 | (48.4)                 | 3000                    | (207) |
| 1.75       | 1-3/4" | 3.45                 | (56.5)                 | 2500                    | (172) |
| 2.00       | 2"     | 3.94                 | (64.6)                 | 2500                    | (172) |

# MH31 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |             |             |           |
|-----------|----------------------|-------------|-------------|-------------|-----------|
|           | 1"                   | 1-1/4"      | 1-1/2"      | 1-3/4"      | 2"        |
| 900       | 6.5 / 24.5           | 8 / 30      | 10 / 38     | 12 / 45.5   | 13.5 / 51 |
| 1200      | 9 / 34               | 11.5 / 43.5 | 14 / 53     | 16 / 60.5   | 18.5 / 70 |
| 1500      | 11.5 / 43.5          | 14.5 / 55   | 17.5 / 66   | 20.5 / 77.5 | 23.5 / 89 |
| 1800      | 14 / 53              | 18 / 68     | 21.5 / 81.5 | 25 / 94.5   | 29 / 110  |
| 2100      | 16.5 / 62.5          | 21 / 79.5   | 25 / 94.5   | 29.5 / 112  | 34 / 129  |
| 2400      | 19 / 72              | 24 / 91     | 29 / 110    | 34 / 129    | 39 / 148  |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 9 / 34               | 675 / 8                     | 13 / 49              | 1035 / 12                   | 17 / 64.5            | 1385 / 16                   |
| 1200      | 13 / 49              | 685 / 8                     | 18 / 68              | 1055 / 12                   | 23.5 / 89            | 1410 / 16                   |
| 1600      | 16 / 60.5            | 680 / 8                     | 23 / 87              | 1030 / 12                   | 30.5 / 115           | 1390 / 16                   |
| 2000      | 19.5 / 74            | 660 / 7.5                   | 28 / 106             | 1010 / 11.5                 | 37 / 140             | 1370 / 16                   |

**Note:** Input Flow @ 2500psi | Output Torque @ 175 bar

## MH31 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 13,000   | 5,500     |
| SAE "BB" Keyed   | 8,600    | 5,500     |
| SAE "B" Spline   | 8,300    | 5,500     |
| SAE "B" Keyed    | 5,700    | 5,500     |
| SAE "C" Spline   | *        | *         |
| SAE "C" Keyed    | *        | *         |
| Connecting Shaft |          | 5,500     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH31 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10  
**MHP - 31 - A - 1 - 07 - ME - AB - 10 - 12 - DB - \* - \* - \***

### Type <sup>1</sup>

**MHP** = Pump  
**MHM** = Motor

### Unit <sup>2</sup>

**A** = Single Unit  
**B** = Tandem Unit  
**C** = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

**1** = Pump w/o Shaft Bearing (Clockwise Rotation)  
**2** = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
**3** = Pump w/o Shaft Bearing (Double Rotation)  
**4** = Pump w/ Shaft Bearing (Clockwise Rotation)  
**5** = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
**6** = Pump w/ Shaft Bearing (Double Rotation)  
**8** = Motor w/ Shaft Bearing & 1/4" Drain Port  
**9** = Motor w/o Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

**00** = Pad Mount                      **92** = 76/31 Piggyback Mount  
**05** = 6-Bolt Flng 3.25" Dia. Bolt Circle    **94** = SAE 2-Bolt "A" Mount  
**42** = SAE 4-Bolt "B" Mount                      **96** = SAE 2-Bolt "B" Mount  
**78** = SAE 4-Bolt "C" Mount                      **97** = SAE 2-Bolt "B" Mount (*Type 1*)  
**91** = 31/51 Piggyback Mount

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
**1** = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 62 for Bearing Carrier options

### Shaft Type <sup>8</sup>

**07** = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)  
**12** = Keyed Shaft .75" Dia. x 1.56 Key (Cont. Only)  
**15** = SAE "B" Keyed .875 Dia. w/ 5/8"-18 Thd (Cont. Only)  
**25** = SAE "B" 13 Tooth Spline .88" Dia.  
**30** = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key  
**43** = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key  
**65** = SAE "B" 13 Tooth Spline .875" Dia. Type 2  
**66** = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key Type 2  
**67** = SAE "B" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key Type 2  
**68** = 6 Tooth Spline .1" Dia.  
**95** = SAE "A" 9 Tooth Spline .62" Dia.  
**98** = SAE "BB" 15 Tooth Spline 1" Dia.

### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|                    |                     |                     |                     |                     |                     |                     |                     |                     |
|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <b>05</b><br>(.99) | <b>07</b><br>(1.48) | <b>10</b><br>(1.97) | <b>12</b><br>(2.46) | <b>15</b><br>(2.96) | <b>17</b><br>(3.45) | <b>20</b><br>(3.94) | <b>22</b><br>(4.43) | <b>25</b><br>(4.93) |
|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units   | Tandem Units   | Port Size |       | A    | B    |
|----------------|----------------|-----------|-------|------|------|
|                |                | Left      | Right |      |      |
| <b>BE   BY</b> | <b>BI   BJ</b> | None      | None  | n/a  | n/a  |
| <b>KE   KY</b> | <b>KI   KY</b> | 3/4"      | None  | n/a  | 1.25 |
| <b>LE   LY</b> | <b>LI   LY</b> | None      | 3/4"  | 1.25 | n/a  |
| <b>ME   MY</b> | <b>MI   MY</b> | 3/4"      | 3/4"  | 1.25 | 1.25 |



Orientation is viewed from the shaft end

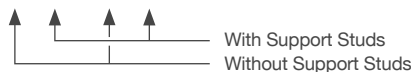
#### O-ring Codes

| Single Units | Tandem Units | Port Size |        | A    | B    |
|--------------|--------------|-----------|--------|------|------|
|              |              | Left      | Right  |      |      |
| <b>GU</b>    | <b>GU</b>    | 1-1/4"    | 1"     | 1.38 | 1.38 |
| <b>HU</b>    | <b>HU</b>    | 1"        | 1-1/4" | 1.38 | 1.38 |
| <b>TU</b>    | <b>TU</b>    | 1-1/4"    | 1"     | 1.38 | 1.38 |
| <b>XU</b>    | <b>XU</b>    | 1"        | 1-1/4" | 1.38 | 1.38 |

Orientation is viewed from the shaft end

#### ORB Codes

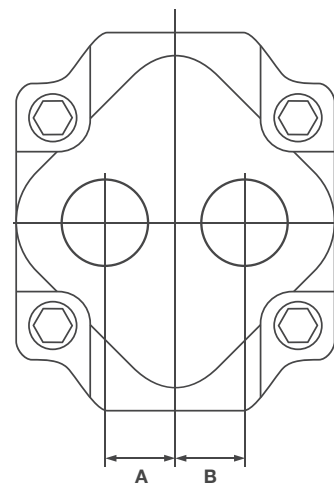
| Single Units   | Tandem Units   | Port Size |       | A    | B    |
|----------------|----------------|-----------|-------|------|------|
|                |                | Left      | Right |      |      |
| <b>CE   CY</b> | <b>CI   CY</b> | 3/4"      | None  | n/a  | 1.25 |
| <b>CA   CO</b> | <b>CU   CO</b> | 3/4"      | None  | n/a  | 1.38 |
| <b>DE   DY</b> | <b>DI   DY</b> | None      | 3/4"  | 1.25 | n/a  |
| <b>DA   DO</b> | <b>DU   DO</b> | None      | 3/4"  | 1.25 | n/a  |
| <b>FE   FY</b> | <b>FI   FY</b> | 3/4"      | 3/4"  | 1.25 | 1.25 |
| <b>JA   BO</b> | <b>JU   BO</b> | 3/4"      | 3/4"  | 1.38 | 1.38 |
| <b>GE   GY</b> | <b>GI   GY</b> | 1"        | 3/4"  | 1.25 | 1.38 |
| <b>KA  </b>    | <b>KU  </b>    | 1"        | 3/4"  | 1.38 | 1.38 |
| <b>HE   HY</b> | <b>HI   HY</b> | 3/4"      | 1"    | 1.38 | 1.25 |
| <b>LA  </b>    | <b>LU  </b>    | 3/4"      | 1"    | 1.38 | 1.38 |
| <b>MA   YO</b> | <b>MU   YO</b> | 1"        | None  | n/a  | 1.38 |
| <b>RA   RO</b> | <b>SU   RO</b> | None      | 1"    | 1.38 | n/a  |
| <b>JE   JY</b> | <b>JI   JY</b> | 1"        | 1"    | 1.38 | 1.38 |
| <b>ZA   ZO</b> | <b>ZU   ZO</b> | 1"        | 1"    | 1.38 | 1.38 |



Orientation is viewed from the shaft end

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options



# MH31 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| IL   | 1/2"      | None     | x | x |    |    |    |    |    |
| IM   | None      | 1/2"     | x | x |    |    |    |    |    |
| IR   | 1/2"      | 1/2"     | x | x |    |    |    |    |    |
| IC   | 3/4"      | None     |   |   | x  | x  | x  | x  | x  |
| ID   | None      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| IF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| IG   | 3/4"      | 1"       |   |   | x  | x  | x  | x  |    |
| IH   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| IK   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |
| YC   | 1"        | None     |   |   | x  | x  | x  | x  |    |
| YD   | None      | 1"       |   |   | x  | x  | x  | x  |    |
| YF   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| YG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| YH   | 1"        | 1-1/2"   |   |   |    |    | x  | x  | x  |
| YJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| YK   | 1-1/2"    | 1"       |   |   |    |    | x  | x  | x  |
| IA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |
| IB   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  |
| YL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  |
| YM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  |
| YP   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  |
| YA   | 1-1/2" *  | None     |   |   |    |    |    |    | x  |
| YB   | None      | 1-1/2" * |   |   |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| YN   | 3/4"      | None     |   | x | x  | x  | x  | x  | x  |
| YQ   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |
| YS   | 3/4"      | 3/4"     |   |   | x  | x  |    | x  | x  |
| YT   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   |    |    |    | x  | x  |
| YV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| YW   | 1-1/4"    | 3/4"     |   |   |    |    |    | x  | x  |
| SL   | 1"        | None     |   |   |    | x  | x  | x  | x  |
| RQ   | None      | 1"       |   |   |    | x  | x  | x  | x  |
| MP   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| VY   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| IX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    |    | x  | x  |
| UI   | None      | 1-1/4" * |   |   |    |    |    | x  | x  |
| PF   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| UC   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |
| UD   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |
| UF   | 3/4"      | 3/4"     |   | x | x  | x  | x  |    |    |
| UG   | 3/4"      | 1"       |   | x | x  | x  | x  |    |    |
| UH   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  | x  |
| UJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |
| UK   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  | x  |
| OC   | 1"        | None     |   |   |    |    | x  | x  | x  |
| OD   | None      | 1"       |   |   |    | x  | x  | x  | x  |
| OF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |
| OG   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| OH   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| OJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  |
| OK   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| OA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  |
| OB   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| OL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |
| OM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| OP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| OE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  |
| OU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

# MH31 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### O.D. Tube Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| EC   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |
| ED   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |
| EF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |
| EG   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |
| EH   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  |    |
| IN   | 3/4"      | 1-1/2"   |   |   |    |    |    |    | x  |
| EJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |
| EK   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |
| IP   | 1-1/2"    | 3/4"     |   |   |    |    |    |    | x  |
| EZ   | 7/8"      | None     |   |   |    | x  |    |    |    |
| EL   | 7/8"      | 1"       |   |   | x  | x  |    |    |    |
| EM   | 1"        | 7/8"     |   |   | x  | x  |    |    |    |
| AC   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| AD   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| AF   | 1"        | 1"       |   |   |    |    | x  | x  | x  |
| AG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| AH   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| AJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| AK   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| AA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  |    |
| AO   | None      | 1-1/4" * |   |   |    | x  | x  | x  |    |
| AL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  |
| AM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| AP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| AE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  |
| AU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

#### Metric Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| VN   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |
| VQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |
| VS   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  |    |
| VT   | 3/4"      | 1"       |   |   | x  | x  | x  | x  |    |
| RV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| RU   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  |    |
| RW   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  |    |
| UL   | 1"        | None     |   |   | x  | x  | x  | x  | x  |
| UR   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| UM   | 1"        | 1"       |   |   |    | x  | x  | x  |    |
| VU   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |
| UX   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  |
| HO   | 1"        | 1-1/2" * |   |   |    |    |    | x  | x  |
| VO   | 1-1/2" *  | 1"       |   |   |    |    |    | x  | x  |
| NO   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |
| UO   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  |
| PO   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  |
| QO   | 1-1/4"    | 1-1/2" * |   |   |    |    |    | x  | x  |
| SO   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    | x  | x  |
| UY   | 1-1/2" *  | None     |   |   |    |    | x  | x  |    |
| TO   | None      | 1-1/2" * |   |   |    |    | x  | x  |    |

\* Low Pressure Inlet Porting

#### Metric Str. Thd. Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 |
|------|-----------|----------|---|---|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  |
| EN   | 3/4"      | None     |   |   | x  | x  | x  |    |    |
| TQ   | None      | 3/4"     |   |   | x  | x  | x  |    |    |
| ES   | 3/4"      | 3/4"     |   |   | x  | x  |    |    |    |
| ET   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |
| EV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  |    |
| NL   | 1"        | None     |   |   | x  | x  | x  |    |    |
| ER   | None      | 1"       |   |   | x  | x  | x  | x  | x  |
| CM   | 1"        | 1"       |   |   |    | x  | x  |    |    |
| VE   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  |
| EX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |
| PA   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  |
| QA   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  |
| SA   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    |    | x  |

\* Low Pressure Inlet Porting

# MH31 Series Bearing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

**NPT Codes**

| In                         | Out                | CW (Left)            | CCW (Right)    |
|----------------------------|--------------------|----------------------|----------------|
| None<br>None               | None<br>None       | C<br>A               | D<br>J         |
| 1"<br>1-1/4"               | None<br>None       | TB<br>VB             | BT<br>BV       |
| 1"<br>1-1/4"<br>1-1/4"     | 3/4"<br>3/4"<br>1" | TX<br>VX<br>VZ       | XT<br>XV<br>ZV |
| 1-1/4"<br>1-1/4"<br>1-1/2" | 3/4"<br>1"<br>1"   | TJ<br>VJ<br>VK<br>KW | JT<br>JV<br>KV |
| 1"                         | 3/4"               | ZX                   | XZ             |
| 1"                         | 3/4"               | ZS                   | SZ             |

**SAE Split Flange Codes**

| In   | Out                              | CW (Left)                        | CCW (Right)                      |
|--|----------------------------------|----------------------------------|----------------------------------|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None             | LB<br>MB<br>NB                   | BL<br>BM<br>BN                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | BR<br>LR<br>MR<br>NR<br>MS<br>NS | RB<br>RL<br>RM<br>RN<br>SM<br>SN |
| 1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2"         | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | LX<br>MX<br>NX<br>MZ<br>NZ       | XL<br>XM<br>XN<br>ZM<br>ZN       |
| 1"   | 3/4"                             | SR                               | RS                               |
| 1"   | 3/4"                             | RZ                               | ZR                               |

**SAE O-ring Codes**

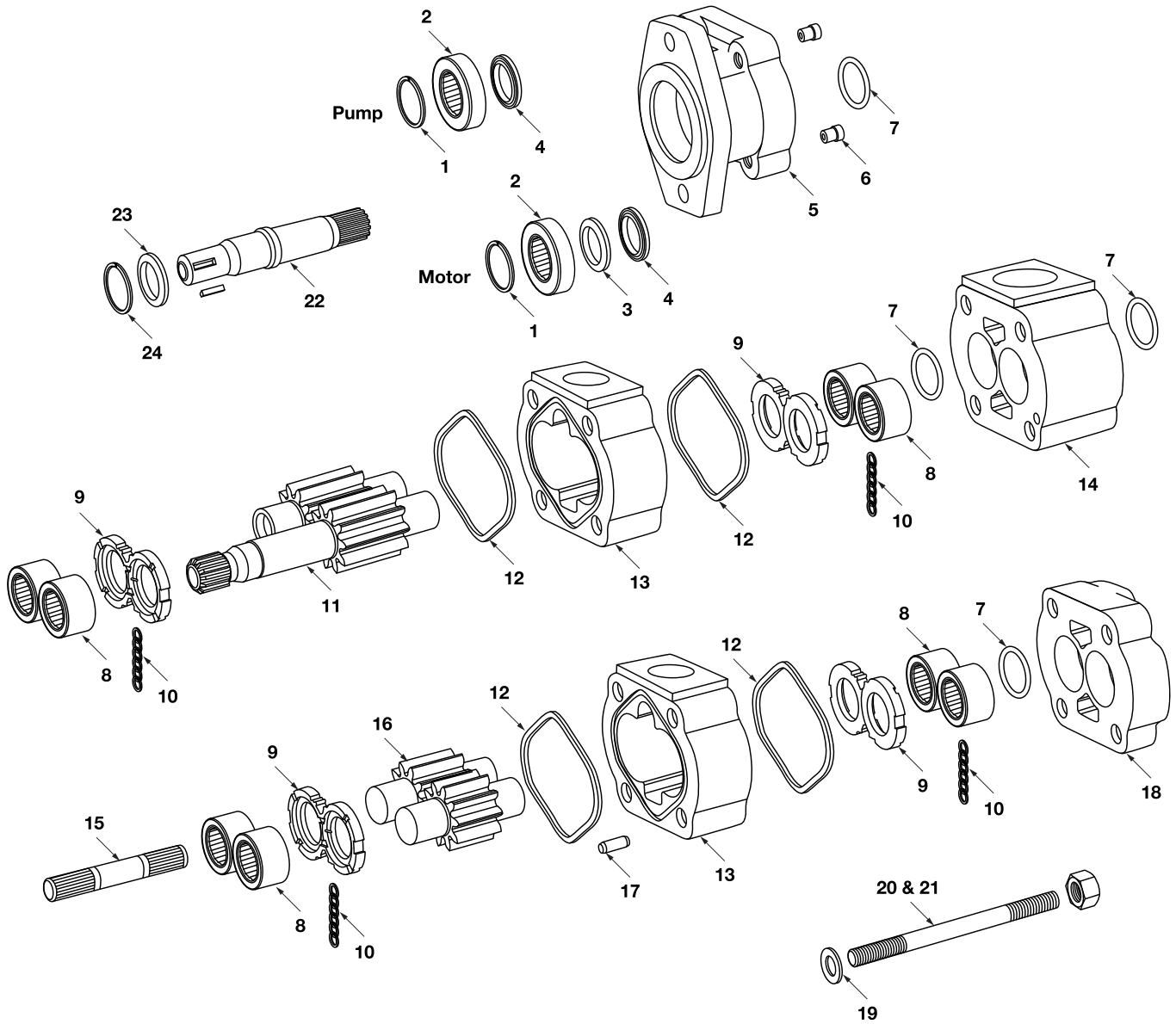
| In   | Out                                      | CW (Left)                  | CCW (Right)                      |
|--|--|----------------------------|----------------------------------|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None                     | CB<br>DB<br>FB             | BC<br>BD<br>BF                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>3/4"<br>1"<br>1" | CJ<br>DJ<br>FJ<br>DK<br>FK | JP<br>JC<br>JD<br>JF<br>KD<br>KF |
| 1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2"         | 3/4"<br>3/4"<br>3/4"<br>1"<br>1"         | CR<br>DR<br>FR<br>DS<br>FS | RC<br>RD<br>RF<br>SD<br>SF       |
| 1"   | 3/4"                                     | KJ                         | JK                               |
| 1"   | 3/4"                                     | KX                         | XK                               |

**Motors Only Codes**

| In   | Out  | Dual   |  |
|--|--|--|--|
| None   | None   | B  |  |
| 1"<br>1-1/4"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | 1"<br>1-1/4"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | TT<br>VV<br>CC<br>BB<br>FF<br>LL<br>MM<br>NN | NPT<br>NPT<br>SAE O-Ring<br>SAE O-Ring<br>SAE O-Ring<br>SAE Split Flange<br>SAE Split Flange<br>SAE Split Flange |

# MH31 Series

## Parts Breakdown



# MH31 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION   | METARIS #    | ALTERNATE #  |
|-------------|---|--------------|--------------|
| 1           | SHAFT BEARING SNAP RING   | X05-03-56200 | 391-2686-063 |
| 2a          | INPUT SHAFT BEARING   | X03-16-12552 | 391-0381-040 |
| 2b          | BEARING SPACER ( IN PLACE OF SHAFT BEARING )                          | A30-92-38520 | 391-3383-069 |
| 3           | MOTOR SEAL RETAINER USED WITH SHAFT BEARING OR SPACER                 | A20-60-10000 | 391-3381-040 |
| 4a          | PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY                              | X89-11-02508 | 391-2883-107 |
| 4b          | PUMP LIP SEAL FOR PIGGY BACK 76/31 SHAFT END COVER                    | X83-11-03308 | 391-2883-103 |
| 4c          | MOTOR LIP SEAL  | X84-36-02709 | 391-2883-119 |
| 4d          | MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY                             | X84-36-02509 | 391-2883-126 |
| 5a          | 31 PAD PILOT PUMP S.E.C. TYPE 00                                      | A31-10-21100 | 312-5017-201 |
| 5b          | 31 6 BOLT ROUND WITH 2.625" or 66,67 mm PILOT PUMP S.E.C. TYPE 05     | A31-10-21650 | 312-5047-201 |
| 5c          | 31 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)          | A31-10-21420 | 312-5037-201 |
| 5d          | 31 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)            | A31-10-21430 | 312-5037-202 |
| 5e          | 31 2 BOLT A PILOT PUMP S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)      | A31-10-21210 | 312-5027-204 |
| 5f          | 31 2 BOLT B PILOT PUMP S.E.C. TYPE 97 (4" or 101.6 mm pilot)          | A31-10-21220 | 312-5027-201 |
| 5g          | 31 2 BOLT B (TYPE 2) PILOT PUMP S.E.C. TYPE 96 (4" or 101.6 mm pilot) | A31-10-22220 | 312-5027-205 |
| 5h          | 31/51 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91                     | A05-10-21500 | 312-5027-208 |
| 5i          | 76/31 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92                     | A06-10-21500 | 312-5027-209 |
| 5j          | 31 2/4 BOLT B PILOT PUMP S.E.C. TYPE 46 (4" or 101.6 mm pilot)        | A30-10-21320 | 312-5053-202 |
| 5k          | 31 PAD PILOT MOTOR S.E.C. TYPE 00                                     | A31-10-41100 | 312-5017-401 |
| 5l          | 31 6 BOLT ROUND WITH 2,625" or 66,67 mm PILOT MOTOR S.E.C. TYPE 05    | A31-10-41650 | 312-5047-401 |
| 5m          | 31 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)         | A31-10-41420 | 312-5037-401 |
| 5n          | 31 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)           | A31-10-41430 | 312-5037-402 |
| 5o          | 31 2 BOLT A PILOT MOTOR S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)     | A31-10-41210 | 312-5027-404 |
| 5p          | 31 2 BOLT B PILOT MOTOR S.E.C. TYPE 97 (4" or 101.6 mm pilot)         | A31-10-41220 | 312-5027-401 |
| 5q          | 31 2/4 BOLT B PILOT MOTOR S.E.C. TYPE 46 (4" or 101.6 mm pilot)       | A30-10-41320 | 312-5053-402 |
| 6a          | CHECK VALVE MOTOR   | A00-75-11000 | 391-3681-001 |
| 6b          | PRESSURE PLUG PUMP  | X02-03-32110 | 391-2286-004 |
| 7           | RING SEAL   | X81-76-02706 | 391-2585-006 |
| 8           | ROLLER BEARING (Ø 1.687" O.D.)  | X03-24-12743 | 391-0381-068 |
| 9a          | PUMP THRUST PLATE   | A31-70-20000 | 391-2185-031 |
| 9b          | MOTOR THRUST PLATE  | A30-70-10000 | 391-2185-013 |
| 10          | POCKET SEAL   | X85-11-00002 | 391-2882-086 |
| 11a         | SHAFT & GEAR TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)                | A30-50-XX125 | 312-29XX-730 |
| 11b         | SHAFT & GEAR TYPE 25 ( 0.875" Ø - 13-Tooth spline)                    | A30-50-XX225 | 312-29XX-230 |
| 11c         | SHAFT & GEAR TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)             | A30-50-XX135 | 312-29XX-740 |
| 11d         | SHAFT & GEAR TYPE 66 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)         | A30-50-XX126 | 312-29XX-930 |
| 11e         | SHAFT & GEAR TYPE 65 TYPE 2 ( 0.875" Ø - 13-Tooth spline)             | A30-50-XX226 | 312-29XX-430 |



# MH31 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #          | ALTERNATE #  |
|-------------|--|--------------------|--------------|
| 12          | PUMP & MOTOR HOUSING GASKET  | X85-11-10104       | 391-2884-050 |
| 13          | PUMP & MOTOR GEAR HOUSING  | A31-32-XX000       | 312-80XX-100 |
| 14a         | 31 MOTOR BEARING CARRIER BLANK   | A31-40-00000       | 312-7740-100 |
| 14b         | 31 PUMP BEARING CARRIER WITH COMMON PASSAGE  | A31-40-20000       | 312-7723-100 |
| 15          | CONNECTING SHAFT   | A30-50-00500       | 312-1133-001 |
| 16          | GEAR SET ONLY  | A30-50-XX000       | 312-28XX-000 |
| 17          | GEAR HOUSING DOWEL PIN   | A00-94-11025       | 391-2082-032 |
| 18a         | PUMP & MOTOR PORT END COVER  | A31-22-00000       | 312-3120-100 |
| 18b         | 31 PUMP & MOTOR PORT END COVER LARGER PORTING  | A31-27-00000       | 312-3420-100 |
| 18c         | 31/31 PIGGY BACK PORT END COVER  | A04-22-03000       | 312-5027-212 |
| 19          | FLAT WASHER  | X45-10-17005       | 391-3784-028 |
| 20          | BOLTS / STUDS  | See Fasteners Page |              |
| 21          | HEX NUT  | X42-11-16000       | 391-1451-076 |
| 22a         | CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)                          | A30-50-00121       | 312-1500-300 |
| 22b         | CONTINENTAL SHAFT TYPE 30 Long (0.875" Ø x 1/4" x 3/8" x 1" key)                     | A30-50-00124       | 312-1135-192 |
| 22c         | CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14-tooth spline, Continental only)              | A30-50-00241       | 312-1135-133 |
| 22d         | CONTINENTAL SHAFT TYPE 25 ( 0.875" Ø - 13-Tooth spline)                              | A30-50-00221       | 312-1135-138 |
| 22e         | CONTINENTAL SHAFT TAPERED TYPE 32 (Clutch pump shaft with woodruff key)              | Special Order      | 312-1500-001 |
| 22f         | CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)                       | A30-50-00131       | 312-1500-400 |
| 22g         | CONTINENTAL SHAFT TYPE 43 Long (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)                  | A30-50-00134       | 312-1135-193 |
| 22h         | CONTINENTAL SHAFT TYPE 12 (0.750" Ø x 3/16" x 3/16" 1 9/16" key)                     | A30-50-00169       | 312-1135-152 |
| 22i         | CONTINENTAL SHAFT THREADED & KEYED END TYPE 15 (5/8"-18UNF + 1/4" x 3/8" x 7/8" key) | A30-50-00127       | 312-1135-171 |
| 22j         | CONTINENTAL SHAFT TYPE 95 (0.625" Ø x 9-tooth spline)                                | A30-50-00211       | 312-1000-200 |
| 23          | CONTINENTAL SHAFT BRG. RETAINER  | A20-60-20000       | 312-0100-002 |
| 24          | CONTINENTAL SHAFT BRG. RETAINER SNAP RING  | X05-02-28110       | 391-2685-011 |
| Not Shown   | PUMP & PIGGY BACK 31/31 S.E.C. LIP SEAL  | X83-11-02708       | 391-2883-058 |
| Not Shown   | SEAL RETAINER FOR 51/51 & 31/51 PIGGY BACK PUMP S.E.C.                               | A30-60-10001       | 391-2584-063 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                                      | X81-11-04704       | 391-2881-124 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                                      | X81-11-05704       | 391-2881-120 |
| Not Shown   | SEAL RETAINER FOR 76/51 & 76/31 PIGGY BACK PUMP S.E.C.                               | A50-60-10003       | 391-2585-013 |
| Not Shown   | CASE DRAIN PLUG  | X02-03-22060       | 391-2282-056 |
| Not Shown   | SHAFT KEY FOR TYPE 12 SHAFT  | X01-02-50540       | 391-1781-075 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A30-50-XX000 changes to A30-50-15000 for 1.5" gear size  
Housing no. A31-32-XX000 changes to A31-32-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH31 Series

## Parts Breakdown

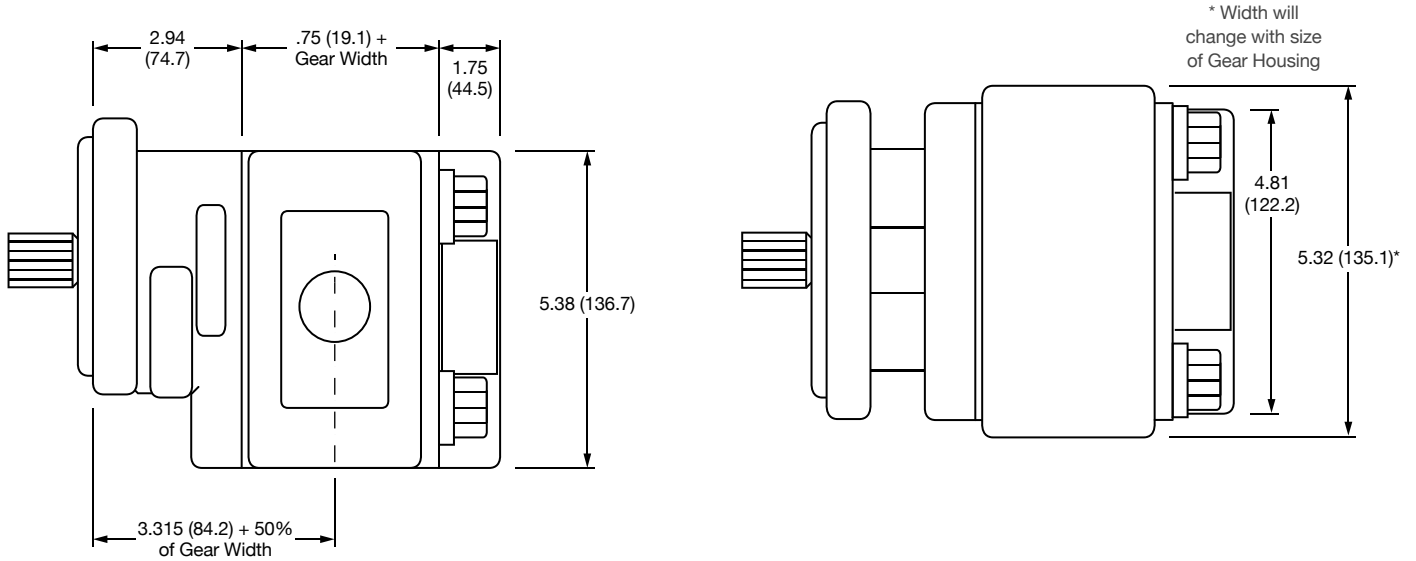
| DRAWING NO.      | DESCRIPTION                       | METARIS #    | ALTERNATE #  |
|------------------|-----------------------------------|--------------|--------------|
| <b>Not Shown</b> | SHAFT KEY FOR TYPE 43 & 67 SHAFT  | X01-01-61032 | 391-1781-021 |
| <b>Not Shown</b> | SHAFT KEY FOR TYPE 30 & 66 SHAFT  | X01-01-61025 | 391-1781-025 |
| <b>Not Shown</b> | SHAFT KEY FOR TYPE Spl. SHAFT     | X01-01-61044 | 391-1781-020 |
| <b>Not Shown</b> | 30/30 PIGGY BACK CONNECTING SHAFT | A01-50-00400 | 312-1133-002 |
| <b>Not Shown</b> | 50/30 PIGGY BACK CONNECTING SHAFT | A02-50-00400 | 312-1133-003 |
| <b>Not Shown</b> | 75/30 PIGGY BACK CONNECTING SHAFT | A03-50-00400 | 316-1133-003 |

# MH31 Series

## Dimensions

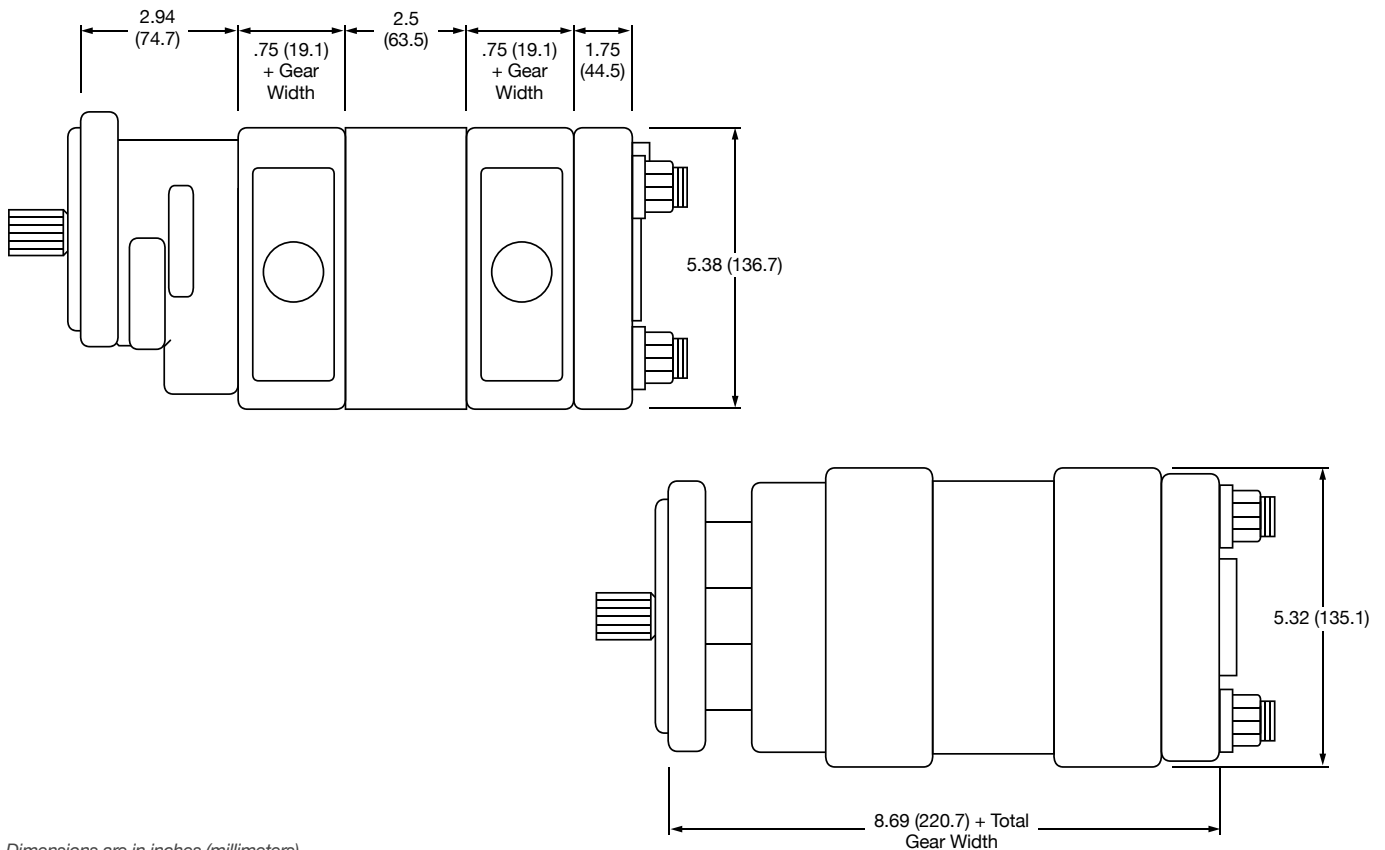
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH37 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 2500 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH37       |        | DISPLACEMENT         |                        | MAX PRESSURE |       | MAX PRESSURE (DOWELLED) |       |
|------------|--------|----------------------|------------------------|--------------|-------|-------------------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   | PSI                     | BAR   |
| .75        | 3/4"   | 2.25                 | (36.9)                 | 2000         | (138) | 2500                    | (172) |
| 1.00       | 1"     | 3.00                 | (49.2)                 | 2000         | (138) | 2500                    | (172) |
| 1.25       | 1-1/4" | 3.75                 | (61.5)                 | 2000         | (138) | 2500                    | (172) |
| 1.50       | 1-1/2" | 4.50                 | (73.7)                 | 2000         | (138) | 2500                    | (172) |
| 1.75       | 1-3/4" | 5.25                 | (86.0)                 | 2000         | (138) | 2500                    | (172) |
| 2.00       | 2"     | 6.00                 | (98.3)                 | 2000         | (138) | 2500                    | (172) |
| 2.25       | 2-1/4" | 6.75                 | (110.6)                | 2000         | (138) | 2500                    | (172) |
| 2.50       | 2-1/2" | 7.50                 | (122.9)                | 2000         | (138) | 2500                    | (172) |
| 3.00       | 3"     | 9.00                 | (147.5)                | 2000         | (138) | 2500                    | (172) |

# MH37 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |           |            |            |            |            |            |            |
|-----------|----------------------|-----------|------------|------------|------------|------------|------------|------------|
|           | 1"                   | 1-1/4"    | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"     | 2-1/2"     | 3"         |
| 600       | 4.5 / 17             | 6.5 / 25  | 8.5 / 32   | 10.5 / 40  | 12.5 / 47  | 14 / 53    | 16.5 / 62  | 20 / 76    |
| 1200      | 12.5 / 47            | 16.5 / 62 | 20 / 76    | 24 / 91    | 28 / 106   | 31.5 / 119 | 35.5 / 134 | 43 / 163   |
| 1800      | 20 / 76              | 26 / 98   | 31.5 / 119 | 37.5 / 142 | 43.5 / 165 | 49.5 / 187 | 55 / 208   | 66.5 / 252 |
| 2100      | 24 / 91              | 31 / 117  | 37.5 / 142 | 44.5 / 168 | 51 / 193   | 58 / 219   | 64.5 / 244 | 78 / 295   |
| 2400      | 28 / 106             | 36 / 136  | 43.5 / 165 | 51 / 193   | 59 / 223   | 67 / 254   | 74.5 / 282 | 90 / 341   |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             | 2-1/2"               |                             | 3"                   |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 900       | 10.5 / 40            | 750 / 8.5                   | 15 / 57              | 1200 / 13.5                 | 20 / 76              | 1650 / 19                   | 24.5 / 93            | 2125 / 24.5                 | 28 / 106             | 2670 / 30.5                 |
| 1000      | 16 / 61              | 745 / 8.5                   | 23 / 87              | 1180 / 13.5                 | 31 / 117             | 1630 / 18.5                 | 38 / 144             | 2115 / 24                   | 44 / 167             | 2635 / 30                   |
| 1400      | 21 / 79              | 730 / 8.5                   | 31 / 117             | 1165 / 13.5                 | 41 / 155             | 1610 / 18.5                 | 51 / 193             | 2100 / 24                   | 60 / 227             | 2595 / 30                   |
| 1800      | 26.5 / 100           | 700 / 8                     | 39 / 147             | 1140 / 13                   | 52 / 197             | 1590 / 18                   | 64 / 242             | 2075 / 24                   | 76 / 288             | 2560 / 29.5                 |

**Note:** Input Flow @ 2000psi | Output Torque @ 140 bar

## MH37 PL Chart

| SHAFT STYLE      | TWO PIECE |
|------------------|-----------|
| SAE "BB" Spline  | 7,750     |
| SAE "BB" Keyed   | 5,550     |
| SAE "B" Spline   | 5,050     |
| SAE "B" Keyed    | 3,700     |
| SAE "C" Spline   | 11,950    |
| SAE "C" Keyed    | 11,950    |
| Connecting Shaft | 11,950    |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH37 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10  
**MHP - 37 - X - 1 - 78 - MA - AB - 10 - 10 - FP - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

X = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

1 = Pump w/ Shaft Bearing (Clockwise Rotation)  
 2 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
 3 = Pump w/ Shaft Bearing (Double Rotation)  
 7 = Motor w/ Shaft Bearing & 1/4" Drain Port  
 9 = Motor w/ Shaft Bearing & No Drain Port

### Shaft End Cover <sup>4</sup>

11 = Pad Mount  
 42 = SAE 4-Bolt "B" Mount (Drain Location @ 1 o'clock position)  
 45 = SAE 4-Bolt "B" Mount (Drain Location @ 12 o'clock position)  
 78 = SAE 4-Bolt "C" Mount  
 81 = Round Flange 6-Bolt 3.99 Pilot  
 98 = SAE 2-Bolt "C" Mount

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| BA   BI      | BY   BU      | None      | None  | n/a  | n/a  |
| CA   CI      | CY   CU      | None      | 3/4"  | 1.43 | n/a  |
| FA   FI      | FY   FU      | 3/4"      | None  | n/a  | 1.43 |
| GA   GI      | GY   GU      | 3/4"      | 3/4"  | 1.43 | 1.43 |
| DA   DI      | DY   DU      | None      | 1"    | 1.43 | n/a  |
| JA   JI      | JY   JU      | 1"        | None  | n/a  | 1.43 |
| KA   KI      | KY   KU      | 1"        | 3/4"  | 1.43 | 1.43 |
| HA   HI      | HY   HU      | 3/4"      | 1"    | 1.43 | 1.43 |
| LA   LI      | LY   LU      | 1"        | 1"    | 1.43 | 1.43 |

↑ ↑ ↑ ↑ With Support Studs  
 ↑ Without Support Studs

Orientation is viewed from the shaft end

#### O-ring Ports Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| MA   MI      | MY   MU      | 3/4"      | 3/4"  | 1.43 | 1.43 |
| NA   NI      | NY   NU      | None      | 3/4"  | 1.43 | n/a  |
| PA   PI      | PY   PU      | 3/4"      | None  | n/a  | 1.43 |

↑ ↑ ↑ ↑ With Support Studs  
 ↑ Without Support Studs

Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
 1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 73 for Bearing Carrier options

### Shaft Type <sup>8</sup>

02 = 1.1247 Dia. Keyed Shaft  
 03 = 6 Tooth Spline 1.1096 Dia. x 2-1/8" Ext.  
 06 = 1.120 Dia. 6 Tooth Spline  
 07 = SAE "C" 14 Tooth Spline 1.25 Dia.  
 08 = 1.250 Dia. Keyed Shaft  
 10 = 1.1235 Dia. 6 Tooth Spline Shaft  
 11 = SAE "C" Keyed 1.249 Dia.  
 25 = SAE "B" 13 Tooth Spline .875" Dia.  
 30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key  
 38 = .8745 Dia. Keyed 1-7/16" Ext. x 1-1/4" Key  
 73 = 1.249 Dia. Keyed, Drilled & Tapped x 1-1/2"

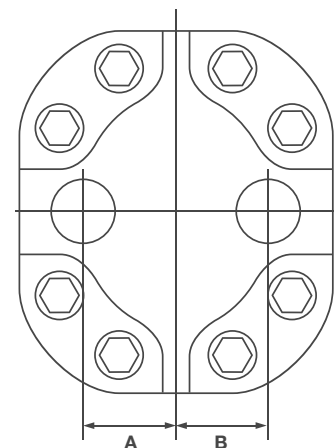
### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 07     | 10     | 12     | 15     | 17     | 20     | 22     | 25     | 30     |
| (2.25) | (3.00) | (3.75) | (4.50) | (5.25) | (6.00) | (6.75) | (7.50) | (9.00) |

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options



# MH37 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |    |
| EC   | 1/2"      | 1/2"     |   | x | x  | x  |    |    |    |    |    |    |
| AR   | 3/4"      | None     |   | x | x  | x  | x  | x  |    |    |    |    |
| AF   | None      | 3/4"     |   | x | x  | x  | x  | x  |    |    |    |    |
| ER   | 3/4"      | 3/4"     |   | x | x  | x  | x  | x  | x  | x  | x  | x  |
| ET   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| EU   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  | x  |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| IQ   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  | x  | x  | x  | x  |
| AT   | 1"        | None     |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| AH   | None      | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| IL   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| IM   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  | x  |
| IN   | 1"        | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  | x  |
| IS   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  | x  |
| IY   | 1-1/2"    | 1"       |   |   |    |    |    |    | x  | x  | x  | x  |
| AV   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  | x  | x  | x  |
| AJ   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  | x  |
| IT   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  | x  |
| IU   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  | x  |
| IZ   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  | x  |
| JC   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  | x  |
| AW   | 1-1/2" *  | None     |   |   |    |    |    |    |    | x  | x  | x  |
| AK   | None      | 1-1/2" * |   |   |    |    |    |    |    | x  | x  | x  |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |    |
| EM   | None      | 3/4"     |   |   | x  | x  | x  |    |    |    |    |    |
| EA   | 3/4"      | None     |   |   | x  | x  | x  |    |    |    |    |    |
| EJ   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |    |
| EK   | 3/4"      | 1"       |   |   | x  | x  |    |    |    |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   | x  | x  | x  | x  |    |    |    |    |
| EN   | 1"        | 3/4"     |   |   | x  | x  |    |    |    |    |    |    |
| YW   | 1-1/4"    | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |    |
| EP   | 1"        | None     |   |   |    |    | x  | x  | x  |    |    |    |
| IH   | None      | 1"       |   |   |    |    | x  | x  | x  |    |    |    |
| EQ   | 1"        | 1"       |   |   |    |    | x  | x  | x  |    |    |    |
| ES   | 1"        | 1-1/4" * |   |   |    |    | x  |    |    |    |    |    |
| IR   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  |    |    |    |
| ID   | 1-1/2"    | 1"       |   |   |    |    |    |    |    |    | x  |    |
| NJ   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |    |    |    |
| JB   | None      | 1-1/4" * |   |   |    |    |    |    |    |    | x  |    |
| IE   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |    |
| IQ   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    |    |    |    | x  |
| IS   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    |    | x  |
| JV   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

# MH37 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### ORB Codes

| Code | Port Size |        | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 30 |
|------|-----------|--------|---|---|----|----|----|----|----|----|----|----|
|      | Left      | Right  |   |   |    |    |    |    |    |    |    |    |
| AB   | None      | None   | x | x | x  | x  | x  | x  | x  | x  | x  |    |
| UC   | None      | 1/2"   |   | x | x  | x  | x  |    |    |    |    |    |
| UP   | 1/2"      | None   |   | x | x  | x  | x  |    |    |    |    |    |
| YC   | 1/2"      | 1/2"   |   | x | x  | x  | x  |    |    |    |    |    |
| UD   | None      | 5/8"   |   | x | x  | x  | x  |    |    |    |    |    |
| UQ   | 5/8"      | None   |   | x | x  | x  | x  |    |    |    |    |    |
| YK   | 5/8"      | 5/8"   |   | x | x  | x  | x  |    |    |    |    |    |
| YD   | 1/2"      | 5/8"   |   | x | x  | x  | x  |    |    |    |    |    |
| YJ   | 5/8"      | 1/2"   |   | x | x  | x  | x  |    |    |    |    |    |
| YL   | 5/8"      | 3/4"   |   |   | x  | x  | x  | x  |    |    |    |    |
| YQ   | 3/4"      | 5/8"   |   |   | x  | x  | x  | x  | x  |    |    |    |
| YS   | 3/4"      | 7/8"   |   |   |    | x  | x  | x  |    |    |    |    |
| UF   | None      | 3/4"   |   |   | x  | x  | x  | x  |    |    |    |    |
| UR   | 3/4"      | None   |   |   | x  | x  | x  | x  | x  |    |    |    |
| YR   | 3/4"      | 3/4"   |   |   | x  | x  | x  | x  | x  |    |    |    |
| UG   | None      | 7/8"   |   |   |    | x  | x  | x  | x  |    |    |    |
| US   | 7/8"      | None   |   |   |    | x  | x  | x  | x  |    |    |    |
| YZ   | 7/8"      | 7/8"   |   |   |    | x  | x  | x  | x  |    |    |    |
| YT   | 3/4"      | 1"     |   |   | x  | x  | x  | x  | x  |    |    |    |
| VJ   | 1"        | 3/4"   |   |   | x  | x  | x  | x  | x  |    |    |    |
| YX   | 7/8"      | 3/4"   |   |   |    | x  | x  | x  | x  |    |    |    |
| VC   | 7/8"      | 1"     |   |   |    |    | x  | x  | x  |    |    |    |
| VK   | 1"        | 7/8"   |   |   |    |    | x  | x  | x  | x  | x  |    |
| UH   | None      | 1"     |   |   |    |    | x  | x  | x  | x  | x  |    |
| UT   | 1"        | None   |   |   |    |    | x  | x  | x  | x  | x  |    |
| VL   | 1"        | 1"     |   |   |    |    | x  | x  | x  | x  | x  |    |
| UJ   | None      | 1-1/4" |   |   |    |    |    | x  | x  | x  | x  |    |
| UV   | 1-1/4"    | None   |   |   |    |    |    | x  | x  | x  | x  |    |
| VT   | 1-1/4"    | 1-1/4" |   |   |    |    |    | x  | x  | x  | x  | x  |
| VM   | 1"        | 1-1/4" |   |   |    |    |    |    | x  | x  | x  | x  |
| VS   | 1-1/4"    | 1"     |   |   |    |    |    |    | x  | x  | x  | x  |
| VU   | 1-1/4"    | 1-1/2" |   |   |    |    |    |    | x  | x  | x  | x  |
| VZ   | 1-1/2"    | 1-1/4" |   |   |    |    |    |    | x  | x  | x  | x  |
| UK   | None      | 1-1/2" |   |   |    |    |    |    |    |    | x  | x  |
| UW   | 1-1/2"    | None   |   |   |    |    |    |    |    |    | x  | x  |
| WC   | 1-1/2"    | 1-1/2" |   |   |    |    |    |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

#### Split Flange Codes

| Code | Port Size |        | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 30 |
|------|-----------|--------|---|---|----|----|----|----|----|----|----|----|
|      | Left      | Right  |   |   |    |    |    |    |    |    |    |    |
| AB   | None      | None   | x | x | x  | x  | x  | x  | x  | x  | x  |    |
| OC   | None      | 1/2"   |   | x | x  | x  | x  |    |    |    |    |    |
| OP   | 1/2"      | None   |   | x | x  | x  | x  |    |    |    |    |    |
| ZC   | 1/2"      | 1/2"   |   |   | x  | x  | x  |    |    |    |    |    |
| OF   | None      | 3/4"   |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| OR   | 3/4"      | None   |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| ZR   | 3/4"      | 3/4"   |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| OH   | None      | 1"     |   |   | x  | x  | x  | x  | x  | x  | x  | x  |
| OT   | 1"        | None   |   |   |    | x  | x  | x  | x  | x  | x  | x  |
| RL   | 1"        | 1"     |   |   |    |    | x  | x  | x  | x  | x  | x  |
| OJ   | None      | 1-1/4" |   |   |    |    | x  | x  | x  | x  | x  | x  |
| OV   | 1-1/4"    | None   |   |   |    |    | x  | x  | x  | x  | x  | x  |
| RT   | 1-1/4"    | 1-1/4" |   |   |    |    |    | x  | x  | x  | x  | x  |
| OK   | None      | 1-1/2" |   |   |    |    |    | x  | x  | x  | x  | x  |
| OW   | 1-1/2"    | None   |   |   |    |    |    | x  | x  | x  | x  | x  |
| SC   | 1-1/2"    | 1-1/2" |   |   |    |    |    | x  | x  | x  | x  | x  |
| OL   | None      | 2"     |   |   |    |    |    |    |    |    |    | x  |
| OX   | 2"        | None   |   |   |    |    |    |    |    |    |    | x  |
| SK   | 2"        | 2"     |   |   |    |    |    |    |    |    |    | x  |
| OM   | None      | 2-1/2" |   |   |    |    |    |    |    |    |    | x  |
| OY   | 2-1/2"    | None   |   |   |    |    |    |    |    |    |    | x  |
| SQ   | 2-1/2"    | 2-1/2" |   |   |    |    |    |    |    |    |    | x  |
| ZF   | 1/2"      | 3/4"   |   |   | x  | x  | x  | x  |    |    |    |    |
| ZP   | 3/4"      | 1/2"   |   |   | x  | x  | x  | x  |    |    |    |    |
| ZT   | 3/4"      | 1"     |   |   |    | x  | x  | x  | x  | x  | x  | x  |
| RJ   | 1"        | 3/4"   |   |   |    | x  | x  | x  | x  | x  | x  | x  |
| RM   | 1"        | 1-1/4" |   |   |    |    | x  | x  | x  | x  | x  | x  |
| RS   | 1-1/4"    | 1"     |   |   |    |    | x  | x  | x  | x  | x  | x  |
| RQ   | 1-1/4"    | 3/4"   |   |   |    |    | x  | x  | x  | x  | x  | x  |
| ZU   | 3/4"      | 1-1/4" |   |   |    |    | x  | x  | x  | x  | x  | x  |
| RU   | 1-1/4"    | 1-1/2" |   |   |    |    |    | x  | x  | x  | x  | x  |
| RZ   | 1-1/2"    | 1-1/4" |   |   |    |    |    | x  | x  | x  | x  | x  |
| SD   | 1-1/2"    | 2"     |   |   |    |    |    |    |    |    | x  | x  |
| SH   | 2"        | 1-1/2" |   |   |    |    |    |    |    |    | x  | x  |
| RX   | 1-1/4"    | 2"     |   |   |    |    |    |    |    |    |    | x  |
| SG   | 2"        | 1-1/4" |   |   |    |    |    |    |    |    |    | x  |
| SF   | 1-1/2"    | 2-1/2" |   |   |    |    |    |    |    |    |    | x  |
| SN   | 2-1/2"    | 1-1/2" |   |   |    |    |    |    |    |    |    | x  |
| RN   | 1"        | 1-1/2" |   |   |    |    |    | x  | x  | x  | x  | x  |
| RY   | 1-1/2"    | 1"     |   |   |    |    |    | x  | x  | x  | x  | x  |

\* Low Pressure Inlet Porting













# MH37 Series Bearing Pump









## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>









**NPT Codes**

| In     | Out    | CW (Left)  | CCW (Right)  |
|--------|--------|--|--|
| None   | None   |  B  |  B  |
| 1-1/2" | None   |  TL |  TJ |
| 1-1/2" | 1-1/2" |  XS |  XT |
| 1"     | 1"     |  DH |  HD |
| 1-1/4" | 1-1/4" |  BF |  FB |











**SAE Split Flange Codes**

| In     | Out    | CW (Left)  | CCW (Right)  |
|--------|--------|--|--|
| 1-1/2" | None   |  FP |  FT |
| 1-1/2" | 1"     |  XV |  XW |
| 1"     | 1"     |  LP |  PL |
| 1-1/4" | 1-1/4" |  GL |  LG |

**SAE Split Flange Codes**

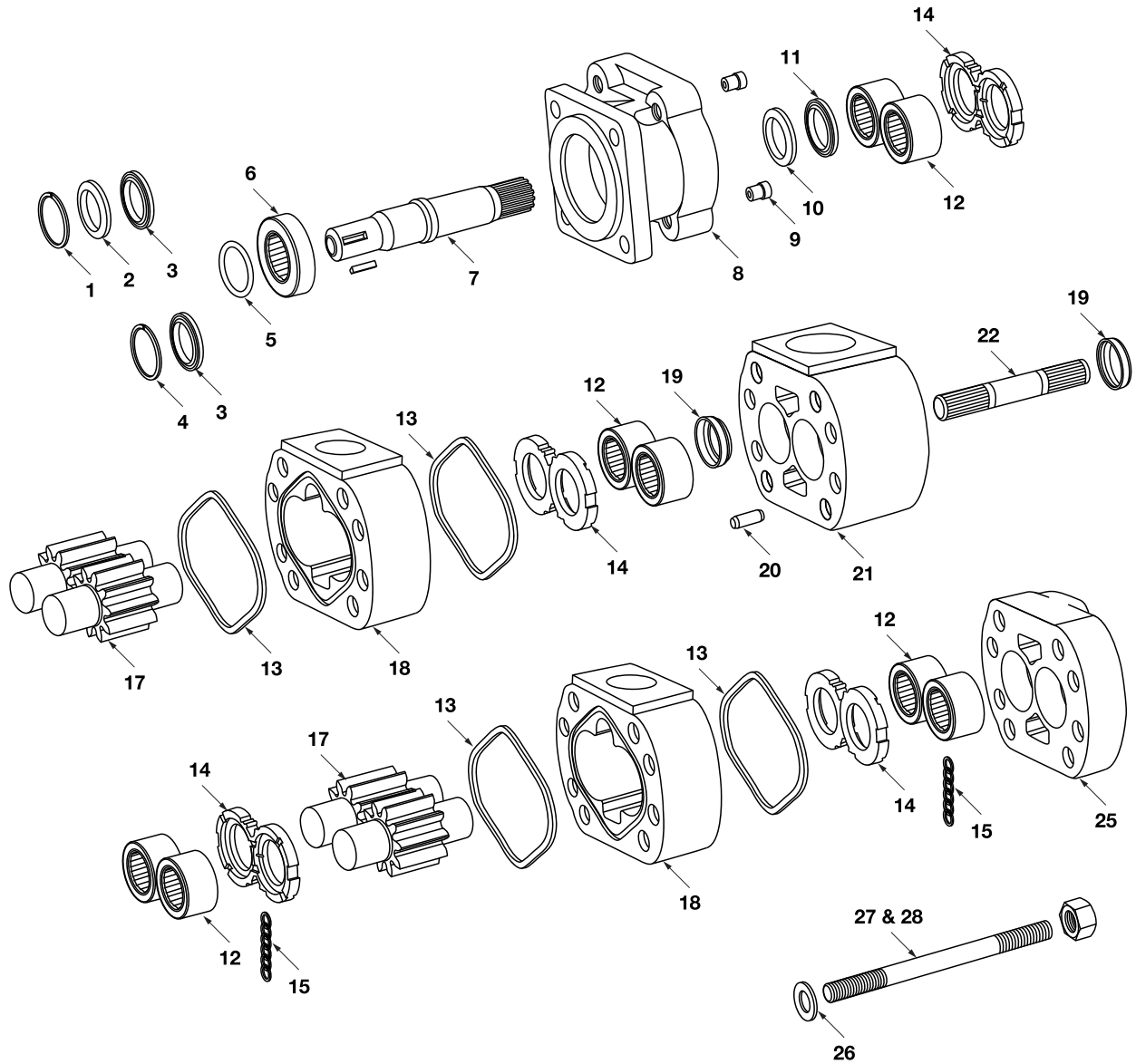
| In     | Out    | CW (Left)  | CCW (Right)  |
|--------|--------|--|--|
| 1-1/2" | None   |  NG |  NK |
| 1-1/2" | 1"     |  XX |  XZ |
| 1"     | 1"     |  QD |  DQ |
| 1-1/4" | 1-1/4" |  NV |  VN |

**Motors Only Codes**

| In     | Out    | Dual   |                  |
|--------|--------|--|------------------|
| None   | None   |  B  |                  |
| 1"     | 1"     |  TT | NPT              |
| 1-1/4" | 1-1/4" |  VV | NPT              |
| 1-1/2" | 1-1/2" |  WW | NPT              |
| 1"     | 1"     |  CC | SAE O-Ring       |
| 1-1/4" | 1-1/4" |  BB | SAE O-Ring       |
| 1-1/2" | 1-1/2" |  FF | SAE O-Ring       |
| 1"     | 1"     |  LL | SAE Split Flange |
| 1-1/4" | 1-1/4" |  MM | SAE Split Flange |
| 1-1/2" | 1-1/2" |  NN | SAE Split Flange |

# MH37 Series

## Parts Breakdown



# MH37 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION   | METARIS #     | ALTERNATE #  |
|------------------|---|---------------|--------------|
| 1                | RETAINER RING   | A37-60-50000  | 391-2581-008 |
| 2a               | SHAFT SEAL RETAINER   | A37-60-10000  | 391-2584-015 |
| 2b               | SEAL RETAINER   | A37-60-30002  | 391-2581-004 |
| 3a               | DOUBLE LIP SEAL (PUMP)  | X83-11-03508  | 391-2883-052 |
| 3b               | MOTOR SHAFT SEAL  | X84-36-03510  | 391-2883-094 |
| 4                | SEAL AND BEARING RETAINER RING  | A37-60-30001  | 391-2581-002 |
| 5a               | SHAFT SEAL RETAINER O RING  | X81-15-06904  | 391-2881-098 |
| 5b               | SHAFT SEAL RETAINER O RING  | X81-15-06904  | 391-2881-127 |
| 6                | TAPERED ROLLER BEARING  | X03-33-13576  | 391-0384-006 |
| <b>Not Shown</b> | TAPERED BEARING SPACER  | A37-92-59760  | 391-3381-008 |
| 7a               | KEYED 1.1247" dia. (KEY SIZE 1/4 X 3/8 X 1 3/4) (TYPE 2) TYPE 1                   | A37-50-00151  | 305-1134-003 |
| 7b               | 6 Tooth Spline 1.109" dia. .275" tooth (TYPE 3) TYPE 1                            | A37-50-00791  | 305-1135-004 |
| 7c               | KEYED .996" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") MALE THREAD (TYPE 4) TYPE 1      | Special Order | 305-1134-026 |
| 7d               | 6 Tooth Spline 1.120" dia. .275" tooth (TYPE 6) TYPE 1                            | Special Order | 305-1134-005 |
| 7e               | 14-Tooth Spline 1.228" dia. 12/24 pitch -SAE C Spline (TYPE 7) TYPE 1             | A37-50-00241  | 305-1134-001 |
| 7f               | KEYED 1.125" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") (TYPE 8) TYPE1                  | A37-50-00144  | 305-1134-007 |
| 7g               | KEYED 1.125" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") (TYPE 9) TYPE1                  | Special Order | 305-1134-025 |
| 7h               | 6 Tooth Spline 1.1235" dia. .275" tooth GROOVED (TYPE 10) TYPE 1                  | Special Order | 305-1134-022 |
| 7i               | KEYED 1.249" dia. (KEY SIZE 5/16" X 15/32" X 1 1/2") (TYPE 11) TYPE 1             | A37-50-00141  | 305-1134-008 |
| 7j               | 13 Tooth .858" dia. 16/32 pitch -SAE B Spline (TYPE 25) TYPE 1                    | Special Order | 305-1134-010 |
| 7k               | KEYED 1.250" dia.THREADED END (KEY SIZE 5/16" X 15/32" X 1 1/2") (TYPE 27) TYPE 1 | A37-50-00147  | 305-1134-012 |
| 7l               | SAE B KEYED 0.875" dia. (KEY SIZE 0.25" x 0.375" X 1" L) (TYPE 30) TYPE 1         | Special Order | 305-1134-013 |
| 7m               | 6 Tooth Spline 1.1248" dia. .309" tooth (TYPE 31) TYPE 1                          | Special Order | 305-1134-021 |
| 7n               | KEYED 1.249" dia. .250" hole (KEY 5/16" X 15/32" X 1 1/2" ) ( TYPE 35) TYPE 1     | A37-50-00149  | 305-1134-019 |
| 7o               | 12 Tooth Spline 1.0818" dia. (TYPE 36 ) TYPE 1                                    | Special Order | 305-1134-020 |
| 7p               | 8 Tooth Spline 1.641" dia. (TYPE 37) TYPE 2                                       | Special Order | 305-1134-024 |
| 7q               | KEYED 1.25" dia. + Int. Thread 1/2" -13 Thd (double brg.) (TYPE 73) TYPE 2        | A37-50-00142  | 305-1134-031 |
| 7r               | Tang Drive 1.250" dia. (TYPE 78) TYPE 1   | Special Order | 305-1134-042 |
| 7s               | KEYED 1.0937" dia. threaded (KEY SIZE 0.25"sq X 2"L) double brg. (TYPE 79) TYPE 2 | Special Order | 305-1134-037 |
| 7t               | 14 Tooth Spline 1.248" dia. 12/24 pitch (TYPE 85) TYPE 1                          | A37-50-00244  | 305-1134-039 |
| 7u               | KEYED 1.125" dia. (KEY SIZE 1/4" X 1 3/4") (TYPE 86) TYPE 1                       | Special Order | 305-1134-029 |
| 7v               | KEYED 1.25" dia. + Int. Thread 1/2" -13 Thd (double brg.) (TYPE 87) TYPE 2        | Special Order | 305-1134-043 |
| 8a               | 37 S.E.C. PAD MOUNT PUMP TYPE 1 TYPE 111 / 211 / 311 / 911                        | A37-10-21100  | 305-5012-201 |
| 8b               | 37 S.E.C. 4 BOLT B MOUNT TYPE 1 TYPE 142 / 242 / 342 (4" or 101.6 mm pilot)       | A37-10-21420  | 305-5031-204 |
| 8c               | 37 S.E.C. 4 BOLT SQUARE 3.999" PILOT TYPE 1 TYPE 177 / 277 / 377                  | Special Order | 305-5031-206 |
| 8d               | 37 S.E.C. 4 BOLT C MOUNT TYPE 1 TYPE 178 / 278 / 378 / 978 (5" or 127 mm pilot)   | A37-10-21430  | 305-5031-201 |

# MH37 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|------------------|--|--------------|--------------|
| 8e               | 37 S.E.C. 6 BOLT ROUND 3.999" PILOT TYPE 1 TYPE 181 / 281 / 381 / 981                                      | A37-10-21650 | 305-5041-201 |
| 8f               | 37 S.E.C. 2 BOLT C MOUNT TYPE 1 TYPE 198 / 298 / 398 / 998 (5" or 127 mm pilot)                            | A37-10-21230 | 305-5021-201 |
| 8g               | 37 S.E.C. PAD MOUNT WITH DRAIN @ 3 O'CLOCK TYPE 2 TYPE 411 / 511 / 611 / 811                               | A37-10-22100 | 305-5012-202 |
| 8h               | 37 S.E.C. 4 BOLT B 3.999" PILOT DRAIN @ 3 O'CLOCK TYPE 2 TYPE 442 / 542 / 642 / 842 (4" or 101.6 mm pilot) | A37-10-22420 | 305-5032-202 |
| 8i               | 37 S.E.C. 4 BOLT C PILOT WITH DRAIN @ 3 O'CLOCK TYPE 2 TYPE 478 / 578 / 678 / 878 (5" or 127 mm pilot)     | A37-10-22430 | 305-5032-203 |
| 8j               | 37 S.E.C. 4 BOLT B PILOT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 942 (4" or 101.6 mm pilot)                          | A37-10-21420 | 305-5031-204 |
| 8k               | 37 S.E.C. 4 BOLT B MOUNT DRAIN @ 12 O'CLOCK TYPE 1 TYPE 745 (4" or 101.6 mm pilot)                         | A37-10-41422 | 305-5032-413 |
| 8l               | 37 S.E.C. 4 BOLT C PILOT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 778 (5" or 127 mm pilot)                            | A37-10-41430 | 305-5031-403 |
| 8m               | 37 S.E.C. 2 BOLT C PILOT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 798 (5" or 127 mm pilot)                            | A37-10-41230 | 305-5021-401 |
| 8n               | 37 S.E.C. PAD MOUNT DRAIN @ 4 O'CLOCK TYPE 1 TYPE 711  | A37-10-41100 | 305-5012-406 |
| 8o               | 37 S.E.C. 4 BOLT B MOUNT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 742 (4" or 101.6 mm pilot)                          | A37-10-41421 | 305-5031-406 |
| 9a               | CHECK VALVE  | A00-75-11000 | 391-3681-001 |
| 9b               | PRESSURE PLUG PUMP   | X02-03-32110 | 391-2286-004 |
| 10               | SHAFT BUSHING  | X03-00-32835 | 391-0481-001 |
| 11               | CONICAL SPRING   | A37-95-00000 | 391-3581-172 |
| <b>Not Shown</b> | CASE DRAIN PIPE PLUG   | X02-03-22060 | 391-2282-056 |
| 12               | ROLLER BEARING (Ø 2.322" O.D.)   | X03-24-13859 | 391-0381-060 |
| 13               | GEAR HOUSING GASKET  | X85-11-12303 | 391-2884-023 |
| 14               | BI-ROTATIONAL THRUST PLATE   | A37-70-10000 | 391-2185-009 |
| 15               | POCKET SEAL  | X85-11-00002 | 391-2882-023 |
| 16               | GEAR SPACER  | n/a          | 391-3383-XXX |
| 17               | GEAR SET ONLY  | A37-50-XX000 | 305-28XX-000 |
| 18               | PUMP & MOTOR GEAR HOUSING  | A37-32-XX000 | 305-80XX-100 |
| 19               | BUSHING  | X03-00-32836 | 391-0481-004 |
| 20               | ROLL PIN   | A00-94-30310 | 391-2084-020 |
| 21a              | COMMON PASSAGE BEARING CARRIER   | A37-40-20000 | 305-7000-100 |
| 21b              | BLANK BEARING CARRIER  | A37-40-00000 | 305-7300-100 |
| 22               | CONNECT SHAFT  | A37-50-00500 | 305-1133-001 |
| 23               | TIE ROD  | n/a          | n/a          |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A37-50-XX000 changes to A37-50-15000 for 1.5" gear size  
 Housing no. A37-32-XX000 changes to A37-32-15000 for a 1.5" housing size  
 No porting sizes have been indicated all porting must be specified when ordering parts.

# MH37 Series

## Parts Breakdown

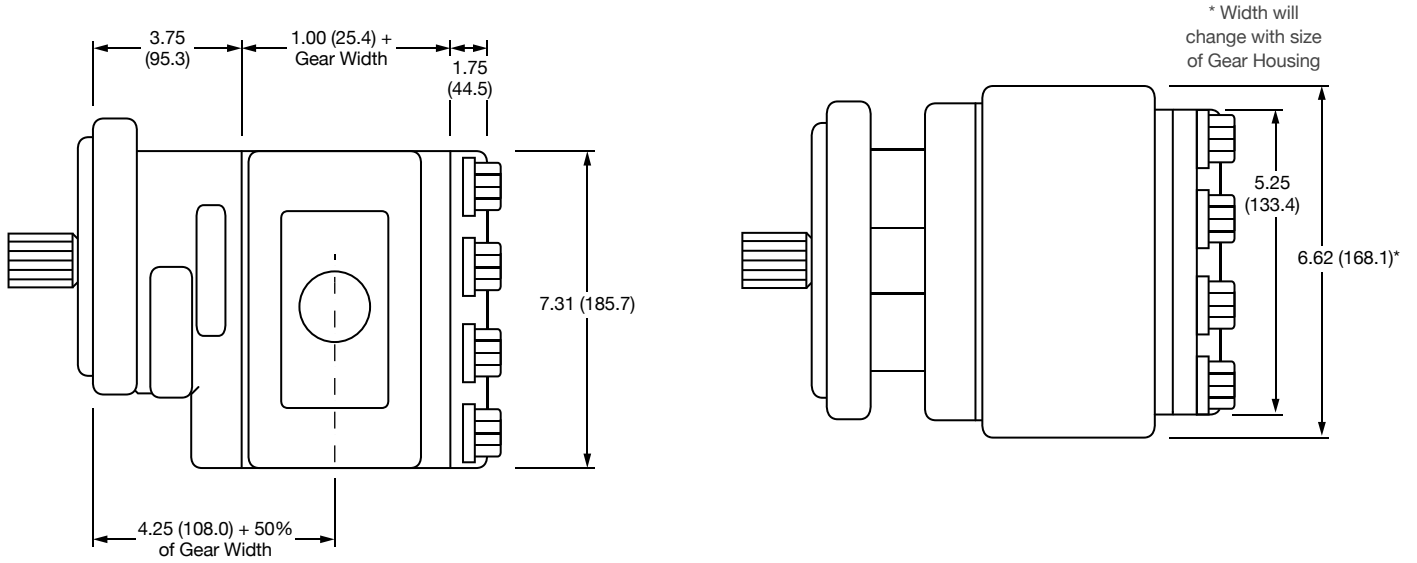
| DRAWING NO.      | DESCRIPTION                              | METARIS #          | ALTERNATE #  |
|------------------|--|--------------------|--------------|
| 25               | PORT END COVER                           | A37-22-00000       | 305-3000-100 |
| 26               | FLAT WASHER (1/2")                       | X45-19-13005       | 391-3782-027 |
| 27               | BOLTS / STUDS (1/2"-UNC)                 | See Fasteners Page |              |
| 28               | HEX NUT (1/2"-UNC)                       | X42-11-13011       | 391-1451-051 |
| <b>Not Shown</b> | SHAFT RET. SNAP RING                     | X05-02-31130       | 391-2685-012 |
| <b>Not Shown</b> | .187" THICK SPACER FOR TYPE 2 SHAFTS     | A37-92-28441       | 391-3383-012 |
| <b>Not Shown</b> | .194" THICK SPACER FOR TYPE 2 SHAFTS     | A37-92-28442       | 391-3383-013 |
| <b>Not Shown</b> | DRIVE KEY TYPE 2 & 4 & 8 & 86 & 87 SHAFT | X01-01-61044       | 391-1781-020 |
| <b>Not Shown</b> | DRIVE KEY TYPE 9 SHAFT                   | X01-01-61032       | 391-1781-021 |
| <b>Not Shown</b> | DRIVE KEY TYPE 11 & 27 & 35 SHAFT        | X01-01-81238       | 391-1781-045 |
| <b>Not Shown</b> | DRIVE KEY TYPE 30 SHAFT                  | X01-01-61025       | 391-1781-025 |
| <b>Not Shown</b> | DRIVE KEY TYPE 73 SHAFT                  | X01-01-81257       | 391-1781-008 |
| <b>Not Shown</b> | DRIVE KEY TYPE 79 SHAFT                  | X01-02-60651       | 391-1781-037 |

# MH37 Series

## Dimensions

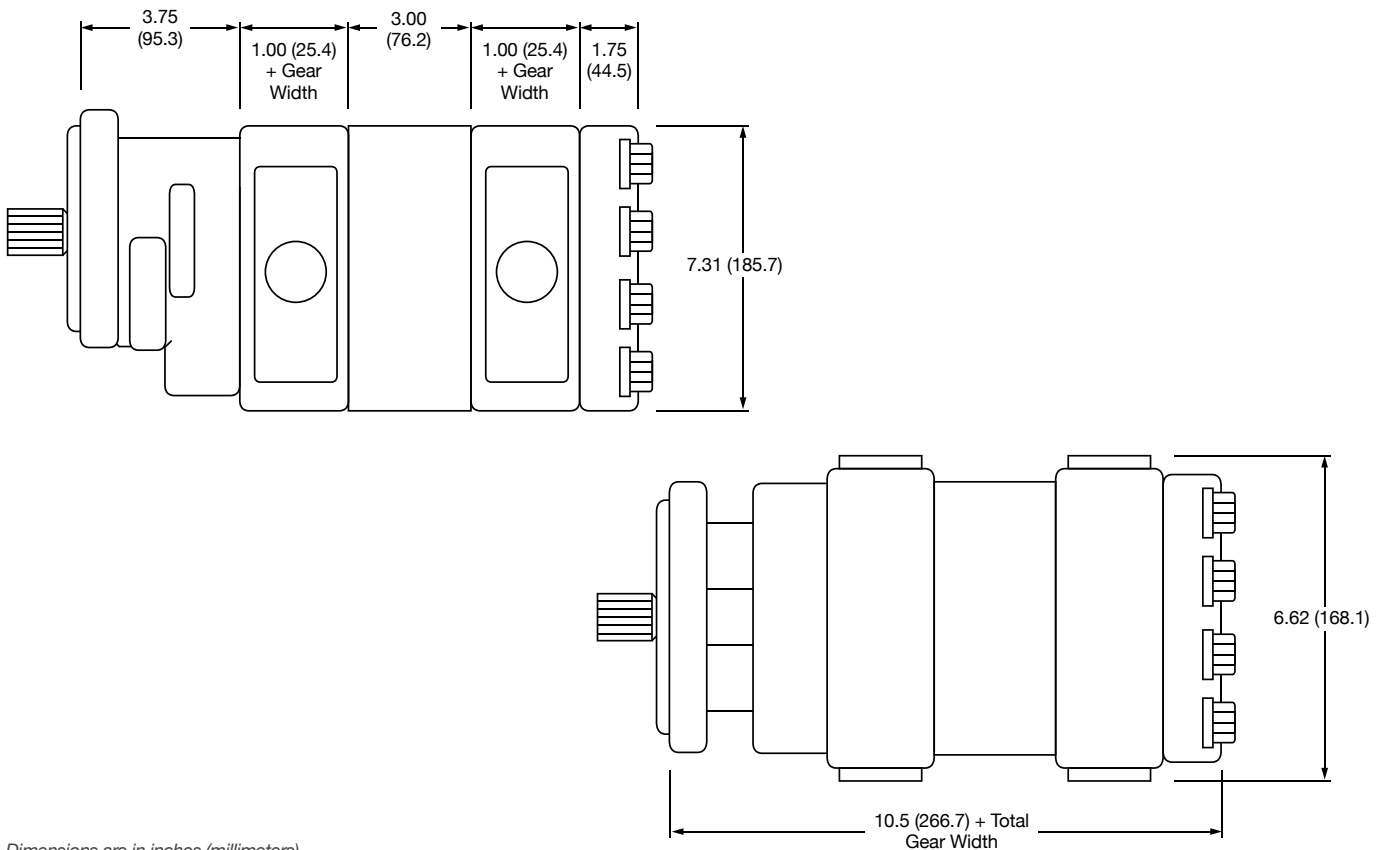
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH50 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH50       |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .75        | 3/4"   | 1.91                 | (31.3)                 | 2500         | (172) |
| 1.00       | 1"     | 2.55                 | (41.8)                 | 2500         | (172) |
| 1.25       | 1-1/4" | 3.19                 | (52.2)                 | 2500         | (172) |
| 1.50       | 1-1/2" | 3.83                 | (62.7)                 | 2500         | (172) |
| 1.75       | 1-3/4" | 4.46                 | (73.1)                 | 2000         | (145) |
| 2.00       | 2"     | 5.10                 | (83.6)                 | 2000         | (145) |
| 2.25       | 2-1/4" | 5.74                 | (94.0)                 | 2000         | (145) |
| 2.50       | 2-1/2" | 6.38                 | (104.5)                | 2000         | (145) |

# MH50 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |            |            |            |            |            |
|-----------|----------------------|-------------|------------|------------|------------|------------|------------|
|           | 1"                   | 1-1/4"      | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"     | 2-1/2"     |
| 900       | 8.5 / 32             | 10.5 / 39.5 | 13 / 49    | 15 / 57    | 17.5 / 66  | 20 / 75.5  | 22 / 83.5  |
| 1200      | 12 / 46.5            | 15 / 57     | 18 / 68    | 21 / 79.5  | 24 / 91    | 27 / 102   | 30 / 114   |
| 1500      | 15 / 57              | 19 / 72     | 23 / 87    | 27 / 102   | 31 / 117   | 35 / 132   | 39 / 146   |
| 1800      | 18 / 68              | 23 / 87     | 27.5 / 104 | 32.5 / 123 | 37.5 / 142 | 42 / 159   | 47 / 178   |
| 2100      | 21.5 / 81.5          | 27 / 102    | 32.5 / 123 | 38.5 / 146 | 44 / 167   | 48.5 / 187 | 55 / 208   |
| 2400      | 25 / 94.5            | 31 / 117    | 37 / 140   | 44 / 167   | 51 / 193   | 57 / 216   | 63.5 / 240 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             | 2-1/2"               |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 10.5 / 40            | 670 / 7.5                   | 15.5 / 58.5          | 1070 / 12.5                 | 21 / 79.5            | 1450 / 16.5                 | 26 / 98.5            | 1850 / 21.5                 |
| 1200      | 15.5 / 58.5          | 680 / 8                     | 22.5 / 85            | 1075 / 12.5                 | 30.5 / 115           | 1450 / 16.5                 | 37.5 / 142           | 1840 / 21                   |
| 1600      | 20 / 75.5            | 670 / 7.5                   | 30 / 114             | 1045 / 12                   | 40 / 151             | 1440 / 16.5                 | 49.5 / 187           | 1750 / 20                   |
| 2000      | 25 / 94.5            | 660 / 7.5                   | 37 / 140             | 1030 / 12                   | 49 / 185             | 1415 / 16.5                 | 61.5 / 233           | 1720 / 20                   |

**Note:** Input Flow @ 2000psi | Output Torque @ 140 bar

## MH50 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 9,900    | 8,000     |
| SAE "BB" Keyed   | 6,600    | 6,600     |
| SAE "B" Spline   | 6,400    | 6,400     |
| SAE "B" Keyed    | 5,750    | 5,750     |
| SAE "C" Spline   | 13,850   | 8,000     |
| SAE "C" Keyed    | 13,000   | 8,000     |
| Connecting Shaft |          | 8,000     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.



# MH50 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10

**MHP - 50 - A - 1 - 78 - ME - AB - 10 - 25 - DB - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
3 = Pump w/o Shaft Bearing (Double Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
6 = Pump w/ Shaft Bearing (Double Rotation)  
8 = Motor w/ Shaft Bearing & 1/4" Drain Port  
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

00 = Pad Mount  
42 = SAE 4-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount  
91 = 51/51 Piggyback Mount  
92 = 76/51 Piggyback Mount  
96 = SAE 2-Bolt "B" Mount (Type 2)  
97 = SAE 2-Bolt "B" Mount  
98 = SAE 2-Bolt "C" Mount  
99 = SAE 2-Bolt "C" Mount (Type 2)

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| BE   BY      | BI   BJ      | None      | None  | n/a  | n/a  |
| KE   KY      | KI   KJ      | 3/4"      | None  | n/a  | 1.38 |
| LE   LY      | LI   LJ      | None      | 3/4"  | 1.38 | n/a  |
| ME   MY      | MI   MJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

#### O-ring Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| CE   CY      | CI   CJ      | 3/4"      | None  | n/a  | 1.38 |
| DE   DY      | DI   DJ      | None      | 3/4"  | 1.38 | n/a  |
| FE   FY      | FI   FJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

#### Metric Str. Thd. Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| NE           | NI   NY      | 3/4"      | None  | n/a  | 1.38 |
| PE           | PI   PY      | None      | 3/4"  | 1.38 | n/a  |
| QE           | QI   QY      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

#### BSPP Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| WE           | WI   WY      | 3/4"      | None  | n/a  | 1.38 |
| XE           | XI   XY      | None      | 3/4"  | 1.38 | n/a  |
| ZE           | ZI   ZY      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 85 for Bearing Carrier options

### Shaft Type <sup>8</sup>

07 = SAE "C" 14 Tooth Spline 1.25" Dia.  
11 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 1-1/2" Key  
25 = SAE "B" 13 Tooth Spline .875" Dia.  
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key  
53 = SAE "C" 14 Tooth Spline 1.25" Dia.  
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2  
67 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key Type 2  
73 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 2-1/4" Key  
98 = SAE "BB" 15 Tooth Spline 1" Dia. (Cont. Only)

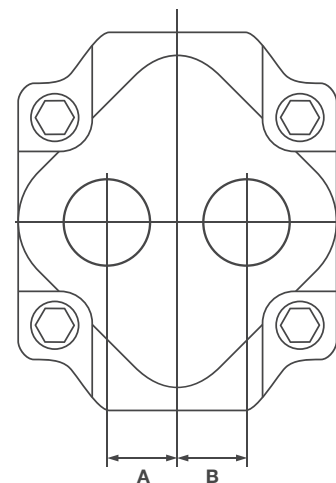
### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

| 07     | 10     | 12     | 15     | 17     | 20     | 22     | 25     |
|--------|--------|--------|--------|--------|--------|--------|--------|
| (1.91) | (2.55) | (3.19) | (3.83) | (4.46) | (5.10) | (5.74) | (6.38) |

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options



# MH50 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| IC   | 3/4"      | None     |   |   | x  |    |    |    |    |    |    |
| ID   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| IF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| IG   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| IH   | 3/4"      | 1-1/4"   |   |   |    |    | x  |    |    |    |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| IK   | 1-1/4"    | 3/4"     |   |   |    |    | x  |    |    |    |    |
| YC   | 1"        | None     |   |   |    | x  | x  | x  | x  | x  |    |
| YD   | None      | 1"       |   |   |    | x  | x  | x  | x  | x  |    |
| YF   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| YG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  |    |
| YH   | 1"        | 1-1/2"   |   |   |    |    |    |    |    |    | x  |
| YJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| YK   | 1-1/2"    | 1"       |   |   |    |    |    |    |    |    | x  |
| IA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  | x  | x  |
| IB   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| YL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  | x  | x  |
| YM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  |
| YP   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| YR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| YA   | 1-1/2"    | None     |   |   |    |    |    |    | x  | x  | x  |
| YB   | None      | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| YN   | 3/4"      | None     |   |   | x  | x  |    |    |    |    |    |
| YQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| YS   | 3/4"      | 3/4"     |   |   |    | x  | x  |    |    |    |    |
| YT   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   | x  | x  | x  | x  |    |    |    |
| YV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| YW   | 1-1/4"    | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| SL   | 1"        | None     |   |   | x  | x  | x  |    |    |    |    |
| RQ   | None      | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| MP   | 1"        | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| VY   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| IX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |    |    |
| UI   | None      | 1-1/4" * |   |   |    |    |    |    |    | x  | x  |
| PF   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    |    | x  | x  |
| IQ   | 1-1/4"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  |
| IS   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Metric Str. Thd. Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| EN   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |    |    |
| TQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| ES   | 3/4"      | 3/4"     |   |   | x  | x  |    |    |    |    |    |
| ET   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |    |    |
| EV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| NL   | 1"        | None     |   |   |    |    | x  | x  | x  | x  |    |
| ER   | None      | 1"       |   |   |    |    | x  | x  | x  | x  |    |
| CM   | 1"        | 1"       |   |   |    |    | x  | x  | x  |    |    |
| VE   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| EX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| UA   | None      | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| PA   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| QA   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  |
| SA   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |

\* Low Pressure Inlet Porting

# MH50 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### O.D. Tube Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| EC   | 3/4"      | None     |   |   | x  | x  | x  | x  | x  |    |    |
| ED   | None      | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| EF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| EG   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| EH   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  |    |    |    |
| EJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| EK   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |    |    |
| AC   | 1"        | None     |   |   | x  | x  | x  | x  |    |    |    |
| AD   | None      | 1"       |   |   | x  | x  | x  | x  |    |    |    |
| AF   | 1"        | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| AG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| AH   | 1"        | 1-1/2"   |   |   |    |    |    | x  | x  | x  |    |
| AJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| AK   | 1-1/2" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| AL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| AM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  |
| AP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| AR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  |
| AA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  | x  | x  |
| AO   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| AE   | 1-1/2" *  | None     |   |   |    |    |    |    | x  | x  |    |
| AU   | None      | 1-1/2" * |   |   |    |    |    |    | x  | x  |    |

\* Low Pressure Inlet Porting

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| UC   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |    |    |
| UD   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| UF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  | x  | x  |
| UG   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| UH   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  |    |    |    |
| UJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| UK   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  |    |    |    |
| OC   | 1"        | None     |   |   | x  | x  | x  | x  | x  | x  | x  |
| OD   | None      | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |
| OF   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| OG   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |    |    |
| OH   | 1"        | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| OJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| OK   | 1-1/2" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| OL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| OM   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| ON   | 1-1/4"    | 2"       |   |   |    |    |    |    | x  | x  | x  |
| OP   | 1-1/2" *  | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| OQ   | 2"        | 1-1/4"   |   |   |    |    |    |    |    | x  | x  |
| OR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| OS   | 1-1/2"    | 2"       |   |   |    |    |    |    |    | x  | x  |
| OV   | 2"        | 1-1/2"   |   |   |    |    |    |    |    | x  | x  |
| OX   | 2"        | 2"       |   |   |    |    |    |    |    |    | x  |
| OA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  | x  | x  |
| OB   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| OE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  | x  | x  |
| OU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  | x  | x  |
| UB   | 1"        | 2"       |   |   |    |    |    |    |    | x  | x  |
| UQ   | 2"        | 1"       |   |   |    |    |    |    |    | x  | x  |
| XB   | 2"        | None     |   |   |    |    |    |    |    | x  | x  |
| ZB   | None      | 2"       |   |   |    |    |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

# MH50 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### Metric Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| VN   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |    |    |
| VQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| VS   | 3/4"      | 3/4"     |   |   | x  | x  | x  |    |    |    |    |
| VT   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |    |    |
| RV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| RU   | 3/4"      | 1-1/4"   |   |   | x  | x  | x  |    |    |    |    |
| RW   | 1-1/4"    | 3/4"     |   |   | x  | x  | x  |    |    |    |    |
| UL   | 1"        | None     |   |   |    | x  | x  | x  | x  | x  |    |
| UR   | None      | 1"       |   |   |    | x  | x  | x  | x  | x  |    |
| UM   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  |    |
| VU   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  | x  |
| UX   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| HO   | 1"        | 1-1/2" * |   |   |    |    | x  | x  | x  |    |    |
| VO   | 1-1/2" *  | 1"       |   |   |    |    | x  | x  | x  |    |    |
| NO   | 1-1/4" *  | None     |   |   |    |    |    | x  | x  | x  | x  |
| UO   | None      | 1-1/4" * |   |   |    |    |    | x  | x  | x  | x  |
| PO   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| QO   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| SO   | 1-1/2" *  | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| JR   | 1-1/4"    |          |   |   |    |    |    |    | x  | x  | x  |
| JM   | 2"        | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| UY   | 1-1/2" *  | None     |   |   |    |    | x  | x  | x  | x  |    |
| TO   | None      | 1-1/2" * |   |   |    |    | x  | x  | x  | x  |    |
| SV   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| JN   | 1-1/2"    | 2"       |   |   |    |    |    |    | x  | x  | x  |
| JQ   | 2"        | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |











\* Low Pressure Inlet Porting

# MH50 Series Bearing Pump









## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>







NPT Codes

| In   | Out                              | CW (Left)   | CCW (Right)   |
|--|----------------------------------|---|---|
| None<br>None                               | None<br>None                     | <br>C<br>A                     | <br>D<br>U                     |
| 1"<br>1-1/4"<br>1-1/2"                     | None<br>None<br>None             | <br>TB<br>VB<br>WB             | <br>BT<br>BV<br>BW             |
| 1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | <br>TX<br>VX<br>WX<br>VZ<br>WZ | <br>XT<br>XV<br>XW<br>ZV<br>ZW |
| 1"<br>1-1/4"<br>1-1/4"<br>1-1/2"           | 3/4"<br>3/4"<br>1"<br>1"         | <br>TJ<br>VJ<br>VK<br>WK       | <br>JT<br>JV<br>KV<br>KW       |
| 1"   | 3/4"                             | <br>ZX                       | <br>XZ                       |



SAE Split Flange Codes

| In   | Out                              | CW (Left)   | CCW (Right)   |
|--|----------------------------------|---|---|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None             | <br>LB<br>MB<br>NB                   | <br>BL<br>BM<br>BN                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | <br>BR<br>LR<br>MR<br>NR<br>MS<br>NS | <br>RB<br>RL<br>RM<br>RN<br>SM<br>SN |
| 1"<br>1-1/4"<br>1-1/4"<br>1-1/2"                   | 3/4"<br>3/4"<br>1"<br>1"         | <br>LX<br>MX<br>MZ<br>NZ             | <br>XL<br>XM<br>ZM<br>ZN             |
| 1"   | 3/4"                             | <br>SR                               | <br>RS                               |

SAE O-ring Codes

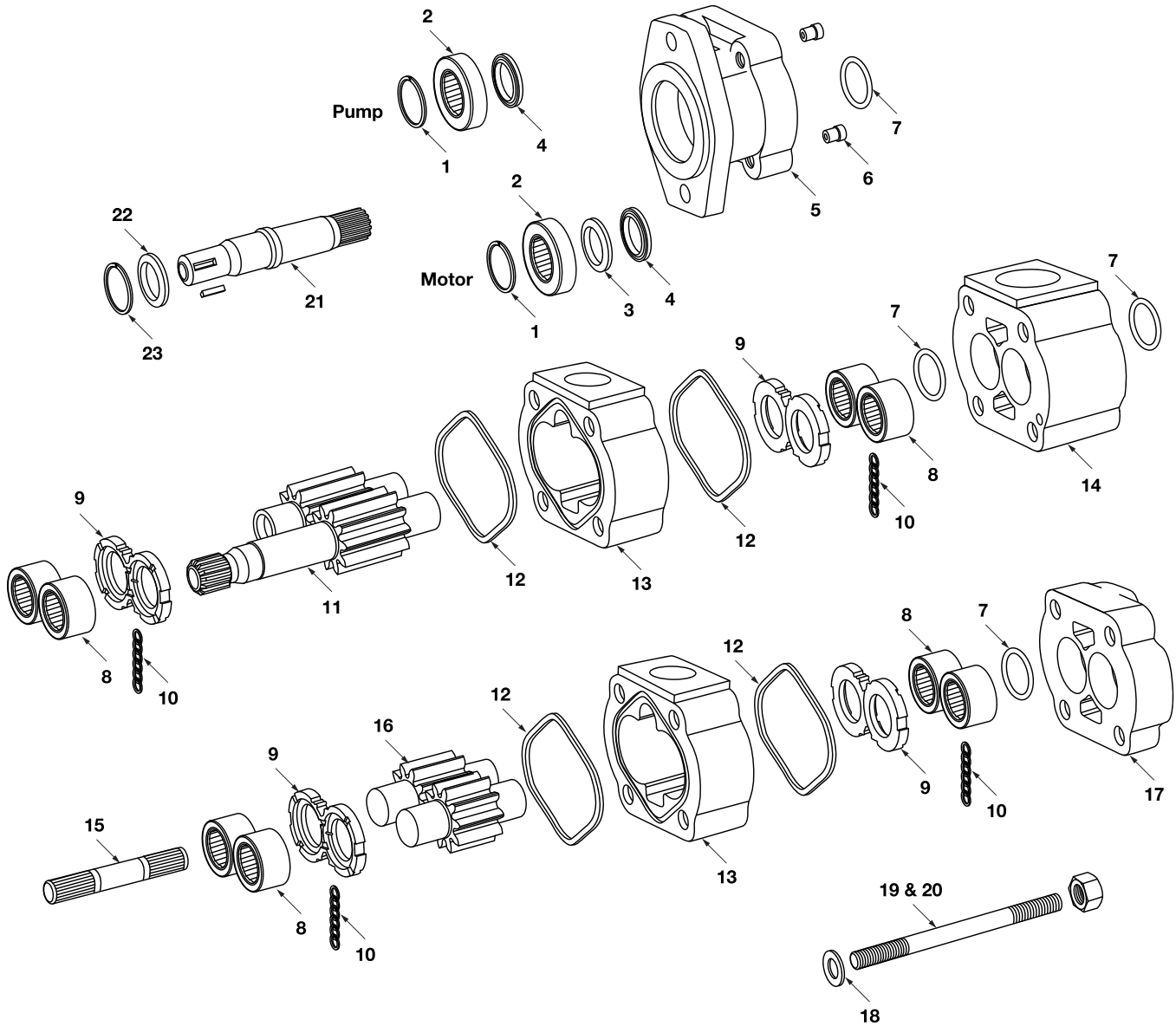
| In   | Out                              | CW (Left)   | CCW (Right)   |
|--|----------------------------------|---|---|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None             | <br>CB<br>DB<br>FB                   | <br>BC<br>BD<br>BF                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | <br>PJ<br>CJ<br>DJ<br>FJ<br>DK<br>FK | <br>JP<br>JC<br>JD<br>JF<br>KD<br>KF |
| 1"   | 3/4"                             | <br>CR                               | <br>RC                               |

Motors Only Codes

| In   | Out  | Dual  |   |
|--|--|---|---|
| None   | None   | <br>B  |   |
| 1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | 1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | <br>TT<br>VV<br>WW<br>CC<br>BB<br>FF<br>LL<br>MM<br>NN | NPT<br>NPT<br>NPT<br>SAE O-Ring<br>SAE O-Ring<br>SAE O-Ring<br>SAE Split Flange<br>SAE Split Flange<br>SAE Split Flange |

# MH50 Series

## Parts Breakdown



# MH50 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|-------------|--|--------------|--------------|
| 1           | SHAFT BRG. SNAP RING   | X05-03-77250 | 391-2686-065 |
| 2a          | BEARING SPACER & SEAL RETAINER FOR MOTORS                                      | A50-60-10000 | 391-3383-087 |
| 2b          | INPUT SHAFT BEARING  | X03-16-13272 | 391-0381-077 |
| 3           | MOTOR SEAL RETAINER USED WITH SHAFT BEARING                                    | A50-60-30000 | 391-3383-020 |
| 4a          | PUMP LIP SEAL  | X83-11-03308 | 391-2883-10  |
| 4b          | MOTOR LIP SEAL   | X84-36-03309 | 391-2883-115 |
| 4c          | PUMP LIP SEAL FOR CONTINENTIAL SHAFT ONLY                                      | X89-11-03308 | 391-2883-133 |
| 5a          | 50 PAD PILOT PUMP SHAFT END COVER TYPE 00                                      | A50-10-21100 | 313-5013-201 |
| 5b          | 50 4 BOLT B PILOT PUMP SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)          | A50-10-21420 | 313-5033-201 |
| 5c          | 50 4 BOLT C PILOT PUMP SHAFT END COVER TYPE 78 (5" or 127 mm pilot)            | A50-10-21430 | 313-5033-202 |
| 5d          | 50 2 BOLT B PILOT PUMP SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)          | A50-10-21220 | 313-5023-204 |
| 5e          | 50 2 BOLT C PILOT PUMP SHAFT END COVER TYPE 98 (5" or 127 mm pilot)            | A50-10-21230 | 313-5023-203 |
| 5f          | 50 2 BOLT B (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 96 (4" or 101.6 mm pilot) | A50-10-22220 | 313-5029-201 |
| 5g          | 50 2 BOLT C (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 99 (5" or 127 mm pilot)   | A50-10-22230 | 313-5029-202 |
| 5h          | 50/50 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91                              | A41-10-21500 | 313-5029-206 |
| 5i          | 75/50 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92                              | A42-10-21500 | 313-5029-207 |
| 5j          | 50 PAD PILOT MOTOR SHAFT END COVER TYPE 00                                     | A50-10-41100 | 313-5013-202 |
| 5k          | 50 4 BOLT B PILOT MOTOR SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)         | A50-10-41420 | 313-5033-405 |
| 5l          | 50 4 BOLT C PILOT MOTOR SHAFT END COVER TYPE 78 (5" or 127 mm pilot)           | A50-10-41430 | 313-5033-403 |
| 5m          | 50 2 BOLT B PILOT MOTOR SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)         | A50-10-41220 | 313-5023-206 |
| 5n          | 50 2 BOLT C PILOT MOTOR SHAFT END COVER TYPE 98 (5" or 127 mm pilot)           | A50-10-41230 | 313-5023-205 |
| 6a          | CHECK VALVE MOTOR  | A00-75-11000 | 391-3681-001 |
| 6b          | PRESSURE PLUG PUMP   | X02-03-32110 | 391-2286-004 |
| 7           | RING SEAL  | X81-76-03305 | 391-2585-009 |
| 8           | ROLLER BEARING (Ø 1.937" O.D.)   | X03-24-13349 | 391-0381-059 |
| 9a          | PUMP & MOTOR THRUST PLATE  | A25-70-10000 | 391-2185-012 |
| 9b          | DRY VALVE THRUST PLATE   | A50-70-10000 | 391-2185-041 |
| 10          | POCKET SEAL  | X85-11-00002 | 391-2882-050 |
| 11a         | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7                           | A50-50-XX245 | 313-29XX-250 |
| 11b         | SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11                                      | A50-50-XX145 | 313-29XX-750 |
| 11c         | SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25                       | A50-50-XX225 | 313-29XX-230 |
| 11d         | SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43             | A50-50-XX135 | 313-29XX-740 |
| 11e         | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 53 TYPE 2                   | A50-50-XX246 | 313-29XX-450 |
| 11f         | SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 65 TYPE 2                | A50-50-XX226 | 313-29XX-430 |
| 12          | PUMP & MOTOR HOUSING GASKET  | X85-11-10803 | 391-2884-021 |
| 13          | PUMP & MOTOR GEAR HOUSING  | A25-32-XX000 | 303-80XX-100 |

# MH50 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION   | METARIS #          | ALTERNATE #  |
|-------------|---|--------------------|--------------|
| 14a         | 50 MOTOR BEARING CARRIER BLANK                                  | A50-40-00000       | 313-7300-100 |
| 14b         | 50 PUMP BEARING CARRIER WITH COMMON PASSAGE                     | A50-40-20000       | 313-7363-100 |
| 15          | CONNECTING SHAFT  | A50-50-00500       | 313-1133-001 |
| 16          | GEAR SET ONLY   | A50-50-XX000       | 313-28XX-000 |
| 17a         | 50 PUMP & MOTOR PORT END COVER                                  | A50-22-00000       | 313-3100-100 |
| 17b         | 50 PUMP & MOTOR PORT END COVER SPECIAL LARGER PORTING           | A50-27-00000       | 313-3400-100 |
| 17c         | 50 PIGGY BACK REAR PORT END COVER                               | A50-22-03000       | 313-5029-205 |
| 18          | FLAT WASHER (5/8")  | X45-10-17005       | 391-3784-028 |
| 19          | BOLTS / STUDS (5/8"-UNC)  | See Fasteners Page |              |
| 20          | HEX NUT (5/8"-UNC)  | X42-11-16000       | 391-1451-076 |
| 21a         | CONTINENTAL SHAFT TYPE 11 (1 1/4" Ø KEYED 5/16")                | A50-50-00141       | 313-1500-500 |
| 21b         | CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14 TOOTH SPLINE)           | A50-50-00241       | 313-1135-194 |
| 21c         | CONTINENTAL SHAFT TYPE 25 (0.875" Ø- 13 TOOTH SPLINE)           | A50-50-00221       | 313-1000-300 |
| 21d         | CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)  | A50-50-00131       | 313-1500-400 |
| 21e         | CONTINENTAL SHAFT TYPE 73 LONG (1 1/4" Ø KEYED 5/16")           | A50-50-00147       | 313-1500-502 |
| 21f         | CONTINENTAL SHAFT TYPE 98 - SPLINED - SAE BB 15T                | A50-50-00231       | 313-1000-400 |
| 22          | CONTINENTAL SHAFT BRG. RETAINER (MAY NOT BE REQUIRED)           | A50-60-20000       | 391-3381-046 |
| 23          | CONTINENTAL SHAFT BRG. RETAINER SNAP RING (MAY NOT BE REQUIRED) | X05-02-35120       | 391-2685-040 |
| Not Shown   | SEAL RETAINER FOR 51/51 PIGGY BACK PUMP S.E.C.                  | A30-60-10001       | 391-2584-063 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                 | X81-11-04704       | 391-2881-124 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                 | X81-11-05704       | 391-2881-120 |
| Not Shown   | SEAL RETAINER FOR 76/51 PIGGY BACK PUMP S.E.C.                  | A50-60-10003       | 391-2585-013 |
| Not Shown   | DRY VALVE SEAL RETAINER   | A50-60-10001       | 391-2584-050 |
| Not Shown   | CASE DRAIN PLUG   | X02-03-22060       | 391-2282-056 |
| Not Shown   | PUMP LIP SEAL FOR PIGGY BACK S.E.C. & P.E.C.                    | X83-11-02708       | 391-2883-058 |
| Not Shown   | SHAFT KEY FOR TYPE 73 SHAFT                                     | X01-01-81257       | 391-1781-008 |
| Not Shown   | SHAFT KEY FOR TYPE 43 SHAFT                                     | X01-01-61032       | 391-1781-021 |
| Not Shown   | SHAFT KEY FOR TYPE 11 SHAFT                                     | X01-01-81238       | 391-1781-045 |
| Not Shown   | 50/50 PIGGY BACK CONNECTING SHAFT                               | A41-50-00400       | 313-1133-004 |
| Not Shown   | 75/50 PIGGY BACK CONNECTING SHAFT                               | A42-50-00400       | 313-1133-003 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A50-50-XX000 changes to A50-50-15000 for 1.5" gear size  
 Housing no. A25-32-XX000 changes to A25-32-15000 for a 1.5" housing size  
 No porting sizes have been indicated all porting must be specified when ordering parts.

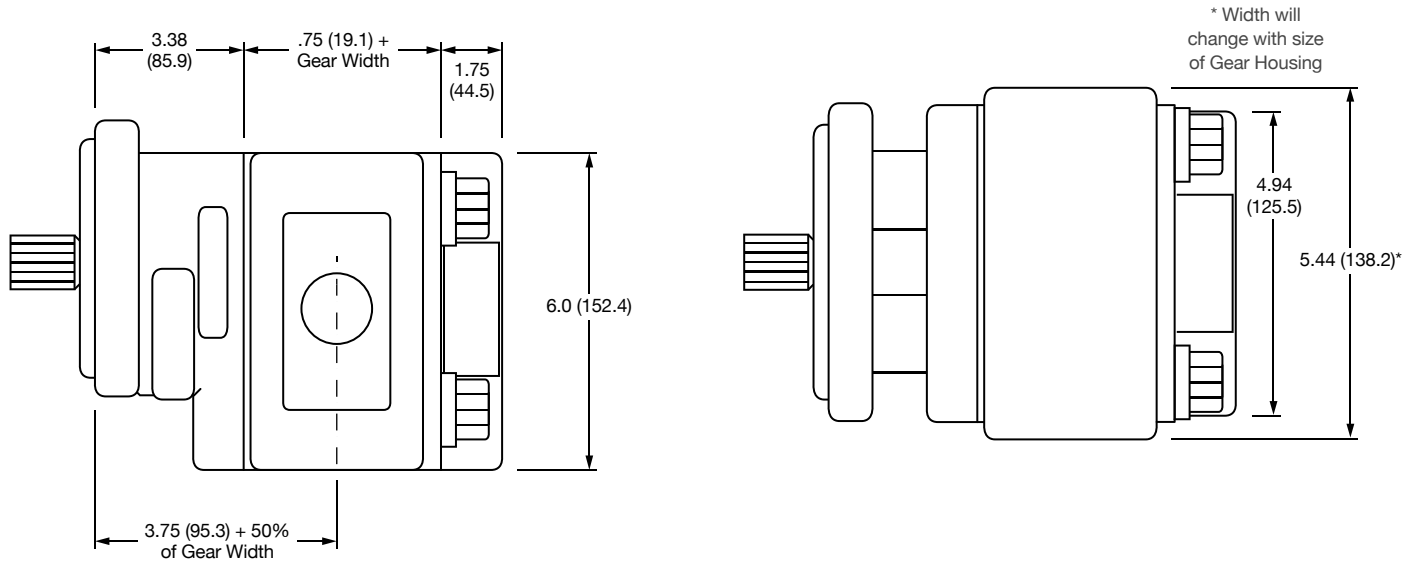


# MH50 Series

## Dimensions

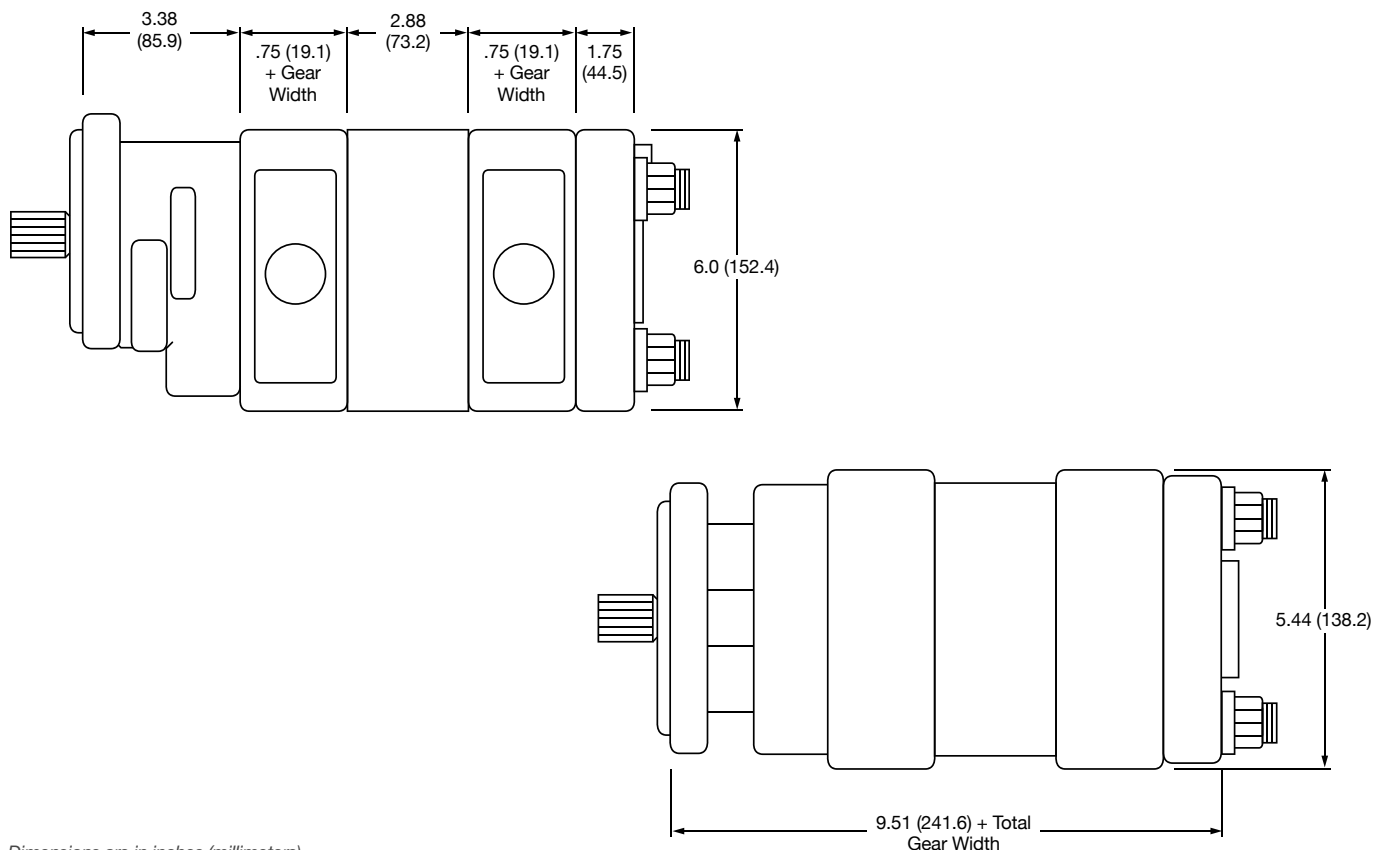
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH51 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH51       |        | DISPLACEMENT         |                        | MAX PRESSURE (DOWELLED) |       |
|------------|--------|----------------------|------------------------|-------------------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI                     | BAR   |
| .75        | 3/4"   | 1.91                 | (31.3)                 | 3000                    | (207) |
| 1.00       | 1"     | 2.55                 | (41.8)                 | 3000                    | (207) |
| 1.25       | 1-1/4" | 3.19                 | (52.2)                 | 3000                    | (207) |
| 1.50       | 1-1/2" | 3.83                 | (62.7)                 | 3000                    | (207) |
| 1.75       | 1-3/4" | 4.46                 | (73.1)                 | 3000                    | (207) |
| 2.00       | 2"     | 5.10                 | (83.6)                 | 2500                    | (172) |
| 2.25       | 2-1/4" | 5.74                 | (94.0)                 | 2500                    | (172) |
| 2.50       | 2-1/2" | 6.38                 | (104.5)                | 2500                    | (172) |

# MH51 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |            |            |            |            |            |
|-----------|----------------------|-------------|------------|------------|------------|------------|------------|
|           | 1"                   | 1-1/4"      | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"     | 2-1/2"     |
| 900       | 8.5 / 32             | 10.5 / 39.5 | 13 / 49    | 15 / 57    | 17.5 / 66  | 20 / 75.5  | 22 / 83.5  |
| 1200      | 12 / 46.5            | 15 / 57     | 18 / 68    | 21 / 79.5  | 24 / 91    | 27 / 102   | 30 / 114   |
| 1500      | 15 / 57              | 19 / 72     | 23 / 87    | 27 / 102   | 31 / 117   | 35 / 132   | 39 / 146   |
| 1800      | 18 / 68              | 23 / 87     | 27.5 / 104 | 32.5 / 123 | 37.5 / 142 | 42 / 159   | 47 / 178   |
| 2100      | 21.5 / 81.5          | 27 / 102    | 32.5 / 123 | 38.5 / 146 | 44 / 167   | 48.5 / 187 | 55 / 208   |
| 2400      | 25 / 94.5            | 31 / 117    | 37 / 140   | 44 / 167   | 51 / 193   | 57 / 216   | 63.5 / 240 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             | 2-1/2"               |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 10.5 / 40            | 825 / 9.5                   | 15.5 / 58.5          | 1310 / 15                   | 21 / 79.5            | 1810 / 21                   | 26 / 98.5            | 2330 / 27                   |
| 1200      | 15.5 / 58.5          | 850 / 10                    | 22.5 / 85            | 1340 / 15.5                 | 30.5 / 115           | 1830 / 21                   | 37.5 / 142           | 2340 / 27                   |
| 1600      | 20 / 75.5            | 830 / 9.5                   | 30 / 114             | 1330 / 15.5                 | 40 / 151             | 1805 / 21                   | 49.5 / 187           | 2300 / 26.5                 |
| 2000      | 25 / 94.5            | 800 / 9                     | 37 / 140             | 1290 / 15                   | 49 / 185             | 1770 / 20.5                 | 61.5 / 233           | 2250 / 25                   |

**Note:** Input Flow @ 2500psi | Output Torque @ 175 bar

## MH51 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 9,900    | 8,000     |
| SAE "BB" Keyed   | 6,600    | 6,600     |
| SAE "B" Spline   | 6,400    | 6,400     |
| SAE "B" Keyed    | 5,750    | 5,750     |
| SAE "C" Spline   | 13,850   | 8,000     |
| SAE "C" Keyed    | 13,000   | 8,000     |
| Connecting Shaft |          | 8,000     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH51 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10  
**MHP - 51 - A - 1 - 78 - ME - AB - 10 - 25 - DB - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
3 = Pump w/o Shaft Bearing (Double Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
6 = Pump w/ Shaft Bearing (Double Rotation)  
8 = Motor w/ Shaft Bearing & 1/4" Drain Port  
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

00 = Pad Mount  
42 = SAE 4-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount  
91 = 51/51 Piggyback Mount  
92 = 76/51 Piggyback Mount  
96 = SAE 2-Bolt "B" Mount (Type 2)  
97 = SAE 2-Bolt "B" Mount  
98 = SAE 2-Bolt "C" Mount  
99 = SAE 2-Bolt "C" Mount (Type 2)

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| BE   BY      | BI   BJ      | None      | None  | n/a  | n/a  |
| KE   KY      | KI   KJ      | 3/4"      | None  | n/a  | 1.38 |
| LE   LY      | LI   LJ      | None      | 3/4"  | 1.38 | n/a  |
| ME   MY      | MI   MJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

#### O-ring Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| CE   CY      | CI   CJ      | 3/4"      | None  | n/a  | 1.38 |
| DE   DY      | DI   DJ      | None      | 3/4"  | 1.38 | n/a  |
| FE   FY      | FI   FJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

#### Metric Str. Thd. Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| NE           | NI   NJ      | 3/4"      | None  | n/a  | 1.38 |
| PE           | PI   PJ      | None      | 3/4"  | 1.38 | n/a  |
| QE           | QI   QJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

#### BSPP Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| WE           | WI   WJ      | 3/4"      | None  | n/a  | 1.38 |
| XE           | XI   XJ      | None      | 3/4"  | 1.38 | n/a  |
| ZE           | ZI   ZJ      | 3/4"      | 3/4"  | 1.38 | 1.38 |

↑ ↑ ↑ ↑  
With Support Studs  
Without Support Studs

Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 96 for Bearing Carrier options

### Shaft Type <sup>8</sup>

07 = SAE "C" 14 Tooth Spline 1.25" Dia. Type 1  
11 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 1-1/2" Key  
25 = SAE "B" 13 Tooth Spline .875" Dia.  
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key  
53 = SAE "C" 14 Tooth Spline 1.25" Dia. Type 2  
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2  
67 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key Type 2  
73 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 2-1/4" Key  
98 = SAE "BB" 15 Tooth Spline 1" Dia. (Cont. Only)

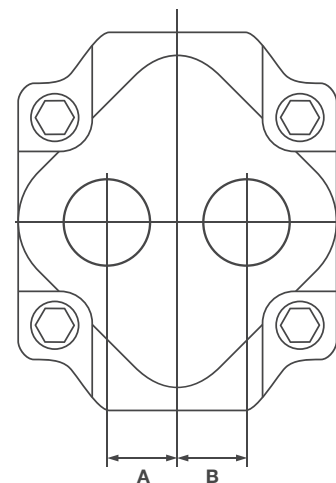
### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

| 07     | 10     | 12     | 15     | 17     | 20     | 22     | 25     |
|--------|--------|--------|--------|--------|--------|--------|--------|
| (1.91) | (2.55) | (3.19) | (3.83) | (4.46) | (5.10) | (5.74) | (6.38) |

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options



# MH51 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| IC   | 3/4"      | None     |   |   | x  |    |    |    |    |    |    |
| ID   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| IF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| IG   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| IH   | 3/4"      | 1-1/4"   |   |   |    |    | x  |    |    |    |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| IK   | 1-1/4"    | 3/4"     |   |   |    |    | x  |    |    |    |    |
| YC   | 1"        | None     |   |   |    | x  | x  | x  | x  | x  |    |
| YD   | None      | 1"       |   |   |    | x  | x  | x  | x  | x  |    |
| YF   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| YG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  |    |
| YH   | 1"        | 1-1/2"   |   |   |    |    |    |    |    |    | x  |
| YJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| YK   | 1-1/2"    | 1"       |   |   |    |    |    |    |    |    | x  |
| IA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  | x  | x  |
| IB   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| YL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    | x  | x  | x  | x  |
| YM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  |
| YP   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| YR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| YA   | 1-1/2"    | None     |   |   |    |    |    |    | x  | x  | x  |
| YB   | None      | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| YN   | 3/4"      | None     |   |   | x  | x  |    |    |    |    |    |
| YQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| YS   | 3/4"      | 3/4"     |   |   |    | x  | x  |    |    |    |    |
| YT   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   | x  | x  | x  | x  |    |    |    |
| YV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| YW   | 1-1/4"    | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| SL   | 1"        | None     |   |   | x  | x  | x  |    |    |    |    |
| RQ   | None      | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| MP   | 1"        | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| VY   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| IX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |    |    |
| UI   | None      | 1-1/4" * |   |   |    |    |    |    |    | x  | x  |
| PF   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    |    | x  | x  |
| IQ   | 1-1/4"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  |
| IS   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Metric Str. Thd. Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| EN   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |    |    |
| TQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| ES   | 3/4"      | 3/4"     |   |   | x  | x  |    |    |    |    |    |
| ET   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |    |    |
| EV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| NL   | 1"        | None     |   |   |    |    | x  | x  | x  | x  |    |
| ER   | None      | 1"       |   |   |    |    | x  | x  | x  | x  |    |
| CM   | 1"        | 1"       |   |   |    |    | x  | x  | x  |    |    |
| VE   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| EX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| UA   | None      | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| PA   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| QA   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  |
| SA   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |

\* Low Pressure Inlet Porting

# MH51 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### O.D. Tube Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| EC   | 3/4"      | None     |   |   | x  | x  | x  | x  | x  |    |    |
| ED   | None      | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| EF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| EG   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| EH   | 3/4"      | 1-1/4"   |   |   |    |    | x  | x  |    |    |    |
| EJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| EK   | 1-1/4"    | 3/4"     |   |   |    |    | x  | x  |    |    |    |
| AC   | 1"        | None     |   |   | x  | x  | x  | x  |    |    |    |
| AD   | None      | 1"       |   |   | x  | x  | x  | x  |    |    |    |
| AF   | 1"        | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| AG   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| AH   | 1"        | 1-1/2"   |   |   |    |    |    | x  | x  | x  |    |
| AJ   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| AK   | 1-1/2" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| AL   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| AM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  |
| AP   | 1-1/2" *  | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| AR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  |
| AA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  | x  | x  |
| AO   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| AE   | 1-1/2" *  | None     |   |   |    |    |    |    | x  | x  |    |
| AU   | None      | 1-1/2" * |   |   |    |    |    |    | x  | x  |    |

\* Low Pressure Inlet Porting

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| UC   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |    |    |
| UD   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| UF   | 3/4"      | 3/4"     |   |   | x  | x  | x  | x  | x  | x  | x  |
| UG   | 3/4"      | 1"       |   |   | x  | x  | x  |    |    |    |    |
| UH   | 3/4"      | 1-1/4"   |   |   |    | x  | x  | x  |    |    |    |
| UJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| UK   | 1-1/4"    | 3/4"     |   |   |    | x  | x  | x  |    |    |    |
| OC   | 1"        | None     |   |   | x  | x  | x  | x  | x  | x  | x  |
| OD   | None      | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |
| OF   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| OG   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  |    |    |
| OH   | 1"        | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| OJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| OK   | 1-1/2" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  |
| OL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| OM   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| ON   | 1-1/4"    | 2"       |   |   |    |    |    |    | x  | x  | x  |
| OP   | 1-1/2" *  | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| OQ   | 2"        | 1-1/4"   |   |   |    |    |    |    |    | x  | x  |
| OR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| OS   | 1-1/2"    | 2"       |   |   |    |    |    |    |    | x  | x  |
| OV   | 2"        | 1-1/2"   |   |   |    |    |    |    |    | x  | x  |
| OX   | 2"        | 2"       |   |   |    |    |    |    |    |    | x  |
| OA   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  | x  | x  |
| OB   | None      | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  |
| OE   | 1-1/2" *  | None     |   |   |    |    |    | x  | x  | x  | x  |
| OU   | None      | 1-1/2" * |   |   |    |    |    | x  | x  | x  | x  |
| UB   | 1"        | 2"       |   |   |    |    |    |    |    | x  | x  |
| UQ   | 2"        | 1"       |   |   |    |    |    |    |    | x  | x  |
| XB   | 2"        | None     |   |   |    |    |    |    |    | x  | x  |
| ZB   | None      | 2"       |   |   |    |    |    |    |    | x  | x  |

\* Low Pressure Inlet Porting

# MH51 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### Metric Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  |
| VN   | 3/4"      | None     |   |   | x  | x  | x  | x  |    |    |    |
| VQ   | None      | 3/4"     |   |   | x  | x  | x  | x  |    |    |    |
| VS   | 3/4"      | 3/4"     |   |   | x  | x  | x  |    |    |    |    |
| VT   | 3/4"      | 1"       |   |   | x  | x  | x  | x  | x  |    |    |
| RV   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |
| RU   | 3/4"      | 1-1/4"   |   |   | x  | x  | x  |    |    |    |    |
| RW   | 1-1/4"    | 3/4"     |   |   | x  | x  | x  |    |    |    |    |
| UL   | 1"        | None     |   |   |    | x  | x  | x  | x  | x  |    |
| UR   | None      | 1"       |   |   |    | x  | x  | x  | x  | x  |    |
| UM   | 1"        | 1"       |   |   |    | x  | x  | x  | x  | x  |    |
| VU   | 1"        | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  | x  |
| UX   | 1-1/4" *  | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |
| HO   | 1"        | 1-1/2" * |   |   |    |    | x  | x  | x  |    |    |
| VO   | 1-1/2" *  | 1"       |   |   |    |    | x  | x  | x  |    |    |
| NO   | 1-1/4" *  | None     |   |   |    |    |    | x  | x  | x  | x  |
| UO   | None      | 1-1/4" * |   |   |    |    |    | x  | x  | x  | x  |
| PO   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| QO   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  | x  | x  | x  |
| SO   | 1-1/2" *  | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |
| JR   | 1-1/4"    |          |   |   |    |    |    |    | x  | x  | x  |
| JM   | 2"        | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  |
| UY   | 1-1/2" *  | None     |   |   |    |    | x  | x  | x  | x  |    |
| TO   | None      | 1-1/2" * |   |   |    |    | x  | x  | x  | x  |    |
| SV   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |
| JN   | 1-1/2"    | 2"       |   |   |    |    |    |    | x  | x  | x  |
| JQ   | 2"        | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  |

\* Low Pressure Inlet Porting

# MH51 Series Bearing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

**NPT Codes**

| In   | Out                              | CW (Left)                  | CCW (Right)                |
|--|----------------------------------|----------------------------|----------------------------|
| None<br>None                               | None<br>None                     | C<br>A                     | D<br>U                     |
| 1"<br>1-1/4"<br>1-1/2"                     | None<br>None<br>None             | TB<br>VB<br>WB             | BT<br>BV<br>BW             |
| 1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | TX<br>VX<br>WX<br>VZ<br>WZ | XT<br>XV<br>XW<br>ZV<br>ZW |
| 1"<br>1-1/4"<br>1-1/4"<br>1-1/2"           | 3/4"<br>3/4"<br>1"<br>1"         | TJ<br>VJ<br>VK<br>WK       | JT<br>JV<br>KV<br>KW       |
| 1"   | 3/4"                             | ZX                         | XZ                         |

**SAE Split Flange Codes**

| In   | Out                              | CW (Left)                        | CCW (Right)                      |
|--|----------------------------------|----------------------------------|----------------------------------|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None             | LB<br>MB<br>NB                   | BL<br>BM<br>BN                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>1"<br>1" | BR<br>LR<br>MR<br>NR<br>MS<br>NS | RB<br>RL<br>RM<br>RN<br>SM<br>SN |
| 1"<br>1-1/4"<br>1-1/4"<br>1-1/2"                   | 3/4"<br>3/4"<br>1"<br>1"         | LX<br>MX<br>MZ<br>NZ             | XL<br>XM<br>ZM<br>ZN             |
| 1"   | 3/4"                             | SR                               | RS                               |

**SAE O-ring Codes**

| In   | Out                                      | CW (Left)                        | CCW (Right)                      |
|--|--|----------------------------------|----------------------------------|
| 1"<br>1-1/4"<br>1-1/2"                             | None<br>None<br>None                     | CB<br>DB<br>FB                   | BC<br>BD<br>BF                   |
| None<br>1"<br>1-1/4"<br>1-1/2"<br>1-1/4"<br>1-1/2" | 3/4"<br>3/4"<br>3/4"<br>3/4"<br>1"<br>1" | PJ<br>CJ<br>DJ<br>FJ<br>DK<br>FK | JP<br>JC<br>JD<br>JF<br>KD<br>KF |
| 1"   | 3/4"                                     | CR                               | RC                               |

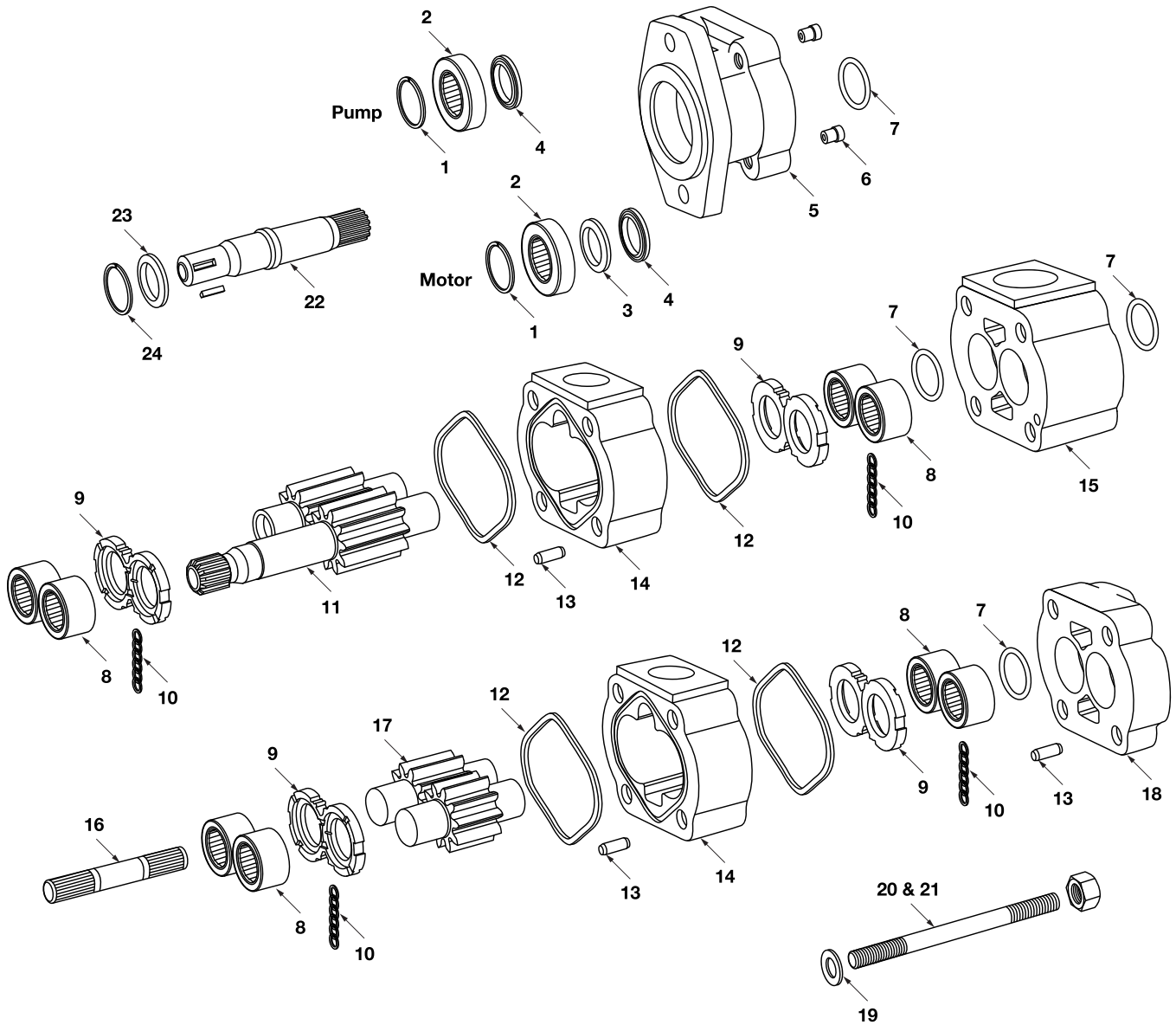
**Motors Only Codes**

| In   | Out  | Dual   |   |
|--|--|--|---|
| None   | None   | B  |   |
| 1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | 1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2"<br>1"<br>1-1/4"<br>1-1/2" | TT<br>VV<br>WW<br>CC<br>BB<br>FF<br>LL<br>MM<br>NN | NPT<br>NPT<br>NPT<br>SAE O-Ring<br>SAE O-Ring<br>SAE O-Ring<br>SAE Split Flange<br>SAE Split Flange<br>SAE Split Flange |



# MH51 Series

## Parts Breakdown



# MH51 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|-------------|--|--------------|--------------|
| 1           | SHAFT BRG. SNAP RING   | X05-03-77250 | 391-2686-065 |
| 2a          | BEARING SPACER & SEAL RETAINER FOR MOTORS                                      | A50-60-10000 | 391-3383-087 |
| 2b          | INPUT SHAFT BEARING  | X03-16-13272 | 391-0381-077 |
| 3           | MOTOR SEAL RETAINER USED WITH SHAFT BEARING                                    | A50-60-30000 | 391-3383-020 |
| 4a          | PUMP LIP SEAL  | X83-11-03308 | 391-2883-103 |
| 4b          | MOTOR LIP SEAL   | X84-36-03309 | 391-2883-115 |
| 4c          | PUMP LIP SEAL FOR CONTINENTIAL SHAFT ONLY                                      | X89-11-03308 | 391-2883-133 |
| 5a          | 51 PAD PILOT PUMP SHAFT END COVER TYPE 00                                      | A51-10-21100 | 313-5017-201 |
| 5b          | 51 4 BOLT B PILOT PUMP SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)          | A51-10-21420 | 313-5037-201 |
| 5c          | 51 4 BOLT C PILOT PUMP SHAFT END COVER TYPE 78 (5" or 127 mm pilot)            | A51-10-21430 | 313-5037-202 |
| 5d          | 51 2 BOLT B PILOT PUMP SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)          | A51-10-21220 | 313-5027-201 |
| 5e          | 51 2 BOLT C PILOT PUMP SHAFT END COVER TYPE 98 (5" or 127 mm pilot)            | A51-10-21230 | 313-5027-202 |
| 5f          | 51 2 BOLT B (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 96 (4" or 101.6 mm pilot) | A51-10-22220 | 313-5027-205 |
| 5g          | 51 2 BOLT C (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 99 (5" or 127 mm pilot)   | A51-10-22230 | 313-5027-206 |
| 5h          | 51/51 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91                              | A43-10-21500 | 313-5027-208 |
| 5i          | 76/51 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92                              | A44-10-21500 | 313-5027-209 |
| 5j          | 51 PAD PILOT MOTOR SHAFT END COVER TYPE 00                                     | A51-10-41100 | 313-5017-401 |
| 5k          | 51 4 BOLT B PILOT MOTOR SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)         | A51-10-41420 | 313-5037-401 |
| 5l          | 51 4 BOLT C PILOT MOTOR SHAFT END COVER TYPE 78 (5" or 127 mm pilot)           | A51-10-41430 | 313-5037-402 |
| 5m          | 51 2 BOLT B PILOT MOTOR SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)         | A51-10-41220 | 313-5027-401 |
| 5n          | 51 2 BOLT C PILOT MOTOR SHAFT END COVER TYPE 98 (5" or 127 mm pilot)           | A51-10-41230 | 313-5027-402 |
| 6a          | CHECK VALVE MOTOR  | A00-75-11000 | 391-3681-001 |
| 6b          | PRESSURE PLUG PUMP   | X02-03-32110 | 391-2286-004 |
| 7           | RING SEAL  | X81-76-03305 | 391-2585-009 |
| 8           | ROLLER BEARING (Ø 1.937" O.D.)   | X03-24-13349 | 391-0381-059 |
| 9a          | PUMP THRUST PLATE  | A51-70-20000 | 391-2185-029 |
| 9b          | MOTOR THRUST PLATE   | A25-70-10000 | 391-2185-012 |
| 9c          | DRY VALVE THRUST PLATE   | A50-70-10000 | 391-2185-041 |
| 10          | POCKET SEAL  | X85-11-00002 | 391-2882-050 |
| 11a         | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7                           | A50-50-XX245 | 313-29XX-250 |
| 11b         | SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11                                      | A50-50-XX145 | 313-29XX-750 |
| 11c         | SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25                       | A50-50-XX225 | 313-29XX-230 |
| 11d         | SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43             | A50-50-XX135 | 313-29XX-740 |
| 11e         | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 53 TYPE 2                   | A50-50-XX246 | 313-29XX-450 |
| 11f         | SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 65 TYPE 2                | A50-50-XX226 | 313-29XX-430 |
| 12          | PUMP & MOTOR HOUSING GASKET  | X85-11-10803 | 391-2884-021 |

# MH51 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #          | ALTERNATE #  |
|-------------|--|--------------------|--------------|
| 13          | HOUSING DOWEL PIN  | A00-94-11025       | 391-2082-032 |
| 14          | PUMP & MOTOR GEAR HOUSING                                      | A51-32-XX000       | 313-82XX-100 |
| 15a         | 51 MOTOR BEARING CARRIER BLANK                                 | A51-40-00000       | 313-7740-100 |
| 15b         | 51 PUMP BEARING CARRIER WITH COMMON PASSAGE                    | A51-40-20000       | 313-7723-100 |
| 16          | CONNECTING SHAFT   | A50-50-00500       | 313-1133-001 |
| 17          | GEAR SET ONLY  | A50-50-XX000       | 313-28XX-000 |
| 18a         | 51 PUMP & MOTOR PORT END COVER                                 | A51-22-00000       | 313-3120-100 |
| 18b         | 51 PUMP & MOTOR PORT END COVER SPECIAL LARGER PORTING          | A51-27-00000       | 313-3420-100 |
| 18c         | 51 PIGGY BACK REAR PORT END COVER                              | A51-22-03000       | 313-5027-212 |
| 19          | FLAT WASHER (5/8")   | X45-10-17005       | 391-3784-028 |
| 20          | BOLTS / STUDS (5/8"-UNC)                                       | See Fasteners Page |              |
| 21          | HEX NUT (5/8"-UNC)   | X42-11-16000       | 391-1451-076 |
| 22a         | CONTINENTAL SHAFT TYPE 11 (1.250" Ø KEYED 5/16")               | A50-50-00141       | 313-1500-500 |
| 22b         | CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14 TOOTH SPLINE)          | A50-50-00241       | 313-1135-194 |
| 22c         | CONTINENTAL SHAFT TYPE 25 (0.875" Ø- 13 TOOTH SPLINE)          | A50-50-00221       | 313-1000-300 |
| 22d         | CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key) | A50-50-00131       | 313-1500-400 |
| 22e         | CONTINENTAL SHAFT TYPE 73 LONG (1.250" Ø KEYED 5/16")          | A50-50-00147       | 313-1500-502 |
| 23          | CONTINENTAL SHAFT BRG. RETAINER (MAY NOT BE REQUIRED)          | A50-60-20000       | 391-3381-046 |
| 24          | CONTINENTAL SHAFT BRG. RETAINER SNAP RING (MAY NOT BE REQ)     | X05-02-35120       | 391-2685-040 |
| Not Shown   | SEAL RETAINER FOR 51/51 PIGGY BACK PUMP S.E.C.                 | A30-60-10001       | 391-2584-063 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                | X81-11-04704       | 391-2881-124 |
| Not Shown   | SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.                | X81-11-05704       | 391-2881-120 |
| Not Shown   | SEAL RETAINER FOR 76/51 PIGGY BACK PUMP S.E.C.                 | A50-60-10003       | 391-2585-013 |
| Not Shown   | CASE DRAIN PLUG  | X02-03-22060       | 391-2282-056 |
| Not Shown   | DRY VALVE SEAL RETAINER  | A50-60-10001       | 391-2584-050 |
| Not Shown   | PUMP LIP SEAL FOR PIGGY BACK S.E.C.& P.E.C.                    | X83-11-02708       | 391-2883-058 |
| Not Shown   | SHAFT KEY FOR TYPE 73 SHAFT                                    | X01-01-81257       | 391-1781-008 |
| Not Shown   | SHAFT KEY FOR TYPE 43 SHAFT                                    | X01-01-61032       | 391-1781-021 |
| Not Shown   | SHAFT KEY FOR TYPE 11 SHAFT                                    | X01-01-81238       | 391-1781-045 |
| Not Shown   | 50/50 PIGGY BACK CONNECTING SHAFT                              | A41-50-00400       | 313-1133-004 |
| Not Shown   | 75/50 PIGGY BACK CONNECTING SHAFT                              | A42-50-00400       | 313-1133-003 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

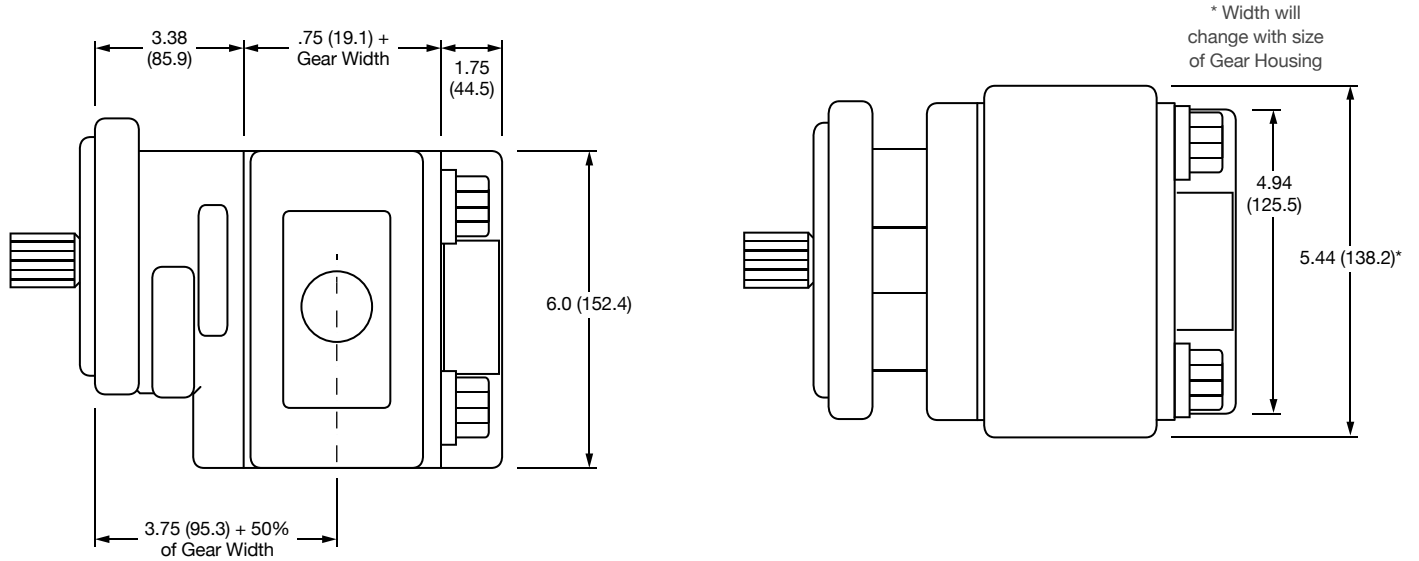
For example: Gear set no. A50-50-XX000 changes to A50-50-15000 for 1.5" gear size  
Housing no. A51-32-XX000 changes to A51-32-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH51 Series

## Dimensions

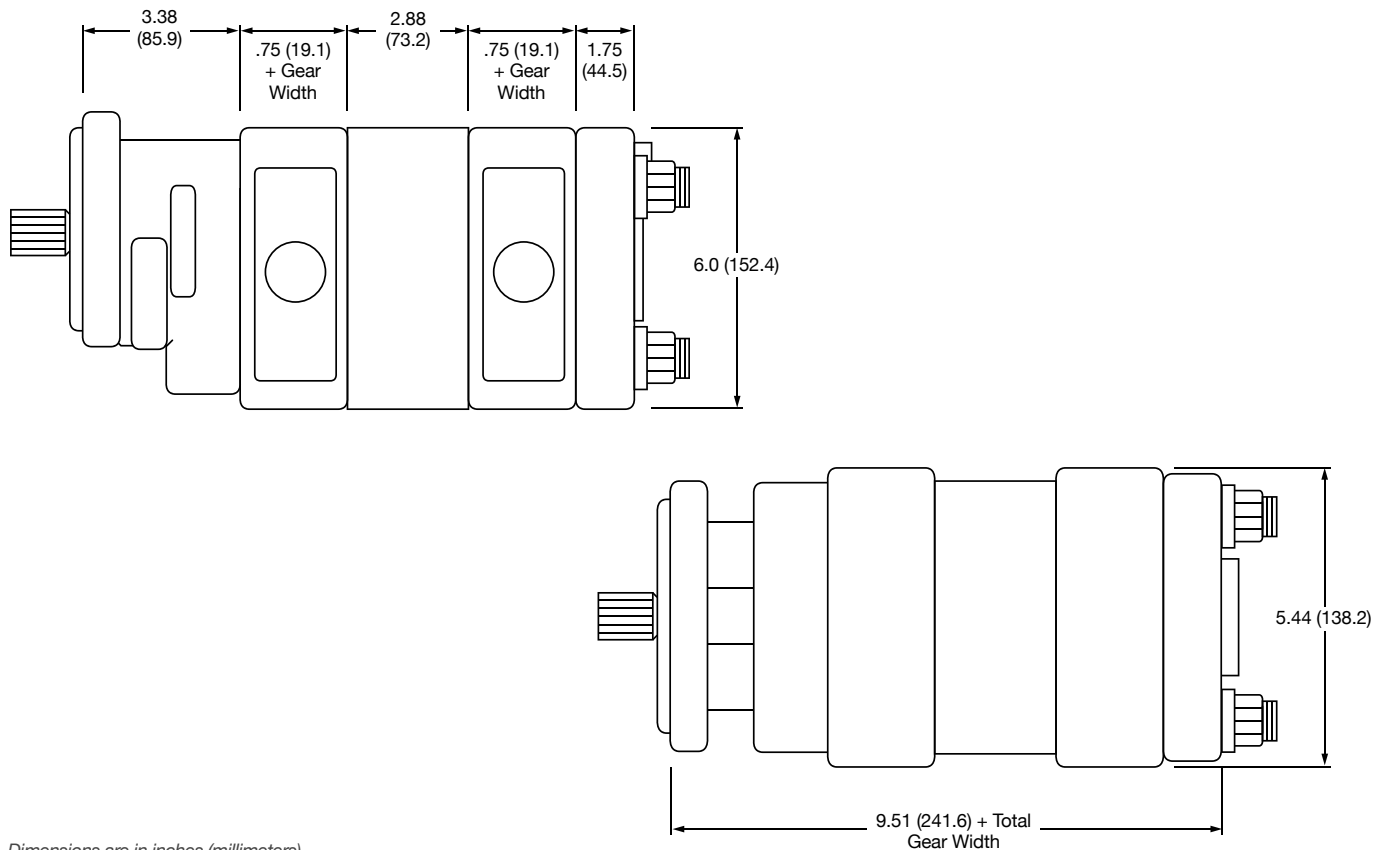
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH75 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH75       |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .75        | 3/4"   | 3.07                 | (50.3)                 | 2500         | (172) |
| 1.00       | 1"     | 4.1                  | (67.2)                 | 2500         | (172) |
| 1.25       | 1-1/4" | 5.12                 | (83.9)                 | 2500         | (172) |
| 1.50       | 1-1/2" | 6.15                 | (100.7)                | 2500         | (172) |
| 1.75       | 1-3/4" | 7.17                 | (117.5)                | 2500         | (172) |
| 2.00       | 2"     | 8.2                  | (134.3)                | 2500         | (172) |
| 2.25       | 2-1/4" | 9.22                 | (151)                  | 2250         | (155) |
| 2.50       | 2-1/2" | 10.25                | (167.8)                | 2250         | (155) |
| 2.75       | 2-3/4" | 11.28                | (185)                  | 2000         | (137) |
| 3.00       | 3"     | 12.3                 | (201)                  | 2000         | (137) |

# MH75 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |            |            |            |              |              |             |           |
|-----------|----------------------|-------------|------------|------------|------------|--------------|--------------|-------------|-----------|
|           | 1"                   | 1-1/4"      | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"       | 2-1/2"       | 2-3/4"      | 3"        |
| 900       | 11.5 / 43.5          | 15.5 / 58.5 | 19.5 / 74  | 23 / 87    | 27 / 102   | 30.5 / 115.5 | 34.5 / 130.5 | 38 / 144    | 42 / 159  |
| 1200      | 17 / 64.5            | 22 / 83.5   | 27 / 102   | 32 / 121   | 37.5 / 141 | 42 / 159     | 48 / 182     | 452.5 / 199 | 58 / 220  |
| 1500      | 22 / 83.5            | 29 / 110    | 35.5 / 134 | 41.5 / 157 | 48 / 182   | 54.5 / 206   | 61 / 231     | 67 / 254    | 74 / 280  |
| 1800      | 27.5 / 104           | 35.5 / 134  | 43.5 / 165 | 51 / 193   | 59 / 223   | 66 / 250     | 74 / 280     | 81.5 / 308  | 90 / 341  |
| 2100      | 33 / 125             | 42 / 159    | 51.5 / 195 | 60 / 227   | 69.5 / 263 | 78 / 295     | 87 / 329     | 96.5 / 365  | 106 / 401 |
| 2400      | 38 / 144             | 49 / 185    | 59.5 / 225 | 70 / 265   | 80 / 303   | 90 / 341     | 101 / 382    | 111 / 420   | 122 / 462 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             | 2-1/2"               |                             | 3"                   |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 20.5 / 77.5          | 1050 / 12                   | 28 / 106             | 1650 / 19                   | 35.5 / 134           | 2200 / 25.5                 | 43 / 163             | 2875 / 33                   | 50.5 / 191           | 3625 / 42                   |
| 1200      | 27.5 / 104           | 1025 / 12                   | 38 / 144             | 1600 / 18.5                 | 49.5 / 187           | 2200 / 25.5                 | 60.5 / 229           | 2850 / 33                   | 72 / 273             | 3575 / 41                   |
| 1600      | 34 / 129             | 1000 / 11.5                 | 49 / 185             | 1575 / 18                   | 64 / 242             | 2175 / 25                   | 78.5 / 297           | 2800 / 32.5                 | 93 / 352             | 3500 / 40.5                 |
| 2000      | 41.5 / 157           | 950 / 11                    | 59 / 223             | 1550 / 18                   | 78 / 295             | 2175 / 25                   | 96.5 / 365           | 2750 / 31.5                 | 114 / 431            | 3425 / 39.5                 |

**Note:** Input Flow @ 2000psi | Output Torque @ 140 bar

## MH75 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 7,750    | 7,750     |
| SAE "BB" Keyed   | 5,550    | 5,550     |
| SAE "B" Spline   | 5,050    | 5,050     |
| SAE "B" Keyed    | 3,700    | 3,700     |
| SAE "C" Spline   | 8,600    | 7,750     |
| SAE "C" Keyed    | 8,300    | 7,750     |
| Connecting Shaft |          | 7,750     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH75 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1 2 3 4 5 6 7 8 9 6 7 10  
**MHP - 75 - A - 1 - 78 - BE - AB - 10 - 11 - DB - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
3 = Pump w/o Shaft Bearing (Double Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
6 = Pump w/ Shaft Bearing (Double Rotation)  
8 = Motor w/ Shaft Bearing & 1/4" Drain Port  
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

42 = SAE 4-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount  
80 = SAE 4-Bolt "D" Mount  
98 = SAE 2-Bolt "C" Mount

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A   | B   |
|--------------|--------------|-----------|-------|-----|-----|
|              |              | Left      | Right |     |     |
| BE   BY      | BI   BJ      | None      | None  | n/a | n/a |

↑ ↑ ↑ ↑ With Support Studs  
 ↑ ↑ Without Support Studs  
 Orientation is viewed from the shaft end

#### O-ring Ports Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| JE   JY      | JI   JY      | 1"        | 1"    | 1.62 | 1.62 |

↑ ↑ ↑ ↑ With Support Studs  
 ↑ ↑ Without Support Studs  
 Orientation is viewed from the shaft end

#### Metric Str. Thd. Ports

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| TE   TY      | TI   TY      | 1"        | 1"    | 1.62 | 1.62 |

↑ ↑ ↑ ↑ With Support Studs  
 ↑ ↑ Without Support Studs  
 Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 106 for Bearing Carrier options

### Shaft Type <sup>8</sup>

07 = SAE "C" 14 Tooth Spline 1.250 Dia.  
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2"  
Key

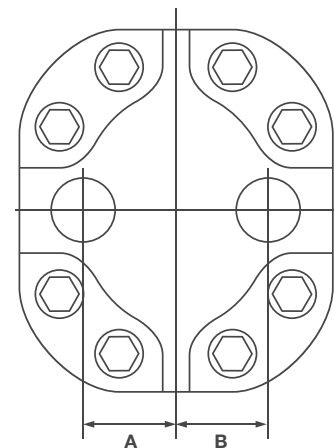
### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 07     | 10     | 12     | 15     | 17     | 20     | 22     | 25     | 27     | 30     |
| (3.07) | (4.10) | (5.12) | (6.15) | (7.17) | (8.20) | (9.22) | (10.3) | (11.3) | (12.3) |

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options



# MH75 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| IC   | 3/4"      | None     |   |   |    |    |    |    |    |    |    |    |    |
| ID   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| IF   | 3/4"      | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| IG   | 3/4"      | 1"       |   |   | x  |    |    |    |    |    |    |    |    |
| IH   | 3/4"      | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  |    |    |    |    |    |    |
| IK   | 1-1/4"    | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| YC   | 1"        | None     |   |   |    |    |    |    | x  |    |    |    |    |
| YD   | None      | 1"       |   |   |    | x  | x  | x  | x  |    |    |    |    |
| YF   | 1"        | 1"       |   |   | x  | x  |    |    |    |    |    |    |    |
| YG   | 1"        | 1-1/4" * |   |   |    | x  | x  |    |    |    |    |    |    |
| YH   | 1"        | 1-1/2"   |   |   |    |    |    |    |    |    |    |    |    |
| YJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| YK   | 1-1/2"    | 1"       |   |   |    |    |    |    |    |    |    |    |    |
| YL   | 1-1/4"    | 1-1/4"   |   |   |    | x  | x  | x  |    |    |    |    |    |
| YM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    |    |    |    |    |    |
| YP   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| YR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    |    |    |    |

\* Low Pressure Inlet Porting

#### O.D. Tube Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| EC   | 3/4"      | None     |   | x | x  | x  | x  |    |    |    |    |    |    |
| ED   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| EF   | 3/4"      | 3/4"     |   | x |    |    |    |    |    |    |    |    |    |
| EG   | 3/4"      | 1"       |   | x |    | x  | x  |    |    |    |    |    |    |
| EH   | 3/4"      | 1-1/4"   |   |   | x  |    |    |    |    |    |    |    |    |
| EJ   | 1"        | 3/4"     |   | x |    | x  | x  |    |    |    |    |    |    |
| EK   | 1-1/4"    | 3/4"     |   |   | x  |    |    |    |    |    |    |    |    |
| AC   | 1"        | None     |   |   |    |    |    |    |    |    |    |    |    |
| AD   | None      | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| AF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| AG   | 1"        | 1-1/4" * |   |   | x  | x  |    |    |    |    |    |    |    |
| AH   | 1"        | 1-1/2"   |   |   |    |    | x  |    |    |    |    |    |    |
| AJ   | 1-1/4" *  | 1"       |   |   | x  | x  |    |    |    |    |    |    |    |
| AK   | 1-1/2"    | 1"       |   |   |    |    | x  |    |    |    |    |    |    |
| AL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |    | x  |
| AM   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  |    |    |    |    |    |
| AP   | 1-1/2"    | 1-1/4"   |   |   |    |    | x  | x  |    |    |    |    |    |
| AR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    | x  |    | x  | x  |    |    |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| YN   | 3/4"      | None     |   |   | x  | x  |    |    |    |    |    |    |    |
| YQ   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |    |    |    |    |
| YS   | 3/4"      | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| YT   | 3/4"      | 1"       |   | x |    |    |    |    |    |    |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| YV   | 1"        | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| YW   | 1-1/4"    | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| SL   | 1"        | None     |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| RQ   | None      | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| MP   | 1"        | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| VY   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  | x  | x  |
| IX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  | x  | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |    |    |    |    |
| UI   | None      | 1-1/4" * |   |   |    |    |    |    |    |    | x  | x  | x  |
| PF   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |    |    |
| IQ   | 1-1/4"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| IS   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| HW   | 1"        | 1-1/2"   |   |   |    |    |    | x  | x  |    |    |    |    |
| VI   | 1-1/2"    | 1"       |   |   |    |    |    | x  | x  |    |    |    |    |

\* Low Pressure Inlet Porting



# MH75 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| UC   | 3/4"      | None     |   | x | x  | x  | x  |    |    |    |    |    |    |
| UD   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| UF   | 3/4"      | 3/4"     |   | x |    |    |    |    |    |    |    |    |    |
| UG   | 3/4"      | 1"       |   | x | x  |    |    |    |    |    |    |    |    |
| UH   | 3/4"      | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| UJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| UK   | 1-1/4"    | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| OC   | 1"        | None     |   |   |    | x  |    |    |    |    |    |    |    |
| OD   | None      | 1"       |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| OF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |    | x  | x  | x  |
| OG   | 1"        | 1-1/4" * |   |   | x  | x  | x  |    |    |    |    |    |    |
| OH   | 1"        | 1-1/2" * |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| OJ   | 1-1/4" *  | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |    |    |
| OK   | 1-1/2" *  | 1"       |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| OL   | 1-1/4"    | 1-1/4"   |   |   |    | x  | x  | x  | x  | x  | x  | x  | x  |
| OM   | 1-1/4"    | 1-1/2" * |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| ON   | 1-1/4"    | 2"       |   |   |    |    |    | x  | x  | x  | x  | x  | x  |
| OP   | 1-1/2" *  | 1-1/4"   |   |   |    | x  | x  | x  | x  | x  | x  | x  | x  |
| OQ   | 2"        | 1-1/4"   |   |   |    |    |    | x  | x  | x  | x  | x  | x  |
| OR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OS   | 1-1/2"    | 2"       |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OT   | 1-1/2"    | 2-1/2"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| OV   | 2"        | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OW   | 2-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| OX   | 2"        | 2"       |   |   |    |    |    |    |    |    |    | x  | x  |
| OA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| UB   | 1"        | 2"       |   |   |    |    |    |    | x  |    |    |    |    |
| UQ   | 2"        | 1"       |   |   |    |    |    |    | x  |    |    |    |    |
| OB   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| OE   | 1-1/2" *  | None     |   |   |    |    |    |    | x  | x  |    |    |    |
| OU   | None      | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OY   | 2"        | 2-1/2"   |   |   |    |    |    |    |    |    |    |    | x  |
| OZ   | 2-1/2"    | 2"       |   |   |    |    |    |    |    |    |    |    | x  |
| UN   | 1-1/4"    | 2-1/2"   |   |   |    |    |    |    |    |    | x  |    |    |
| US   | 2-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |    |    |

\* Low Pressure Inlet Porting

#### Metric Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| VN   | 3/4"      | None     |   | x | x  | x  | x  |    |    |    |    |    |    |
| VQ   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| VS   | 3/4"      | 3/4"     |   | x | x  |    |    |    |    |    |    |    |    |
| VT   | 3/4"      | 1"       |   | x | x  |    |    |    |    |    |    |    |    |
| RU   | 3/4"      | 1-1/4"   |   |   | x  |    |    |    |    |    |    |    |    |
| RV   | 1"        | 3/4"     |   | x | x  | x  | x  | x  | x  |    |    |    |    |
| RW   | 1-1/4"    | 3/4"     |   |   | x  |    |    |    |    |    |    |    |    |
| UL   | 1"        | None     |   |   | x  | x  | x  | x  |    |    |    |    |    |
| UR   | None      | 1"       |   |   | x  | x  | x  | x  |    |    |    |    |    |
| UM   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| VU   | 1"        | 1-1/4" * |   |   | x  | x  |    |    |    |    |    |    |    |
| HO   | 1"        | 1-1/2" * |   |   |    | x  | x  |    |    |    |    |    |    |
| UX   | 1-1/4" *  | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |    |    |
| VO   | 1-1/2" *  | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| NO   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| UO   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| PO   | 1-1/4"    | 1-1/4"   |   |   |    | x  | x  | x  | x  | x  | x  | x  | x  |
| QO   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  | x  | x  |    |    |    |
| SO   | 1-1/2" *  | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  | x  | x  |
| JR   | 1-1/4"    | 2"       |   |   |    |    |    | x  | x  | x  | x  |    |    |
| JM   | 2"        | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  | x  |    |
| UY   | 1-1/2" *  | None     |   |   |    |    |    |    | x  | x  | x  |    |    |
| TO   | None      | 1-1/2" * |   |   |    |    |    |    |    | x  | x  | x  | x  |
| SV   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    | x  | x  | x  | x  |
| JN   | 1-1/2"    | 2"       |   |   |    |    |    |    |    | x  | x  | x  | x  |
| JQ   | 2"        | 1-1/2"   |   |   |    |    |    |    |    | x  | x  | x  | x  |
| JX   | 1-1/2"    | 2-1/2"   |   |   |    |    |    |    |    |    |    | x  | x  |
| LJ   | 2-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    |    | x  | x  |
| JS   | 2"        | 2"       |   |   |    |    |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Metric Str. Thd. Codes

| Code | Port Size |       | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|-------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None  | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| EN   | 3/4"      | None  |   | x | x  | x  | x  |    |    |    |    |    |    |
| TQ   | None      | 3/4"  |   | x | x  | x  | x  |    |    |    |    |    |    |
| ES   | 3/4"      | 3/4"  |   | x | x  |    |    |    |    |    |    |    |    |
| ET   | 3/4"      | 1"    |   | x |    |    |    |    |    |    |    |    |    |
| EV   | 1"        | 3/4"  |   | x | x  | x  | x  |    |    |    |    |    |    |
| NL   | 1"        | None  |   |   |    | x  | x  |    |    |    |    |    |    |
| ER   | None      | 1"    |   |   |    | x  | x  |    |    |    |    |    |    |
| CM   | 1"        | 1"    |   |   | x  | x  | x  |    |    |    |    |    |    |



\* Low Pressure Inlet Porting

# MH75 Series Bearing Pump









## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>







**NPT Codes**

| In   | Out  | CW (Left)   | CCW (Right)   |
|------|------|---|---|
| None | None |  |  |
| None | None | C<br>A  | D<br>U  |



**SAE Split Flange Codes**

| In     | Out  | CW (Left)   | CCW (Right)   |
|--------|------|---|---|
| 1"     | None |  |  |
| 1-1/4" | None | LB  | BL  |
| 1-1/2" | None | MB  | BM  |
|        |      | NB  | BN  |
| None   | 3/4" |  |  |
| 1"     | 3/4" | BR  | RB  |
| 1-1/4" | 3/4" | LR  | RL  |
| 1-1/2" | 3/4" | MR  | RM  |
| 1-1/4" | 1"   | NR  | RN  |
| 1-1/2" | 1"   | MS  | SM  |
|        |      | NS  | SN  |
| 1"     | 3/4" |  |  |
| 1-1/4" | 3/4" | LX  | XL  |
| 1-1/4" | 1"   | MX  | XM  |
| 1-1/2" | 1"   | MZ  | ZM  |
|        |      | NZ  | ZN  |
| 1"     | 3/4" |  |  |
|        |      | SR  | RS  |

**SAE O-ring Codes**

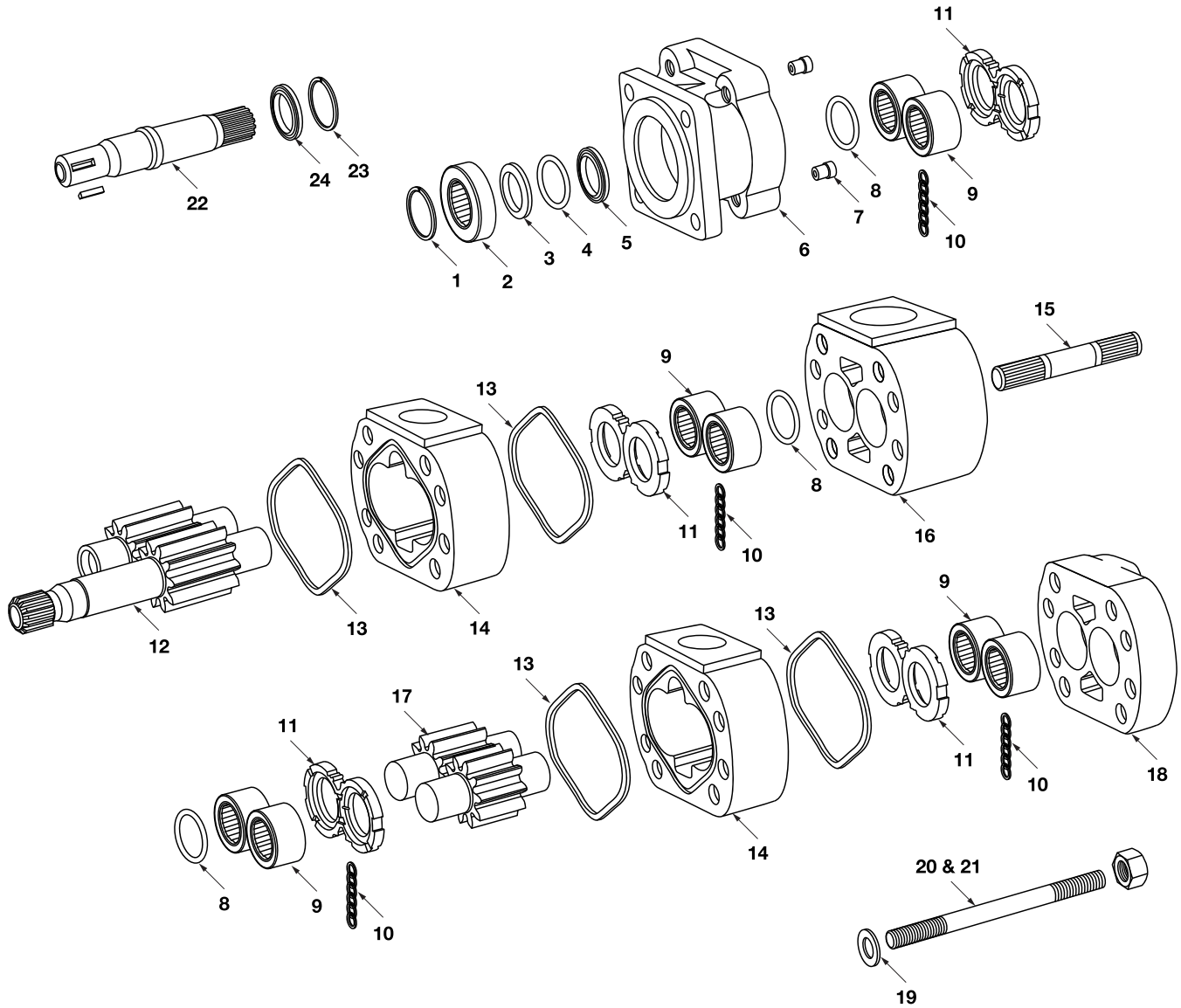
| In     | Out  | CW (Left)   | CCW (Right)   |
|--------|------|---|---|
| 1"     | None |  |  |
| 1-1/4" | None | CB  | BC  |
| 1-1/2" | None | DB  | BD  |
|        |      | FB  | BF  |
| None   | 3/4" |  |  |
| 1"     | 3/4" | PJ  | JP  |
| 1-1/4" | 3/4" | CJ  | JC  |
| 1-1/2" | 3/4" | DJ  | JD  |
| 1-1/4" | 1"   | FJ  | JF  |
| 1-1/2" | 1"   | DK  | KD  |
|        |      | FK  | KF  |
| 1"     | 3/4" |  |  |
| 1-1/4" | 3/4" | CR  | RC  |
| 1-1/2" | 3/4" | DR  | RD  |
| 1-1/4" | 1"   | FR  | RF  |
| 1-1/2" | 1"   | DS  | SD  |
|        |      | FS  | SF  |

**Motors Only Codes**

| In     | Out    | Dual  |  |
|--------|--------|---|--|
| None   | None   |  |  |
|        |        | B   |  |
| 1"     | 1"     |  | SAE O-Ring<br>SAE O-Ring<br>SAE Split Flange<br>SAE Split Flange<br>SAE Split Flange |
| 1-1/4" | 1-1/4" | CC  |  |
| 1"     | 1"     | BB  |  |
| 1-1/4" | 1-1/4" | LL  |  |
| 1-1/2" | 1-1/2" | MM  |  |
|        |        | NN  |  |

# MH75 Series

## Parts Breakdown



# MH75 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION   | METARIS #          | ALTERNATE #  |
|------------------|---|--------------------|--------------|
| 1                | SHAFT BRG. SNAP RING  | X05-01-88280       | 391-2686-025 |
| 2a               | INPUT SHAFT BRG.  | X03-16-13580       | 391-0381-078 |
| 2b               | SPACER TO REPLACE SHAFT BEARING                               | A75-92-64800       | 391-3383-018 |
| 3a               | SEAL RETAINER FOR PUMPS                                       | A75-60-10000       | 391-2584-082 |
| 3b               | SEAL RETAINER FOR MOTORS                                      | A75-60-10000       | 391-2584-051 |
| 4                | SEAL RETAINER O RING  | X81-11-06603       | 391-2881-457 |
| 5a               | PUMP LIP SEAL   | X83-11-03508       | 391-2883-052 |
| 5b               | MOTOR LIP SEAL  | X84-36-03510       | 391-2883-094 |
| 6a               | 75 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)  | A75-10-21420       | 316-5033-201 |
| 6b               | 75 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)    | A75-10-21430       | 316-5033-202 |
| 6c               | 75 4 BOLT D PILOT PUMP S.E.C. TYPE 80 (6" or 152.4 mm pilot)  | A75-10-21440       | 316-5033-203 |
| 6d               | 75 2 BOLT C PILOT PUMP S.E.C. TYPE 98 (5" or 127 mm pilot)    | A75-10-41230       | 316-5023-201 |
| 6e               | 75 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot) | A75-10-41420       | 316-5033-408 |
| 6f               | 75 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)   | A75-10-41430       | 316-5033-402 |
| 6g               | 75 4 BOLT D PILOT MOTOR S.E.C. TYPE 80 (6" or 152.4 mm pilot) | A75-10-41440       | 316-5033-403 |
| 6h               | 75 2 BOLT C PILOT MOTOR S.E.C. TYPE 98 (5" or 127 mm pilot)   | A75-10-41230       | 316-5023-202 |
| 7a               | CHECK VALVE MOTOR   | A00-75-11000       | 391-3681-001 |
| 7b               | PRESSURE PLUG PUMP  | X02-03-32110       | 391-2286-004 |
| 8                | RING SEAL   | X81-76-03809       | 391-2585-011 |
| 9                | ROLLER BEARING (Ø 2.322" O.D.)                                | X03-24-13859       | 391-0381-060 |
| 10               | POCKET SEAL   | X85-11-00003       | 391-2882-052 |
| 11a              | MOTOR & PUMP THRUST PLATE                                     | A75-70-10000       | 391-2185-020 |
| 11b              | DRY VALVE THRUST PLATE UNI DIR                                | A75-70-21000       | 391-2185-072 |
| 11c              | CM86 MHW75 THRUST PLATE WINCH MOTOR / Bi-Rot DV               | MPN106899          | -            |
| <b>Not Shown</b> | DRY VALVE THRUST PLATE SEAL                                   | A75-82-96010       | 391-2885-040 |
| 12a              | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7          | A75-50-XX245       | 316-29XX-250 |
| 12b              | SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11                     | A75-50-10145       | 316-29XX-750 |
| 13               | PUMP & MOTOR HOUSING GASKET                                   | X85-11-13303       | 391-2884-024 |
| 14               | PUMP & MOTOR GEAR HOUSING                                     | A75-32-XX000       | 316-80XX-100 |
| 15               | CONNECTING SHAFT  | A75-50-00500       | 316-1133-001 |
| 16a              | 75 MOTOR BEARING CARRIER BLANK                                | A75-40-00000       | 316-7300-100 |
| 16b              | 75 PUMP BEARING CARRIER WITH COMMON PASSAGE                   | A75-40-20000       | 316-7363-100 |
| 17               | GEAR SET ONLY   | A75-50-XX000       | 316-28XX-000 |
| 18               | 75 PUMP & MOTOR PORT END COVER                                | A75-22-00000       | 316-3100-100 |
| 19               | FLAT WASHER (5/8")  | X45-10-17005       | 391-3784-028 |
| 20               | BOLTS / STUDS (5/8"-UNC)                                      | See Fasteners Page |              |
| 21               | HEX NUT (5/8"-UNC)  | X42-11-16000       | 391-1451-076 |

# MH75 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|-------------|--|--------------|--------------|
| 22a         | CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7  | A75-50-00241 | 316-1135-148 |
| 22b         | CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11             | A75-50-00141 | 316-1135-147 |
| 22c         | CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228". Dia. TYPE 7 Long | A75-50-00244 | 316-1500-502 |
| 22d         | CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11 Long        | A75-50-00144 | 316-1500-501 |
| 23          | CONTINENTAL SHAFT BRG. RETAINER SNAP RING                  | X05-02-38130 | 391-2685-029 |
| 24          | CONTINENTAL SHAFT BRG. RETAINER                            | A75-60-20000 | 391-3381-039 |
| Not Shown   | PUMP LIP SEAL FOR PIGGY BACK P.E.C.                        | X83-11-03308 | 391-2883-103 |
| Not Shown   | PIGGY BACK CONNECTING SHAFT                                | A03-50-00400 | 316-1133-003 |
| Not Shown   | 75 PIGGY BACK REAR PORT END COVER                          | A75-22-03000 | 316-5026-203 |
| Not Shown   | SHAFT KEY FOR TYPE 11 SHAFT                                | X01-01-81238 | 391-1781-045 |
| Not Shown   | DRY VALVE ASSEMBLY 1 1/2" CONNECTION                       | A00-75-12150 | 316- PMV-24  |
| Not Shown   | DRY VALVE ASSEMBLY 2" CONNECTION                           | A00-75-12200 | 316- PMV-32  |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

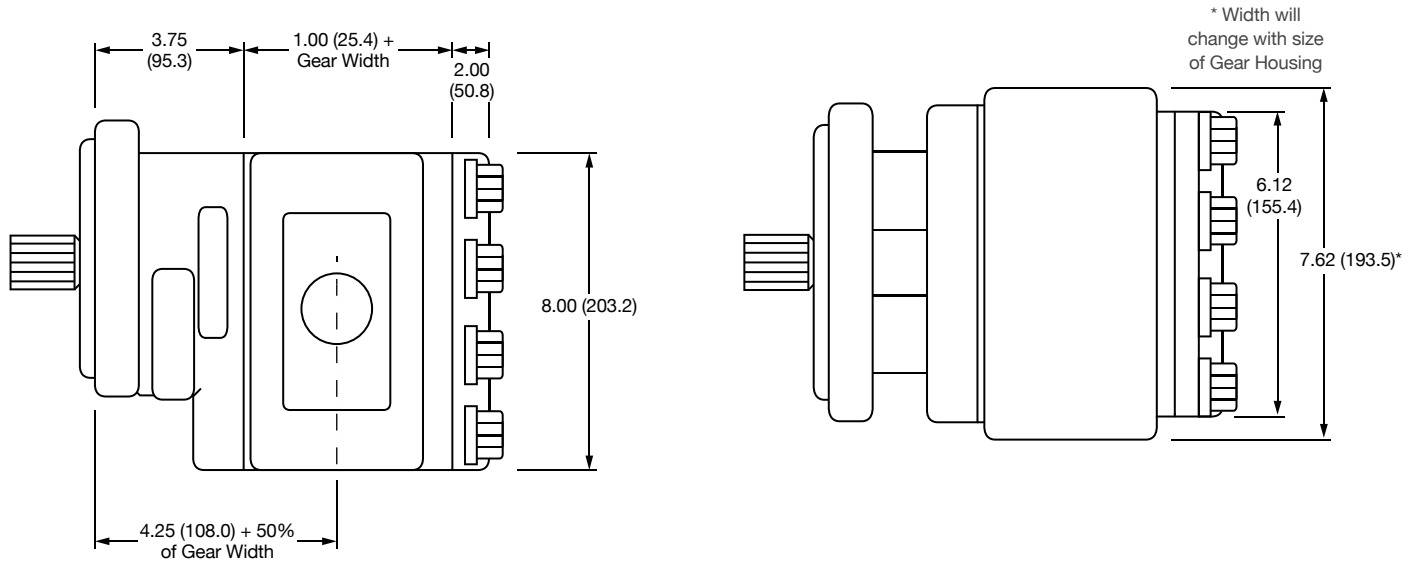
For example: Gear set no. A75-50-XX000 changes to A75-50-15000 for 1.5" gear size  
Housing no. A75-32-XX000 changes to A75-32-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH75 Series

## Dimensions

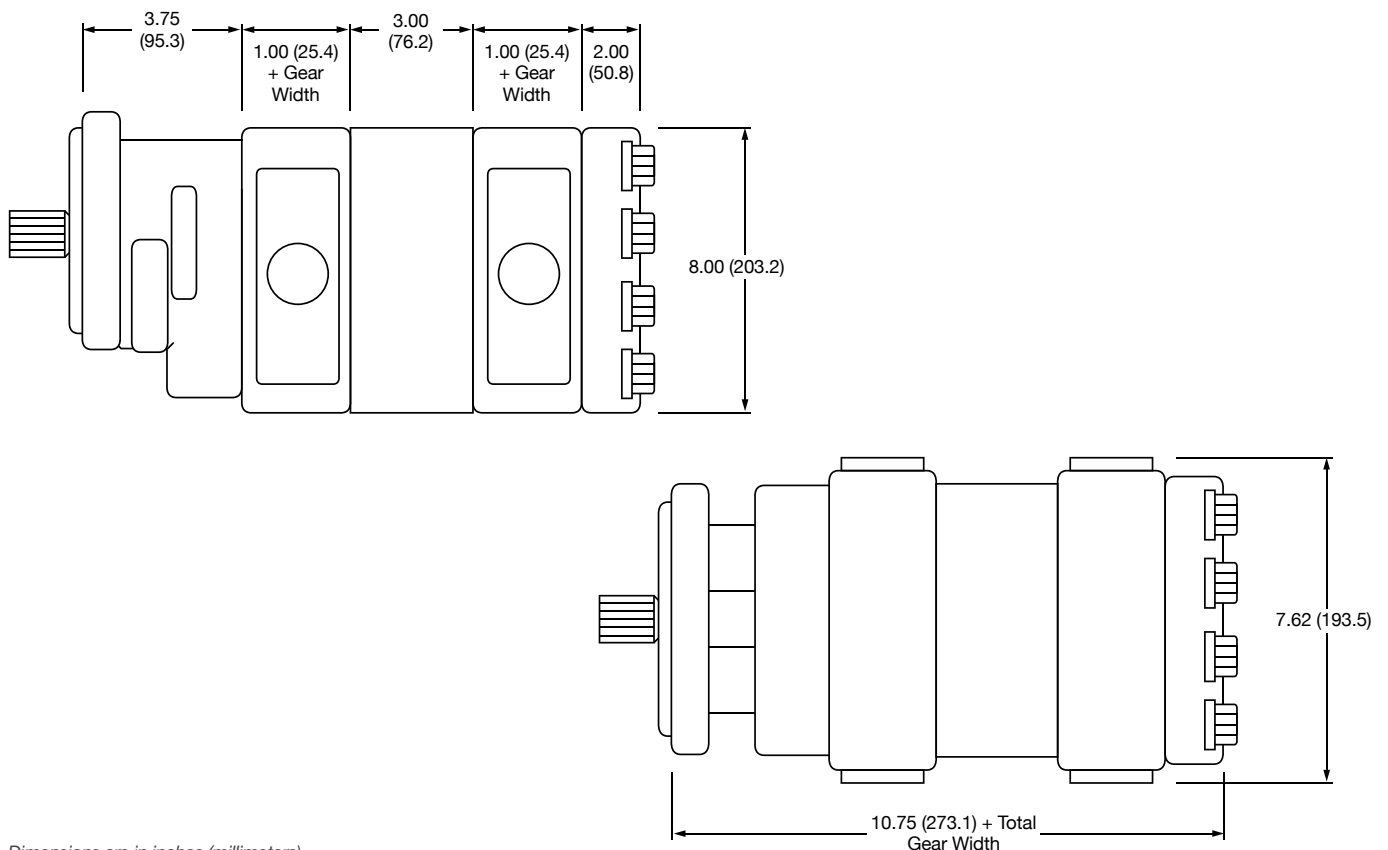
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH76 Series Bearing Pump

## Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH75       |        | DISPLACEMENT         |                        | MAX PRESSURE (DOWELLED) |       |
|------------|--------|----------------------|------------------------|-------------------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI                     | BAR   |
| .75        | 3/4"   | 3.07                 | (50.3)                 | 3000                    | (207) |
| 1.00       | 1"     | 4.1                  | (67.2)                 | 3000                    | (207) |
| 1.25       | 1-1/4" | 5.12                 | (83.9)                 | 3000                    | (207) |
| 1.50       | 1-1/2" | 6.15                 | (100.7)                | 3000                    | (207) |
| 1.75       | 1-3/4" | 7.17                 | (117.5)                | 3000                    | (207) |
| 2.00       | 2"     | 8.2                  | (134.3)                | 2500                    | (172) |
| 2.25       | 2-1/4" | 9.22                 | (151)                  | 2500                    | (172) |
| 2.50       | 2-1/2" | 10.25                | (167.8)                | 2500                    | (172) |
| 2.75       | 2-3/4" | 11.28                | (185)                  | 2000                    | (137) |
| 3.00       | 3"     | 12.3                 | (201)                  | 2000                    | (137) |

# MH76 Series Bearing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |             |            |            |            |              |              |             |           |
|-----------|----------------------|-------------|------------|------------|------------|--------------|--------------|-------------|-----------|
|           | 1"                   | 1-1/4"      | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"       | 2-1/2"       | 2-3/4"      | 3"        |
| 900       | 11.5 / 43.5          | 15.5 / 58.5 | 19.5 / 74  | 23 / 87    | 27 / 102   | 30.5 / 115.5 | 34.5 / 130.5 | 38 / 144    | 42 / 159  |
| 1200      | 17 / 64.5            | 22 / 83.5   | 27 / 102   | 32 / 121   | 37.5 / 141 | 42 / 159     | 48 / 182     | 452.5 / 199 | 58 / 220  |
| 1500      | 22 / 83.5            | 29 / 110    | 35.5 / 134 | 41.5 / 157 | 48 / 182   | 54.5 / 206   | 61 / 231     | 67 / 254    | 74 / 280  |
| 1800      | 27.5 / 104           | 35.5 / 134  | 43.5 / 165 | 51 / 193   | 59 / 223   | 66 / 250     | 74 / 280     | 81.5 / 308  | 90 / 341  |
| 2100      | 33 / 125             | 42 / 159    | 51.5 / 195 | 60 / 227   | 69.5 / 263 | 78 / 295     | 87 / 329     | 96.5 / 365  | 106 / 401 |
| 2400      | 38 / 144             | 49 / 185    | 59.5 / 225 | 70 / 265   | 80 / 303   | 90 / 341     | 101 / 382    | 111 / 420   | 122 / 462 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1"                   |                             | 1-1/2"               |                             | 2"                   |                             | 2-1/2"               |                             | 3"                   |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 800       | 20.5 / 77.5          | 1410 / 16                   | 28 / 106             | 2140 / 24.5                 | 35.5 / 134           | 2875 / 33                   | 43 / 163             | 3650 / 42                   | 50.5 / 191           | 4400 / 50.6                 |
| 1200      | 27.5 / 104           | 1400 / 16                   | 38 / 144             | 2140 / 24.5                 | 49.5 / 187           | 2870 / 33                   | 60.5 / 229           | 3650 / 42                   | 72 / 273             | 4385 / 50.5                 |
| 1600      | 34 / 129             | 1375 / 16                   | 49 / 185             | 2110 / 24.5                 | 64 / 242             | 2830 / 32.5                 | 78.5 / 297           | 3600 / 41.5                 | 93 / 352             | 4320 / 49.7                 |
| 2000      | 41.5 / 157           | 1350 / 15.5                 | 59 / 223             | 2090 / 24                   | 78 / 295             | 2800 / 32.5                 | 96.5 / 365           | 3500 / 40.5                 | 114 / 431            | 4200 / 48.3                 |

**Note:** Input Flow @ 2500psi | Output Torque @ 175 bar

## MH76 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 7,750    | 7,750     |
| SAE "BB" Keyed   | 5,550    | 5,550     |
| SAE "B" Spline   | 5,050    | 5,050     |
| SAE "B" Keyed    | 3,700    | 3,700     |
| SAE "C" Spline   | 8,600    | 7,750     |
| SAE "C" Keyed    | 8,300    | 7,750     |
| Connecting Shaft |          | 7,750     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.



# MH76 Series Bearing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2      3      4      5      6      7      8      9      6      7      10

**MHP - 76 - A - 1 - 78 - BE - AB - 10 - 11 - DB - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
3 = Pump w/o Shaft Bearing (Double Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
6 = Pump w/ Shaft Bearing (Double Rotation)  
8 = Motor w/ Shaft Bearing & 1/4" Drain Port  
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

### Shaft End Cover <sup>4</sup>

42 = SAE 4-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount  
80 = SAE 4-Bolt "D" Mount  
98 = SAE 2-Bolt "C" Mount

### Port End Cover <sup>5</sup>

#### NPT Codes

| Single Units | Tandem Units | Port Size |       | A   | B   |
|--------------|--------------|-----------|-------|-----|-----|
|              |              | Left      | Right |     |     |
| BE   BY      | BI   BJ      | None      | None  | n/a | n/a |

↑ ↑ ↑ ↑      With Support Studs  
↑ ↑      Without Support Studs  
Orientation is viewed from the shaft end

#### O-ring Ports Codes

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| JE   JY      | JI   JY      | 1"        | 1"    | 1.62 | 1.62 |

↑ ↑ ↑ ↑      With Support Studs  
↑ ↑      Without Support Studs  
Orientation is viewed from the shaft end

#### Metric Str. Thd. Ports

| Single Units | Tandem Units | Port Size |       | A    | B    |
|--------------|--------------|-----------|-------|------|------|
|              |              | Left      | Right |      |      |
| TE   TY      | TI   TY      | 1"        | 1"    | 1.62 | 1.62 |

↑ ↑ ↑ ↑      With Support Studs  
↑ ↑      Without Support Studs  
Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See page 116 for Bearing Carrier options

### Shaft Type <sup>8</sup>

07 = SAE "C" 14 Tooth Spline 1.250 Dia.  
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2" Key

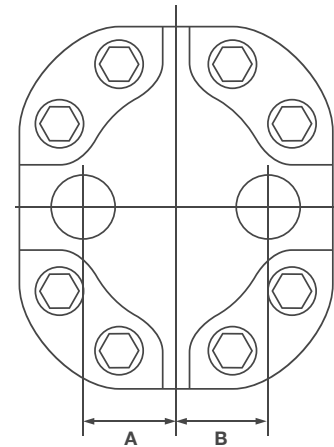
### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|        |        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 07     | 10     | 12     | 15     | 17     | 20     | 22     | 25     | 27     | 30     |
| (3.07) | (4.10) | (5.12) | (6.15) | (7.17) | (8.20) | (9.22) | (10.3) | (11.3) | (12.3) |

### Gear Housing <sup>6</sup>

See following pages for Gear Housing options



# MH76 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### NPT Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| IC   | 3/4"      | None     |   |   |    |    |    |    |    |    |    |    |    |
| ID   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| IF   | 3/4"      | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| IG   | 3/4"      | 1"       |   |   | x  |    |    |    |    |    |    |    |    |
| IH   | 3/4"      | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| IJ   | 1"        | 3/4"     |   |   | x  | x  | x  |    |    |    |    |    |    |
| IK   | 1-1/4"    | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| YC   | 1"        | None     |   |   |    |    |    |    | x  |    |    |    |    |
| YD   | None      | 1"       |   |   |    | x  | x  | x  | x  |    |    |    |    |
| YF   | 1"        | 1"       |   |   | x  | x  |    |    |    |    |    |    |    |
| YG   | 1"        | 1-1/4" * |   |   |    | x  | x  |    |    |    |    |    |    |
| YH   | 1"        | 1-1/2"   |   |   |    |    |    |    |    |    |    |    |    |
| YJ   | 1-1/4" *  | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| YK   | 1-1/2"    | 1"       |   |   |    |    |    |    |    |    |    |    |    |
| YL   | 1-1/4"    | 1-1/4"   |   |   |    | x  | x  | x  |    |    |    |    |    |
| YM   | 1-1/4"    | 1-1/2" * |   |   |    |    |    |    |    |    |    |    |    |
| YP   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| YR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    |    |    |    |

\* Low Pressure Inlet Porting

#### O.D. Tube Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| EC   | 3/4"      | None     |   | x | x  | x  | x  |    |    |    |    |    |    |
| ED   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| EF   | 3/4"      | 3/4"     |   | x |    |    |    |    |    |    |    |    |    |
| EG   | 3/4"      | 1"       |   | x |    | x  | x  |    |    |    |    |    |    |
| EH   | 3/4"      | 1-1/4"   |   |   | x  |    |    |    |    |    |    |    |    |
| EJ   | 1"        | 3/4"     |   | x |    | x  | x  |    |    |    |    |    |    |
| EK   | 1-1/4"    | 3/4"     |   |   | x  |    |    |    |    |    |    |    |    |
| AC   | 1"        | None     |   |   |    |    |    |    |    |    |    |    |    |
| AD   | None      | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| AF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| AG   | 1"        | 1-1/4" * |   |   | x  | x  |    |    |    |    |    |    |    |
| AH   | 1"        | 1-1/2"   |   |   |    |    | x  |    |    |    |    |    |    |
| AJ   | 1-1/4" *  | 1"       |   |   | x  | x  |    |    |    |    |    |    |    |
| AK   | 1-1/2"    | 1"       |   |   |    |    | x  |    |    |    |    |    |    |
| AL   | 1-1/4"    | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  |    | x  |
| AM   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  |    |    |    |    |    |
| AP   | 1-1/2"    | 1-1/4"   |   |   |    |    | x  | x  |    |    |    |    |    |
| AR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    | x  |    | x  | x  |    |    |

\* Low Pressure Inlet Porting

#### BSPP Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| YN   | 3/4"      | None     |   |   | x  | x  |    |    |    |    |    |    |    |
| YQ   | None      | 3/4"     |   | x | x  | x  | x  | x  | x  |    |    |    |    |
| YS   | 3/4"      | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| YT   | 3/4"      | 1"       |   | x |    |    |    |    |    |    |    |    |    |
| YU   | 3/4"      | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| YV   | 1"        | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| YW   | 1-1/4"    | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| SL   | 1"        | None     |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| RQ   | None      | 1"       |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| MP   | 1"        | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| VY   | 1"        | 1-1/4" * |   |   |    |    | x  | x  | x  | x  | x  | x  | x  |
| IX   | 1-1/4" *  | 1"       |   |   |    |    | x  | x  | x  | x  | x  | x  | x  |
| NJ   | 1-1/4" *  | None     |   |   |    |    | x  | x  | x  |    |    |    |    |
| UI   | None      | 1-1/4" * |   |   |    |    |    |    |    |    | x  | x  | x  |
| PF   | 1-1/4"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |    |    |
| IQ   | 1-1/4"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| IS   | 1-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| HW   | 1"        | 1-1/2"   |   |   |    |    |    | x  | x  |    |    |    |    |
| VI   | 1-1/2"    | 1"       |   |   |    |    |    | x  | x  |    |    |    |    |

\* Low Pressure Inlet Porting

# MH76 Series Bearing Pump

## Model Code Breakdown Cont.

### Gear Housing Cont. <sup>6</sup>

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

#### Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| UC   | 3/4"      | None     |   | x | x  | x  | x  |    |    |    |    |    |    |
| UD   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| UF   | 3/4"      | 3/4"     |   | x |    |    |    |    |    |    |    |    |    |
| UG   | 3/4"      | 1"       |   | x | x  |    |    |    |    |    |    |    |    |
| UH   | 3/4"      | 1-1/4"   |   |   |    |    |    |    |    |    |    |    |    |
| UJ   | 1"        | 3/4"     |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| UK   | 1-1/4"    | 3/4"     |   |   |    |    |    |    |    |    |    |    |    |
| OC   | 1"        | None     |   |   |    | x  |    |    |    |    |    |    |    |
| OD   | None      | 1"       |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| OF   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |    | x  | x  | x  |
| OG   | 1"        | 1-1/4" * |   |   | x  | x  | x  |    |    |    |    |    |    |
| OH   | 1"        | 1-1/2" * |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| OJ   | 1-1/4" *  | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |    |    |
| OK   | 1-1/2" *  | 1"       |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| OL   | 1-1/4"    | 1-1/4"   |   |   |    | x  | x  | x  | x  | x  | x  | x  | x  |
| OM   | 1-1/4"    | 1-1/2" * |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| ON   | 1-1/4"    | 2"       |   |   |    |    |    | x  | x  | x  | x  | x  | x  |
| OP   | 1-1/2" *  | 1-1/4"   |   |   |    | x  | x  | x  | x  | x  | x  | x  | x  |
| OQ   | 2"        | 1-1/4"   |   |   |    |    |    | x  | x  | x  | x  | x  | x  |
| OR   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OS   | 1-1/2"    | 2"       |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OT   | 1-1/2"    | 2-1/2"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| OV   | 2"        | 1-1/2"   |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OW   | 2-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    | x  | x  | x  |
| OX   | 2"        | 2"       |   |   |    |    |    |    |    |    |    | x  | x  |
| OA   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  | x  |    |    |    |
| UB   | 1"        | 2"       |   |   |    |    |    |    | x  |    |    |    |    |
| UQ   | 2"        | 1"       |   |   |    |    |    |    | x  |    |    |    |    |
| OB   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| OE   | 1-1/2" *  | None     |   |   |    |    |    |    | x  | x  |    |    |    |
| OU   | None      | 1-1/2" * |   |   |    |    |    |    | x  | x  | x  | x  | x  |
| OY   | 2"        | 2-1/2"   |   |   |    |    |    |    |    |    |    |    | x  |
| OZ   | 2-1/2"    | 2"       |   |   |    |    |    |    |    |    |    |    | x  |
| UN   | 1-1/4"    | 2-1/2"   |   |   |    |    |    |    |    |    | x  |    |    |
| US   | 2-1/2"    | 1-1/4"   |   |   |    |    |    |    |    |    | x  |    |    |

\* Low Pressure Inlet Porting

#### Metric Split Flange Codes

| Code | Port Size |          | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|----------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right    |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None     | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| VN   | 3/4"      | None     |   | x | x  | x  | x  |    |    |    |    |    |    |
| VQ   | None      | 3/4"     |   | x | x  | x  | x  |    |    |    |    |    |    |
| VS   | 3/4"      | 3/4"     |   | x | x  |    |    |    |    |    |    |    |    |
| VT   | 3/4"      | 1"       |   | x | x  |    |    |    |    |    |    |    |    |
| RU   | 3/4"      | 1-1/4"   |   |   | x  |    |    |    |    |    |    |    |    |
| RV   | 1"        | 3/4"     |   | x | x  | x  | x  | x  | x  |    |    |    |    |
| RW   | 1-1/4"    | 3/4"     |   |   | x  |    |    |    |    |    |    |    |    |
| UL   | 1"        | None     |   |   | x  | x  | x  | x  |    |    |    |    |    |
| UR   | None      | 1"       |   |   | x  | x  | x  | x  |    |    |    |    |    |
| UM   | 1"        | 1"       |   |   | x  | x  | x  | x  | x  |    |    |    |    |
| VU   | 1"        | 1-1/4" * |   |   | x  | x  |    |    |    |    |    |    |    |
| HO   | 1"        | 1-1/2" * |   |   |    | x  | x  |    |    |    |    |    |    |
| UX   | 1-1/4" *  | 1"       |   |   | x  | x  | x  | x  | x  | x  | x  |    |    |
| VO   | 1-1/2" *  | 1"       |   |   |    | x  | x  |    |    |    |    |    |    |
| NO   | 1-1/4" *  | None     |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| UO   | None      | 1-1/4" * |   |   |    | x  | x  | x  | x  | x  | x  |    |    |
| PO   | 1-1/4"    | 1-1/4"   |   |   |    | x  | x  | x  | x  | x  | x  | x  | x  |
| QO   | 1-1/4"    | 1-1/2" * |   |   |    |    | x  | x  | x  | x  |    |    |    |
| SO   | 1-1/2" *  | 1-1/4"   |   |   |    |    | x  | x  | x  | x  | x  | x  | x  |
| JR   | 1-1/4"    | 2"       |   |   |    |    |    | x  | x  | x  | x  |    |    |
| JM   | 2"        | 1-1/4"   |   |   |    |    |    |    | x  | x  | x  | x  |    |
| UY   | 1-1/2" *  | None     |   |   |    |    |    |    | x  | x  | x  |    |    |
| TO   | None      | 1-1/2" * |   |   |    |    |    |    |    | x  | x  | x  | x  |
| SV   | 1-1/2"    | 1-1/2"   |   |   |    |    |    |    |    | x  | x  | x  | x  |
| JN   | 1-1/2"    | 2"       |   |   |    |    |    |    |    | x  | x  | x  | x  |
| JQ   | 2"        | 1-1/2"   |   |   |    |    |    |    |    | x  | x  | x  | x  |
| JX   | 1-1/2"    | 2-1/2"   |   |   |    |    |    |    |    |    |    | x  | x  |
| LJ   | 2-1/2"    | 1-1/2"   |   |   |    |    |    |    |    |    |    | x  | x  |
| JS   | 2"        | 2"       |   |   |    |    |    |    |    |    |    |    | x  |

\* Low Pressure Inlet Porting

#### Metric Str. Thd. Codes

| Code | Port Size |       | 5 | 7 | 10 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 |
|------|-----------|-------|---|---|----|----|----|----|----|----|----|----|----|
|      | Left      | Right |   |   |    |    |    |    |    |    |    |    |    |
| AB   | None      | None  | x | x | x  | x  | x  | x  | x  | x  | x  | x  | x  |
| EN   | 3/4"      | None  |   | x | x  | x  | x  |    |    |    |    |    |    |
| TQ   | None      | 3/4"  |   | x | x  | x  | x  |    |    |    |    |    |    |
| ES   | 3/4"      | 3/4"  |   | x | x  |    |    |    |    |    |    |    |    |
| ET   | 3/4"      | 1"    |   | x |    |    |    |    |    |    |    |    |    |
| EV   | 1"        | 3/4"  |   | x | x  | x  | x  |    |    |    |    |    |    |
| NL   | 1"        | None  |   |   |    | x  | x  |    |    |    |    |    |    |
| ER   | None      | 1"    |   |   |    | x  | x  |    |    |    |    |    |    |
| CM   | 1"        | 1"    |   |   | x  | x  | x  |    |    |    |    |    |    |

\* Low Pressure Inlet Porting

# MH76 Series Bearing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

**NPT Codes**

| In   | Out  | CW (Left) | CCW (Right) |
|------|------|-----------|-------------|
| None | None |           |             |
| None | None | C<br>A    | D<br>U      |

**SAE Split Flange Codes**

| In     | Out  | CW (Left) | CCW (Right) |
|--------|------|-----------|-------------|
| 1"     | None |           |             |
| 1-1/4" | None | LB        | BL          |
| 1-1/2" | None | MB        | BM          |
|        |      | NB        | BN          |
| None   | 3/4" |           |             |
| 1"     | 3/4" | BR        | RB          |
| 1-1/4" | 3/4" | LR        | RL          |
| 1-1/2" | 3/4" | MR        | RM          |
| 1-1/4" | 1"   | NR        | RN          |
| 1-1/2" | 1"   | MS        | SM          |
|        |      | NS        | SN          |
| 1"     | 3/4" |           |             |
| 1-1/4" | 3/4" | LX        | XL          |
| 1-1/4" | 1"   | MX        | XM          |
| 1-1/2" | 1"   | MZ        | ZM          |
|        |      | NZ        | ZN          |
| 1"     | 3/4" |           |             |
|        |      | SR        | RS          |

**SAE O-ring Codes**

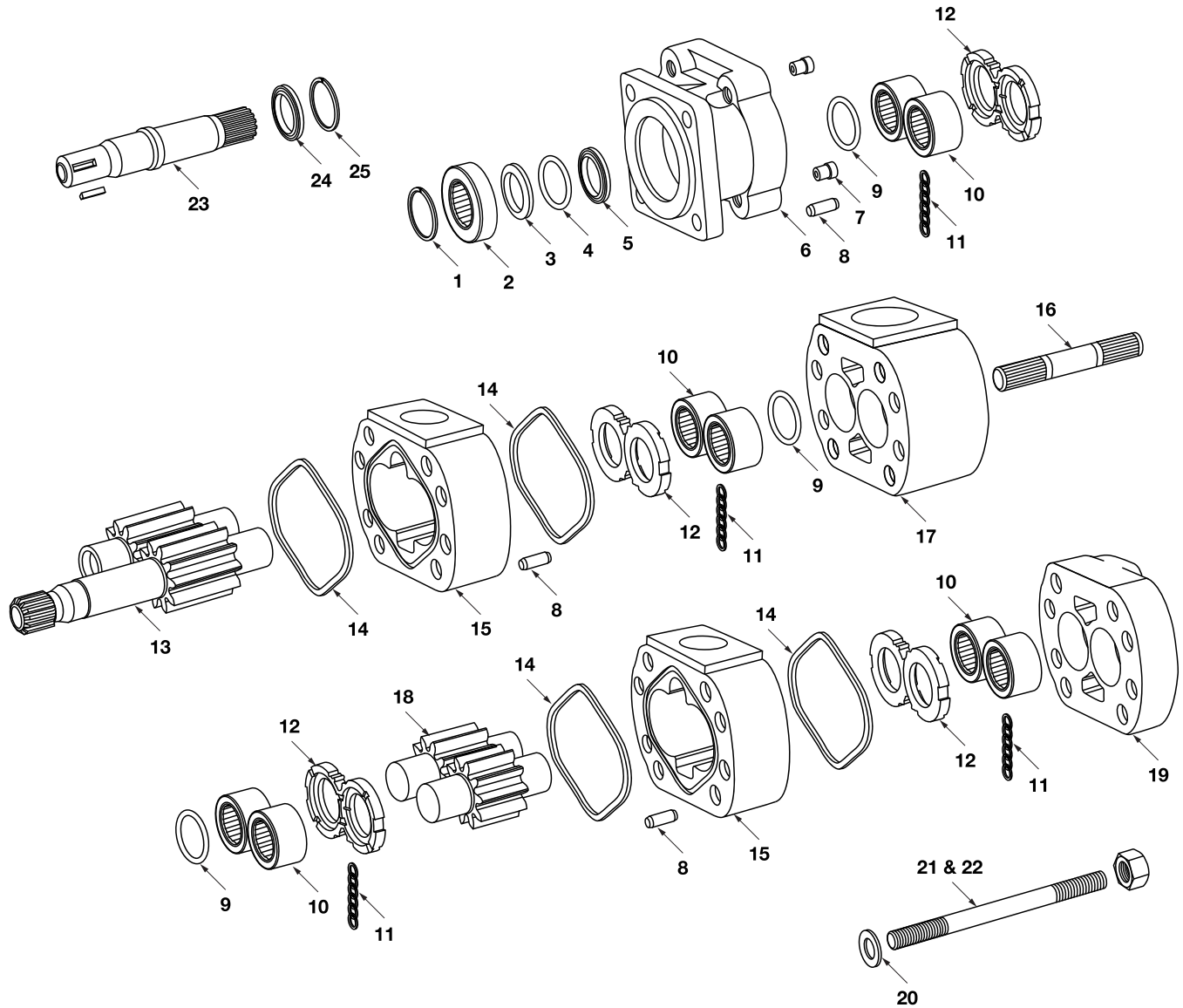
| In     | Out  | CW (Left) | CCW (Right) |
|--------|------|-----------|-------------|
| 1"     | None |           |             |
| 1-1/4" | None | CB        | BC          |
| 1-1/2" | None | DB        | BD          |
|        |      | FB        | BF          |
| None   | 3/4" |           |             |
| 1"     | 3/4" | PJ        | JP          |
| 1-1/4" | 3/4" | CJ        | JC          |
| 1-1/2" | 3/4" | DJ        | JD          |
| 1-1/4" | 1"   | FJ        | JF          |
| 1-1/2" | 1"   | DK        | KD          |
|        |      | FK        | KF          |
| 1"     | 3/4" |           |             |
| 1-1/4" | 3/4" | CR        | RC          |
| 1-1/2" | 3/4" | DR        | RD          |
| 1-1/4" | 1"   | FR        | RF          |
| 1-1/2" | 1"   | DS        | SD          |
|        |      | FS        | SF          |

**Motors Only Codes**

| In     | Out    | Dual |                  |
|--------|--------|------|------------------|
| None   | None   |      |                  |
|        |        | B    |                  |
| 1"     | 1"     |      | SAE O-Ring       |
| 1-1/4" | 1-1/4" | CC   | SAE O-Ring       |
| 1"     | 1"     | BB   | SAE Split Flange |
| 1-1/4" | 1-1/4" | LL   | SAE Split Flange |
| 1-1/2" | 1-1/2" | MM   | SAE Split Flange |
|        |        | NN   | SAE Split Flange |

# MH76 Series

## Parts Breakdown



# MH76 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|------------------|--|--------------|--------------|
| 1                | SHAFT BRG. SNAP RING   | X05-01-88280 | 391-2686-025 |
| 2a               | INPUT SHAFT BRG.   | X03-16-13580 | 391-0381-078 |
| 2b               | SPACER TO REPLACE SHAFT BEARING  | A75-92-64800 | 391-3383-018 |
| 3a               | SEAL RETAINER FOR PUMPS  | A75-60-10000 | 391-2584-082 |
| 3b               | SEAL RETAINER FOR MOTORS   | A75-60-10000 | 391-2584-051 |
| 4                | SEAL RETAINER O RING   | X81-11-06603 | 391-2881-457 |
| 5a               | PUMP LIP SEAL  | X83-11-03508 | 391-2883-052 |
| 5b               | MOTOR LIP SEAL   | X84-36-03510 | 391-2883-094 |
| 6a               | 76 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)                                   | A76-10-21420 | 316-5033-201 |
| 6b               | 76 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)                                     | A76-10-21430 | 316-5033-202 |
| 6c               | 76 4 BOLT D PILOT PUMP S.E.C. TYPE 80 (6" or 152.4 mm pilot)                                   | A76-10-21440 | 316-5033-203 |
| 6d               | 76 2 BOLT C PILOT PUMP S.E.C. TYPE 98 (5" or 127 mm pilot)                                     | A76-10-41230 | 316-5023-201 |
| 6e               | 76 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)                                  | A76-10-41420 | 316-5033-408 |
| 6f               | 76 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)                                    | A76-10-41430 | 316-5033-402 |
| 6g               | 76 4 BOLT D PILOT MOTOR S.E.C. TYPE 80 (6" or 152.4 mm pilot)                                  | A76-10-41440 | 316-5033-403 |
| 6h               | 76 2 BOLT C PILOT MOTOR S.E.C. TYPE 98 (5" or 127 mm pilot)                                    | A76-10-41230 | 316-5023-202 |
| 7a               | CHECK VALVE MOTOR  | A00-75-11000 | 391-3681-001 |
| 7b               | PRESSURE PLUG PUMP   | X02-03-32110 | 391-2286-004 |
| 8                | DOWEL PIN  | A00-94-11638 | 391-2082-033 |
| 9                | RING SEAL  | X81-76-03809 | 391-2585-011 |
| 10               | ROLLER BEARING (Ø 2.322" O.D.)   | X03-24-13859 | 391-0381-060 |
| 11               | POCKET SEAL  | X85-11-00003 | 391-2882-052 |
| 12a              | PUMP THRUST PLATE  | A76-70-20000 | 391-2185-026 |
| 12b              | MOTOR THRUST PLATE   | A75-70-10000 | 391-2185-020 |
| 12c              | DRY VALVE THRUST PLATE   | A75-70-21000 | 391-2185-072 |
| <b>Not Shown</b> | DRY VALVE THRUST PLATE SEAL  | A75-82-96010 | 391-2885-040 |
| 13a              | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7 SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11 | A75-50-XX245 | 316-29XX-250 |
| 13b              | SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11  | A75-50-XX145 | 316-29XX-750 |
| 14               | PUMP & MOTOR HOUSING GASKET  | X85-11-13303 | 391-2884-024 |
| 15               | PUMP & MOTOR GEAR HOUSING  | A76-32-XX000 | 316-82XX-100 |
| 16               | CONNECTING SHAFT   | A75-50-00500 | 316-1133-001 |
| 17a              | 76 MOTOR BEARING CARRIER BLANK   | A76-40-00000 | 316-7740-100 |
| 17b              | 76 PUMP BEARING CARRIER WITH COMMON PASSAGE  | A76-40-20000 | 316-7723-100 |
| 18               | GEAR SET ONLY  | A75-50-XX000 | 316-28XX-000 |
| 19               | 76 PUMP & MOTOR PORT END COVER   | A76-22-00000 | 316-3120-100 |
| 20               | FLAT WASHER (5/8")   | X45-10-17005 | 391-3784-028 |

# MH76 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #          | ALTERNATE #  |
|-------------|--|--------------------|--------------|
| 21          | BOLTS / STUDS (5/8"-UNC)                                   | See Fasteners Page |              |
| 22          | HEX NUT (5/8"-UNC)   | X42-11-16000       | 391-1451-076 |
| 23a         | CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7  | A75-50-00241       | 316-1135-148 |
| 23b         | CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11             | A75-50-00141       | 316-1135-147 |
| 23c         | CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228". Dia. TYPE 7 Long | A75-50-00244       | 316-1500-502 |
| 23d         | CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11 Long        | A75-50-00144       | 316-1500-501 |
| 24          | CONTINENTAL SHAFT BRG. RETAINER                            | A75-60-20000       | 391-3381-039 |
| 25          | CONTINENTAL SHAFT BRG. RETAINER SNAP RING                  | X05-02-38130       | 391-2685-029 |
| Not Shown   | PIGGY BACK CONNECTING SHAFT                                | A03-50-00400       | 316-1133-003 |
| Not Shown   | PUMP LIP SEAL FOR PIGGY BACK P.E.C.                        | X83-11-03308       | 391-2883-103 |
| Not Shown   | 76 PIGGY BACK REAR PORT END COVER                          | A76-22-03000       | 316-5027-213 |
| Not Shown   | DRIVE KEY FOR TYPE 11 SHAFT                                | X01-01-81238       | 391-1781-045 |
| Not Shown   | DRY VALVE ASSEMBLY 1 1/2" CONNECTION                       | A00-75-12150       | 316- PMV-24  |
| Not Shown   | DRY VALVE ASSEMBLY 2" CONNECTION                           | A00-75-12200       | 316- PMV-32  |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

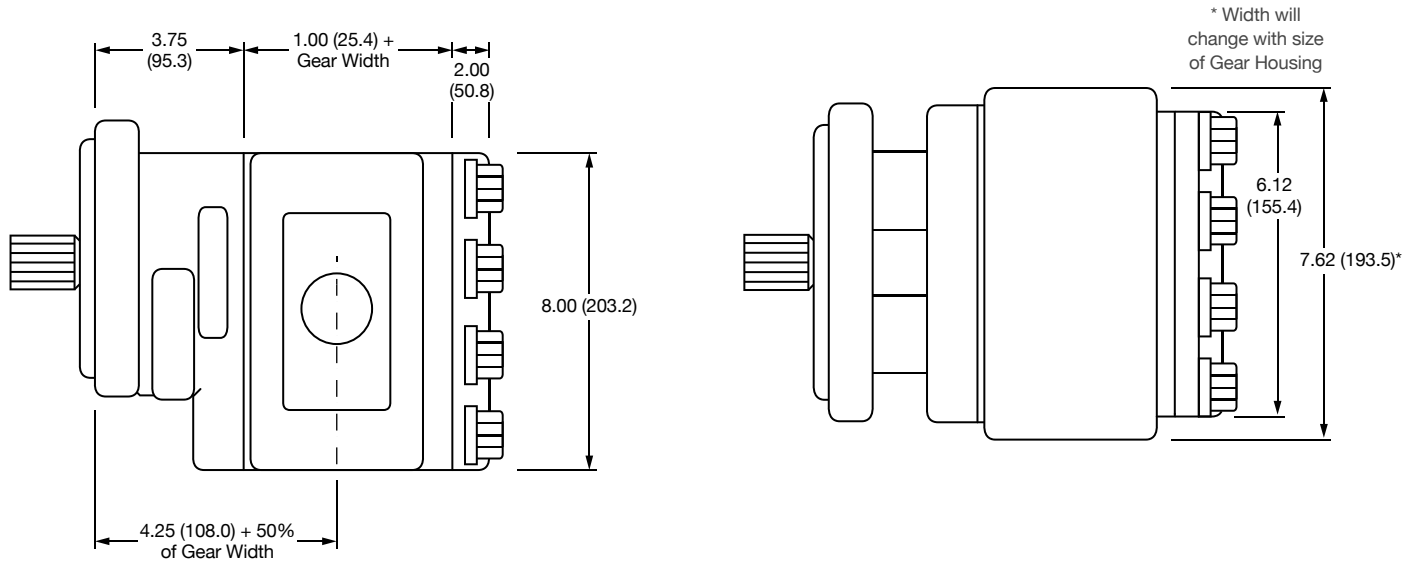
For example: Gear set no. A75-50-XX000 changes to A75-50-15000 for 1.5" gear size  
Housing no. A76-32-XX000 changes to A76-32-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH76 Series

## Dimensions

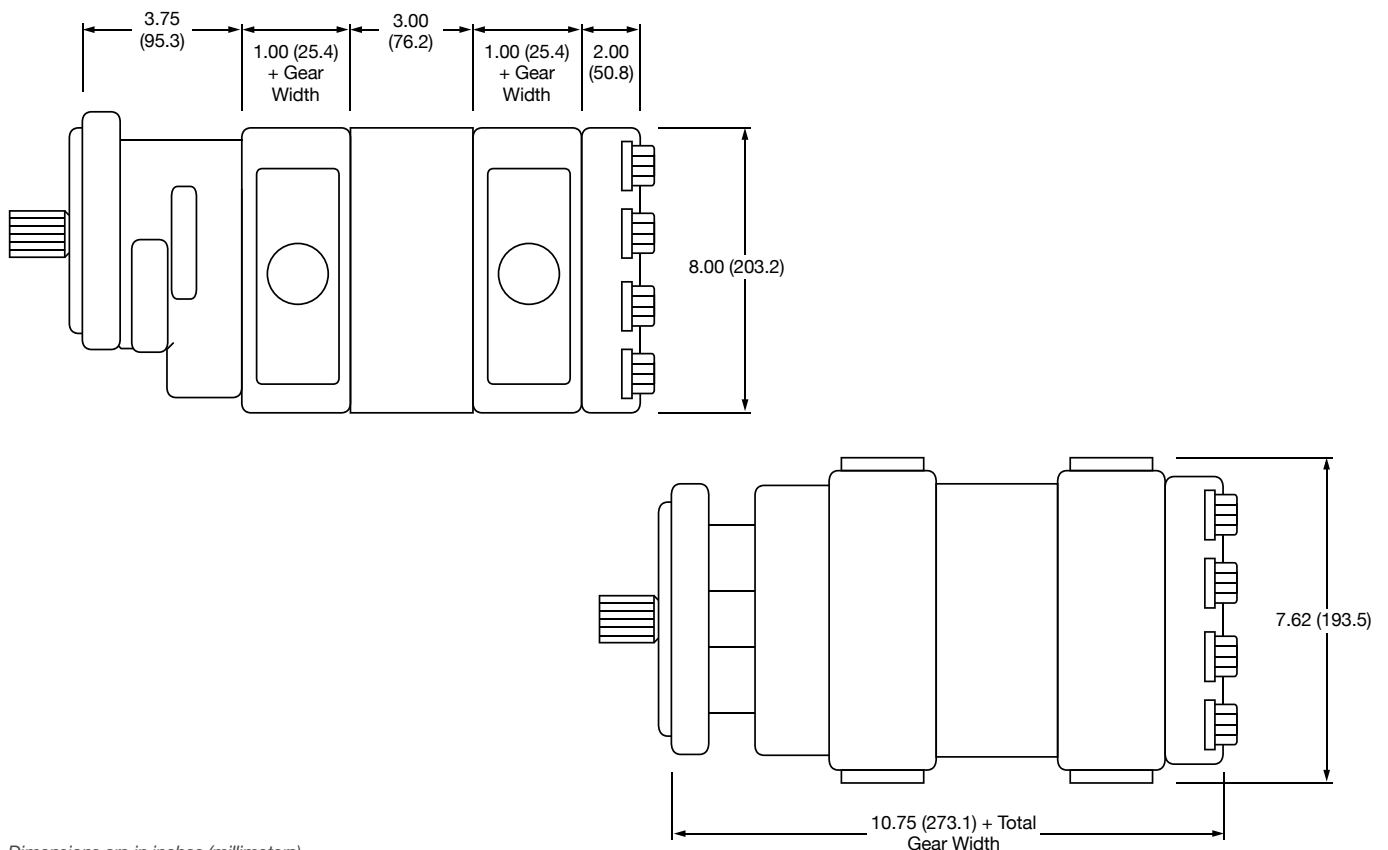
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).



# MH315 Series Bushing Pump

## Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH315      |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .50        | 1/2"   | .62                  | (10.2)                 | 3500         | (241) |
| .75        | 3/4"   | .93                  | (15.2)                 | 3500         | (241) |
| 1.00       | 1"     | 1.24                 | (20.3)                 | 3500         | (241) |
| 1.25       | 1-1/4" | 1.55                 | (25.4)                 | 3500         | (241) |
| 1.50       | 1-1/2" | 1.86                 | (30.5)                 | 3300         | (228) |
| 1.75       | 1-3/4" | 2.17                 | (35.6)                 | 2900         | (200) |
| 2.00       | 2"     | 2.48                 | (40.6)                 | 2500         | (172) |

# MH315 Series Bushing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |           |           |           |           |            |            |
|-----------|----------------------|-----------|-----------|-----------|-----------|------------|------------|
|           | 1/2"                 | 3/4"      | 1"        | 1-1/4"    | 1-1/2"    | 1-3/4"     | 2"         |
| 900       | 2 / 8                | 3.2 / 12  | 4.4 / 17  | 5.5 / 21  | 6.7 / 26  | 7.9 / 30   | 9 / 34     |
| 1200      | 2.8 / 11             | 4.4 / 17  | 6 / 23    | 7.6 / 29  | 9.2 / 35  | 10.7 / 40  | 12.2 / 46  |
| 1500      | 3.6 / 14             | 5.6 / 21  | 7.7 / 29  | 9.6 / 36  | 11.6 / 44 | 13.5 / 51  | 15.4 / 58  |
| 1800      | 4.4 / 17             | 6.8 / 26  | 9.3 / 35  | 11.6 / 44 | 14 / 53   | 16.3 / 62  | 18.6 / 70  |
| 2100      | 5.2 / 20             | 8.1 / 30  | 10.9 / 41 | 13.6 / 51 | 16.4 / 62 | 19.1 / 72  | 21.8 / 83  |
| 2400      | 6 / 23               | 9.3 / 35  | 12.5 / 47 | 15.6 / 59 | 18.8 / 71 | 21.9 / 83  | 25.1 / 95  |
| 3000      | 7.7 / 29             | 11.7 / 44 | 15.7 / 59 | 19.6 / 74 | 23.7 / 90 | 27.6 / 104 | 31.5 / 119 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1" (3500 PSI)        |                             | 1-1/4" (3500 PSI)    |                             | 1-1/2" (3250 PSI)    |                             | 1-3/4" (2900 PSI)    |                             | 2" (2500 PSI)        |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 900       | 7.1 / 27             | 665 / 75.1                  | 8.3 / 32             | 830 / 93.8                  | 9.6 / 37             | 925 / 104.5                 | 10.9 / 41            | 965 / 109                   | 12.2 / 46            | 950 / 107.3                 |
| 1200      | 8.8 / 33             | 665 / 75.1                  | 10.5 / 40            | 830 / 93.8                  | 12.2 / 46            | 925 / 104.5                 | 13.8 / 52            | 965 / 109                   | 15.5 / 59            | 950 / 107.3                 |
| 1500      | 10.6 / 40            | 660 / 74.6                  | 12.6 / 48            | 825 / 93.2                  | 14.7 / 56            | 920 / 103.9                 | 16.7 / 63            | 955 / 107.9                 | 18.8 / 71            | 945 / 106.8                 |
| 1800      | 12.3 / 46            | 665 / 75.1                  | 14.7 / 56            | 820 / 92.6                  | 17.2 / 65            | 915 / 103.4                 | 19.6 / 74            | 950 / 107.3                 | 22.1 / 84            | 940 / 106.2                 |
| 2100      | 14 / 53              | 665 / 75.1                  | 16.8 / 64            | 820 / 92.6                  | 19.7 / 75            | 915 / 103.4                 | 22.5 / 85            | 950 / 107.3                 | 25.4 / 96            | 940 / 106.2                 |
| 2400      | 15.7 / 59            | 640 / 72.3                  | 18.9 / 72            | 800 / 90.4                  | 22.2 / 84            | 895 / 101.1                 | 25.4 / 96            | 930 / 105.1                 | 28.8 / 109           | 920 / 103.9                 |
| 3000      | 19 / 72              | 640 / 72.3                  | 23 / 87              | 800 / 90.4                  | 27.2 / 103           | 890 / 100.6                 | 31.2 / 118           | 925 / 104.5                 | 35.3 / 134           | 915 / 103.4                 |

**Note:** Input Flow @ 2500psi | Output Torque @ 175 bar

## MH315 PL Chart

| SHAFT STYLE                 | INTEGRAL | TWO PIECE |
|-----------------------------|----------|-----------|
| SAE "A" Spline (To 1.25 GW) | 4,450    |           |
| SAE "A" Keyed               | 3,600    |           |
| SAE "B" Spline              | 13,400   |           |
| SAE "B" Keyed               | 9,900    |           |
| Connecting Shaft            |          | 5,550     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH315 Series Bushing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2    3    4    5    6    7    8    9    6    7    10  
**MHP - 315 - A - 1 - 93 - AL - AB - 10 - 65 - CJ - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
L = Unit w/ Extended Studs

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation) (Code 490 Only)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation) (Code 590 Only)  
9 = Motor w/o Shaft Bearing (Bi-Rotational)

### Shaft End Cover <sup>4</sup>

93 = SAE 2-Bolt "A" Mount  
96 = SAE 2-Bolt "B" Mount

### Port End Cover <sup>5</sup>

#### Unported

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| BI |  | None      | None |

#### Side Ported - NPT Codes

| CW | CCW | Port Size |      |
|----|-----|-----------|------|
|    |     | In        | Out  |
| AJ | JA  | 1-1/4"    | 1"   |
| AK | KA  | 1-1/4"    | 3/4" |
| AL | LA  | 1"        | 1"   |
| AM | MA  | 1"        | 3/4" |
| AR | RA  | 3/4"      | 3/4" |

Orientation is viewed from the shaft end

#### Motor - Side Ported - NPT

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| DN |  | 3/4"      | 3/4" |
| DM |  | 1"        | 1"   |
| DQ |  | 1/2"      | 1/2" |

#### Side Ported - SAE O-ring

| CW | CCW | Port Size |      |
|----|-----|-----------|------|
|    |     | In        | Out  |
| FB | BF  | 1-1/4"    | 1"   |
| FC | CF  | 1-1/4"    | 7/8" |
| FG | GF  | 1-1/4"    | 3/4" |
| FJ | JF  | 1-1/4"    | 5/8" |
| FL | LF  | 1"        | 1"   |
| FV | VF  | 1"        | 7/8" |
| FW | WF  | 1"        | 3/4" |
| FX | XF  | 1"        | 5/8" |
| FY | YF  | 7/8"      | 7/8" |
| FZ | ZF  | 7/8"      | 3/4" |
| BC | CB  | 7/8"      | 5/8" |
| BG | GB  | 7/8"      | 1/2" |
| BJ | JB  | 3/4"      | 3/4" |
| BL | LB  | 3/4"      | 5/8" |
| BN | NB  | 3/4"      | 1/2" |
| BV | VB  | 1-1/4"    | None |
| BW | WB  | 1"        | None |
| BX | XB  | 7/8"      | None |
| BY | YB  | 3/4"      | None |
| BZ | ZB  | None      | 1"   |
| PD | DP  | None      | 7/8" |
| PE | EP  | None      | 3/4" |
| PM | MP  | None      | 5/8" |
| PN | NP  | None      | 1/2" |

Orientation is viewed from the shaft end

#### Motor - Side Ported - SAE O-ring

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| VN |  | 1"        | 1"   |
| VR |  | 3/4"      | 3/4" |
| VQ |  | 1/2"      | 1/2" |

#### Rear Ported - SAE O-ring

| CW | CCW | Port Size |      |
|----|-----|-----------|------|
|    |     | In        | Out  |
| UC | CU  | 1-1/4"    | 1"   |
| UF | FU  | 1-1/4"    | 7/8" |
| UN | NU  | 1-1/4"    | 3/4" |
| UD | DU  | 1"        | 1"   |
| UP | PU  | 1"        | 7/8" |
| UQ | QU  | 1"        | 3/4" |
| UR | RU  | 1"        | 5/8" |
| LN | NL  | 7/8"      | 7/8" |
| LP | PL  | 7/8"      | 3/4" |
| LQ | QL  | 7/8"      | 5/8" |
| LR | RL  | 3/4"      | 3/4" |
| LS | SL  | 3/4"      | 5/8" |
| LT | TL  | 3/4"      | 1/2" |

Orientation is viewed from the shaft end

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See following page for Bearing Carrier options

### Shaft Type <sup>8</sup>

65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2  
66 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key Type 2  
96 = SAE "A" 9 Tooth Splined .625 Dia.  
97 = SAE "A" Keyed

### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|              |              |              |              |              |              |              |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 03<br>(.47)  | 05<br>(.62)  | 06<br>(.78)  | 07<br>(.93)  | 08<br>(1.09) | 10<br>(1.24) | 11<br>(1.40) |
| 12<br>(1.55) | 13<br>(1.71) | 15<br>(1.86) | 16<br>(2.02) | 17<br>(2.17) | 18<br>(2.33) | 20<br>(2.48) |

### Gear Housing <sup>6</sup>

| Code | Port Size |      |       |
|------|-----------|------|-------|
|      | In        | Out  |       |
| AB   | None      | None | Pump  |
| EB   | None      | None | Motor |

#### Motor - Rear Ported - SAE O-ring

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| RN |  | 1"        | 1"   |
| RQ |  | 3/4"      | 3/4" |
| RS |  | 1/2"      | 1/2" |

#### Motor - Rear Ported - NPT

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| RX |  | 1"        | 1"   |
| RY |  | 3/4"      | 3/4" |
| RZ |  | 1/2"      | 1/2" |

# MH315 Series Bushing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

#### Dual Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |      |      |
|----|-----|-----------|------|------|
|    |     | In        | Out  | Out  |
| CA | AC  | 1-1/4"    | 3/4" | 3/4" |
| DA | AD  | 1-1/4"    | 3/4" | 1/2" |
| EA | AE  | 1-1/4"    | 1/2" | 1/2" |
| FA | AF  | 1"        | 3/4" | 3/4" |
| GA | AG  | 1"        | 3/4" | 1/2" |
| HA | AH  | 1"        | 1/2" | 1/2" |

Orientation is viewed from the shaft end

#### Dual Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |      |      |
|----|-----|-----------|------|------|
|    |     | In        | Out  | Out  |
| JG | GJ  | 1-1/2"    | 1"   | 1"   |
| KG | GK  | 1-1/2"    | 1"   | 7/8" |
| LG | GL  | 1-1/2"    | 7/8" | 7/8" |
| MG | GM  | 1-1/2"    | 1"   | 3/4" |
| NG | GN  | 1-1/2"    | 3/4" | 3/4" |
| PG | GP  | 1-1/4"    | 1"   | 1"   |
| QG | GQ  | 1-1/4"    | 1"   | 7/8" |
| RG | GR  | 1-1/4"    | 7/8" | 7/8" |
| SG | GS  | 1-1/4"    | 1"   | 3/4" |
| TG | GT  | 1-1/4"    | 3/4" | 3/4" |
| UG | GU  | 1-1/4"    | 3/4" | 5/8" |
| VG | GV  | 1-1/4"    | 3/4" | 1/2" |
| WG | GW  | 1-1/4"    | 5/8" | 5/8" |
| XG | GX  | 1-1/4"    | 1/2" | 1/2" |
| YG | GY  | 1"        | 1"   | 1"   |
| ZG | GZ  | 1"        | 1"   | 7/8" |
| RC | CR  | 1"        | 7/8" | 7/8" |
| SC | CS  | 1"        | 1"   | 3/4" |
| TC | CT  | 1"        | 3/4" | 3/4" |
| VC | CV  | 1"        | 3/4" | 5/8" |
| WC | CW  | 1"        | 3/4" | 1/2" |
| XC | CX  | 1"        | 5/8" | 5/8" |
| YC | CY  | 1"        | 1/2" | 1/2" |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| CJ | JC  | 1-1/4"    | 1-1/4" |
| CL | LC  | 1-1/4"    | 1"     |
| CM | MC  | 1-1/4"    | 3/4"   |
| HB | BH  | 1-1/4"    | 1/2"   |
| HC | CH  | 1"        | 1"     |
| HF | FH  | 1"        | 3/4"   |
| HL | LH  | 1"        | 1/2"   |
| HM | MH  | 3/4"      | 3/4"   |
| HN | NH  | 3/4"      | 1/2"   |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

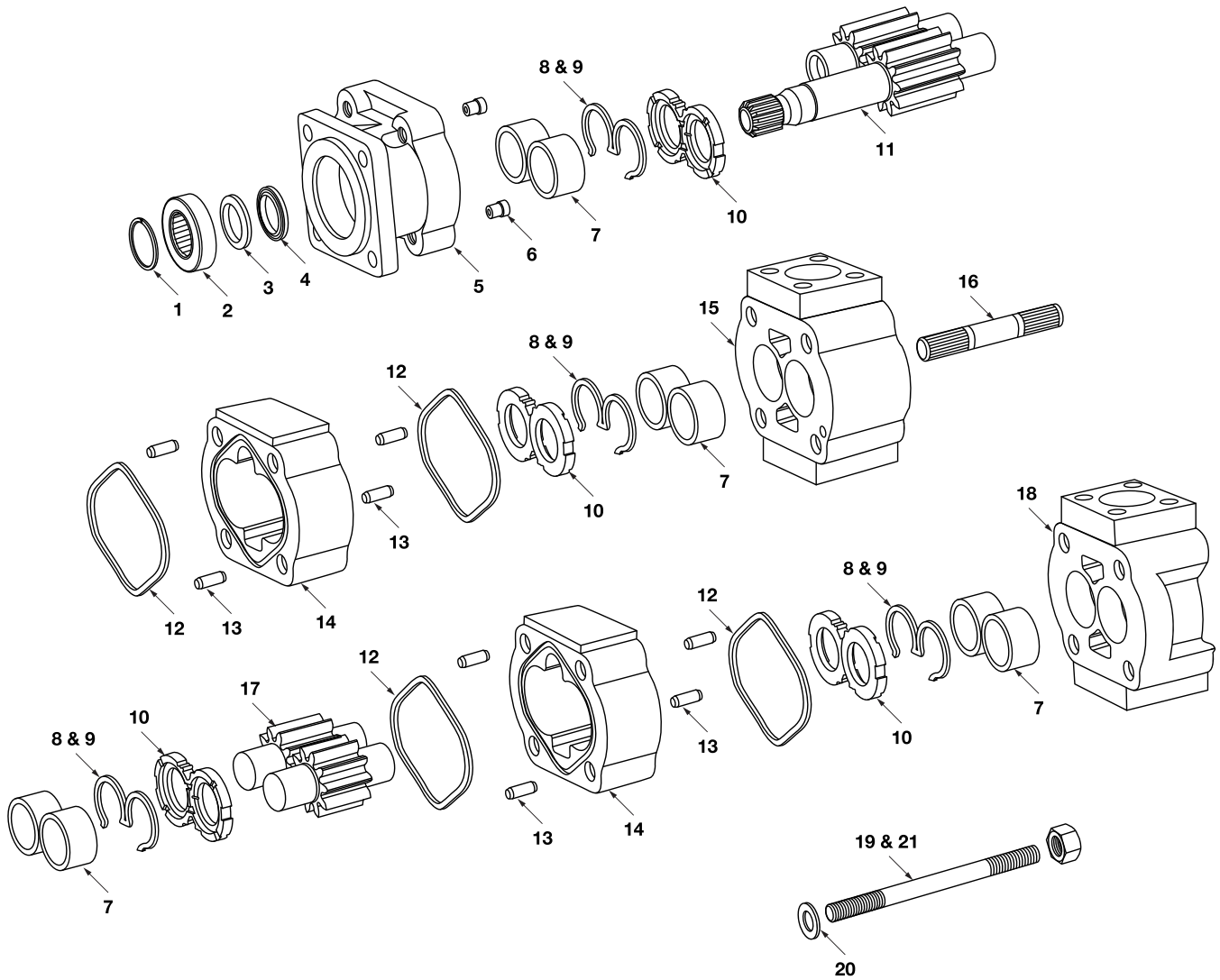
##### SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| KB | BK  | 1-1/2"    | 1-1/2" |
| KC | CK  | 1-1/2"    | 1-1/4" |
| KF | FK  | 1-1/2"    | 1"     |
| KL | LK  | 1-1/2"    | 7/8"   |
| KM | MK  | 1-1/2"    | 3/4"   |
| KN | NK  | 1-1/4"    | 1-1/4" |
| KO | OK  | 1-1/4"    | 1"     |
| KP | PK  | 1-1/4"    | 7/8"   |
| KQ | QK  | 1-1/4"    | 3/4"   |
| MB | BM  | 1-1/4"    | 5/8"   |
| ML | LM  | 1-1/4"    | 1/2"   |
| MN | NM  | 1"        | 1"     |
| MQ | QM  | 1"        | 7/8"   |
| MR | RM  | 1"        | 3/4"   |
| MS | SM  | 1"        | 5/8"   |
| MT | TM  | 1"        | 1/2"   |
| MU | UM  | 3/4"      | 3/4"   |
| MV | VM  | 3/4"      | 5/8"   |
| MW | WM  | 3/4"      | 1/2"   |

Orientation is viewed from the shaft end

# MH315 Series

## Parts Breakdown



# MH315 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|-------------|--|--------------|--------------|
| 1           | SEAL RETAINER SNAP RING MOTOR ONLY   | X05-01-56190 | 391-2686-016 |
| 2           | SHAFT BEARING (USED IN TYPE * 90 S.E.C.)                                       | X03-16-12251 | 391-0381-105 |
| 3           | SEAL RETAINER FOR MOTORS ONLY  | A32-60-10000 | 391-3384-313 |
| 4a          | PUMP LIP SEAL  | X83-11-02406 | 391-2883-151 |
| 4b          | MOTOR LIP SEAL   | X84-36-02406 | 391-2883-156 |
| 5a          | 2 BOLT A PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot)  | A32-10-21211 | 326-5029-204 |
| 5b          | 2 BOLT A PILOT PUMP S.E.C. WITH BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot)     | A32-10-21212 | 326-5129-204 |
| 5c          | 2 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 96 (4" or 101.6 mm pilot)      | A32-10-21221 | 326-5029-203 |
| 5d          | 2 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 96 (4" or 101.6 mm pilot)         | A32-10-21222 | 326-5129-203 |
| 5e          | 2 BOLT A PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot) | A32-10-41211 | 326-5029-404 |
| 5f          | 2 BOLT A PILOT MOTOR S.E.C. WITH BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot)    | A32-10-41213 | 326-5129-404 |
| 5g          | 2 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 96 (4" or 101.6 mm pilot)     | A32-10-41221 | 326-5029-403 |
| 5h          | 2 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 96 (4" or 101.6 mm pilot)        | A32-10-41222 | 326-5129-403 |
| 5i          | 4 BOLT 72 X 100 mm / 80mm PILOT WITHOUT BUSHING TYPE 90                        | A32-10-21491 | 326-5033-205 |
| 5j          | 4 BOLT 72 X 100 mm / 80mm PILOT WITH BUSHING TYPE 90                           | A32-10-21492 | 326-5133-205 |
| 5k          | PAD MOUNT WITHOUT BUSHING TYPE 95  | n/a          | 326-5016-202 |
| 5l          | PAD MOUNT WITH BUSHING TYPE 95   | n/a          | 326-5116-202 |
| 5m          | 2 BOLT A PILOT SEC TYPE 89 W/ SNAP RING  | A32-10-41212 | 326-5029-426 |
| 6a          | CHECK VALVE MOTOR  | A00-75-11000 | 391-3681-001 |
| 6b          | PRESSURE PLUG PUMP (may not be required)                                       | X02-03-32110 | 391-2286-004 |
| 7           | BUSHING  | X03-00-32427 | 391-0482-195 |
| 8           | PUMP BUNA SEAL   | A32-82-11030 | 391-2883-168 |
| 9           | PUMP NYLON BACKUP SEAL   | A32-82-46010 | 391-2883-169 |
| Not Shown   | MOTOR NYLON BACKUP SEAL  | A32-82-46030 | 391-2881-995 |
| Not Shown   | MOTOR THRUST PLATE SIDE SEAL   | A32-82-14022 | 391-2881-997 |
| Not Shown   | MOTOR THRUST PLATE END SEAL  | A32-82-14021 | 391-2881-996 |
| 10a         | PUMP THRUST PLATE  | A32-70-20000 | 391-2185-063 |
| 10b         | MOTOR THRUST PLATE   | A32-70-10000 | 391-2185-070 |
| 11a         | SHAFT & GEAR SAE "A" 0.625" dia. KEYED TYPE 97                                 | A32-50-XX111 | 326-29XX-920 |
| 11b         | SHAFT & GEAR SAE "A" 9 TOOTH SPLINE 0.609" maj. dia. TYPE 96                   | A32-50-XX211 | 326-29XX-420 |
| 11c         | SHAFT & GEAR SAE "B" 0.875" dia. KEYED TYPE 66                                 | A32-50-XX126 | 326-29XX-930 |
| 11d         | SHAFT & GEAR SAE "B" 13-TOOTH SPLINE 0.858" maj. dia. TYPE 65                  | A32-50-XX226 | 326-29XX-430 |
| 11e         | SHAFT & GEAR TAPERED M12 X 1.5 THD & 3X5 KEYED TYPE 60                         | n/a          | 326-29XX-701 |
| 11f         | SHAFT & GEAR TAPERED 5/16 INTERNAL THD #6 WDF KEY TYPE 56                      | n/a          | 326-29XX-604 |
| 12a         | PUMP HOUSING GASKET  | X85-11-08203 | 391-2881-968 |
| 12b         | MOTOR HOUSING GASKET   | X85-11-08903 | 391-2881-429 |

# MH315 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #          | ALTERNATE #  |
|-------------|--|--------------------|--------------|
| 13          | HOUSING DOWEL PIN  | A00-94-10616       | 391-2082-071 |
| 14a         | PUMP GEAR HOUSING  | A32-33-XX000       | 326-81XX-100 |
| 14b         | MOTOR GEAR HOUSING                                       | A32-32-XX000       | 326-82XX-100 |
| 15a         | 315 BEARING CARRIER 1 OUTLET WITHOUT BUSHING             | A32-40-21000       | 326-7100-100 |
| 15b         | 315 BEARING CARRIER 1 OUTLET WITH BUSHING                | A32-40-31000       | 326-7600-100 |
| 15c         | 315 BEARING CARRIER 2 OUTLET WITHOUT BUSHING             | A32-40-22000       | 326-7300-100 |
| 15d         | 315 BEARING CARRIER 2 OUTLET WITH BUSHING                | A32-40-32000       | 326-7800-100 |
| 16          | CONNECTING SHAFT   | A32-50-00500       | 326-1133-001 |
| 17          | GEAR SET ONLY  | A32-50-XX000       | 326-28XX-000 |
| 18a         | 315 PUMP P.E.C. NO PORTING WITHOUT BUSHING               | A32-23-00000       | 326-3000-100 |
| 18b         | 315 PUMP P.E.C. NO PORTING WITH BUSHING                  | A32-23-10000       | 326-3100-100 |
| 18c         | 315 PUMP P.E.C. SIDE PORTING TYPE WITHOUT BUSHING        | A32-23-01000       | 326-3030-100 |
| 18d         | 315 PUMP P.E.C. SIDE PORTING TYPE WITH BUSHING           | A32-23-11000       | 326-3130-100 |
| 18e         | 315 PUMP P.E.C. SIDE & REAR PORTING TYPE WITHOUT BUSHING | A32-26-18000       | 326-3133-100 |
| 18f         | 315 PUMP P.E.C. SIDE & REAR PORTING TYPE WITH BUSHING    | A32-23-08000       | 326-3033-100 |
| 18g         | 315 MOTOR P.E.C. PORTING TYPE WITHOUT BUSHING            | A32-22-02000       | 326-3020-100 |
| 18h         | 315 MOTOR P.E.C. PORTING TYPE WITH BUSHING               | A32-22-12000       | 326-3120-100 |
| 19          | BOLTS / STUDS (1/2"-UNC)                                 | See Fasteners Page |              |
| 20          | FLAT WASHER (1/2")                                       | X45-19-13005       | 391-3782-132 |
| 21          | HEX NUT (1/2"-UNC)                                       | X42-11-13011       | 391-1451-051 |
| Not Shown   | CASE DRAIN PLUG  | X02-03-12060       | 391-2281-010 |
| Not Shown   | DRIVE KEY FOR TYPE 97 SHAFT                              | X01-02-40419       | 391-1781-091 |
| Not Shown   | DRIVE KEY FOR TYPE 66 SHAFT                              | X01-02-60625       | 391-1781-085 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

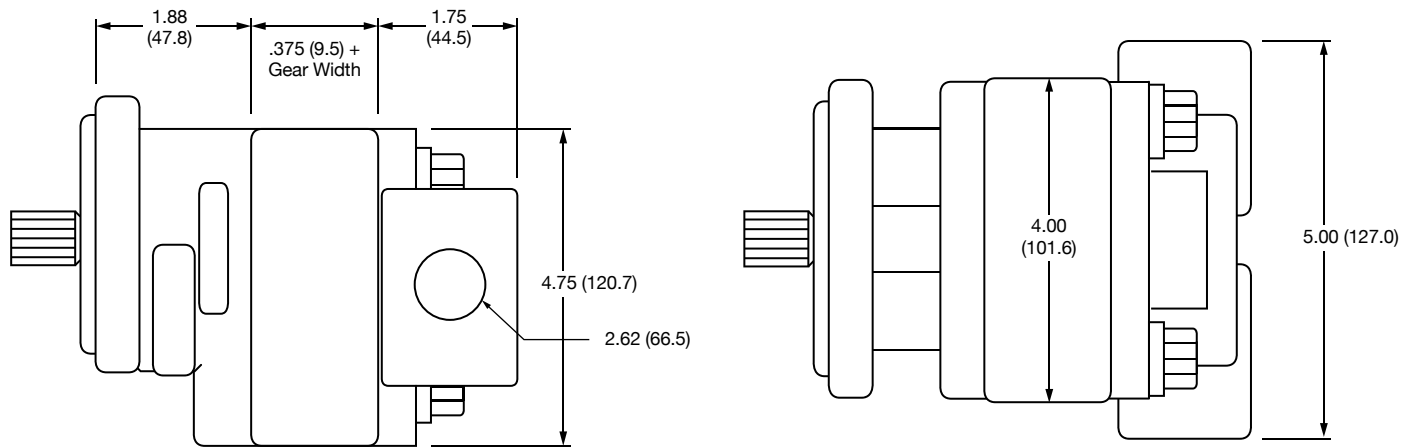
For example: Gear set no. A32-50-XX000 changes to A32-50-15000 for 1.5" gear size  
Housing no. A32-33-XX000 changes to A32-33-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH315 Series

## Dimensions

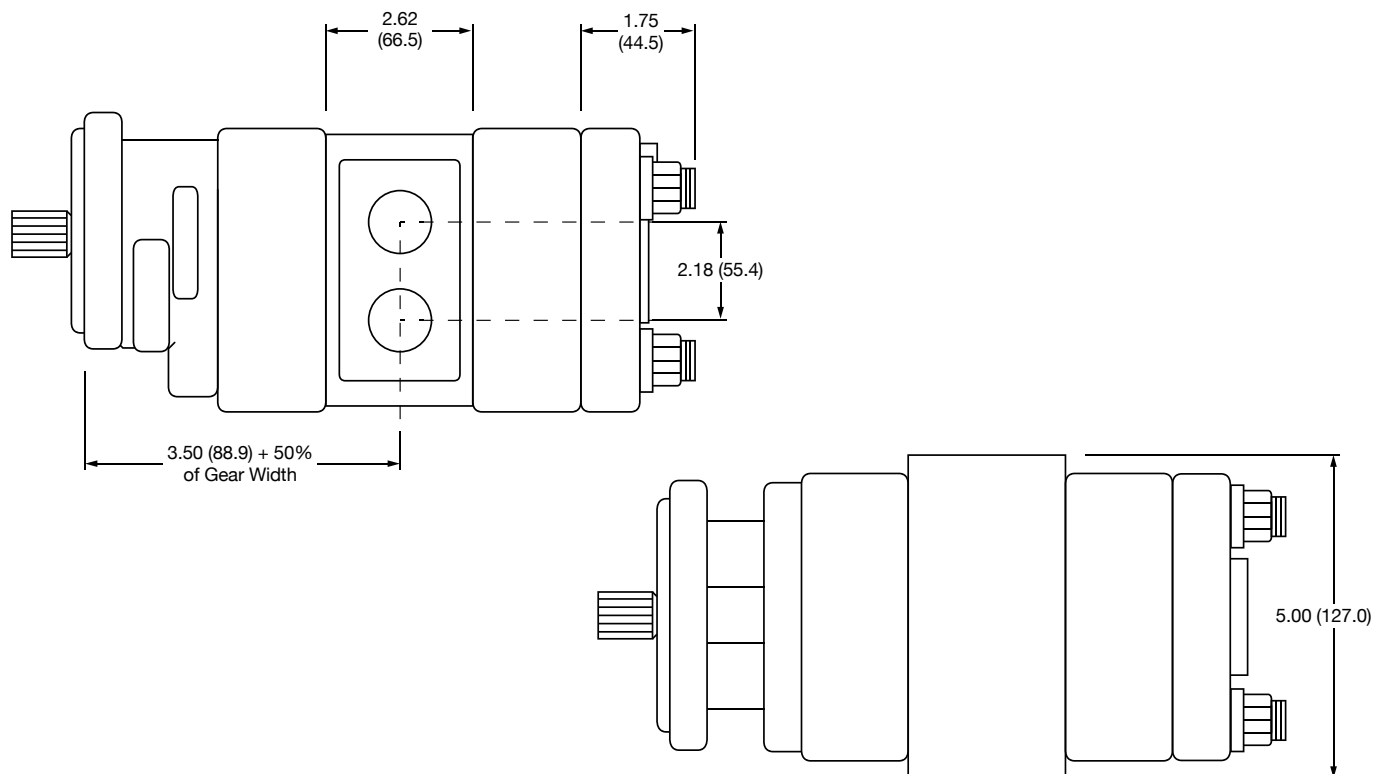
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).



# MH330 Series Bushing Pump

## Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH330      |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .50        | 1/2"   | .99                  | (16.1)                 | 3500         | (241) |
| .75        | 3/4"   | 1.48                 | (24.2)                 | 3500         | (241) |
| 1.00       | 1"     | 1.97                 | (32.3)                 | 3500         | (241) |
| 1.25       | 1-1/4" | 2.46                 | (40.4)                 | 3500         | (241) |
| 1.50       | 1-1/2" | 2.96                 | (48.4)                 | 3500         | (241) |
| 1.75       | 1-3/4" | 3.45                 | (56.5)                 | 3250         | (224) |
| 2.00       | 2"     | 3.94                 | (64.6)                 | 3000         | (207) |

# MH330 Series Bushing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |            |           |            |            |            |            |
|-----------|----------------------|------------|-----------|------------|------------|------------|------------|
|           | 1/2"                 | 3/4"       | 1"        | 1-1/4"     | 1-1/2"     | 1-3/4"     | 2"         |
| 900       | 3.2 / 12             | 5.1 / 19   | 7 / 26    | 8.8 / 33   | 10.6 / 40  | 12.4 / 47  | 14.3 / 54  |
| 1200      | 4.5 / 17             | 7 / 26     | 9.5 / 36  | 12 / 45    | 14.5 / 55  | 16.9 / 64  | 19.4 / 73  |
| 1500      | 5.8 / 22             | 8.9 / 34   | 12.1 / 46 | 15.2 / 57  | 18.3 / 69  | 21.4 / 81  | 24.5 / 93  |
| 1800      | 7.1 / 27             | 10.8 / 41  | 14.7 / 55 | 18.4 / 70  | 22.1 / 84  | 25.9 / 98  | 29.6 / 112 |
| 2100      | 8.4 / 32             | 12.7 / 48  | 17.2 / 65 | 21.6 / 82  | 26 / 98    | 30.3 / 115 | 34.7 / 131 |
| 2400      | 9.6 / 36             | 14.7 / 55  | 19.8 / 75 | 24.8 / 94  | 29.8 / 113 | 34.8 / 132 | 39.8 / 151 |
| 3000      | 12.2 / 46            | 18.55 / 70 | 24.9 / 94 | 31.2 / 118 | 37.5 / 142 | 43.8 / 166 | 50.1 / 190 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1" (3500 PSI)        |                             | 1-1/4" (3500 PSI)    |                             | 1-1/2" (3500 PSI)    |                             | 1-3/4" (3250 PSI)    |                             | 2" (3000 PSI)        |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 900       | 10.1 / 38            | 1010 / 114.1                | 12.3 / 47            | 1270 / 143.5                | 14.5 / 55            | 1530 / 172.9                | 16.7 / 63            | 1665 / 188.1                | 19 / 72              | 1770 / 200                  |
| 1200      | 12.8 / 49            | 1005 / 113.6                | 15.7 / 59            | 1265 / 142.9                | 18.6 / 70            | 1525 / 172.3                | 21.4 / 81            | 1660 / 187.6                | 24.3 / 92            | 1760 / 198.9                |
| 1500      | 15.6 / 59            | 1000 / 113                  | 19.1 / 72            | 1255 / 141.8                | 22.6 / 85            | 1515 / 171.2                | 26.1 / 99            | 1650 / 186.4                | 29.6 / 112           | 1750 / 197.7                |
| 1800      | 18.4 / 69            | 995 / 112.4                 | 22.5 / 85            | 1250 / 141.2                | 26.6 / 101           | 1505 / 170                  | 30.8 / 116           | 1640 / 185.3                | 34.9 / 132           | 1740 / 196.6                |
| 2100      | 21.1 / 80            | 990 / 111.9                 | 25.9 / 98            | 1240 / 140.1                | 30.7 / 116           | 1495 / 168.9                | 35.4 / 134           | 1625 / 183.6                | 40.2 / 152           | 1720 / 194.3                |
| 2400      | 23.9 / 90            | 985 / 111.3                 | 29.3 / 111           | 1235 / 139.5                | 34.7 / 131           | 1480 / 167.2                | 40.1 / 152           | 1605 / 181.3                | 45.5 / 172           | 1695 / 191.5                |
| 3000      | 29.2 / 110           | 980 / 110.7                 | 35.9 / 136           | 1230 / 139                  | 42.6 / 161           | 1475 / 166.7                | 49.3 / 186           | 1595 / 180.2                | 56 / 212             | 1685 / 190.4                |

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

## MH330 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 13,000   | 6,250     |
| SAE "BB" Keyed   | 9,300    | 6,250     |
| SAE "B" Spline   | 8,450    | 6,250     |
| SAE "B" Keyed    | 6,250    | 6,250     |
| SAE "C" Spline   | *        | 6,250     |
| SAE "C" Keyed    | *        | 6,250     |
| Connecting Shaft |          | 6,250     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH330 Series Bushing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2   3   4      5      6      7      8      9   6   7   10  
**MHP - 330 - A - 1 - 78 - AL - AB - 10 - 98 - AU - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft  
L = Unit w/ Extended Studs

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
8 = Motor w/ Shaft Bearing (Bi-Rotational)  
9 = Motor w/o Shaft Bearing (Bi-Rotational)

### Shaft End Cover <sup>4</sup>

42 = SAE 4-Bolt "B" Mount  
46 = SAE 2/4-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount  
97 = SAE 2-Bolt "B" Mount

### Port End Cover <sup>5</sup>

#### Unported

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| BI |  | None      | None |

#### Side Ported - NPT Codes

| CW | CCW | Port Size |      |
|----|-----|-----------|------|
|    |     | In        | Out  |
| AJ | JA  | 1-1/4"    | 1"   |
| AK | KA  | 1-1/4"    | 3/4" |
| AL | LA  | 1"        | 1"   |
| AM | MA  | 1"        | 3/4" |
| AR | RA  | 3/4"      | 3/4" |

Orientation is viewed from the shaft end

#### Motor - Side Ported - NPT

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| DN |  | 1"        | 1"     |
| DM |  | 1-1/4"    | 1-1/4" |
| DQ |  | 1-1/2"    | 1-1/2" |

#### Side Ported - SAE O-ring

| CW | CCW | Port Size |      |
|----|-----|-----------|------|
|    |     | In        | Out  |
| FJ | JF  | 1-1/4"    | 1"   |
| FL | LF  | 1"        | 1"   |
| BG | GB  | 1-1/4"    | None |
| BJ | JB  | 1"        | None |
| BN | NB  | None      | 1"   |

Orientation is viewed from the shaft end

#### Motor - Side Ported - SAE O-ring

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| VN |  | 1"        | 1"     |
| VR |  | 3/4"      | 3/4"   |
| VC |  | 1-1/4"    | 1-1/4" |

#### Side Ported - SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| EJ | JE  | 1-1/2"    | 1-1/4" |
| EK | KE  | 1-1/2"    | 1"     |
| EL | LE  | 1-1/4"    | 1-1/4" |
| EM | ME  | 1-1/4"    | 1"     |
| EN | NE  | 1"        | 1"     |
| OF | FO  | 1-1/2"    | None   |
| OG | GO  | 1-1/4"    | None   |
| OJ | JO  | 1"        | None   |
| OM | MO  | None      | 1-1/4" |
| ON | NO  | None      | 1"     |

Orientation is viewed from the shaft end

#### Motor - Side Ported - SAE Split Flange

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| CS |  | 1-1/4"    | 1-1/4" |
| CT |  | 1"        | 1"     |
| CV |  | 3/4"      | 3/4"   |

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See following page for Bearing Carrier options

### Shaft Type <sup>8</sup>

7 = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)  
25 = SAE "B" 13 Tooth Spline .88" Dia.  
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key  
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key  
98 = SAE "BB" 15 Tooth Spline 1" Dia.

### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|             |              |              |              |              |              |              |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 05<br>(.99) | 07<br>(1.48) | 10<br>(1.97) | 12<br>(2.46) | 15<br>(2.96) | 17<br>(3.45) | 20<br>(3.94) |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|

### Gear Housing <sup>6</sup>

| Code | Port Size |      |       |
|------|-----------|------|-------|
|      | In        | Out  |       |
| AB   | None      | None | Pump  |
| EB   | None      | None | Motor |

# MH330 Series Bushing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

#### Dual Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |        |
|----|-----|-----------|--------|--------|
|    |     | In        | Out    | Out    |
| AM | MA  | 2"        | 1-1/4" | 1-1/4" |
| AN | NA  | 2"        | 1-1/4" | 1"     |
| AP | PA  | 2"        | 1"     | 1"     |
| AT | TA  | 1-1/2"    | 1-1/4" | 1-1/4" |
| AU | UA  | 1-1/2"    | 1-1/4" | 1"     |
| AV | VA  | 1-1/2"    | 1"     | 1"     |
| AW | WA  | 1-1/4"    | 1-1/4" | 1-1/4" |
| AX | XA  | 1-1/4"    | 1-1/4" | 1"     |
| AY | YA  | 1-1/4"    | 1"     | 1"     |
| AZ | ZA  | 1"        | 1"     | 1"     |

Orientation is viewed from the shaft end

#### Dual Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |     |     |
|----|-----|-----------|-----|-----|
|    |     | In        | Out | Out |
| GV | VG  | 1-1/2"    | 1"  | 1"  |
| GY | YG  | 1-1/4"    | 1"  | 1"  |
| GZ | ZG  | 1"        | 1"  | 1"  |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| HB | BH  | 2"        | 1-1/2" |
| HC | CH  | 2"        | 1-1/4" |
| HF | FH  | 2"        | 1"     |
| HL | LH  | 1-1/2"    | 1-1/2" |
| HM | MH  | 1-1/2"    | 1-1/4" |
| HN | NH  | 1-1/2"    | 1"     |
| HO | OH  | 1-1/4"    | 1-1/4" |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| KM | MK  | 1-1/2"    | 1-1/4" |
| KN | NK  | 1-1/2"    | 1"     |
| KO | OK  | 1-1/4"    | 1-1/4" |
| KP | PK  | 1-1/4"    | 1"     |
| KQ | QK  | 1"        | 1"     |

Orientation is viewed from the shaft end

#### Combined Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| UN | NU  | 2"        | 1-1/2" |
| UO | OU  | 2"        | 1-1/4" |
| UP | PU  | 1-1/2"    | 1-1/2" |
| UQ | QU  | 1-1/2"    | 1-1/4" |
| UR | RU  | 1-1/4"    | 1-1/4" |

Orientation is viewed from the shaft end

#### Combined Outlet Motors

##### SAE Split Flange

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| BB |  | 1-1/2"    | 1-1/2" |
| CC |  | 1-1/4"    | 1-1/4" |
| EE |  | 1"        | 1"     |
| FF |  | 3/4"      | 3/4"   |

Orientation is viewed from the shaft end

#### Combined Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| PQ | QP  | 1-1/2"    | 1-1/4" |
| PR | RP  | 1-1/4"    | 1-1/4" |

Orientation is viewed from the shaft end

#### Combined Outlet Motors

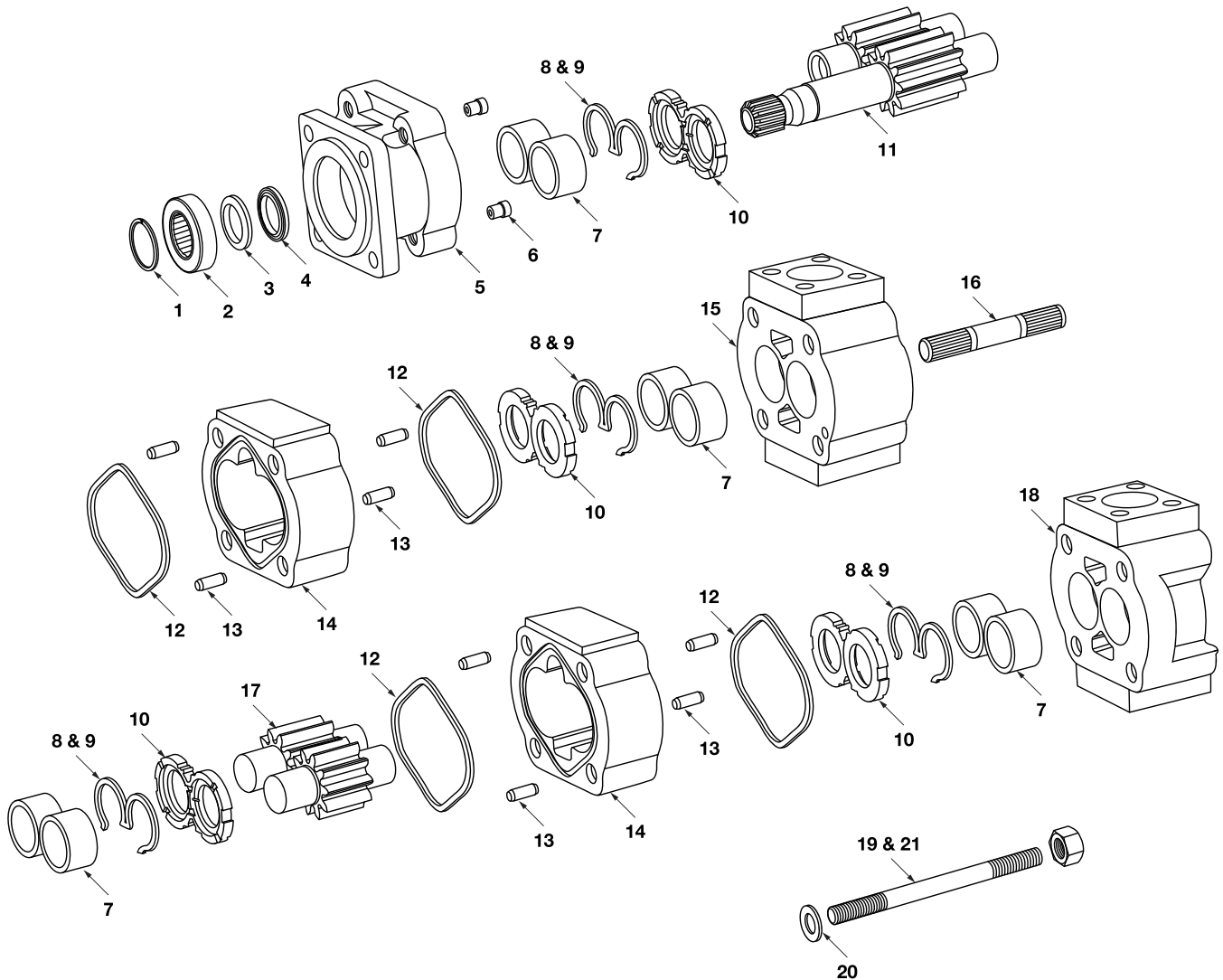
##### SAE O-ring

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| NN |  | 1-1/4"    | 1-1/4" |
| QQ |  | 1"        | 1"     |
| RR |  | 3/4"      | 3/4"   |

Orientation is viewed from the shaft end

# MH330 Series

## Parts Breakdown



# MH330 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|------------------|--|--------------|--------------|
| 1                | SHAFT BRG. SNAP RING   | X05-03-56200 | 391-2686-063 |
| 2a               | INPUT SHAFT BRG.   | X03-16-12552 | 391-0381-040 |
| 2b               | SPACER IN PLACE OF SHAFT BEARING   | A30-92-38520 | 391-3383-069 |
| 3                | SEAL RETAINER FOR MOTORS ONLY  | A20-60-10000 | 391-3381-040 |
| 4a               | PUMP LIP SEAL  | X83-11-02708 | 391-2883-058 |
| 4b               | MOTOR LIP SEAL   | X84-36-02709 | 391-2883-119 |
| 4c               | PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY                                       | X89-11-02508 | 391-2883-107 |
| 4d               | MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY                                      | X84-36-02509 | 391-2883-126 |
| 5a               | 4 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot)      | A33-10-21421 | 324-5033-201 |
| 5b               | 4 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)         | A33-10-21422 | 324-5133-201 |
| 5c               | 4 BOLT C PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)        | A33-10-21431 | 324-5033-202 |
| 5d               | 4 BOLT C PILOT PUMP S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)           | A33-10-21432 | 324-5133-202 |
| 5e               | 2 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot)      | A33-10-21221 | 324-5023-201 |
| 5f               | 2 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)         | A33-10-21222 | 324-5123-201 |
| 5g               | 2 & 4 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101.6 mm pilot)  | A33-10-21321 | 324-5053-201 |
| 5h               | 2 & 4 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 46 (4" or 101.6 mm pilot)     | A33-10-21322 | 324-5153-201 |
| 5i               | 4 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot)     | A33-10-41421 | 324-5033-401 |
| 5j               | 4 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)        | A33-10-41422 | 324-5133-401 |
| 5k               | 4 BOLT C PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)       | A33-10-41431 | 324-5033-402 |
| 5l               | 4 BOLT C PILOT MOTOR S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)          | A33-10-41432 | 324-5133-402 |
| 5m               | 2 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot)     | A33-10-41221 | 324-5023-401 |
| 5n               | 2 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)        | A33-10-41222 | 324-5123-401 |
| 5o               | 2 & 4 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101.6 mm pilot) | A33-10-41320 | 324-5053-401 |
| 5p               | 2 & 4 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 46 (4" or 101.6 mm pilot)    | A33-10-41322 | 324-5153-401 |
| 6a               | CHECK VALVE MOTOR  | A00-75-11000 | 391-3681-001 |
| 6b               | PRESSURE PLUG PUMP (may not be required)                                       | X02-03-32110 | 391-2286-004 |
| 7                | BUSHING  | X03-00-32730 | 391-0482-306 |
| 8                | PUMP BUNA SEAL   | A33-82-11030 | 391-2883-166 |
| 9                | PUMP NYLON BACKUP SEAL   | A33-82-46010 | 391-2883-167 |
| <b>Not Shown</b> | MOTOR NYLON BACKUP SEAL  | A33-82-46030 | 391-2881-929 |
| <b>Not Shown</b> | MOTOR THRUST PLATE SIDE SEAL   | A33-82-14022 | 391-2881-931 |
| <b>Not Shown</b> | MOTOR THRUST PLATE END SEAL  | A33-82-14021 | 391-2881-930 |
| 10a              | PUMP THRUST PLATE  | A33-70-20000 | 391-2185-056 |
| 10b              | MOTOR THRUST PLATE   | A33-70-10000 | 391-2185-065 |
| 11a              | SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25                       | A33-50-XX225 | 324-29XX-230 |
| 11b              | SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43             | A33-50-XX135 | 324-29XX-740 |

# MH330 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #          | ALTERNATE #  |
|-------------|--|--------------------|--------------|
| 11c         | SHAFT & GEAR SET 15 TOOTH SPLINE 0.983" maj. dia TYPE 98   | A33-50-XX231       | 324-29XX-240 |
| 12a         | PUMP HOUSING GASKET  | X85-11-10104       | 391-2884-050 |
| 12b         | MOTOR HOUSING GASKET                                       | X85-11-09803       | 391-2884-076 |
| 13          | HOUSING DOWEL PIN  | A00-94-11025       | 391-2082-032 |
| 14a         | PUMP GEAR HOUSING  | A33-33-XX000       | 324-81XX-100 |
| 14b         | MOTOR GEAR HOUSING   | A33-32-XX000       | 324-82XX-100 |
| 15a         | 330 BEARING CARRIER BLANK WITHOUT BUSHING                  | A33-40-00000       | 324-7200-100 |
| 15b         | 330 BEARING CARRIER BLANK WITH BUSHING                     | A33-40-10000       | 324-7700-100 |
| 15c         | 330 BEARING CARRIER 1 OUTLET WITHOUT BUSHING               | A33-40-21000       | 324-7100-100 |
| 15d         | 330 BEARING CARRIER 1 OUTLET WITH BUSHING                  | A33-40-31000       | 324-7600-100 |
| 15e         | 330 BEARING CARRIER 2 OUTLET WITHOUT BUSHING               | A33-40-22000       | 324-7300-100 |
| 15f         | 330 BEARING CARRIER 2 OUTLET WITH BUSHING                  | A33-40-32000       | 324-7800-100 |
| 15g         | 330/315 BEARING CARRIER CW WITHOUT BUSHING                 | A33-40-23000       | 324-3050-100 |
| 15h         | 330/315 BEARING CARRIER CW WITH BUSHING                    | A33-40-33000       | 324-3150-100 |
| 15i         | 330/315 BEARING CARRIER CCW WITHOUT BUSHING                | A33-40-24000       | 324-3060-100 |
| 15j         | 330/315 BEARING CARRIER CCW WITH BUSHING                   | A33-40-34000       | 324-3160-100 |
| 16a         | CONNECTING SHAFT   | A33-50-00500       | 324-1133-001 |
| 16b         | PIGGYBACK CONNECTING SHAFT PHASE 2                         | A81-50-00500       | 324-1133-004 |
| 17          | GEAR SET ONLY  | A33-50-XX000       | 324-28XX-000 |
| 18a         | 330 PUMP P.E.C. NO PORTING WITHOUT BUSHING                 | A33-23-00000       | 324-3000-100 |
| 18b         | 330 PUMP P.E.C. NO PORTING WITH BUSHING                    | A33-23-10000       | 324-3100-100 |
| 18c         | 330 P.E.C. NO PORTING WITHOUT BUSHING CHECK VALVE REQ.     | A33-25-00000       | 324-3000-101 |
| 18d         | 330 P.E.C. NO PORTING WITH BUSHING CHECK VALVE REQ.        | A33-25-10000       | 324-3100-101 |
| 18e         | 330 PUMP P.E.C. PORTING TYPE WITHOUT BUSHING               | A33-23-02000       | 324-3010-100 |
| 18f         | 330 PUMP P.E.C. PORTING TYPE WITH BUSHING                  | A33-23-12000       | 324-3110-100 |
| 18g         | 330 MOTOR P.E.C. PORTING TYPE WITHOUT BUSHING              | A33-22-02000       | 324-3020-100 |
| 18h         | 330 MOTOR P.E.C. PORTING TYPE WITH BUSHING                 | A33-22-12000       | 324-3120-100 |
| 19          | BOLTS / STUDS (5/8"-UNC)                                   | See Fasteners Page |              |
| 20          | FLAT WASHER (5/8")   | X45-10-17005       | 391-3784-028 |
| 21          | HEX NUT (5/8"-UNC)   | X42-11-16000       | 391-1451-076 |
| Not Shown   | CONTINENTAL SHAFT 14 TOOTH SPLINE 1.223" maj. dia. TYPE 7  | A33-50-00241       | 324-1000-500 |
| Not Shown   | CONTINENTAL SHAFT 13 TOOTH SPLINE 0.858" maj. dia. TYPE 25 | A33-50-00221       | 324-1000-300 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A33-50-XX000 changes to A33-50-15000 for 1.5" gear size  
Housing no. A33-33-XX000 changes to A33-33-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH330 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION   | METARIS #    | ALTERNATE #  |
|------------------|---|--------------|--------------|
| <b>Not Shown</b> | CONTINENTAL SHAFT 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43 | A33-50-00131 | 324-1500-400 |
| <b>Not Shown</b> | CONTINENTAL SHAFT 15 TOOTH SPLINE 0.983" maj. dia. TYPE 98          | A33-50-00239 | 324-1200-400 |
| <b>Not Shown</b> | CONTINENTAL SHAFT 0.875" dia. KEYED (1/4" x 3/8" x 1") TYPE 30      | A33-50-00121 | 324-1500-300 |
| <b>Not Shown</b> | DRIVE KEY FOR TYPE 43 SHAFT   | X01-02-60632 | 391-1781-082 |
| <b>Not Shown</b> | DRIVE KEY FOR TYPE 30 SHAFT   | X01-02-60625 | 391-1781-085 |
| <b>Not Shown</b> | CONTINENTAL SHAFT BRG. RETAINER                                     | A20-60-20000 | 312-0100-002 |
| <b>Not Shown</b> | CONTINENTAL SHAFT BRG. RETAINER SNAP RING                           | X05-02-28110 | 391-2685-011 |

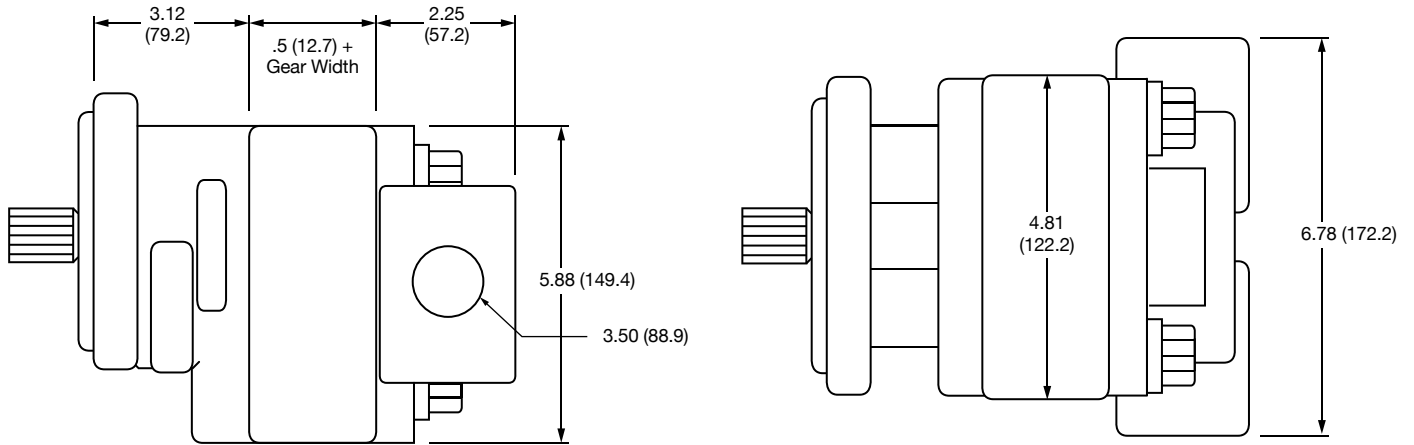


# MH330 Series

## Dimensions

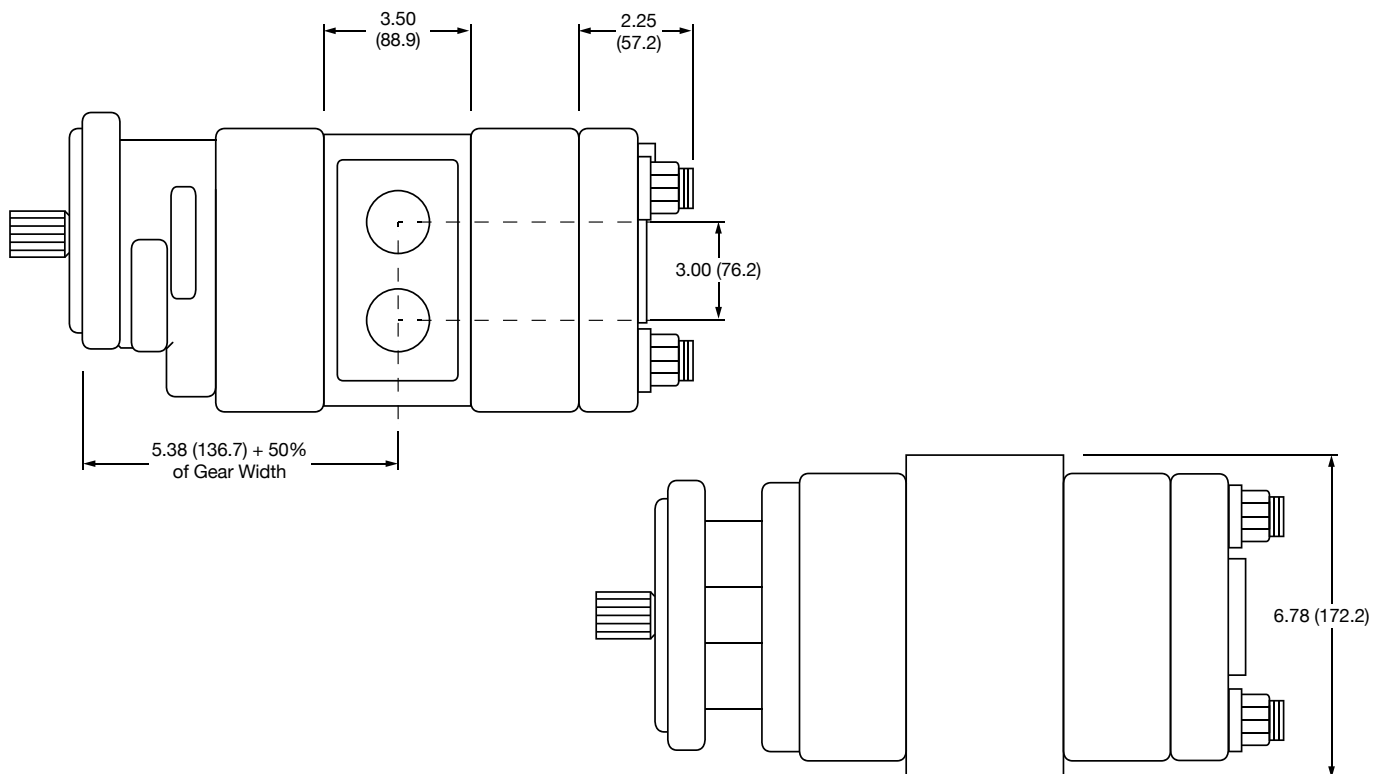
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH350 Series Bushing Pump

## Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH350      |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .50        | 1/2"   | 1.28                 | (20.9)                 | 3500         | (241) |
| .75        | 3/4"   | 1.91                 | (31.3)                 | 3500         | (241) |
| 1.00       | 1"     | 2.55                 | (41.8)                 | 3500         | (241) |
| 1.25       | 1-1/4" | 3.19                 | (52.2)                 | 3500         | (241) |
| 1.50       | 1-1/2" | 3.83                 | (62.7)                 | 3500         | (241) |
| 1.75       | 1-3/4" | 4.46                 | (73.1)                 | 3250         | (224) |
| 2.00       | 2"     | 5.10                 | (83.6)                 | 3000         | (207) |
| 2.25       | 2-1/4" | 5.74                 | (94.0)                 | 2750         | (190) |
| 2.50       | 2-1/2" | 6.38                 | (104.5)                | 2500         | (172) |

# MH350 Series Bushing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH (GPM/LPM) |           |           |            |            |            |            |            |            |
|-----------|----------------------|-----------|-----------|------------|------------|------------|------------|------------|------------|
|           | 1/2"                 | 3/4"      | 1"        | 1-1/4"     | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"     | 2-1/2"     |
| 900       | 4 / 15               | 6.4 / 24  | 8.8 / 33  | 11.2 / 42  | 13.7 / 52  | 16.1 / 61  | 18.6 / 70  | 21 / 70    | 23.4 / 90  |
| 1200      | 5.6 / 21             | 8.8 / 33  | 12.1 / 46 | 15.4 / 58  | 18.7 / 71  | 21.9 / 83  | 25.2 / 95  | 28.4 / 108 | 31.7 / 120 |
| 1500      | 7.3 / 28             | 11.3 / 43 | 15.5 / 59 | 19.5 / 74  | 23.6 / 89  | 27.7 / 105 | 31.8 / 120 | 35.9 / 136 | 40 / 151   |
| 1800      | 8.9 / 34             | 13.8 / 52 | 18.8 / 71 | 23.6 / 89  | 28.6 / 108 | 33.5 / 127 | 38.4 / 145 | 43.3 / 164 | 48.3 / 183 |
| 2100      | 10.6 / 40            | 16.3 / 62 | 22.1 / 84 | 33.6 / 127 | 33.6 / 127 | 39.3 / 149 | 45.1 / 171 | 50.8 / 192 | 56.6 / 214 |
| 2400      | 12.2 / 46            | 18.8 / 71 | 25.4 / 96 | 38.5 / 121 | 38.5 / 146 | 45.1 / 171 | 51.7 / 196 | 58.2 / 220 | 64.8 / 245 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH           |                             |                      |                             |                      |                             |                      |                             |                      |                             |
|-----------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|----------------------|-----------------------------|
|           | 1" (3500 PSI)        |                             | 1-1/4" (3500 PSI)    |                             | 1-1/2" (3500 PSI)    |                             | 1-3/4" (3250 PSI)    |                             | 2" (3000 PSI)        |                             |
|           | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) | INPUT FLOW (GPM/LPM) | OUTPUT TORQUE (IN/LBS / NM) |
| 900       | 13.4 / 51            | 1320 / 149.1                | 16 / 61              | 1670 / 188.7                | 18.6 / 70            | 2025 / 228.8                | 21.2 / 80            | 2225 / 251.4                | 23.8 / 90            | 2350 / 265.5                |
| 1200      | 15.9 / 64            | 1315 / 148.6                | 20.4 / 77            | 1660 / 187.6                | 23.8 / 90            | 2015 / 227.7                | 27.2 / 103           | 2215 / 250.3                | 30.6 / 116           | 2340 / 264.4                |
| 1500      | 20.5 / 77            | 1300 / 146.9                | 24.7 / 93            | 1640 / 185.3                | 28.9 / 110           | 1990 / 224.8                | 33.2 / 126           | 2195 / 248                  | 37.4 / 142           | 2315 / 261.6                |
| 1800      | 24 / 91              | 1295 / 146.3                | 29 / 110             | 1635 / 184.7                | 34.1 / 129           | 1980 / 223.7                | 39.2 / 148           | 2180 / 246.3                | 44.2 / 167           | 2300 / 259.9                |
| 2100      | 27.5 / 104           | 1285 / 145.2                | 33.4 / 126           | 1620 / 183                  | 39.3 / 149           | 1965 / 222                  | 45.2 / 171           | 2165 / 244.6                | 51.1 / 193           | 2285 / 258.2                |
| 2400      | 31 / 117             | 1265 / 142.9                | 37.7 / 143           | 1600 / 180.8                | 44.4 / 168           | 1940 / 219.2                | 51.2 / 194           | 2135 / 241.2                | 57.9 / 219           | 2255 / 254.8                |

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

## MH350 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 9,900    | 9,000     |
| SAE "BB" Keyed   | 7,100    | 7,100     |
| SAE "B" Spline   | 6,450    | 6,450     |
| SAE "B" Keyed    | 4,750    | 4,750     |
| SAE "C" Spline   | 19,100   | 9,000     |
| SAE "C" Keyed    | 13,900   | 9,000     |
| Connecting Shaft |          | 9,000     |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH350 Series Bushing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2   3   4   5   6   7   8      9   6   7   10  
**MHP - 350 - A - 1 - 78 - BL - AB - 10 - 98 - AU - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft  
L = Unit w/ Extended Studs

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
8 = Motor w/ Shaft Bearing (Bi-Rotational)  
9 = Motor w/o Shaft Bearing (Bi-Rotational)

### Shaft End Cover <sup>4</sup>

42 = SAE 4-Bolt "B" Mount  
46 = SAE 2/4-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount  
97 = SAE 2-Bolt "B" Mount  
98 = SAE 2-Bolt "C" Mount

### Port End Cover <sup>5</sup>

#### Unported

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| BI |  | None      | None |

#### Side Ported - SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| FB | BF  | 1-1/2"    | 1-1/4" |
| FC | CF  | 1-1/2"    | 1"     |
| FG | GF  | 1-1/4"    | 1-1/4" |
| FJ | JF  | 1-1/4"    | 1"     |
| FL | LF  | 1"        | 1"     |
| BC | CB  | 1-1/2"    | None   |
| BG | GB  | 1-1/4"    | None   |
| BJ | JB  | 1"        | None   |
| BL | LB  | None      | 1-1/4" |
| BN | NB  | None      | 1"     |

Orientation is viewed from the shaft end

#### Motor - Side Ported - SAE O-ring

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| VC |  | 1-1/4"    | 1-1/4" |
| VN |  | 1"        | 1"     |
| VR |  | 3/4"      | 3/4"   |

#### Side Ported - SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| EC | CE  | 2"        | 1-1/2" |
| EF | FE  | 2"        | 1-1/4" |
| EG | GE  | 2"        | 1"     |
| EH | HE  | 1-1/2"    | 1-1/2" |
| EJ | JE  | 1-1/2"    | 1-1/4" |
| EK | KE  | 1-1/2"    | 1"     |
| EL | LE  | 1-1/4"    | 1-1/4" |
| EM | ME  | 1-1/4"    | 1"     |
| EN | NE  | 1"        | 1"     |
| OE | EO  | 2"        | None   |
| OF | FO  | 1-1/2"    | None   |
| OG | GO  | 1-1/4"    | None   |
| OJ | JO  | 1"        | None   |
| OL | LO  | None      | 1-1/2" |
| OM | MO  | None      | 1-1/4" |
| ON | NO  | None      | 1"     |

Orientation is viewed from the shaft end

#### Motor - Side Ported - SAE Split Flange

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| CR |  | 1-1/2"    | 1-1/2" |
| CS |  | 1-1/4"    | 1-1/4" |
| CT |  | 1"        | 1"     |
| CV |  | 3/4"      | 3/4"   |

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See following page for Bearing Carrier options

### Shaft Type <sup>8</sup>

07 = SAE "C" 14 Tooth Spline 1.250 Dia.  
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2" Key  
25 = SAE "B" 13 Tooth Spline .88" Dia.  
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key  
73 = SAE "C" Keyed Long  
98 = SAE "BB" 15 Tooth Spline 1" Dia.

### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|              |              |              |              |              |
|--------------|--------------|--------------|--------------|--------------|
| 05<br>(1.28) | 07<br>(1.91) | 10<br>(2.55) | 12<br>(3.19) | 15<br>(3.83) |
| 17<br>(4.46) | 20<br>(5.10) | 22<br>(5.74) | 25<br>(6.38) |              |

### Gear Housing <sup>6</sup>

| Code | Port Size |      |       |
|------|-----------|------|-------|
|      | In        | Out  |       |
| AB   | None      | None | Pump  |
| EB   | None      | None | Motor |

# MH350 Series Bushing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

#### Dual Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |        |
|----|-----|-----------|--------|--------|
|    |     | In        | Out    | Out    |
| AF | FA  | 2-1/2"    | 1-1/4" | 1-1/4" |
| AG | GA  | 2-1/2"    | 1-1/4" | 1"     |
| AH | HA  | 2-1/2"    | 1"     | 1"     |
| AM | MA  | 2"        | 1-1/4" | 1-1/4" |
| AN | NA  | 2"        | 1-1/4" | 1"     |
| AP | PA  | 2"        | 1"     | 1"     |
| AT | TA  | 1-1/2"    | 1-1/4" | 1-1/4" |
| AU | UA  | 1-1/2"    | 1-1/4" | 1"     |
| AV | VA  | 1-1/2"    | 1"     | 1"     |
| AW | WA  | 1-1/4"    | 1-1/4" | 1-1/4" |
| AX | XA  | 1-1/4"    | 1-1/4" | 1"     |
| AY | YA  | 1-1/4"    | 1"     | 1"     |
| AZ | ZA  | 1"        | 1"     | 1"     |

Orientation is viewed from the shaft end

#### Dual Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |        |
|----|-----|-----------|--------|--------|
|    |     | In        | Out    | Out    |
| GM | MG  | 2"        | 1-1/4" | 1-1/4" |
| GN | NG  | 2"        | 1-1/4" | 1"     |
| GP | PG  | 2"        | 1"     | 1"     |
| GT | TG  | 1-1/2"    | 1-1/4" | 1-1/4" |
| GU | UG  | 1-1/2"    | 1-1/4" | 1"     |
| GV | VG  | 1-1/2"    | 1"     | 1"     |
| GW | WG  | 1-1/4"    | 1-1/4" | 1-1/4" |
| GX | XG  | 1-1/4"    | 1-1/4" | 1"     |
| GY | YG  | 1-1/4"    | 1"     | 1"     |
| GZ | ZG  | 1"        | 1"     | 1"     |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| HB | BH  | 2"        | 1-1/2" |
| HC | CH  | 2"        | 1-1/4" |
| HF | FH  | 2"        | 1"     |
| HL | LH  | 1-1/2"    | 1-1/2" |
| HM | MH  | 1-1/2"    | 1-1/4" |
| HN | NH  | 1-1/2"    | 1"     |
| HO | OH  | 1-1/4"    | 1-1/4" |
| HP | PH  | 1-1/4"    | 1"     |
| HQ | QH  | 1"        | 1"     |
| RS | SR  | 1-1/4"    | 1"     |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| KB | BK  | 2"        | 1-1/2" |
| KC | CK  | 2"        | 1-1/4" |
| KF | FK  | 2"        | 1"     |
| KL | LK  | 1-1/2"    | 1-1/2" |
| KM | MK  | 1-1/2"    | 1-1/4" |
| KN | NK  | 1-1/2"    | 1"     |
| KO | OK  | 1-1/4"    | 1-1/4" |
| KP | PK  | 1-1/4"    | 1"     |
| KQ | QK  | 1"        | 1"     |

Orientation is viewed from the shaft end

#### Combined Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| UN | NU  | 2"        | 1-1/2" |
| UO | OU  | 2"        | 1-1/4" |
| UP | PU  | 1-1/2"    | 1-1/2" |
| UQ | QU  | 1-1/2"    | 1-1/4" |
| UR | RU  | 1-1/4"    | 1-1/4" |

Orientation is viewed from the shaft end

#### Combined Outlet Motors

##### SAE Split Flange

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| AA |  | 2"        | 2"     |
| BB |  | 1-1/2"    | 1-1/2" |
| CC |  | 1-1/4"    | 1-1/4" |
| EE |  | 1"        | 1"     |
| FF |  | 3/4"      | 3/4"   |

Orientation is viewed from the shaft end

#### Combined Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| PE | EP  | 2"        | 1-1/2" |
| PM | MP  | 2"        | 1-1/4" |
| PN | NP  | 1-1/2"    | 1-1/2" |
| PQ | QP  | 1-1/2"    | 1-1/4" |
| PR | RP  | 1-1/4"    | 1-1/4" |

Orientation is viewed from the shaft end

#### Combined Outlet Motors

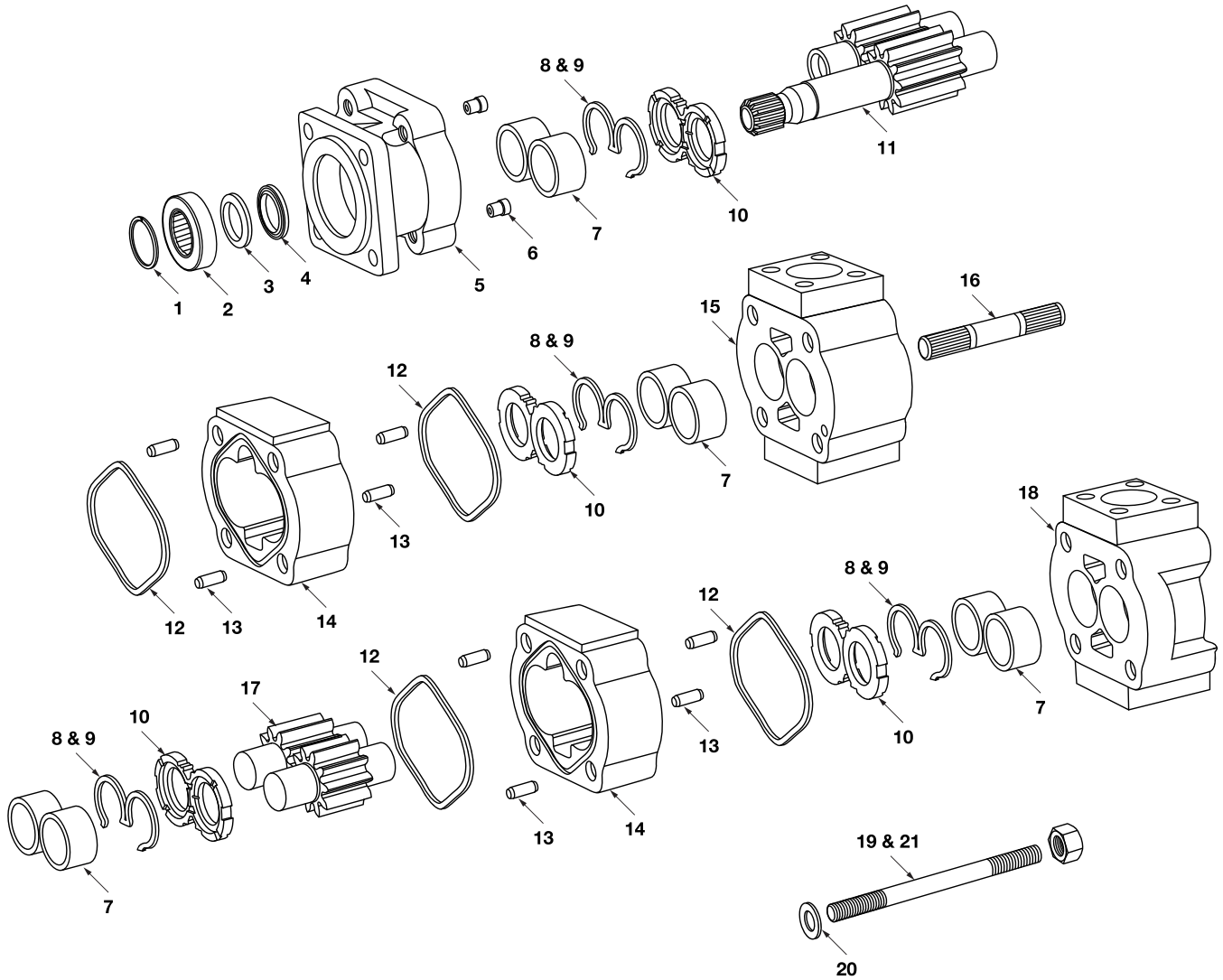
##### SAE O-ring

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| MM |  | 1-1/2"    | 1-1/2" |
| NN |  | 1-1/4"    | 1-1/4" |
| QQ |  | 1"        | 1"     |
| RR |  | 3/4"      | 3/4"   |

Orientation is viewed from the shaft end

# MH350 Series

## Parts Breakdown



# MH350 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|-------------|--|--------------|--------------|
| 1           | SHAFT BRG. SNAP RING   | X05-03-77250 | 391-2686-065 |
| 2a          | INPUT SHAFT BRG.   | X03-16-13272 | 391-0381-077 |
| 2b          | SEAL RETAINER & SPACER IN PLACE OF SHAFT BRG.                                | A50-60-10000 | 391-3383-087 |
| 3           | SEAL RETAINER FOR MOTORS ONLY  | A50-60-30000 | 391-3383-020 |
| 4a          | PUMP LIP SEAL  | X83-11-03308 | 391-2883-103 |
| 4b          | MOTOR LIP SEAL   | X84-36-03309 | 391-2883-115 |
| 4c          | SEAL FOR CONTINENTAL SHAFT   | X89-11-03308 | 391-2883-133 |
| 5a          | 4 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101,6 mm pilot)    | A35-10-21421 | 323-5033-201 |
| 5b          | 4 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 42 (4" or 101,6 mm pilot)       | A35-10-21422 | 323-5133-201 |
| 5c          | 2/4 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101,6 mm pilot)  | A35-10-21321 | 323-5053-201 |
| 5d          | 2/4 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 46 (4" or 101,6 mm pilot)     | A35-10-21322 | 323-5153-201 |
| 5e          | 4 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)      | A35-10-21431 | 323-5033-202 |
| 5f          | 4 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)         | A35-10-21432 | 323-5133-202 |
| 5g          | 2 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101,6 mm pilot)    | A35-10-21221 | 323-5023-201 |
| 5h          | 2 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 97 (4" or 101,6 mm pilot)       | A35-10-21222 | 323-5123-201 |
| 5i          | 2 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)      | A35-10-21231 | 323-5023-202 |
| 5j          | 2 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)         | A35-10-21232 | 323-5123-202 |
| 5k          | 4 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101,6 mm pilot)   | A35-10-41421 | 323-5033-401 |
| 5l          | 4 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 42 (4" or 101,6 mm pilot)      | A35-10-41422 | 323-5133-401 |
| 5m          | 2/4 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101,6 mm pilot) | A35-10-41321 | 323-5053-401 |
| 5n          | 2/4 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 46 (4" or 101,6 mm pilot)    | A35-10-41322 | 323-5153-401 |
| 5o          | 4 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)     | A35-10-41431 | 323-5033-402 |
| 5p          | 4 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)        | A35-10-41432 | 323-5133-402 |
| 5q          | 2 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101,6 mm pilot)   | A35-10-41221 | 323-5023-401 |
| 5r          | 2 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 97 (4" or 101,6 mm pilot)      | A35-10-41222 | 323-5123-401 |
| 5s          | 2 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)     | A35-10-41231 | 323-5023-402 |
| 5t          | 2 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)        | A35-10-41232 | 323-5123-402 |
| 6a          | CHECK VALVE MOTOR  | A00-75-11000 | 391-3681-001 |
| 6b          | PRESSURE PLUG PUMP   | X02-03-32110 | 391-2286-004 |
| 7           | BUSHING  | X03-00-33337 | 391-0482-308 |
| 8           | PUMP BUNA SEAL   | A35-82-11050 | 391-2882-140 |
| 9           | PUMP NYLON BACKUP SEAL   | A35-82-46010 | 391-2882-139 |
| 10a         | PUMP THRUST PLATE  | A35-70-20000 | 391-2185-057 |
| 10b         | MOTOR THRUST PLATE   | A35-70-10000 | 391-2185-068 |
| Not Shown   | MOTOR NYLON BACKUP SEAL  | A35-82-46030 | 391-2885-075 |
| Not Shown   | MOTOR THRUST PLATE SIDE SEAL   | A35-82-14021 | 391-2885-073 |

# MH350 Series

## Parts Breakdown

| DRAWING NO.      | DESCRIPTION  | METARIS #     | ALTERNATE #  |
|------------------|--|---------------|--------------|
| <b>Not Shown</b> | MOTOR THRUST PLATE END SEAL  | A35-82-14020  | 391-2885-074 |
| <b>11a</b>       | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7               | A35-50-XX245  | 323-29XX-250 |
| <b>11b</b>       | SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11                          | A35-50-XX145  | 323-29XX-750 |
| <b>11c</b>       | SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25           | A35-50-XX225  | 323-29XX-230 |
| <b>11d</b>       | SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43 | A35-50-XX135  | 323-29XX-740 |
| <b>11e</b>       | SHAFT & GEAR 15 TOOTH SPLINE 0,980" maj. dia. TYPE 98              | A35-50-XX231  | 323-29XX-240 |
| <b>11f</b>       | SHAFT & GEAR 1.250" dia. KEYED (5/16" x 5/16" x 2 1/4") TYPE 73    | Special Order | 323-29XX-752 |
| <b>12a</b>       | PUMP HOUSING GASKET  | X85-11-11403  | 391-2884-074 |
| <b>12b</b>       | MOTOR HOUSING GASKET   | X85-11-10803  | 391-2884-021 |
| <b>13</b>        | HOUSING DOWEL PIN  | A00-94-11025  | 391-2082-032 |
| <b>14a</b>       | PUMP GEAR HOUSING  | A35-33-XX000  | 323-81XX-100 |
| <b>14b</b>       | MOTOR GEAR HOUSING   | A35-32-XX000  | 323-82XX-100 |
| <b>15a</b>       | 350 BEARING CARRIER BLANK WITHOUT BUSHING                          | A35-40-00000  | 323-7200-100 |
| <b>15b</b>       | 350 BEARING CARRIER BLANK WITH BUSHING                             | A35-40-10000  | 323-7700-100 |
| <b>15c</b>       | 350 BEARING CARRIER 1 OUTLET WITHOUT BUSHING                       | A35-40-21000  | 323-7100-100 |
| <b>15d</b>       | 350 BEARING CARRIER 1 OUTLET WITH BUSHING                          | A35-40-31000  | 323-7600-100 |
| <b>15e</b>       | 350 BEARING CARRIER 2 OUTLET WITHOUT BUSHING                       | A35-40-22000  | 323-7300-100 |
| <b>15f</b>       | 350 BEARING CARRIER 2 OUTLET WITH BUSHING                          | A35-40-32000  | 323-7800-100 |
| <b>15g</b>       | 350/315 BEARING CARRIER CW WITHOUT BUSHING                         | A35-40-23000  | 323-3050-100 |
| <b>15h</b>       | 350/315 BEARING CARRIER CW WITH BUSHING                            | A35-40-33000  | 323-3150-100 |
| <b>15i</b>       | 350/315 BEARING CARRIER CCW WITHOUT BUSHING                        | A35-40-24000  | 323-3060-100 |
| <b>15j</b>       | 350/315 BEARING CARRIER CCW WITH BUSHING                           | A35-40-34000  | 323-3160-100 |
| <b>16a</b>       | CONNECTING SHAFT   | A35-50-00500  | 323-1133-001 |
| <b>16b</b>       | PIGGYBACK CONNECTING SHAFT PHASE 2                                 | A82-50-00500  | 323-1133-006 |
| <b>16c</b>       | PIGGY BACK CONNECTING SHAFT BEARING SNAP RING                      | X05-01-61200  | 391-2686-019 |
| <b>16d</b>       | PIGGY BACK CONNECTING SHAFT BEARING                                | X03-16-13055  | 391-0381-099 |
| <b>16e</b>       | PIGGY BACK CONNECTING SHAFT SAE "B" SPLINE                         | A35-50-00620  | 323-1133-003 |
| <b>16f</b>       | PIGGY BACK CONNECTING SHAFT SAE "A" SPLINE                         | A35-50-00610  | 323-1133-002 |
| <b>17</b>        | GEAR SET ONLY  | A35-50-XX000  | 323-28XX-000 |
| <b>18a</b>       | 350 PUMP & MOTOR P.E.C. WITHOUT BUSHING NO PORTING                 | A35-23-00000  | 323-3000-100 |
| <b>18b</b>       | 350 PUMP & MOTOR P.E.C. WITH BUSHING NO PORTING                    | A35-23-10000  | 323-3100-100 |
| <b>18c</b>       | 350 PUMP P.E.C. PORTING TYPE WITHOUT BUSHING                       | A35-23-02000  | 323-3010-100 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A35-50-XX000 changes to A35-50-15000 for 1.5" gear size  
 Housing no. A35-33-XX000 changes to A35-33-15000 for a 1.5" housing size  
 No porting sizes have been indicated all porting must be specified when ordering parts.



# MH350 Series

## Parts Breakdown

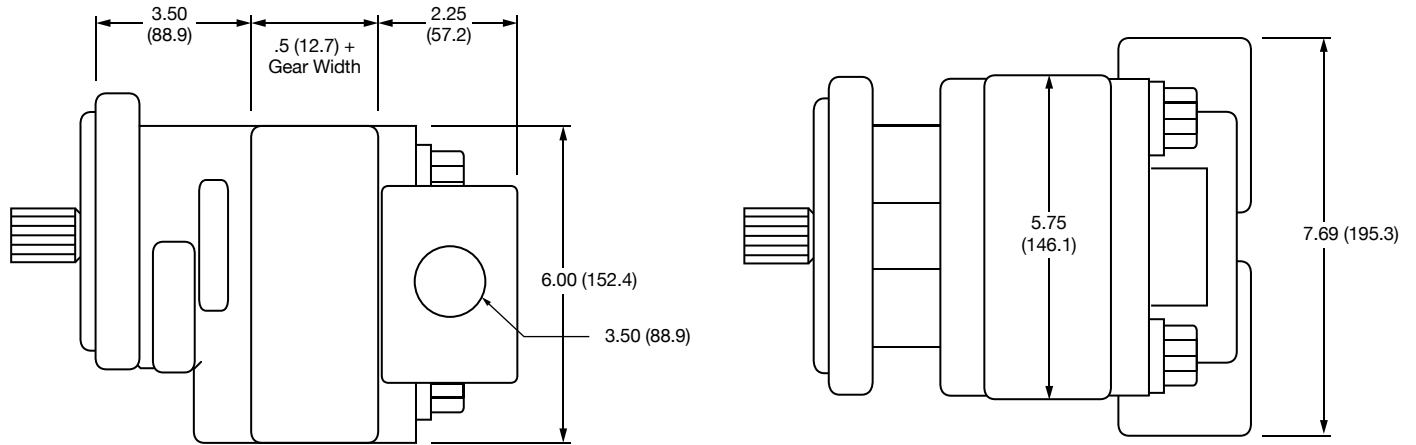
| DRAWING NO.      | DESCRIPTION  | METARIS #          | ALTERNATE #  |
|------------------|--|--------------------|--------------|
| 18d              | 350 PUMP P.E.C. PORTING TYPE WITH BUSHING                      | A35-23-12000       | 323-3110-100 |
| 18e              | 350 MOTOR P.E.C. PORTING TYPE WITHOUT BUSHING                  | A35-22-02000       | 323-3020-100 |
| 18f              | 350 MOTOR P.E.C. PORTING TYPE WITH BUSHING                     | A35-22-12000       | 323-3120-100 |
| 18g              | 350 P.E.C. TO S.A.E. "A" PILOT CW WITHOUT BUSHING              | A35-23-04000       | 323-3054-099 |
| 18h              | 350 P.E.C. TO S.A.E. "A" PILOT CW WITH BUSHING                 | A35-23-14000       | 323-3154-099 |
| 18i              | 350 P.E.C. TO S.A.E. "A" PILOT CCW WITHOUT BUSHING             | A35-23-05000       | 323-3064-099 |
| 18j              | 350 P.E.C. TO S.A.E. "A" PILOT CCW WITH BUSHING                | A35-23-15000       | 323-3164-099 |
| 18k              | 350 P.E.C. TO S.A.E. "B" PILOT CW WITHOUT BUSHING              | A35-23-06000       | 323-3054-100 |
| 18l              | 350 P.E.C. TO S.A.E. "B" PILOT CW WITH BUSHING                 | A35-23-16000       | 323-3154-100 |
| 18m              | 350 P.E.C. TO S.A.E. "B" PILOT CCW WITHOUT BUSHING             | A35-23-07000       | 323-3064-100 |
| 18n              | 350 P.E.C. TO S.A.E. "B" PILOT CCW WITH BUSHING                | A35-23-17000       | 323-3164-100 |
| 19               | BOLTS / STUDS (5/8"-UNC)                                       | See Fasteners Page |              |
| 20               | FLAT WASHER (5/8")   | X45-10-17005       | 391-3784-028 |
| 21               | HEX NUT (5/8"-UNC)   | X42-11-16000       | 391-1451-076 |
| <b>Not Shown</b> | CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11                 | A35-50-00141       | 323-1500-500 |
| <b>Not Shown</b> | CONTINENTAL SHAFT TYPE 25 (0.875" Ø- 13 TOOTH SPLINE)          | A35-50-00221       | 323-1000-300 |
| <b>Not Shown</b> | CONTINENTAL SHAFT TYPE 73 LONG (1 1/4" Ø KEYED 5/16")          | A35-50-00147       | 323-1500-502 |
| <b>Not Shown</b> | CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7      | A35-50-00241       | 323-1135-194 |
| <b>Not Shown</b> | CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key) | A35-50-00131       | 323-1500-400 |
| <b>Not Shown</b> | DRIVE KEY FOR TYPE 11 SHAFT                                    | X01-02-80838       | 391-1781-083 |
| <b>Not Shown</b> | DRIVE KEY FOR TYPE 43 SHAFT                                    | X01-02-60632       | 391-1781-082 |
| <b>Not Shown</b> | DRIVE KEY FOR TYPE 73 SHAFT                                    | Special Order      | 391-1781-088 |
| <b>Not Shown</b> | CONTINENTAL SHAFT BRG. RETAINER                                | A50-60-20000       | 391-3381-046 |
| <b>Not Shown</b> | CONTINENTAL SHAFT BRG. RETAINER SNAP RING                      | X05-02-35120       | 391-2685-040 |
| <b>Not Shown</b> | CASE DRAIN PLUG  | X02-03-12060       | 391-2281-010 |

# MH350 Series

## Dimensions

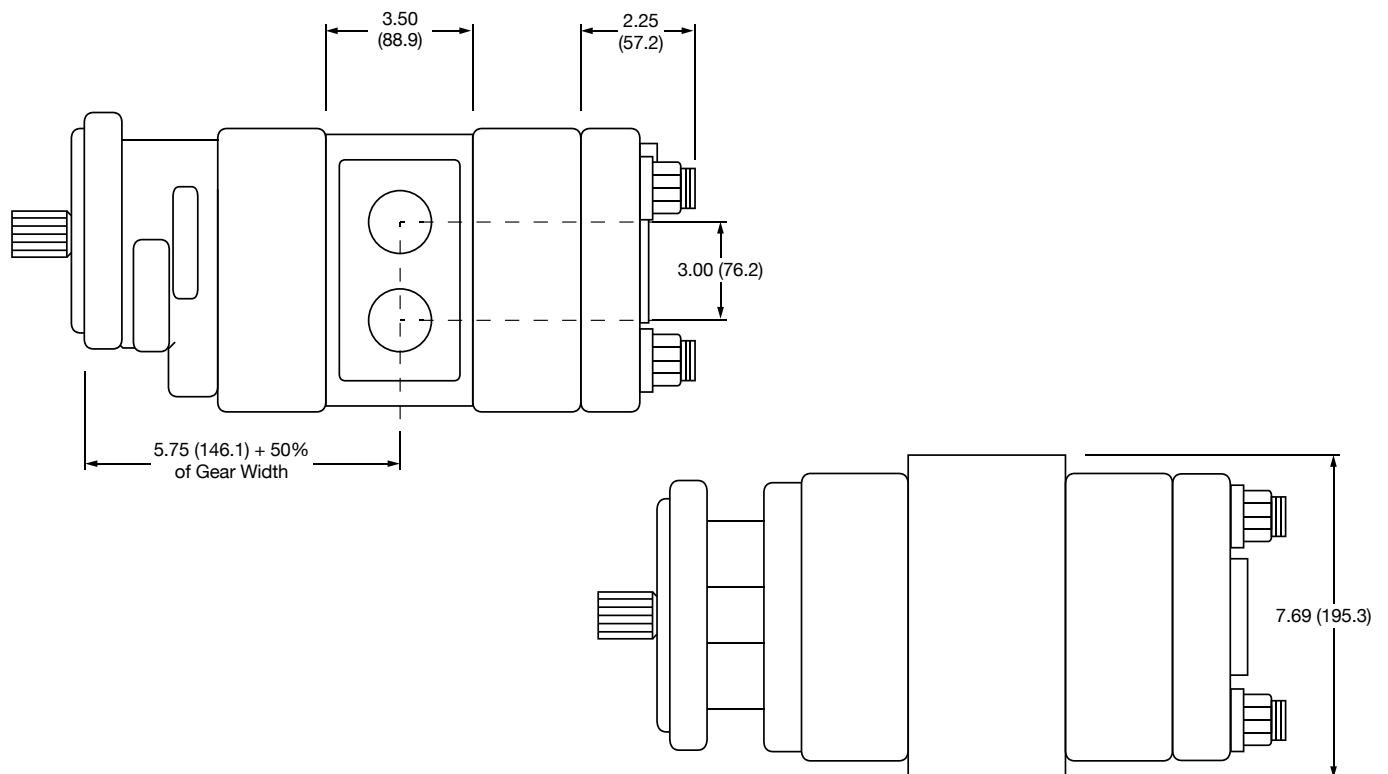
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

# MH365 Series Bushing Pump

## Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



## Specifications

| MH365      |        | DISPLACEMENT         |                        | MAX PRESSURE |       |
|------------|--------|----------------------|------------------------|--------------|-------|
| GEAR WIDTH |        | IN <sup>3</sup> /REV | (CM <sup>3</sup> /REV) | PSI          | BAR   |
| .75        | 3/4"   | 2.70                 | (44.3)                 | 3500         | (241) |
| 1.00       | 1"     | 3.60                 | (59.0)                 | 3500         | (241) |
| 1.25       | 1-1/4" | 4.50                 | (73.8)                 | 3500         | (241) |
| 1.50       | 1-1/2" | 5.40                 | (88.5)                 | 3500         | (241) |
| 1.75       | 1-3/4" | 6.30                 | (103.3)                | 3500         | (241) |
| 2.00       | 2"     | 7.20                 | (118.0)                | 3500         | (241) |
| 2.25       | 2-1/4" | 8.10                 | (132.8)                | 3250         | (224) |
| 2.50       | 2-1/2" | 9.00                 | (147.5)                | 3000         | (207) |

# MH365 Series Bushing Pump

## Pump Performance Data

| SPEED RPM | GEAR WIDTH<br>(GPM/LPM) |            |            |            |            |            |            |            |
|-----------|-------------------------|------------|------------|------------|------------|------------|------------|------------|
|           | 3/4"                    | 1"         | 1-1/4"     | 1-1/2"     | 1-3/4"     | 2"         | 2-1/4"     | 2-1/2"     |
| 900       | 8 / 30                  | 11.5 / 44  | 14.9 / 57  | 18.4 / 70  | 21.8 / 83  | 25.4 / 96  | 28.8 / 109 | 32.3 / 122 |
| 1200      | 11.5 / 44               | 16.2 / 61  | 20.8 / 79  | 25.5 / 96  | 30 / 114   | 34.7 / 131 | 39.3 / 149 | 44 / 166   |
| 1500      | 15 / 57                 | 20.9 / 79  | 26.6 / 101 | 32.5 / 123 | 38.2 / 145 | 44.1 / 167 | 49.8 / 188 | 55.6 / 211 |
| 1800      | 18.5 / 70               | 25.6 / 97  | 32.5 / 123 | 39.5 / 149 | 46.4 / 176 | 53.4 / 202 | 60.3 / 228 | 67.3 / 255 |
| 2100      | 22 / 83                 | 30.2 / 114 | 38.3 / 145 | 46.5 / 176 | 54.6 / 207 | 62.8 / 238 | 70.8 / 268 | 79 / 299   |
| 2400      | 25.6 / 97               | 34.9 / 132 | 44.2 / 167 | 53.5 / 203 | 62.8 / 238 | 72.1 / 273 | 81.4 / 308 | 90.7 / 343 |

## Motor Performance Data

| SPEED RPM | GEAR WIDTH    |              |                   |              |                   |              |                   |              |               |              |                   |              |                   |              |
|-----------|---------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|---------------|--------------|-------------------|--------------|-------------------|--------------|
|           | 1" (3500 PSI) |              | 1-1/4" (3500 PSI) |              | 1-1/2" (3500 PSI) |              | 1-3/4" (3500 PSI) |              | 2" (3500 PSI) |              | 2-1/4" (3250 PSI) |              | 2-1/2" (3000 PSI) |              |
|           | A             | B            | A                 | B            | A                 | B            | A                 | B            | A             | B            | A                 | B            | A                 | B            |
| 900       | 18.4 / 70     | 1865 / 210.7 | 22 / 83           | 2355 / 266.1 | 25.6 / 97         | 2860 / 323.1 | 29.2 / 111        | 3370 / 380.8 | 32.9 / 124    | 3850 / 435   | 36.5 / 138        | 4020 / 454.2 | 40.1 / 152        | 4125 / 466.1 |
| 1200      | 23.3 / 88     | 1845 / 208.5 | 28.1 / 106        | 2330 / 263.3 | 32.9 / 124        | 2830 / 319.7 | 37.6 / 142        | 3335 / 376.8 | 42.4 / 160    | 3800 / 430.5 | 47.2 / 179        | 3980 / 449.7 | 52 / 197          | 4080 / 461   |
| 1500      | 28.2 / 107    | 1815 / 205.1 | 34.1 / 129        | 2295 / 259.3 | 40.1 / 152        | 2780 / 314.1 | 46 / 74           | 3280 / 370.6 | 52 / 197      | 3750 / 423.7 | 57.9 / 219        | 3915 / 442.3 | 63.8 / 242        | 4020 / 454.2 |
| 1800      | 33.1 / 125    | 1805 / 203.9 | 40.2 / 152        | 2280 / 257.6 | 47.3 / 179        | 2765 / 312.4 | 54.4 / 206        | 3265 / 368.9 | 61.5 / 233    | 3730 / 421.4 | 68.6 / 260        | 3895 / 440.1 | 75.7 / 287        | 3995 / 451.4 |
| 2100      | 37.9 / 144    | 1755 / 198.3 | 46.2 / 175        | 2220 / 250.8 | 54.4 / 206        | 2690 / 303.9 | 62.8 / 238        | 3160 / 357   | 71.1 / 269    | 3610 / 407.9 | 79.3 / 300        | 3770 / 426   | 87.6 / 332        | 3865 / 436.7 |
| 2400      | 42.8 / 162    | 1705 / 192.6 | 52.3 / 198        | 2155 / 243.5 | 61.7 / 234        | 2615 / 295.5 | 51.2 / 269        | 3055 / 345.2 | 80.6 / 305    | 3490 / 394.3 | 90.1 / 341        | 3645 / 411.8 | 99.5 / 377        | 3740 / 422.6 |

**Note:** Input Flow @ 2500psi | Output Torque @ 175 bar

**A:** Input Flow - GPM / LPM

**B:** Output Torque - In/Lbs. / Nm

## MH365 PL Chart

| SHAFT STYLE      | INTEGRAL | TWO PIECE |
|------------------|----------|-----------|
| SAE "BB" Spline  | 7,750    | 7,750     |
| SAE "BB" Keyed   | 5,550    | 5,550     |
| SAE "B" Spline   | 3,050    | 3,050     |
| SAE "B" Keyed    | 3,700    | 3,700     |
| SAE "C" Spline   | 14,900   | 11,950    |
| SAE "C" Keyed    | 10,800   | 10,800    |
| Connecting Shaft |          | 11,950    |

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

# MH365 Series Bushing Pump

## Model Code Breakdown

Repeat for Tandem Units

1      2   3   4      5   6   7   8      9   6   7   10  
**MHP - 365 - A - 1 - 78 - BL - AB - 10 - 11 - AU - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

A = Single Unit  
B = Tandem Unit  
C = Single or Tandem Unit w/ a Continental Shaft  
L = Unit w/ Extended Studs

### Shaft End Cover <sup>3</sup>

1 = Pump w/o Shaft Bearing (Clockwise Rotation)  
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)  
4 = Pump w/ Shaft Bearing (Clockwise Rotation)  
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)  
8 = Motor w/ Shaft Bearing (Bi-Rotational)  
9 = Motor w/o Shaft Bearing (Bi-Rotational)

### Shaft End Cover <sup>4</sup>

42 = SAE 4-Bolt "B" Mount  
78 = SAE 4-Bolt "C" Mount  
97 = SAE 2-Bolt "B" Mount  
98 = SAE 2-Bolt "C" Mount

### Port End Cover <sup>5</sup>

#### Unported

|    |  | Port Size |      |
|----|--|-----------|------|
|    |  | In        | Out  |
| BI |  | None      | None |

#### Side Ported - SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| FB | BF  | 1-1/2"    | 1-1/4" |
| FC | CF  | 1-1/2"    | 1"     |
| FG | GF  | 1-1/4"    | 1-1/4" |
| FJ | JF  | 1-1/4"    | 1"     |
| FL | LF  | 1"        | 1"     |
| BC | CB  | 1-1/2"    | None   |
| BG | GB  | 1-1/4"    | None   |
| BJ | JB  | 1"        | None   |
| BL | LB  | None      | 1-1/4" |
| BN | NB  | None      | 1"     |

Orientation is viewed from the shaft end

#### Motor - Side Ported - SAE O-ring

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| VC |  | 1-1/4"    | 1-1/4" |
| VN |  | 1"        | 1"     |
| VR |  | 3/4"      | 3/4"   |

#### Side Ported - SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| EC | CE  | 2"        | 1-1/2" |
| EF | FE  | 2"        | 1-1/4" |
| EG | GE  | 2"        | 1"     |
| EH | HE  | 1-1/2"    | 1-1/2" |
| EJ | JE  | 1-1/2"    | 1-1/4" |
| EK | KE  | 1-1/2"    | 1"     |
| EL | LE  | 1-1/4"    | 1-1/4" |
| EM | ME  | 1-1/4"    | 1"     |
| EN | NE  | 1"        | 1"     |
| OE | EO  | 2"        | None   |
| OF | FO  | 1-1/2"    | None   |
| OG | GO  | 1-1/4"    | None   |
| OJ | JO  | 1"        | None   |
| OL | LO  | None      | 1-1/2" |
| OM | MO  | None      | 1-1/4" |
| ON | NO  | None      | 1"     |

Orientation is viewed from the shaft end

#### Motor - Side Ported - SAE Split Flange

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| CR |  | 1-1/2"    | 1-1/2" |
| CS |  | 1-1/4"    | 1-1/4" |
| CT |  | 1"        | 1"     |
| CV |  | 3/4"      | 3/4"   |

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See following page for Bearing Carrier options

### Shaft Type <sup>8</sup>

07 = SAE "C" 14 Tooth Spline 1.250 Dia.  
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2" Key

### Gear Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/r)

|              |              |              |              |
|--------------|--------------|--------------|--------------|
| 07<br>(2.70) | 10<br>(3.60) | 12<br>(4.50) | 15<br>(5.40) |
| 17<br>(6.30) | 20<br>(7.20) | 22<br>(8.10) | 25<br>(9.00) |

### Gear Housing <sup>6</sup>

| Code | Port Size |      |       |
|------|-----------|------|-------|
|      | In        | Out  |       |
| AB   | None      | None | Pump  |
| EB   | None      | None | Motor |

# MH365 Series Bushing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

#### Dual Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |        |
|----|-----|-----------|--------|--------|
|    |     | In        | Out    | Out    |
| AC | CA  | 2-1/2"    | 1-1/2" | 1-1/2" |
| AD | DA  | 2-1/2"    | 1-1/2" | 1-1/4" |
| AE | EA  | 2-1/2"    | 1-1/2" | 1"     |
| AF | FA  | 2-1/2"    | 1-1/4" | 1-1/4" |
| AG | GA  | 2-1/2"    | 1-1/4" | 1"     |
| AH | HA  | 2-1/2"    | 1"     | 1"     |
| AM | MA  | 2"        | 1-1/4" | 1-1/4" |
| AN | NA  | 2"        | 1-1/4" | 1"     |
| AP | PA  | 2"        | 1"     | 1"     |
| AT | TA  | 1-1/2"    | 1-1/4" | 1-1/4" |
| AU | UA  | 1-1/2"    | 1-1/4" | 1"     |
| AV | VA  | 1-1/2"    | 1"     | 1"     |
| AW | WA  | 1-1/4"    | 1-1/4" | 1-1/4" |
| AX | XA  | 1-1/4"    | 1-1/4" | 1"     |
| AY | YA  | 1-1/4"    | 1"     | 1"     |
| AZ | ZA  | 1"        | 1"     | 1"     |

Orientation is viewed from the shaft end

#### Dual Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |        |
|----|-----|-----------|--------|--------|
|    |     | In        | Out    | Out    |
| GJ | JG  | 2"        | 1-1/2" | 1-1/2" |
| GK | KG  | 2"        | 1-1/2" | 1-1/4" |
| GL | LG  | 2"        | 1-1/2" | 1"     |
| GM | MG  | 2"        | 1-1/4" | 1-1/4" |
| GN | NG  | 2"        | 1-1/4" | 1"     |
| GP | PG  | 2"        | 1"     | 1"     |
| GT | TG  | 1-1/2"    | 1-1/4" | 1-1/4" |
| GU | UG  | 1-1/2"    | 1-1/4" | 1"     |
| GV | VG  | 1-1/2"    | 1"     | 1"     |
| GW | WG  | 1-1/4"    | 1-1/4" | 1-1/4" |
| GX | XG  | 1-1/4"    | 1-1/4" | 1"     |
| GY | YG  | 1-1/4"    | 1"     | 1"     |
| GZ | ZG  | 1"        | 1"     | 1"     |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| CJ | JC  | 2-1/2"    | 1-1/2" |
| CL | LC  | 2-1/2"    | 1-1/4" |
| CM | MC  | 2-1/2"    | 1"     |
| HB | BH  | 2"        | 1-1/2" |
| HC | CH  | 2"        | 1-1/4" |
| HF | FH  | 2"        | 1"     |
| HL | LH  | 1-1/2"    | 1-1/2" |
| HM | MH  | 1-1/2"    | 1-1/4" |
| HN | NH  | 1-1/2"    | 1"     |
| HO | OH  | 1-1/4"    | 1-1/4" |
| HP | PH  | 1-1/4"    | 1"     |
| HQ | QH  | 1"        | 1"     |

Orientation is viewed from the shaft end

#### Single Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| KB | BK  | 2"        | 1-1/2" |
| KC | CK  | 2"        | 1-1/4" |
| KF | FK  | 2"        | 1"     |
| KL | LK  | 1-1/2"    | 1-1/2" |
| KM | MK  | 1-1/2"    | 1-1/4" |
| KN | NK  | 1-1/2"    | 1"     |
| KO | OK  | 1-1/4"    | 1-1/4" |
| KP | PK  | 1-1/4"    | 1"     |
| KQ | QK  | 1"        | 1"     |

Orientation is viewed from the shaft end

#### Combined Outlet Pumps

##### SAE Split Flange

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| UC | CU  | 2-1/2"    | 1-1/2" |
| UF | FU  | 2-1/2"    | 1-1/4" |
| UN | NU  | 2"        | 1-1/2" |
| UO | OU  | 2"        | 1-1/4" |
| UP | PU  | 1-1/2"    | 1-1/2" |
| UQ | QU  | 1-1/2"    | 1-1/4" |
| UR | RU  | 1-1/4"    | 1-1/4" |

Orientation is viewed from the shaft end

#### Combined Outlet Motors

##### SAE Split Flange

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| AA |  | 2"        | 2"     |
| BB |  | 1-1/2"    | 1-1/2" |
| CC |  | 1-1/4"    | 1-1/4" |
| EE |  | 1"        | 1"     |
| FF |  | 3/4"      | 3/4"   |

Orientation is viewed from the shaft end

#### Combined Outlet Pumps

##### SAE O-ring

| CW | CCW | Port Size |        |
|----|-----|-----------|--------|
|    |     | In        | Out    |
| PE | EP  | 2"        | 1-1/2" |
| PM | MP  | 2"        | 1-1/4" |
| PN | NP  | 1-1/2"    | 1-1/2" |
| PQ | QP  | 1-1/2"    | 1-1/4" |
| PR | RP  | 1-1/4"    | 1-1/4" |

Orientation is viewed from the shaft end

#### Combined Outlet Motors

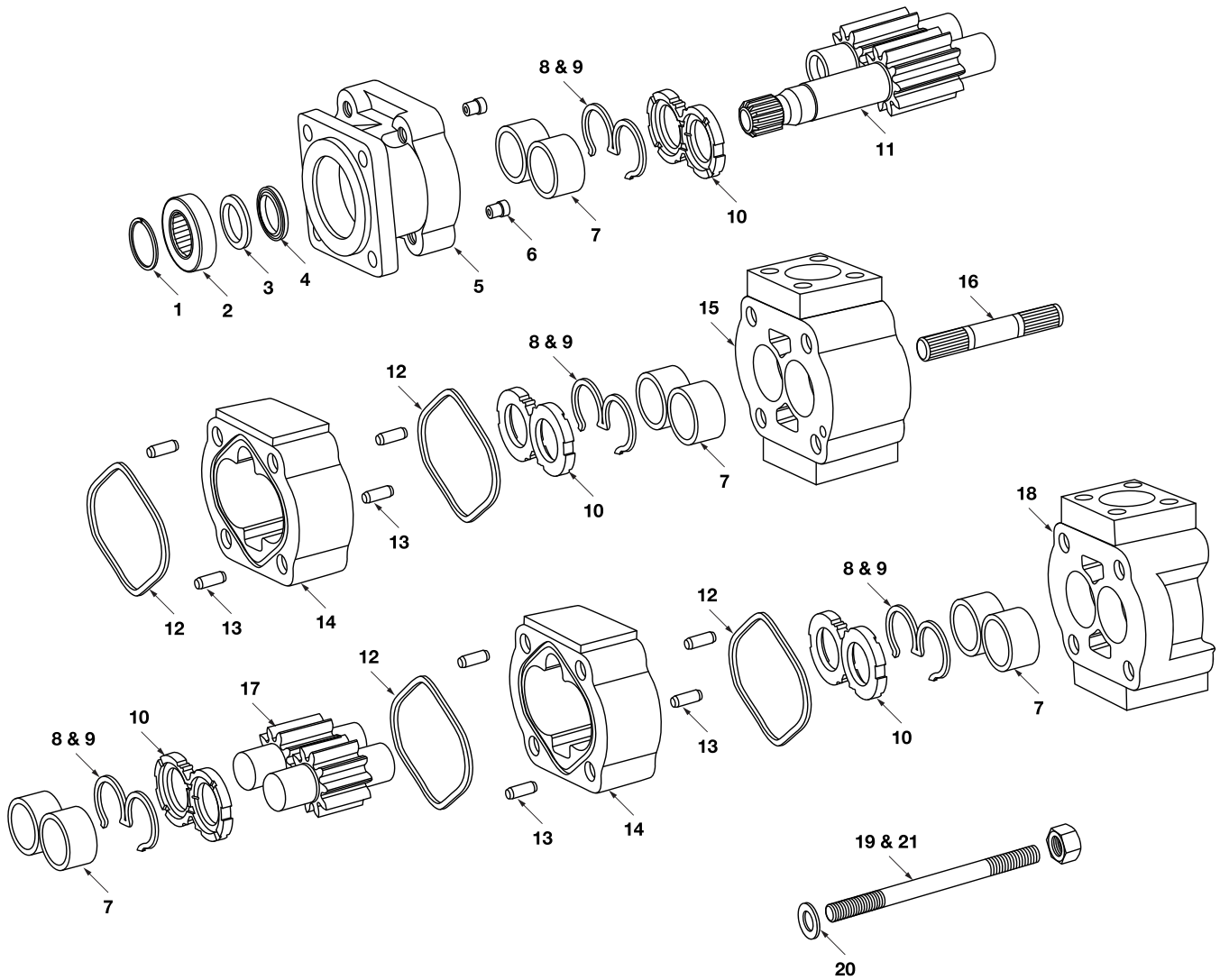
##### SAE O-ring

|    |  | Port Size |        |
|----|--|-----------|--------|
|    |  | In        | Out    |
| MM |  | 1-1/2"    | 1-1/2" |
| NN |  | 1-1/4"    | 1-1/4" |
| QQ |  | 1"        | 1"     |
| RR |  | 3/4"      | 3/4"   |

Orientation is viewed from the shaft end

# MH365 Series

## Parts Breakdown



# MH365 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION  | METARIS #    | ALTERNATE #  |
|-------------|--|--------------|--------------|
| 1           | SHAFT BRG. SNAP RING   | X05-01-88280 | 391-2686-025 |
| 2a          | INPUT SHAFT BRG.   | X03-16-13580 | 391-0381-078 |
| 2b          | SEAL RETAINER & SPACER IN PLACE OF SHAFT BRG.                              | A36-60-10002 | 391-3383-099 |
| 3           | SEAL RETAINER FOR MOTORS ONLY  | A36-60-10001 | 391-2584-119 |
| 4a          | PUMP LIP SEAL  | X83-11-03508 | 391-2883-052 |
| 4b          | MOTOR LIP SEAL   | X84-36-03510 | 391-2883-094 |
| 5a          | 4 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot)  | A36-10-21421 | 322-5033-201 |
| 5b          | 4 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)     | A36-10-21422 | 322-5133-201 |
| 5c          | 4 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)    | A36-10-21431 | 322-5033-202 |
| 5d          | 4 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)       | A36-10-21432 | 322-5133-202 |
| 5e          | 2 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot)  | A36-10-21221 | 322-5023-201 |
| 5f          | 2 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)     | A36-10-21222 | 322-5123-201 |
| 5g          | 2 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)    | A36-10-21231 | 322-5023-202 |
| 5h          | 2 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)       | A36-10-21232 | 322-5123-202 |
| 5i          | 4 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot) | A36-10-41421 | 322-5033-401 |
| 5j          | 4 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)    | A36-10-41422 | 322-5133-401 |
| 5k          | 4 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)   | A36-10-41431 | 322-5033-402 |
| 5l          | 4 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)      | A36-10-41432 | 322-5133-402 |
| 5m          | 2 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot) | A36-10-41221 | 322-5023-401 |
| 5n          | 2 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)    | A36-10-41222 | 322-5123-401 |
| 5o          | 2 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)   | A36-10-41231 | 322-5023-402 |
| 5p          | 2 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)      | A36-10-41232 | 322-5123-402 |
| 6a          | CHECK VALVE MOTOR ( Not required on all models )                           | A00-75-11000 | 391-3681-001 |
| 6b          | PRESSURE PLUG PUMP ( Not required on all models )                          | X02-03-32110 | 391-2286-004 |
| 7           | BUSHING  | X03-00-33842 | 391-0482-307 |
| 8           | PUMP BUNA SEAL   | A36-82-13050 | 391-2883-176 |
| 9           | PUMP NYLON BACKUP SEAL   | A36-82-46020 | 391-2883-177 |
| Not Shown   | MOTOR NYLON BACKUP SEAL  | A36-82-46030 | 391-2885-071 |
| Not Shown   | MOTOR THRUST PLATE SIDE SEAL   | A36-82-14021 | 391-2885-069 |
| Not Shown   | MOTOR THRUST PLATE END SEAL  | A36-82-14022 | 391-2885-070 |
| 10a         | PUMP THRUST PLATE  | A36-70-20000 | 391-2185-055 |
| 10b         | MOTOR THRUST PLATE   | A36-70-10000 | 391-2185-060 |
| 11a         | SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7                       | A36-50-XX245 | 322-29XX-250 |
| 11b         | SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11                                  | A36-50-XX145 | 322-29XX-750 |
| 11c         | SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25                   | A36-50-XX225 | 322-29XX-230 |
| 12a         | PUMP HOUSING GASKET  | X85-11-12703 | 391-2884-052 |
| 12b         | MOTOR HOUSING GASKET   | X85-11-12303 | 391-2884-023 |



# MH365 Series

## Parts Breakdown

| DRAWING NO. | DESCRIPTION   | METARIS #    | ALTERNATE #  |
|-------------|---|--------------|--------------|
| 13a         | PUMP HOUSING DOWEL PIN                                | A00-94-22119 | 391-2082-062 |
| 13b         | MOTOR HOUSING DOWEL PIN                               | A00-94-22408 | 391-2082-069 |
| 14a         | PUMP GEAR HOUSING                                     | A36-33-XX000 | 322-81XX-100 |
| 14b         | MOTOR GEAR HOUSING                                    | A36-32-XX000 | 322-82XX-100 |
| 15a         | 365 BEARING CARRIER 1 OUTLET WITHOUT BUSHING          | A36-40-21000 | 322-7100-100 |
| 15b         | 365 BEARING CARRIER 1 OUTLET WITH BUSHING             | A36-40-31000 | 322-7600-100 |
| 15c         | 365 BEARING CARRIER 2 OUTLET WITHOUT BUSHING          | A36-40-22000 | 322-7300-100 |
| 15d         | 365 BEARING CARRIER 2 OUTLET WITH BUSHING             | A36-40-32000 | 322-7800-100 |
| 15e         | 365 MOTOR BEARING CARRIER BLANK WITHOUT BUSHING       | A36-40-00000 | 322-7200-100 |
| 15f         | 365 MOTOR BEARING CARRIER BLANK WITH BUSHING          | A36-40-10000 | 322-7700-100 |
| 15g         | 365/330 BEARING CARRIER CW WITHOUT BUSHING            | A36-40-23000 | 322-3050-100 |
| 15h         | 365/330 BEARING CARRIER CW WITH BUSHING               | A36-40-33000 | 322-3150-100 |
| 15i         | 365/330 BEARING CARRIER CCW WITHOUT BUSHING           | A36-40-24000 | 322-3060-100 |
| 15j         | 365/330 BEARING CARRIER CCW WITH BUSHING              | A36-40-34000 | 322-3160-100 |
| 16a         | CONNECTING SHAFT                                      | A36-50-00500 | 322-1133-001 |
| 16b         | PIGGYBACK CONNECTING SHAFT 365/330                    | A83-50-00500 | 322-1133-002 |
| 17          | GEAR SET ONLY   | A36-50-XX000 | 322-28XX-000 |
| 18a         | 365 PUMP PORT END COVER WITHOUT BUSHING NO PORTING    | A36-23-00000 | 322-3000-100 |
| 18b         | 365 PUMP PORT END COVER WITH BUSHING NO PORTING       | A36-23-10000 | 322-3100-100 |
| 18c         | 365 PUMP PORT END COVER WITHOUT BUSHING PORTING TYPE  | A36-23-02000 | 322-3010-100 |
| 18d         | 365 PUMP PORT END COVER WITH BUSHING PORTING TYPE     | A36-23-12000 | 322-3110-100 |
| 18e         | 365 MOTOR PORT END COVER WITHOUT BUSHING NO PORTING   | A36-22-00000 | 322-3000-099 |
| 18f         | 365 MOTOR PORT END COVER WITH BUSHING NO PORTING      | A36-22-10000 | 322-3100-099 |
| 18g         | 365 MOTOR PORT END COVER WITHOUT BUSHING PORTING TYPE | A36-22-02000 | 322-3020-100 |
| 18h         | 365 MOTOR PORT END COVER WITH BUSHING PORTING TYPE    | A36-22-12000 | 322-3120-100 |
| 18i         | 365 P.E.C. TO S.A.E. "A" PILOT CW WITHOUT BUSHING     | A36-22-04000 | 322-3054-099 |
| 18j         | 365 P.E.C. TO S.A.E. "A" PILOT CW WITH BUSHING        | A36-23-14000 | 322-3154-099 |
| 18k         | 365 P.E.C. TO S.A.E. "A" PILOT CCW WITHOUT BUSHING    | A36-22-05000 | 322-3064-099 |
| 18l         | 365 P.E.C. TO S.A.E. "A" PILOT CCW WITH BUSHING       | A36-23-17000 | 322-3164-099 |
| 18m         | 365 P.E.C. TO S.A.E. "B" PILOT CW WITHOUT BUSHING     | A36-23-06000 | 322-3054-100 |
| 18n         | 365 P.E.C. TO S.A.E. "B" PILOT CW WITH BUSHING        | A36-23-16000 | 322-3154-100 |
| 18o         | 365 P.E.C. TO S.A.E. "B" PILOT CCW WITHOUT BUSHING    | A36-23-07000 | 322-3064-100 |

**Note:** The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A36-50-XX000 changes to A36-50-15000 for 1.5" gear size  
Housing no. A36-33-XX000 changes to A36-33-15000 for a 1.5" housing size  
No porting sizes have been indicated all porting must be specified when ordering parts.

# MH365 Series

## Parts Breakdown

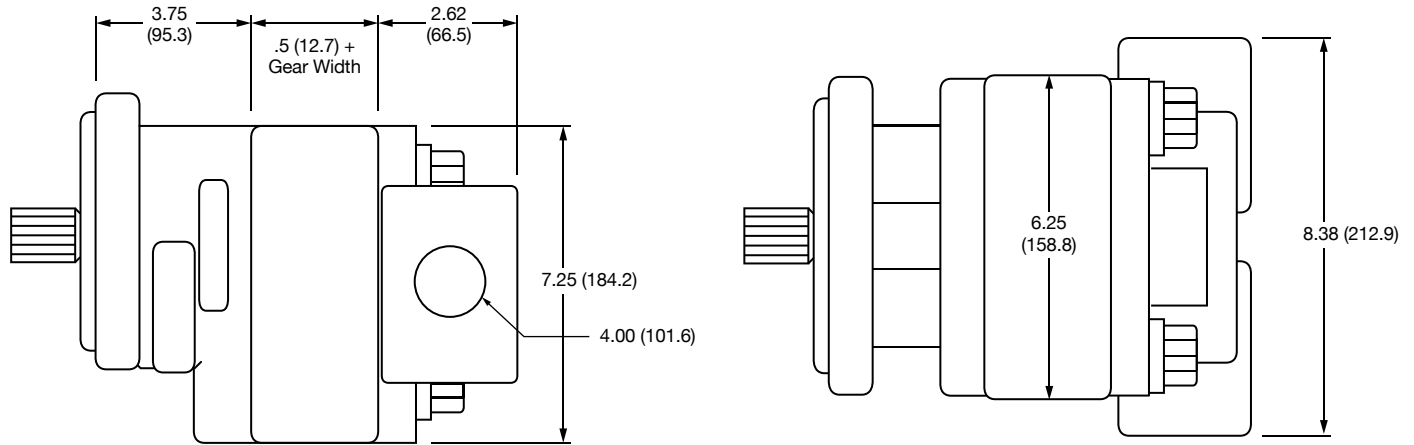
| DRAWING NO.      | DESCRIPTION   | METARIS #          | ALTERNATE #  |
|------------------|---|--------------------|--------------|
| <b>18p</b>       | 365 P.E.C. TO S.A.E. "B" PILOT CCW WITH BUSHING           | A36-23-17000       | 322-3164-100 |
| <b>19</b>        | BOLTS / STUDS   | See Fasteners Page |              |
| <b>20a</b>       | MOTOR FLAT WASHER   | X45-10-21004       | 391-3782-114 |
| <b>20b</b>       | PUMP FLAT WASHER  | X45-10-17005       | 391-3784-028 |
| <b>21a</b>       | PUMP HEX NUT  | X42-11-16000       | 391-1451-076 |
| <b>21b</b>       | MOTOR HEX NUT   | X42-11-19016       | 391-1451-086 |
| <b>Not Shown</b> | CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11            | A36-50-00141       | 322-1500-500 |
| <b>Not Shown</b> | CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7 | A36-50-00241       | 322-1000-500 |
| <b>Not Shown</b> | CONTINENTAL SHAFT BRG. RETAINER                           | X45-19-35002       | 391-3782-158 |
| <b>Not Shown</b> | CONTINENTAL SHAFT BRG. RETAINER SNAP RING                 | X05-02-38130       | 391-2685-029 |
| <b>Not Shown</b> | SHAFT KEY FOR TYPE 11 SHAFT                               | X01-02-80838       | 391-1781-083 |
| <b>Not Shown</b> | PIGGYBACK CONNECTING SHAFT BEARING                        | X03-16-13055       | 391-0381-099 |
| <b>Not Shown</b> | PIGGYBACK CONNECTING SHAFT LIP SEAL                       | X83-11-03308       | 391-2883-103 |
| <b>Not Shown</b> | PIGGYBACK CONNECTING SHAFT BEARING SNAP RING              | X05-01-61200       | 391-2686-019 |
| <b>Not Shown</b> | 1/4" ORB DRAIN PLUG                                       | X02-03-12060       | 391-2281-010 |

# MH365 Series

## Dimensions

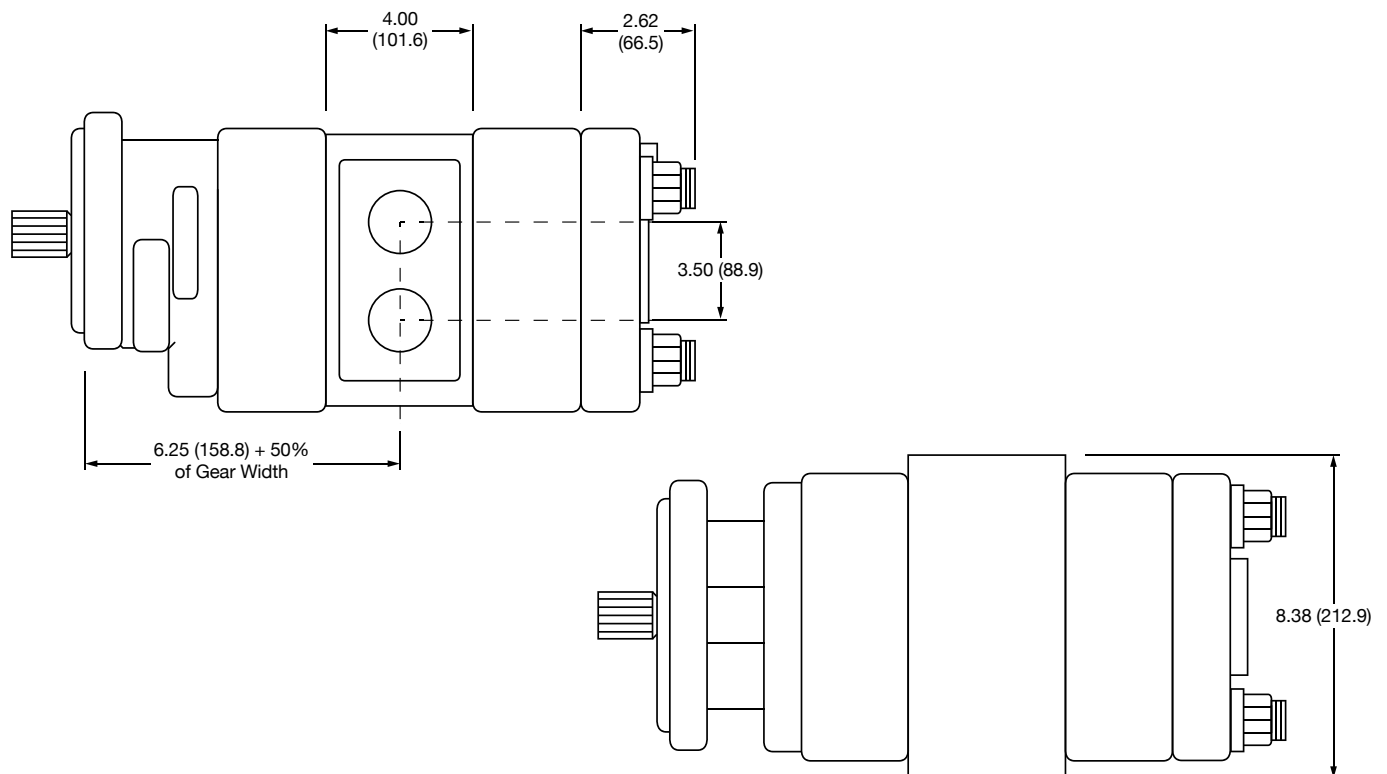
### Single Unit

\* Shaft dimension will change with the type of shaft used.



### Multiple Unit

\* Shaft dimension will change with the type of shaft used.

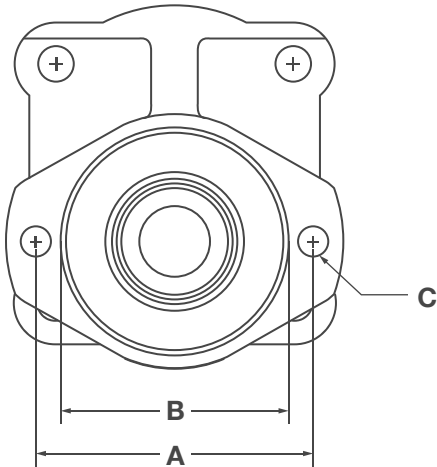


Dimensions are in inches (millimeters).

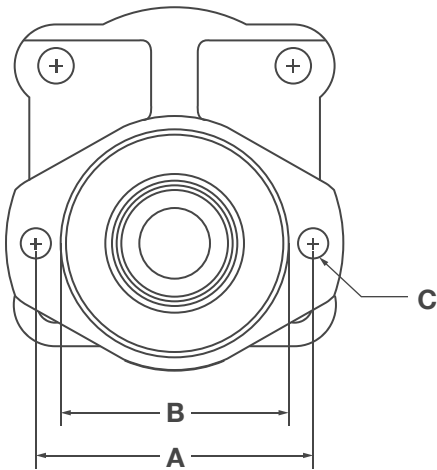
# Metaris MH Series Units

## Shaft End Covers

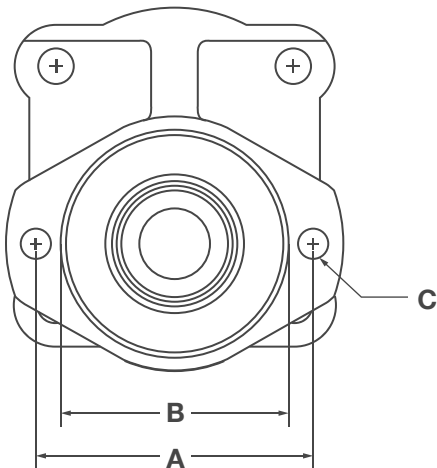
### 2-Bolt "A" Mount



### 2-Bolt "B" Mount



### 2-Bolt "C" Mount



| 2-BOLT "A" MOUNT | A            | B           | C           | CODE |
|------------------|--------------|-------------|-------------|------|
| MH15             | 4.19 (106.4) | 3.25 (82.6) | 0.44 (11.2) | 01   |
| MH20             | 4.19 (106.4) | 3.25 (82.6) | 0.44 (11.2) | 94   |
| MH25             |              |             | n/a         |      |
| MH30             | 4.19 (106.4) | 3.25 (82.6) | 0.44 (11.2) | 94   |
| MH31             | 4.19 (106.4) | 3.25 (82.6) | 0.44 (11.2) | 94   |
| MH37             |              |             | n/a         |      |
| MH50             |              |             | n/a         |      |
| MH51             |              |             | n/a         |      |
| MH75             |              |             | n/a         |      |
| MH76             |              |             | n/a         |      |
| MH315            | 4.19 (106.4) | 3.25 (82.6) | 0.44 (11.2) | 93   |
| MH330            |              |             | n/a         |      |
| MH350            |              |             | n/a         |      |
| MH365            |              |             | n/a         |      |

| 2-BOLT "B" MOUNT | A            | B            | C           | CODE |
|------------------|--------------|--------------|-------------|------|
| MH15             | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 07   |
| MH20             | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH25             | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH30             | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH31             | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH37             |              |              | n/a         |      |
| MH50             | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH51             | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH75             |              |              | n/a         |      |
| MH76             |              |              | n/a         |      |
| MH315            | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 96   |
| MH330            | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH350            | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |
| MH365            | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 97   |

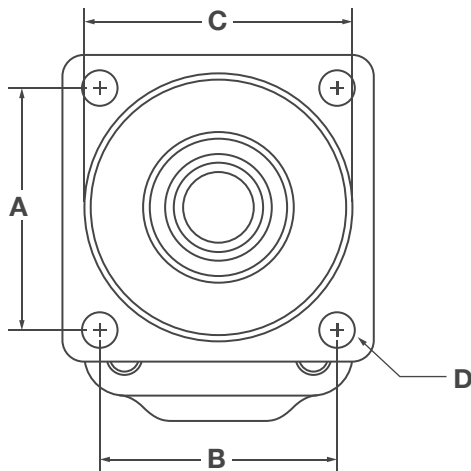
| 2-BOLT "C" MOUNT | A            | B            | C           | CODE |
|------------------|--------------|--------------|-------------|------|
| MH15             |              |              | n/a         |      |
| MH20             |              |              | n/a         |      |
| MH25             | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |
| MH30             |              |              | n/a         |      |
| MH31             |              |              | n/a         |      |
| MH37             | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |
| MH50             | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |
| MH51             | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |
| MH75             | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |
| MH76             | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |
| MH315            |              |              | n/a         |      |
| MH330            |              |              | n/a         |      |
| MH350            | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |
| MH365            | 7.13 (181.1) | 4.99 (126.7) | 0.69 (17.5) | 98   |

Dimensions are in inches (millimeters).

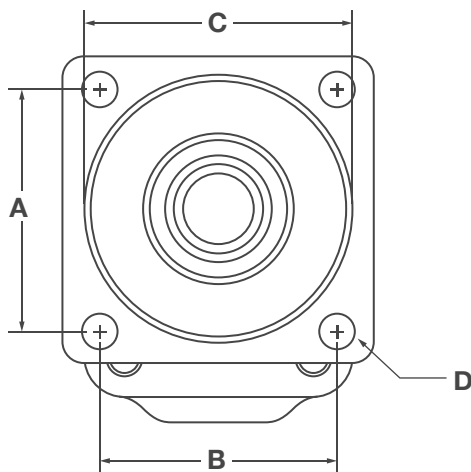
# Metaris MH Series Units

## Shaft End Covers

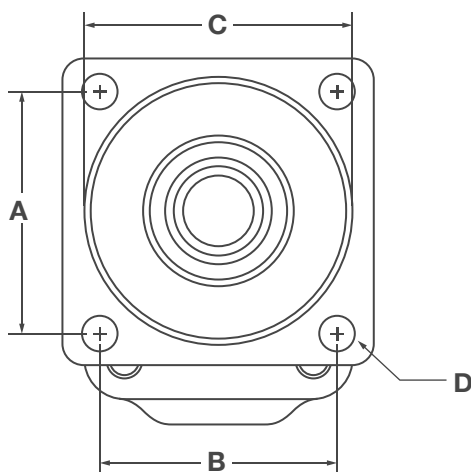
4-Bolt "B" Mount



4-Bolt "C" Mount



4-Bolt "D" Mount



| 4-BOLT "B" MOUNT | A           | B           | C            | D           | CODE |
|------------------|-------------|-------------|--------------|-------------|------|
| MH15             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 12   |
| MH20             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH25             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH30             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH31             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH37             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH50             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH51             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH75             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH76             | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH315            |             |             | n/a          |             |      |
| MH330            | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH350            | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |
| MH365            | 3.54 (89.9) | 3.54 (89.9) | 3.99 (101.3) | 0.56 (14.2) | 42   |

| 4-BOLT "C" MOUNT | A            | B            | C            | D           | CODE |
|------------------|--------------|--------------|--------------|-------------|------|
| MH15             |              |              | n/a          |             |      |
| MH20             |              |              | n/a          |             |      |
| MH25             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH30             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH31             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH37             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH50             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH51             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH75             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH76             | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH315            |              |              | n/a          |             |      |
| MH330            | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH350            | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |
| MH365            | 4.51 (114.5) | 4.51 (114.5) | 4.99 (126.7) | 0.56 (14.2) | 78   |

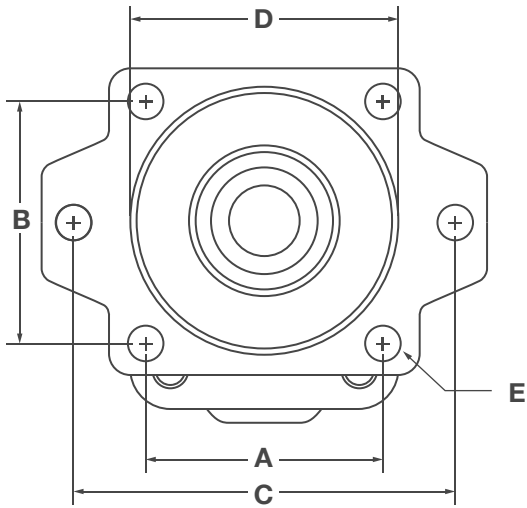
| 4-BOLT "D" MOUNT | A            | B            | C            | D           | CODE |
|------------------|--------------|--------------|--------------|-------------|------|
| MH15             |              |              | n/a          |             |      |
| MH20             |              |              | n/a          |             |      |
| MH25             |              |              | n/a          |             |      |
| MH30             |              |              | n/a          |             |      |
| MH31             |              |              | n/a          |             |      |
| MH37             |              |              | n/a          |             |      |
| MH50             |              |              | n/a          |             |      |
| MH51             |              |              | n/a          |             |      |
| MH75             | 6.36 (161.5) | 6.36 (161.5) | 5.99 (152.1) | 0.81 (20.6) | 80   |
| MH76             | 6.36 (161.5) | 6.36 (161.5) | 5.99 (152.1) | 0.81 (20.6) | 80   |
| MH315            |              |              | n/a          |             |      |
| MH330            |              |              | n/a          |             |      |
| MH350            |              |              | n/a          |             |      |
| MH365            |              |              | n/a          |             |      |

Dimensions are in inches (millimeters).

# Metaris MH Series Units

## Shaft End Covers

2/4-Bolt "B" Mount



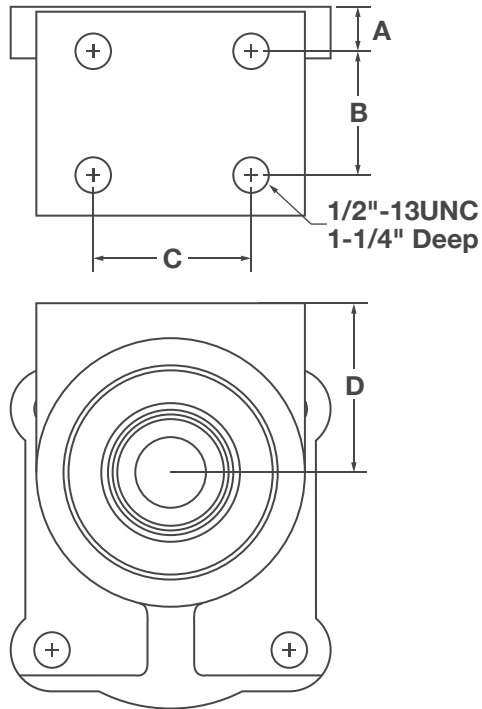
| 2/4-BOLT "B" MOUNT | A           | B           | C            | D            | E           | CODE |
|--------------------|-------------|-------------|--------------|--------------|-------------|------|
| MH15               |             |             |              |              | n/a         |      |
| MH20               | 3.54 (89.9) | 3.54 (89.9) | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 46   |
| MH25               |             |             |              |              | n/a         |      |
| MH30               | 3.54 (89.9) | 3.54 (89.9) | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 46   |
| MH31               | 3.54 (89.9) | 3.54 (89.9) | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 46   |
| MH37               |             |             |              |              | n/a         |      |
| MH50               | 3.54 (89.9) | 3.54 (89.9) | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 46   |
| MH51               | 3.54 (89.9) | 3.54 (89.9) | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 46   |
| MH75               |             |             |              |              | n/a         |      |
| MH76               |             |             |              |              | n/a         |      |
| MH315              |             |             |              |              | n/a         |      |
| MH330              | 3.54 (89.9) | 3.54 (89.9) | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 46   |
| MH350              | 3.54 (89.9) | 3.54 (89.9) | 5.75 (146.1) | 4.00 (101.6) | 0.56 (14.2) | 46   |
| MH365              |             |             |              |              | n/a         |      |

Dimensions are in inches (millimeters).

# Metaris MH Series Units

## Shaft End Covers

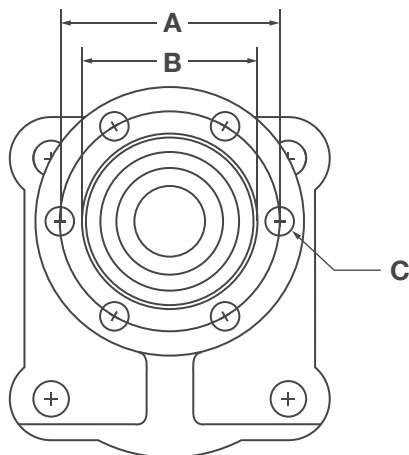
### Pad Mount



| PAD MOUNT | A           | B           | C           | D           | CODE |
|-----------|-------------|-------------|-------------|-------------|------|
| MH15      |             |             | n/a         |             |      |
| MH20      |             |             | n/a         |             |      |
| MH25      | 0.69 (17.5) | 2.00 (50.8) | 2.00 (50.8) | 2.50 (63.5) | 00   |
| MH30      | 0.69 (17.5) | 2.00 (50.8) | 2.00 (50.8) | 2.50 (63.5) | 00   |
| MH31      | 0.69 (17.5) | 2.00 (50.8) | 2.00 (50.8) | 2.50 (63.5) | 00   |
| MH37      | 0.88 (22.4) | 2.50 (63.5) | 3.50 (88.9) | 2.50 (63.5) | 00   |
| MH50      | 0.69 (17.5) | 2.00 (50.8) | 2.00 (50.8) | 2.50 (63.5) | 00   |
| MH51      | 0.69 (17.5) | 2.00 (50.8) | 2.00 (50.8) | 2.50 (63.5) | 00   |
| MH75      |             |             | n/a         |             |      |
| MH76      |             |             | n/a         |             |      |
| MH315     |             |             | n/a         |             |      |
| MH330     |             |             | n/a         |             |      |
| MH350     |             |             | n/a         |             |      |
| MH365     |             |             | n/a         |             |      |

Dimensions are in inches (millimeters).

### 6-Bolt Round



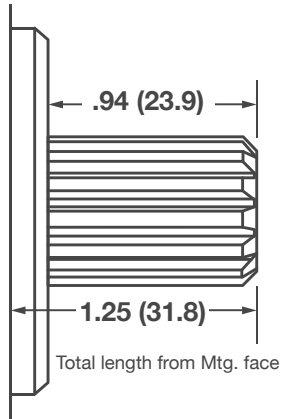
| 6-BOLT ROUND | A            | B           | C           | CODE |
|--------------|--------------|-------------|-------------|------|
| MH15         |              |             | n/a         |      |
| MH20         | 3.25 (82.6)  | 2.63 (66.8) | 0.44 (11.2) | 05   |
| MH25         | 4.00 (101.6) | 3.15 (80.0) | 0.56 (14.2) | 05   |
| MH30         | 3.25 (82.6)  | 2.63 (66.8) | 0.44 (11.2) | 05   |
| MH31         | 3.25 (82.6)  | 2.63 (66.8) | 0.44 (11.2) | 05   |
| MH37         |              |             | n/a         |      |
| MH50         |              |             | n/a         |      |
| MH51         |              |             | n/a         |      |
| MH75         |              |             | n/a         |      |
| MH76         |              |             | n/a         |      |
| MH315        |              |             | n/a         |      |
| MH330        |              |             | n/a         |      |
| MH350        |              |             | n/a         |      |
| MH365        |              |             | n/a         |      |

Dimensions are in inches (millimeters).

# Metaris MH Series Units

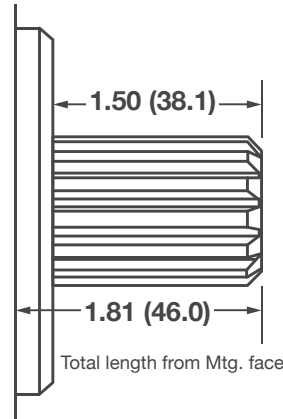
## Drive Shaft Dimensions

### SAE "A" 9-Tooth Spline, 5/8"



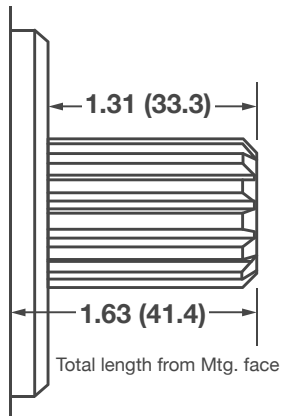
- 9-Tooth, .625 Dia.
- .94 (23.9) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .603-.609
- Minor Dia. .4835 Max.
- ANSI 16-4
- Code 95
- Unit Sizes 20, 30, 31

### SAE "BB" 15-Tooth Spline, 1"



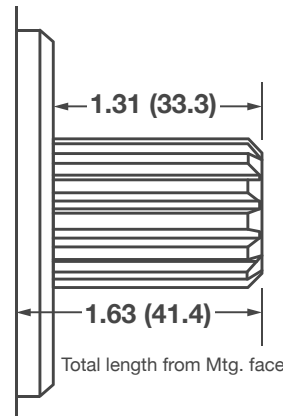
- 15-Tooth, 1.00 Dia.
- 1.50 (38.1) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .978-.996
- Minor Dia. .840 Max.
- ANSI 25-4
- Code 98
- Unit Sizes 20, 30, 31, 50, 51, 330, 350

### SAE "B" 13-Tooth Spline, 7/8"



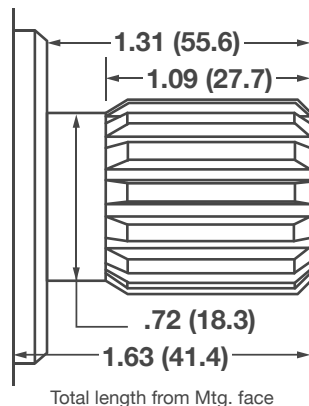
- 13-Tooth, .875 Dia.
- 1.31 (33.3) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .853-.858
- Minor Dia. .7335 Max.
- ANSI 22-4
- Code 25
- Unit Sizes 20, 30, 31, 50, 51, 330, 350

### SAE "B" Spline, Type 2



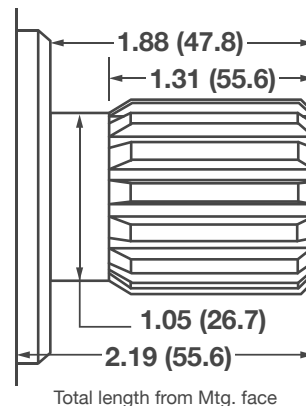
- 13-Tooth, .875 Dia.
- 1.31 (33.3) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .853-.858
- Minor Dia. .7335 Max.
- ANSI 22-4
- Code 65
- Unit Sizes 20, 30, 31, 50, 51, 315

### SAE "B" Spline, Type 2



- 13-Tooth, .875 Dia.
- 1.31 (33.3) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .853-.858
- Minor Dia. .7335 Max.
- ANSI 22-4
- Code 65
- Unit Sizes 20, 30, 31, 315,

### SAE "C" 14-Tooth Spline, 1-1/4"



- 14-Tooth, 1.250 Dia.
- 1.88 (47.8) Shaft Length
- 12/24 Dia. Pitch
- Major Dia. 1.223-1.228
- Minor Dia. 1.0627 Max.
- ANSI 32-4
- Code 7
- Unit Sizes 20, 30, 31, 50, 51, 75, 76, 330, 350, 365

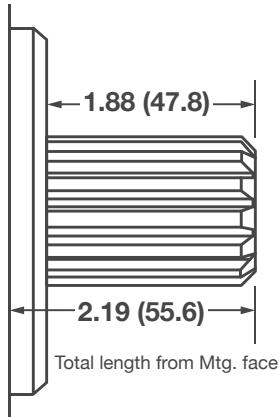
Dimensions are in inches (millimeters).



# Metaris MH Series Units

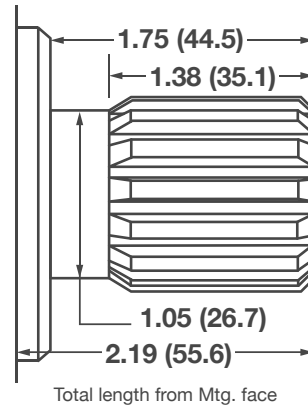
## Drive Shaft Dimensions

### SAE "C" 14-Tooth Spline, 1-1/4"



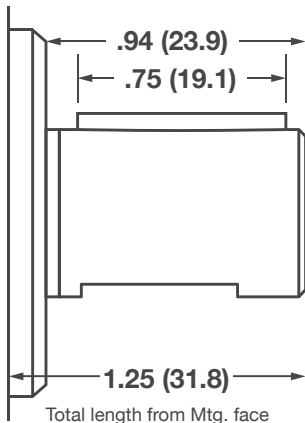
- 14-Tooth, 1.250 Dia.
- 1.88 (47.8) Shaft Length
- 12/24 Dia. Pitch
- Major Dia. 1.223-1.228
- Minor Dia. 1.0627 Max.
- ANSI 32-4
- Code 7
- Unit Sizes 20, 30, 31, 50, 51, 75, 76, 330, 350, 365

### SAE "C" Spline, Type 2



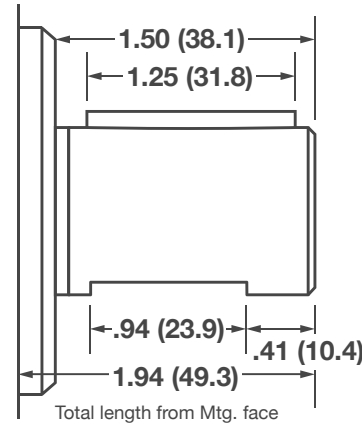
- 14-Tooth, 1.250 Dia.
- 1.75 (44.5) Shaft Length
- 12/24 Dia. Pitch
- Major Dia. 1.223-1.228
- Minor Dia. 1.0627 Max.
- ANSI 32-4
- Code 53
- Unit Sizes 50, 51

### SAE "A" Keyed, 5/8"



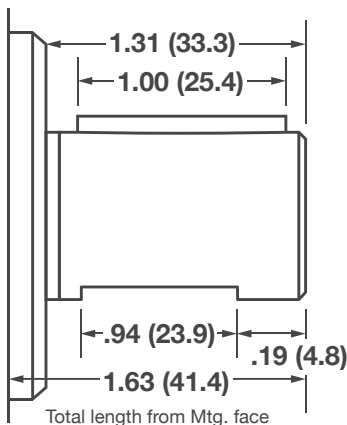
- 5/8" Keyed, .625 Dia.
- .94 (23.9) Shaft Length
- Square Key .16 x .16 x .75
- Major Dia. .625
- Minor Dia. .624
- ANSI 16-1

### SAE "BB" Keyed, 1"



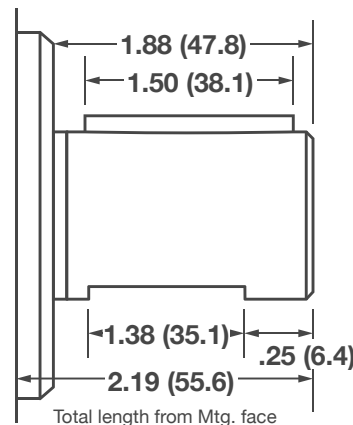
- 1" Keyed, 1.00 Dia.
- 1.50 (38.1) Shaft Length
- #25 P&W Key .25 x .38 x 1.25
- Major Dia. .998
- Minor Dia. .997
- ANSI 25-1
- Code 43
- Unit Sizes 20, 30, 31, 330, 350

### SAE "B" Keyed, 7/8"



- 7/8" Keyed, .875 Dia.
- 1.31 (33.3) Shaft Length
- #15 P&W Key .25 x .375 x 1
- Major Dia. .875
- Minor Dia. .874
- ANSI 22-1
- Code 30
- Unit Sizes 20, 30, 31, 330

### SAE "C" Keyed, 1-1/4"



- 1-1/4" Keyed, 1.25 Dia.
- 1.88 (47.8) Shaft Length
- #25 P&W Key .31 x .47 x 1.5
- Major Dia. 1.25
- Minor Dia. 1.248
- ANSI 32-1
- Code 11
- Unit Sizes 50, 51, 75, 76, 330, 365

Dimensions are in inches (millimeters).

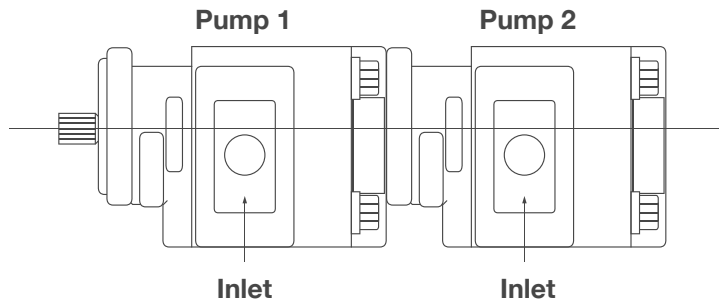
# Metaris MH Series Units

## Piggyback Pumps

The piggyback pump is two pumps sharing the same driveline. Metaris offers three types of piggyback units. The original bearing type piggyback version, the Add-A-Pump and the phase two close couple model. The Add-A-Pump allows for any type of pump to be installed to the rear of the main pump. While the close couple type requires a Metaris 300 series pump added to the rear of the main pump, the bearing type requires another bearing type unit to be added to the main pump.

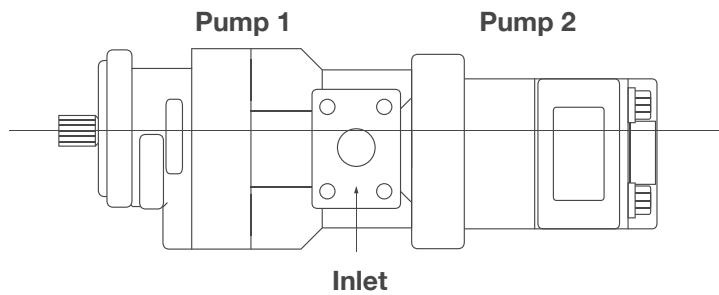
**Fig. 1**  
**Bearing Type Piggyback Pump**

- Single drive
- Two suction lines required
- Both pumps bearing type



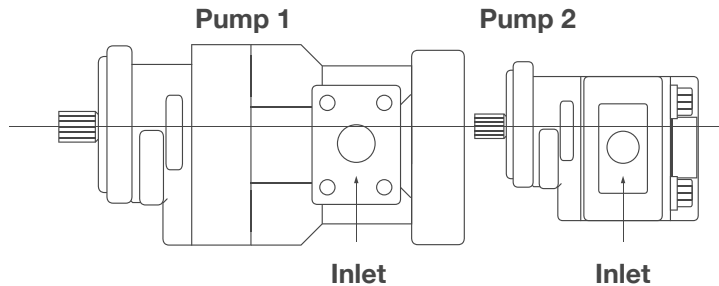
**Fig. 2**  
**Close Couple Type Piggyback Pump**

- Single drive
- One suction lines required
- Both pumps bushing type



**Fig. 3**  
**Add-a-Pump Piggyback Unit**

- Single drive
- Two suction lines required
- Second pump can be any type



## Pump Configurations

**Fig. 1**

| BEARING TYPE PUMPS |        |
|--------------------|--------|
| PUMP 1             | PUMP 2 |
| MHP75              | MHP50  |
| MHP75              | MHP30  |
| MHP76              | MHP51  |
| MHP76              | MHP31  |
| MHP50              | MHP50  |
| MHP50              | MHP30  |
| MHP51              | MHP51  |
| MHP51              | MHP31  |
| MHP30              | MHP30  |
| MHP31              | MHP31  |

**Fig. 2**

| BUSHING TYPE PUMPS |        |
|--------------------|--------|
| PUMP 1             | PUMP 2 |
| MHP365             | MHP330 |
| MHP350             | MHP315 |
| MHP330             | MHP315 |

**Fig. 3**

| ADD-A-PUMP TYPE |           |
|-----------------|-----------|
| PUMP 1          | PAD MOUNT |
| MHP365          | "A" Pad   |
| MHP365          | "B" Pad   |
| MHP350          | "A" Pad   |
| MHP350          | "B" Pad   |

*For Piggyback units, please consult the factory.*

# Metaris MH Series Units

## Flow Dividers

To build an assembly code number for a flow divider, the code letters and numbers are the same found when building codes for pumps/motors. When selecting the correct code for the flow divider use the clockwise gear housing and end cover codes from the pump code section for the series required.

**These units are built in the 30 / 31 / 50 / 51/ 75 / 76 models.**

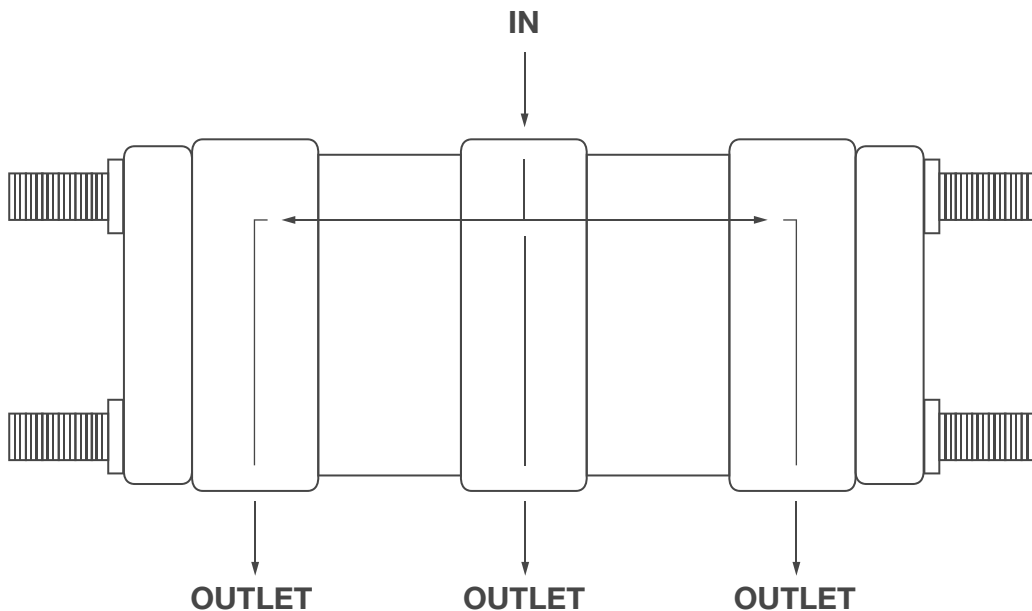
**Consult the factory for codes not found in the catalog.**

## Sample Code for Three Section Flow Divider

Assembly Code:

**MFD50B-BY-OD12-1-E-OJ25-1-E-UD10-BY**

|                     |                                 |             |
|---------------------|---------------------------------|-------------|
| 1. Flow Divider     |                                 | <b>MFD</b>  |
| 2. Series           |                                 | <b>50</b>   |
| 3. Model            |                                 | <b>B</b>    |
| 4. Port End Cover   | (Blank w/Ext. Studs)            | <b>BY</b>   |
| 5. Gear Housing     | (1" Split Flange on one side)   | <b>OD12</b> |
| 6. Connecting Shaft | (Not shown)                     | <b>1</b>    |
| 7. Bearing Carrier  | (No ports)                      | <b>E</b>    |
| 8. Gear Housing     | (1-1/4" x 1" Split Flange)      | <b>OJ25</b> |
| 9. Connecting Shaft | (Not shown)                     | <b>1</b>    |
| 10. Bearing Carrier | (No ports)                      | <b>E</b>    |
| 11. Gear Housing    | (3/4" Split Flange on one side) | <b>UD10</b> |
| 12. Port End Cover  | (Blank w/Ext. Studs)            | <b>BY</b>   |



# Metaris MH Series Units

## Seal Kits

Each seal kit will work for a motor or pump. For multiple section units, you add the second kit - for example:

**For a single MH30/31 unit use 1-SK30**

**If the unit is a 2 section unit use 1-SK30 + SK30M**

**If the unit is a 3 section unit use 1-SK30 + SK30M + SK30M**

**If the unit is a 4 section unit use 1-SK30 + SK30M + SK30M + SK30M**

| SINGLE UNIT                   | QTY | 1-SK20<br>A20-80-31100 |              | 1-SK25<br>A25-80-31100 |              | 1-SK30<br>A30-80-31100 |              |
|-------------------------------|-----|------------------------|--------------|------------------------|--------------|------------------------|--------------|
|                               |     | METARIS #              | ALT #        | METARIS #              | ALT #        | METARIS #              | ALT #        |
| SHAFT SEAL INTERGAL           | 1   | X83-11-02708           | 391-2883-058 | n/a                    | n/a          | X83-11-02708           | 391-2883-058 |
| SHAFT SEAL CONTINENTAL        | 1   | X89-11-02508           | 391-2883-107 | X83-11-03008           | 391-2883-055 | X89-11-02508           | 391-2883-107 |
| SHAFT SEAL CONTINENTAL TYPE 2 | 1   | n/a                    | n/a          | X83-11-02508           | 391-2883-057 | n/a                    | n/a          |
| SHAFT SEAL INTERGAL MOTOR     | 1   | X84-36-02709           | 391-2883-119 | X84-36-03009           | 391-2883-096 | X84-36-02709           | 391-2883-119 |
| SHAFT SEAL CONTINENTAL MOTOR  | 1   | X83-36-02509           | 391-2883-126 | X84-36-03510           | 391-2883-094 | X83-36-02509           | 391-2883-126 |
| HOUSING GASKET SEAL           | 2   | X85-11-09203           | 391-2884-019 | X85-11-10803           | 391-2884-021 | X85-11-10104           | 391-2884-050 |
| POCKET SEAL (2" STRIP)        | 1   | X85-11-00002           | 391-2882-086 | X85-11-00002           | 391-2882-050 | X85-11-00002           | 391-2882-086 |
| RING SEAL FOR TYPE 1          | 2   | n/a                    | n/a          | X03-00-32532           | 391-0481-002 | n/a                    | n/a          |
| SEAL RET. "O" RING            | 2   | n/a                    | n/a          | X81-11-05704           | 391-2881-120 | n/a                    | n/a          |
| SPRING                        | 1   | n/a                    | n/a          | A25-95-00000           | 391-3581-176 | n/a                    | n/a          |
| RING SEAL FOR TYPE 2          | 1   | n/a                    | n/a          | X03-00-32531           | 391-0481-003 | n/a                    | n/a          |
| SEAL RET. "O" RING            | 1   | n/a                    | n/a          | X81-11-04403           | 391-2881-203 | n/a                    | n/a          |
| SEAL RET. "O" RING            | 1   | n/a                    | n/a          | X81-11-06304           | 391-2881-141 | n/a                    | n/a          |
| SHAFT SEAL BACK UP RING       | 1   | n/a                    | n/a          | A25-82-46020           | 391-2681-248 | n/a                    | n/a          |
| SHAFT SEAL "O" RING           | 1   | n/a                    | n/a          | X81-11-02504           | 391-2881-261 | n/a                    | n/a          |

| SINGLE UNIT                   | QTY | 1-SK50<br>A50-80-31100 |              | 1-SK37<br>A37-80-31100 |              | 1-SK75<br>A75-80-31100 |              |
|-------------------------------|-----|------------------------|--------------|------------------------|--------------|------------------------|--------------|
|                               |     | METARIS #              | ALT #        | METARIS #              | ALT #        | METARIS #              | ALT #        |
| SHAFT SEAL INTERGAL           | 1   | X83-11-03308           | 391-2883-103 | n/a                    | n/a          | X83-11-03508           | 391-2883-052 |
| SHAFT SEAL CONTINENTAL        | 1   | X89-11-03308           | 391-2883-133 | X83-11-03508           | 391-2883-052 | n/a                    | n/a          |
| SHAFT SEAL CONTINENTAL TYPE 2 | 1   | n/a                    | n/a          | n/a                    | n/a          | n/a                    | n/a          |
| SHAFT SEAL INTERGAL MOTOR     | 1   | X83-36-03309           | 391-2883-115 | n/a                    | n/a          | X84-36-03510           | 391-2883-094 |
| SHAFT SEAL CONTINENTAL MOTOR  | 1   | n/a                    | n/a          | X84-36-03510           | 391-2883-094 | n/a                    | n/a          |
| HOUSING GASKET SEAL           | 2   | X85-11-10803           | 391-2884-021 | X85-11-12303           | 391-2884-023 | X85-11-13303           | 391-2884-024 |
| POCKET SEAL (2" STRIP)        | 1   | X85-11-00002           | 391-2882-050 | X85-11-00002           | 391-2882-023 | X85-11-00003           | 391-2882-052 |
| RING SEAL FOR TYPE 1          | 2   | X81-76-03305           | 391-2585-009 | X03-00-32835           | 391-0481-001 | X81-76-03809           | 391-2585-011 |
| SEAL RET. "O" RING            | 2   | n/a                    | n/a          | X81-15-06904           | 391-2881-127 | X81-11-06603           | 391-2881-457 |
| SPRING                        | 1   | n/a                    | n/a          | A37-95-00000           | 391-3581-172 | n/a                    | n/a          |
| RING SEAL FOR TYPE 2          | 1   | n/a                    | n/a          | X03-00-32836           | 391-0481-004 | n/a                    | n/a          |
| SEAL RET. "O" RING            | 1   | n/a                    | n/a          | X81-15-06904           | 391-2881-098 | n/a                    | n/a          |
| SEAL RET. "O" RING            | 1   | n/a                    | n/a          | n/a                    | n/a          | n/a                    | n/a          |
| SHAFT SEAL BACK UP RING       | 1   | n/a                    | n/a          | n/a                    | n/a          | n/a                    | n/a          |
| SHAFT SEAL "O" RING           | 1   | n/a                    | n/a          | n/a                    | n/a          | n/a                    | n/a          |

## Metaris MH Series Units

### Seal Kits Cont.

Each seal kit will work for a motor or pump. For multiple section units, you add the second kit - for example:

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**If the unit is a 2 section unit use 1-SK30 + SK30M**

**If the unit is a 3 section unit use 1-SK30 + SK30M + SK30M**

**If the unit is a 4 section unit use 1-SK30 + SK30M + SK30M + SK30M**

| SINGLE UNIT                         | QTY | 1-SK315<br>A32-80-31100 |              | 1-SK330<br>A33-80-31100 |              |
|-------------------------------------|-----|-------------------------|--------------|-------------------------|--------------|
|                                     |     | METARIS #               | ALT #        | METARIS #               | ALT #        |
| SHAFT SEAL INTERGAL                 | 1   | X83-11-02406            | 391-2883-151 | X83-11-02708            | 391-2883-058 |
| SHAFT SEAL CONTINENTAL              | 1   | n/a                     | n/a          | X89-11-02508            | 391-2883-107 |
| SHAFT SEAL INTERGAL MOTOR           | 1   | X83-36-02406            | 391-2883-156 | X84-36-02709            | 391-2883-119 |
| SHAFT SEAL CONTINENTAL MOTOR        | 1   | n/a                     | n/a          | X83-36-02509            | 391-2883-126 |
| PUMP HOUSING GASKET SEAL            | 2   | X85-11-08203            | 391-2881-968 | X85-11-10104            | 391-2884-050 |
| MOTOR HOUSING GASKET SEAL           | 2   | X85-11-08903            | 391-2881-429 | X85-11-09803            | 391-2884-076 |
| THRUST PLATE PUMP SEAL (CHANNEL)    | 2   | A32-82-11030            | 391-2883-168 | A33-82-11030            | 391-2883-166 |
| THRUST PLATE PUMP SEAL (BACK-UP)    | 2   | A32-82-46010            | 391-2883-169 | A33-82-46010            | 391-2883-167 |
| THRUST PLATE MOTOR SEAL (BACK-UP)   | 2   | A32-82-46030            | 391-2881-995 | A33-82-46030            | 391-2881-929 |
| THRUST PLATE MOTOR SEAL (SEAL END)  | 4   | A32-82-14021            | 391-2881-996 | A33-82-14021            | 391-2881-930 |
| THRUST PLATE MOTOR SEAL (SEAL SIDE) | 4   | A32-82-14022            | 391-2881-997 | A33-82-14022            | 391-2881-931 |

| SINGLE UNIT                         | QTY | 1-SK350<br>A35-80-3100 |              | 1-SK365<br>A36-80-31100 |              |
|-------------------------------------|-----|------------------------|--------------|-------------------------|--------------|
|                                     |     | METARIS #              | ALT #        | METARIS #               | ALT #        |
| SHAFT SEAL INTERGAL                 | 1   | X83-11-03308           | 391-2883-103 | X83-11-03508            | 391-2883-052 |
| SHAFT SEAL CONTINENTAL              | 1   | n/a                    | n/a          | n/a                     | n/a          |
| SHAFT SEAL INTERGAL MOTOR           | 1   | X83-36-03309           | 391-2883-115 | X84-36-03510            | 391-2883-094 |
| SHAFT SEAL CONTINENTAL MOTOR        | 1   | n/a                    | n/a          | n/a                     | n/a          |
| PUMP HOUSING GASKET SEAL            | 2   | X85-11-11403           | 391-2884-074 | X85-11-12703            | 391-2884-052 |
| MOTOR HOUSING GASKET SEAL           | 2   | X85-11-10803           | 391-2884-021 | X85-11-12303            | 391-2884-023 |
| THRUST PLATE PUMP SEAL (CHANNEL)    | 2   | A35-82-11050           | 391-2882-140 | A36-82-46020            | 391-2883-177 |
| THRUST PLATE PUMP SEAL (BACK-UP)    | 2   | A35-82-46010           | 391-2882-139 | A36-82-13050            | 391-2883-176 |
| THRUST PLATE MOTOR SEAL (BACK-UP)   | 2   | A35-82-46030           | 391-2885-075 | A36-82-46030            | 391-2885-071 |
| THRUST PLATE MOTOR SEAL (SEAL END)  | 4   | A35-82-14020           | 391-2885-074 | A36-82-14022            | 391-2885-070 |
| THRUST PLATE MOTOR SEAL (SEAL SIDE) | 4   | A35-82-14021           | 391-2885-073 | A36-82-14021            | 391-2885-069 |

# Metaris MH Series Units

## Seal Kits Cont.

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**If the unit is a 3 section unit use 1-SK30 + SK30M + SK30M**

**If the unit is a 4 section unit use 1-SK30 + SK30M + SK30M + SK30M**

| MULTIPLE SECTION UNIT  | QTY | SK20M<br>A20-80-32100 |              | SK25M<br>A25-80-32100 |              | SK30M<br>A30-80-32100 |              |
|------------------------|-----|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
|                        |     | METARIS #             | ALT #        | METARIS #             | ALT #        | METARIS #             | ALT #        |
| HOUSING GASKET SEAL    | 2   | X85-11-09203          | 391-2884-019 | X85-11-10803          | 391-2884-021 | X85-11-10104          | 391-2884-050 |
| POCKET SEAL (2" STRIP) | 1   | X85-11-00002          | 391-2882-086 | X85-11-00002          | 391-2882-050 | X85-11-00002          | 391-2882-086 |
| RING SEAL              | 2   | X81-76-02706          | 391-2585-006 | X03-00-32531          | 391-0481-003 | X81-76-02706          | 391-2585-006 |

| MULTIPLE SECTION UNIT  | QTY | SK37M<br>A37-80-32100 |              | SK50M<br>A50-80-32100 |              | SK75M<br>A75-80-32100 |              |
|------------------------|-----|-----------------------|--------------|-----------------------|--------------|-----------------------|--------------|
|                        |     | METARIS #             | ALT #        | METARIS #             | ALT #        | METARIS #             | ALT #        |
| HOUSING GASKET SEAL    | 2   | X85-11-12303          | 391-2884-023 | X85-11-10803          | 391-2884-021 | X85-11-13303          | 391-2884-024 |
| POCKET SEAL (2" STRIP) | 1   | X85-11-00002          | 391-2882-023 | X85-11-00002          | 391-2882-050 | X85-11-00003          | 391-2882-052 |
| RING SEAL              | 2   | X03-00-32836          | 391-0481-004 | X81-76-03305          | 391-2585-009 | X81-76-03809          | 391-2585-011 |

| MULTIPLE SECTION UNIT               | QTY | SK315M<br>A32-80-32100 |              | SK330M<br>A33-80-32100 |              |
|-------------------------------------|-----|------------------------|--------------|------------------------|--------------|
|                                     |     | METARIS #              | ALT #        | METARIS #              | ALT #        |
| PUMP HOUSING GASKET SEAL            | 2   | X85-11-08203           | 391-2881-968 | X85-11-10104           | 391-2884-050 |
| MOTOR HOUSING GASKET SEAL           | 2   | X85-11-08903           | 391-2881-429 | X85-11-09803           | 391-2884-076 |
| THRUST PLATE PUMP SEAL (CHANNEL)    | 2   | A32-82-11030           | 391-2883-168 | A33-82-11030           | 391-2883-166 |
| THRUST PLATE PUMP SEAL (BACK-UP)    | 2   | A32-82-46010           | 391-2883-169 | A33-82-46010           | 391-2883-167 |
| THRUST PLATE MOTOR SEAL (BACK-UP)   | 2   | A32-82-46030           | 391-2881-995 | A33-82-46030           | 391-2881-929 |
| THRUST PLATE MOTOR SEAL (SEAL END)  | 4   | A32-82-14021           | 391-2881-996 | A33-82-14021           | 391-2881-930 |
| THRUST PLATE MOTOR SEAL (SEAL SIDE) | 4   | A32-82-14022           | 391-2881-997 | A33-82-14022           | 391-2881-931 |

| MULTIPLE SECTION UNIT               | QTY | SK350M<br>A35-80-32100 |              | SK365M<br>A36-80-32100 |              |
|-------------------------------------|-----|------------------------|--------------|------------------------|--------------|
|                                     |     | METARIS #              | ALT #        | METARIS #              | ALT #        |
| PUMP HOUSING GASKET SEAL            | 2   | X85-11-11403           | 391-2884-074 | X85-11-12703           | 391-2884-052 |
| MOTOR HOUSING GASKET SEAL           | 2   | X85-11-10803           | 391-2884-021 | X85-11-12303           | 391-2884-023 |
| THRUST PLATE PUMP SEAL (CHANNEL)    | 2   | A35-82-11050           | 391-2882-140 | A36-82-46020           | 391-2883-177 |
| THRUST PLATE PUMP SEAL (BACK-UP)    | 2   | A35-82-46010           | 391-2882-139 | A36-82-13050           | 391-2883-176 |
| THRUST PLATE MOTOR SEAL (BACK-UP)   | 2   | A35-82-46030           | 391-2885-075 | A36-82-46030           | 391-2885-071 |
| THRUST PLATE MOTOR SEAL (SEAL END)  | 4   | A35-82-14020           | 391-2885-074 | A36-82-14022           | 391-2885-070 |
| THRUST PLATE MOTOR SEAL (SEAL SIDE) | 4   | A35-82-14021           | 391-2885-073 | A36-82-14021           | 391-2885-069 |

# Metaris MH Series Units

## Fasteners

| SINGLE UNITS |       |       |       |      |       |      |       |      |       |      |       |           |
|--------------|-------|-------|-------|------|-------|------|-------|------|-------|------|-------|-----------|
| GEAR CODE    |       |       |       |      |       |      |       |      |       |      |       |           |
| MODEL        | 5     | 7     | 10    | 12   | 15    | 17   | 20    | 22   | 25    | 27   | 30    | BOLT DIA. |
| MH15         | 4"    | 4.25" | 4.5"  | 4.5" | 5"    | 5"   | 5.5"  |      |       |      |       | 1/2" NC   |
| MH20         | 4"    | 4.25" | 4.5"  | 4.5" | 5"    | 5"   | 5.5"  |      |       |      |       | 9/16" NC  |
| MH25         | 3.75" | 4"    | 4.25" | 4.5" | 4.75" | 5"   | 5.25" | 5.5" | 5.75" |      |       | 5/8" NC   |
| MH30/31      | 3.75" | 4"    | 4.25" | 4.5" | 4.75" | 5"   | 5.25" | 5.5" | 5.75" |      |       | 5/8" NC   |
| MH37         | 4.75" | 5"    | 5.25" | 5.5" | 5.75" | 6"   | 6.5"  | 6.5" | 6.75" | 7"   | 7.25" | 1/2" NC   |
| MH50/51      | 3.75" | 4"    | 4.25" | 4.5" | 4.75" | 5"   | 5.25" | 5.5" | 5.75" |      |       | 5/8" NC   |
| MH75/76      |       | 4.5"  | 4.75" | 5"   | 5.25" | 5.5" | 5.75" | 6"   | 6.5"  | 6.5" | 6.75" | 5/8" NC   |
| MH315        | 2.75" | 3"    | 3.25" | 3.5" | 3.75" | 4"   | 4.25" |      |       |      |       | 1/2" NC   |
| MH330        | 3.75" | 4"    | 4.25" | 4.5" | 4.75" | 5"   | 5.25" |      |       |      |       | 5/8" NC   |
| MH350        | 5.25" | 5.5"  | 5.75" | 6"   | 6.5"  | 6.5" | 6.75" | 7"   | 7.5"  |      |       | 5/8" NC   |
| MHP365       |       | 4.5"  | 5"    | 5"   | 5.5"  | 5.5" | 6"    | 6"   | 6.5"  |      |       | 5/8" NC   |
| MHM365       |       |       | 5"    | 5"   | 5.5"  | 5.5" | 6"    | 6"   | 6.5"  |      |       | 3/4" NC   |

| MULTIPLE UNITS |                                |      |    |       |      |       |    |       |      |       |    |  |
|----------------|--------------------------------|------|----|-------|------|-------|----|-------|------|-------|----|--|
| GEAR LENGTH    |                                |      |    |       |      |       |    |       |      |       |    |  |
| MODEL          | .5"                            | .75" | 1" | 1.25" | 1.5" | 1.75" | 2" | 2.25" | 2.5" | 2.75" | 3" |  |
| MH15           | 4.125 + (N * 3.25) + (TGS) = L |      |    |       |      |       |    |       |      |       |    |  |
| MH20           | 4.25 + (N * 3.25) + (TGS) = L  |      |    |       |      |       |    |       |      |       |    |  |
| MH25           | 4 + (N * 3.625) + (TGS) = L    |      |    |       |      |       |    |       |      |       |    |  |
| MH30/31        | 4 + (N * 3.25) + (TGS) = L     |      |    |       |      |       |    |       |      |       |    |  |
| MH37           | 4.875 + (N * 4) + (TGS) = L    |      |    |       |      |       |    |       |      |       |    |  |
| MH50/51        | 4 + (N * 3.625) + (TGS) = L    |      |    |       |      |       |    |       |      |       |    |  |
| MH75/76        | 4.5 + (N * 4) + (TGS) = L      |      |    |       |      |       |    |       |      |       |    |  |
| MH315          | 2.875 + (N * 3) + (TGS) = L    |      |    |       |      |       |    |       |      |       |    |  |
| MH330          | 4 + (N * 4) + (TGS) = L        |      |    |       |      |       |    |       |      |       |    |  |
| MH350          | 5.5 + (N * 4) + (TGS) = L      |      |    |       |      |       |    |       |      |       |    |  |
| MHP365         | 4.75 + (N * 4.5) + (TGS) = L   |      |    |       |      |       |    |       |      |       |    |  |
| MHM365         | 5 + (N * 4.5) + (TGS) = L      |      |    |       |      |       |    |       |      |       |    |  |

N = Number of Bearing Carriers  
 TGS = Total Gear Width  
 (Width is achieved by adding all gear sets together)

L = Rod Length  
 e.g. To build a triple MH350 unit with gear sets  
 (1st section = 2", 2nd section = 1.5", 3rd section = 1")

Rod Length = 5.5" + (N \* 4) + (TGS)  
 Rod Length = 5.5" + (2 \* 4) + (2" + 1.5" + 1")  
 Rod Length = 5.5" + (8) + (4.5")  
 Rod Length = 18"

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