MTS SENSORS

Level Plus®

Magnetostrictive Liquid Level Transmitters
with Temposonics® Technology

Accessories for liquid level transmitters
Catalog

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Table of contents

Introduction

MTS Sensors offers a variety of floats to meet your application needs. Our floats come in a variety of sizes from less than 38 mm (1.5 in.) up to 178 mm (7 in.) in diameter. Float materials are available in stainless steel, Teflon®, Aluminum, Hastelloy® C and Nitrophyl®.
Product viscosity, specific gravity, and temperature can vary widely in a process or tank gauging application. Because of these variables and others, such as tank pressure and corrosiveness, no one float can meet all requirements. Therefore, a variety of float styles are available and we will assist you in choosing the one that best meets your requirements.

When choosing a float for your application, MTS recommends you choose one that has a specific gravity of at least 0.05 less than that of the measured liquid. For interface measurement, a minimum of 0.05 specific gravity differential is recommended between upper and lower liquids. MTS Sensors also offers a variety of meters, housings, and calibration equipment as accessories to our transmitter range. Meters are available for analog, DDA, and Modbus outputs.

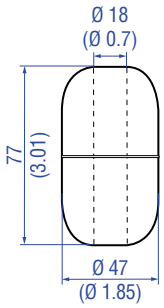
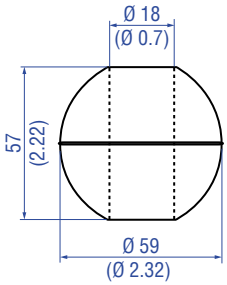
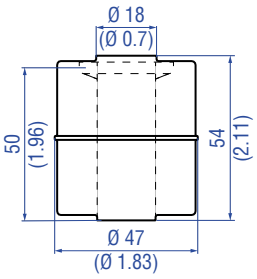
For more information, please contact the MTS Sensors' applications department or go to www.mtssensors.com for more information.

1. Floats

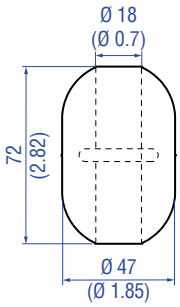
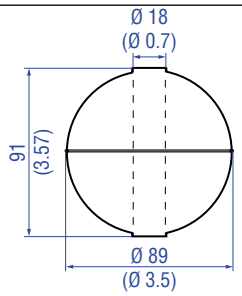
1.1 Standard floats

General notes:

1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. When the magnet is not shown, the magnet is positioned at the center line of float.
4. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.
5. * Standard float that can be expedited

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		29.3 bar (425 psi)	149 °C (300 °F)	No	0.67	Stainless steel	**251 981-2***
					0.71	Hastelloy® C	**251 981-4**
		22.4 bar (325 psi)	149 °C (300 °F)	No	0.48	Stainless steel	**251 387-2**
		4 bar (60 psi)	149 °C (300 °F)	Yes	0.6	Stainless steel	**201 605-2***

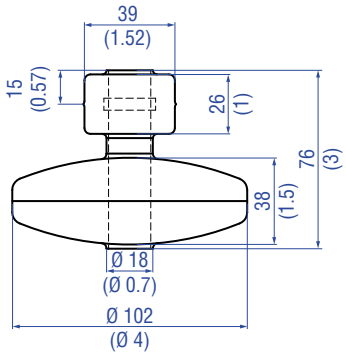
Controlling design dimensions are in millimeters and measurements in ( ) are in inches

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		69 bar (1000 psi)	149 °C (300 °F)	No	0.68	Stainless steel	**254 526-2***
		22.4 bar (325 psi)	149 °C (300 °F)	No	0.45	Stainless steel	**251 469-2**

1.2 Low-liftoff float

General notes:

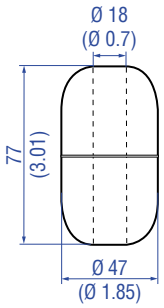
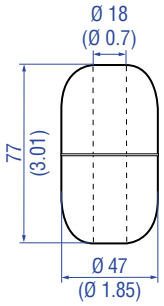
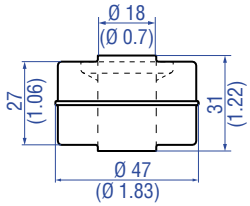
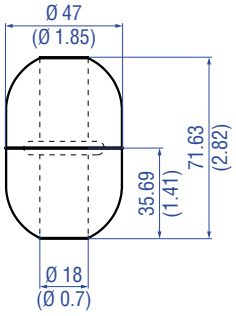
1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. When the magnet is not shown, the magnet is positioned at the center line of float.
4. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		8.6 bar (125 psi)	149 °C (300 °F)	Yes	0.65	Stainless steel	**252 228-4**

1.3 Standard interface floats

General notes:

1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. When the magnet is not shown, the magnet is positioned at the center line of float.
4. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.
5. * Standard float that can be expedited

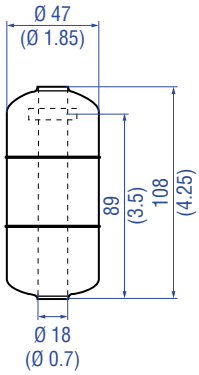
Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		29.3 bar (425 psi)	149 °C (300 °F)	No	0.93	Stainless steel	**251 982-2***
						Hastelloy® C	**251 982-4**
		29.3 bar (425 psi)	149 °C (300 °F)	No	1.06	Stainless steel	**251 983-2***
						Hastelloy® C	**251 983-4**
		4 bar (60 psi)	149 °C (300 °F)	Yes	0.93	Stainless steel	**201 606-2***
		69 bar (1000 psi)	149 °C (300 °F)	No	0.93	Stainless steel	**254 894-2**

Controlling design dimensions are in millimeters and measurements in ( ) are in inches

1.4 Sanitary floats

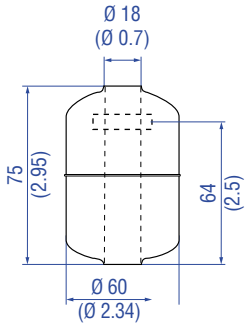
General notes:

1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. Sanitary polish is available for stainless-steel floats up to 200 Grit/Ra 25.
4. Electropolish is available for stainless-steel floats up to 240 Grit/Ra 15.
5. When the magnet is not shown, the magnet is positioned at the center line of float.
6. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.
7. * Standard float that can be expedited

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		10.3 bar (150 psi)	149 °C (300 °F)	Yes	0.66	Stainless steel 200 Grit / Ra 25 µin (0.625 µm)	**401 513-2***
						Stainless steel 240 Grit / Ra 15 µin (0.375 µm)	**401 513-4**

Note for part no. 401 513-2 & 401 513-4:

- Float meets 3A Sanitary specifications.
- Use this float with all Sanitary transmitter wells as other floats may enter the inactive zone when the tank is emptied.

		22.4 bar (325 psi)	149 °C (300 °F)	Yes	0.63	Stainless steel 200 Grit / Ra 25 µin (0.625 µm)	**200 931-6**
						Stainless steel 240 Grit / Ra 15 µin (0.375 µm)	**200 931-8**

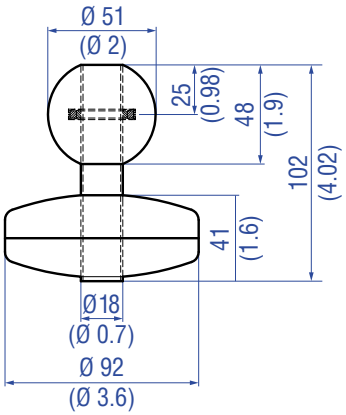
Note for part no. 200 931-6 & 200 931-8:

- Float meets 3A Sanitary specifications.
- Float will enter inactive zone when the tank is empty.

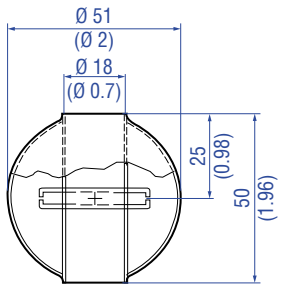
Controlling design dimensions are in millimeters and measurements in ( ) are in inches

General notes:

1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. Sanitary polish is available for stainless-steel floats up to 200 Grit/Ra 25.
4. Electropolish is available for stainless-steel floats up to 240 Grit/Ra 15.
5. When the magnet is not shown, the magnet is positioned at the center line of float.
6. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.

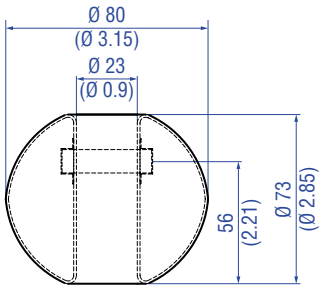
Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		8.6 bar (125 psi)	149 °C (300 °F)	Yes	0.48	Stainless steel 240 Grit / Ra 15 µin (0.375 µm)	**252 228-2**

Note for part no. 252 228-2
Use this float with all Sanitary transmitter wells as other floats may enter the inactive zone when the tank is emptied.

		22.4 bar (325 psi)	149 °C (300 °F)	No	0.74	Stainless steel 200 Grit / Ra 25 µin (0.625 µm)	**251 234-2**

Note for part no. 251 234-2:

- Float may enter the inactive zone. Consult factory about viability of usage.

		64 bar (928 psi)	149 °C (300 °F)	Yes	0.86	Stainless steel 240 Grit / Ra 15 µin (0.375 µm)	**560 564-2**

Note for part no. 560 564-2

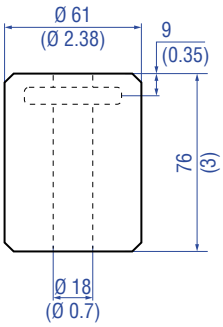
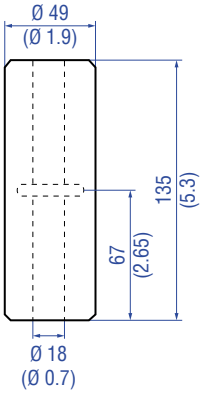
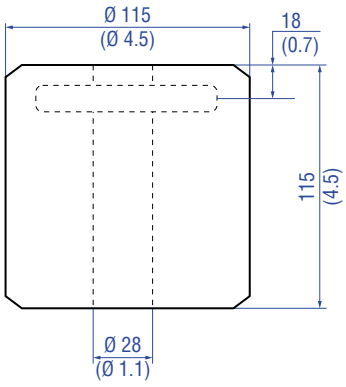
- Float meets 3A Sanitary specifications.
- Float may enter the inactive zone. Consult factory about viability of usage.

Controlling design dimensions are in millimeters and measurements in ( ) are in inches

1.5 Teflon® floats

General notes:

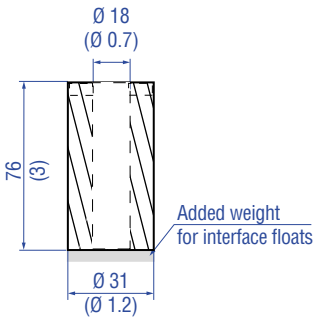
1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. When the magnet is not shown, the magnet is positioned at the center line of float.
4. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.
5. Floats 251 939, 251 119, and 251 120 should not be used in hazardous areas. Please consult Installation and operation manual for further details.

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		1.7 bar (25 psi	38 °C (100 °F)	Yes	0.86	Teflon®	**201 109-2**
					0.93	Teflon®	**251 115-2**
					1.06	Teflon®	**251 116-2**
		1.7 bar (25 psi	38 °C (100 °F)	No	0.86	Teflon®	**251 939**
		1.7 bar (25 psi	38 °C (100 °F)	Yes	0.93	Teflon®	**251 119**
					1.06	Teflon®	**251 120**

1.6 Nitrophyl® floats

General notes:

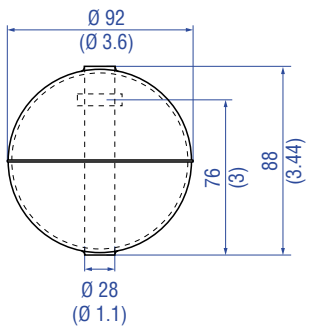
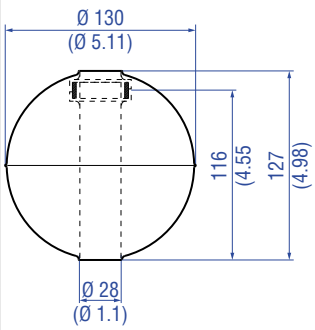
1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. When the magnet is not shown, the magnet is positioned at the center line of float.
4. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.
5. * Standard float that can be expedited

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		17.2 bar (250 psi)	104 °C (220 °F)	Yes	0.45	Nitrophyl®	**201 643-2***
					0.8 – 0.86	Nitrophyl®	**201 649-2**
					0.91 – 0.96	Nitrophyl®	**201 650-2**

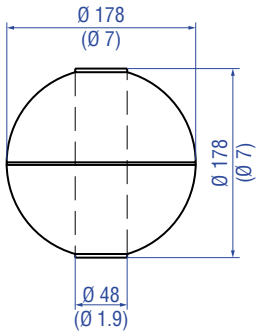
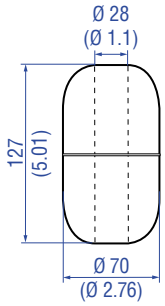
1.7 Long-gauge floats

General notes:

1. Be sure that the float specific gravity is at least 0.05 less than that of the measured liquid as a safety margin at ambient temperature.
2. For interface measurement: A minimum of 0.05 specific gravity differential is required between the upper and lower liquids.
3. When the magnet is not shown, the magnet is positioned at the center line of float.
4. Drawings contained in this document are for reference only. Contact the factory for engineering drawings.
5. * Standard float that can be expedited

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		29.3 bar (425 psi)	149 °C (300 °F)	Yes	0.54	Stainless steel	**252 961-2***
					0.65	Hastelloy® C	**252 961-4**
					0.93	Stainless steel	**252 962-2**
					0.93	Hastelloy® C	**252962-4**
					1.06	Stainless steel	**252 963-2**
					1.06	Hastelloy® C	**252 963-4**
		44.8 bar (650 psi)	149 °C (300 °F)	Yes	0.44	Stainless steel	**201 248-2**
					0.52	Hastelloy® C	**201 248-4**
					0.93	Stainless steel	**252 959-2**
					0.93	Hastelloy® C	**252 959-4**
					1.06	Stainless steel	**252 960-2**
					1.06	Hastelloy® C	**252 960-4**

Controlling design dimensions are in millimeters and measurements in ( ) are in inches

Photo	Drawing	Pressure	Temperature	Magnet offset	Specific gravity	Material	Part no.
		17.2 bar (250 psi)	149 °C (300 °F)	No	0.44	Stainless steel	**251 426-2**
					0.47	Hastelloy® C**	**251 426-4**
					0.93	Stainless steel	**251 427-2**
					0.93	Hastelloy® C**	**251 427-4**
					1.06	Stainless steel	**251 428-2**
		22.4 bar (325 psi)	149 °C (300 °F)	No	0.66	Stainless steel	**201 232-2***
					0.70	Hastelloy® C	**201 232-4**
					0.93	Stainless steel	**201 233-2**

** Internal diameter for these floats is 34.8 mm (1.37 in.)

Controlling design dimensions are in millimeters and measurements in ( ) are in inches

2. Process meteres and enclosures

2.1 Analog process meters

Photo	Description	Part no.
	**LED Display Universal Analog Process Meter** (Contact MTS for more options including explosion proof housings.) 6 Digit LED display **Input:** Analog 4…20 mA **Output:** None 110 VAC Input Power 32 point linearization Includes 24 Vdc transmitter supply **Material:** Standard 1/8 in. DIN, high impact plastic, NEMA Type 4X front panel	**380 071**
	**LED Display Universal Analog Process Meter (2 Relays)** (Contact MTS for more options including explosion proof housings.) 6 Digit LED display **Input:** Analog 4…20 mA **Output:** 2 relays 110 VAC Input Power 32 point linearization Includes 24 Vdc transmitter supply **Material:** Standard 1/8 in. DIN, high impact plastic, NEMA Type 4X front panel	**380 072**
	**LED Display Universal Analog Process Meter (4 Relays)** (Contact MTS for more options including explosion proof housings.) 6 Digit LED display **Input:** Analog 4-20 mA **Output:** 4 relays 110 VAC Input Power 32 point linearization Includes 24 Vdc transmitter supply **Material:** Standard 1/8 in. DIN, high impact plastic, NEMA Type 4X front panel	**380 073**
	**LED Display Universal Analog Process Meter (2 Relays, 4…20 mA)** (Contact MTS for more options including explosion proof housings.) 6 Digit LED display **Input:** Analog 4…20 mA **Output:** 4…20 mA and 2 relays 110 VAC Input Power 32 point linearization Includes 24 Vdc transmitter supply **Material:** Standard 1/8 in. DIN, high impact plastic, NEMA Type 4X front panel	**380 095**
	**XP Loop Powered Analog Meter** Loop Powered on 4…20 mA output Displays in Percentage Only Embedded in XP Housing **XP:** Class I, II, III; Division 1; Groups B-G **IS:** Class I, II, III; Division 1; Groups A-G	**380 062**
	**Loop Powered Analog Meter** Loop Powered on 4…20 mA output Displays loop current, engineering units, and/or value Selectable on screen engineering units IP 67 / NEMA Type 4X Intrinsically Safe, backlight	**380 088**

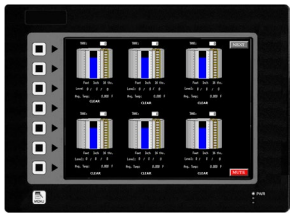
2.2 Modbus process meters

Photo	Description	Part no.
	**Multivariable Modbus Process Meter** Display levels in feet, inches, and 16ths of an inch **Input:** RS485 Modbus RTU **Output:** 2 Form A relays and 4…20 mA 110 VAC Input Power 16 point linearization Includes 24 Vdc transmitter supply **Material:** Standard 1/8 in. DIN, high impact plastic, NEMA Type 4X front panel	**380 086**
	**Single Variable Modbus Process Meter** (Contact MTS for more options including explosion proof housings.) 6 Digit Display in Decimal Format Display 1 process variable without interrupting Master/Slave communication **Input:** RS485 Modbus RTU **Output:** 2 Form A relays and 4…20 mA 110 VAC Input Power 16 point linearization Includes 24 Vdc transmitter supply **Material:** Standard 1/8 in. DIN, high impact plastic, NEMA Type 4X front panel	**380 094**

2.3 Process meter enclosures

Photo	Description	Part no.
	**NEMA Enclosures - Single NEMA 4X** *(NEMA Enclosures are available for most process meters, please contact factory for more information.)*	**401 150**
	NEMA Enclosures - Dual NEMA 4X *(NEMA Enclosures are available for most process meters, please contact factory for more information.)*	**401 151**

2.4 Modbus Terminals

Photo	Description	Part no.
	**LCD Modbus Terminal** Displays up to 4 tanks (2 levels, temp, volume) Displays up to 8 tanks (2 levels, temp) Displays levels in ft., in, and 16ths in. **Input:** Up to 8 Modbus transmitters **Output:** Modbus Mounted in NEMA 4 box Class 1 Div. 2 Includes Power Supply Calibrate from Screen	**280 494-X**
	**Touchscreen Modbus Terminal** Displays up to 16 tanks (2 levels, temp, volume) Displays levels in ft., in, and 16ths in. **Input:** up to 16 Modbus transmitters **Output:** Modbus Pictorial display of tanks Touchscreen Mounted in NEMA 4 box Class 1 Div. 2 Includes Power Supply Calibrate from Screen	**280 508-X**

3. Programming and hardware

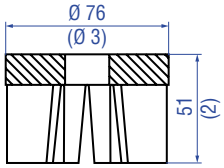
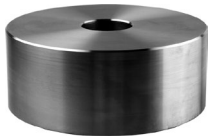
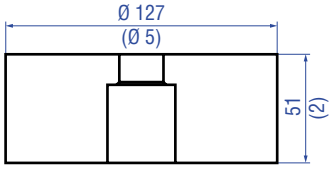
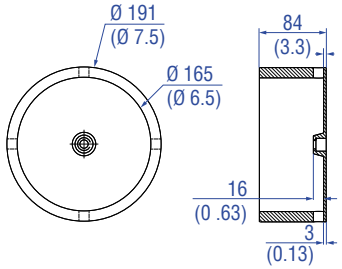
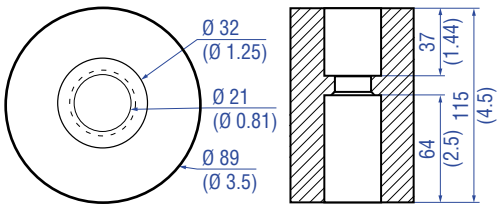
3.1 Setup software

Photo	Description	Part no.
	**LP-Dashboard on USB**	**551 719**

3.2 Hardware

Photo	Description	Part no.
	**HART to USB adapter**	**380 068**
	**RS-485 to USB adapter converter**	**380 114**
	**Hex Bushing** 2 in. MNPT × 3/4 in. FNPT	**561 440**
	Hex Bushing 2 in. FNPT × 4 in. MNPT	**561 441**
	Hex Bushing 1 in. FNPT × 2 in. MNPT	**561 448**

4. Magnet and weight assemblies

Photo	Drawing	Description	Part no.
		**150 lb. Pull Magnet** For Tank SLAYER® level transmitter. (Washer must be removed before installation)	**560 604**
		**Standard 11 lb. Weight** For LP-Series transmitters	**401 059**
		**Low Liftoff 11 lb. Weight Assembly**	**402 364**
		**Narrow 11 lb. Weight** Use with LP-Series transmitters	**402 647**

Controlling design dimensions are in millimeters and measurements in ( ) are in inches

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