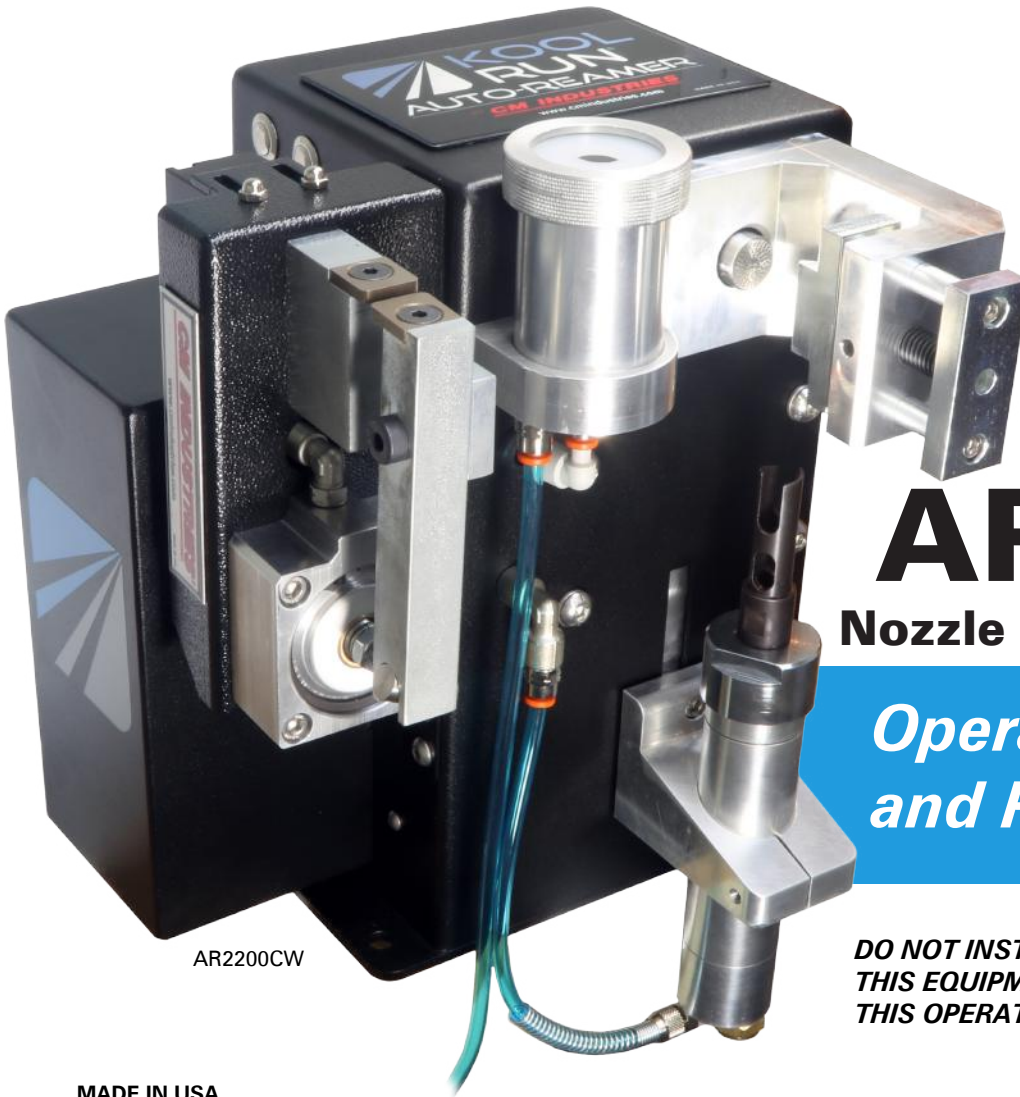




KOOL RUN[®]

Driven by Performance

AUTO-REAMER



AR2200CW

AR2200

Nozzle Cleaning Station

*Operating Manual
and Parts List*

**DO NOT INSTALL, OPERATE, OR REPAIR
THIS EQUIPMENT WITHOUT READING
THIS OPERATING MANUAL**

MADE IN USA

CM INDUSTRIES
INC.

November 2021 v1.0

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Introduction:

The CM Industries product you have purchased has been carefully manufactured, assembled and fully tested in our factory prior to shipment. This manual contains information on the operation of this CM Industries product. While every precaution has been taken to assure the accuracy of this manual, CM Industries, Inc. assumes no responsibility for errors or omissions. CM Industries, Inc. assumes no liability for damages resulting from the use of the information contained herein. CM Industries, Inc. shall have no liability to the buyer for consequential damages or be liable to the in tort for any negligent manufacture of the goods or for the omissions of any warning therefrom.

Warranty:

Warranty is extended to the original distributor purchasing the product from CM Industries, Inc. for resale. Any CM Industries product found defective because of material or workmanship under normal intended use within 90 days after installation will, at CM Industries discretion, be repaired, replaced, or credit issued for the purchase price of the product.

Upon notification from the original purchaser of a possible defect or failure, CM Industries, Inc. will issue instructions for the procedure to follow to return the merchandise to CM Industries, Inc. Appropriate adjustments will be made when the claim is verified. Genuine CM Industries parts must be used for safety and performance reasons or the warranty becomes invalid.

Specifications:

AIR REQUIREMENT:

80-120 PSI @ 8 S.C.F.M. (MIN) CLEAN SHOP AIR

REAMER STROKE: 2"

DIMENSIONS: 6-1/2" X 6" X 12"

WEIGHT: 28 LBS. AR2200

32 LBS. AR2200 w/ WC-95E

ELECTRICAL REQUIREMENTS:

(4) ROBOT OUTPUTS AND (1) ROBOT INPUT

OUTPUT: 0V DC SWITCHABLE GROUND

OUTPUT: 24V DC CONTINUOUS SUPPLY

INPUT: 24V DC SIGNAL RETURN

NOTE: WIRED FOR STANDARD "SINKING" LOGIC

Installation/Setup:

Step 1: Mounting

Mount the nozzle cleaning station within easy access of the robot. For proper operation, a solid, vibration free stand or mount is required. Mounting dimensions are shown below in Fig. 1.

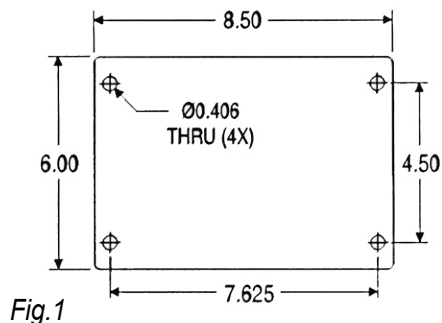


Fig. 1

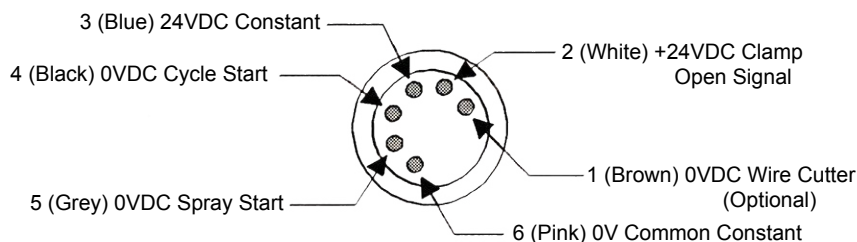


Fig. 2

NOTE: WIRING SHOWN FOR STANDARD "SINKING" LOGIC

Step 2: Electrical Connection

Electical connection information for the nozzle cleaning station cordset is given in Fig. 2.

NOTICE:

Line 1 (brown wire) on cordset must be connected to a robot output capable of supplying a timed "ground". This ground "pulse" determines the length of time the wire cutting action will take place. (Optional)

Line 2 (white wire) on cordset must be connected to a robot input of receiving a +24VDC signal from the nozzle cleaning station. This "cycle status signal" informs the robot when the clamp is open.

Line 3 (blue wire) on cordset must be connected to a robot output capable of supplying a continuous 24VDC.

Line 4 (black wire) on cordset must be connected to a robot output capable of supplying a timed "ground". This ground "pulse" determines the length of time the reaming action will take place.

Line 5 (grey wire) on cordset must be connected to a robot output capable of supplying a timed "ground". This ground "pulse" determines the length of time the spraying action will take place.

Step 3: Air Supply

The nozzle cleaning station requires 80-120 psi clean shop air (@ 8 S.C.F.M.) minimum for proper operation. The unit is equipped with a 1/4" NPT female fitting for the air supply connection.

Step 4: Reamer Tooling

1. Choose the appropriate size reamer blade for your welding nozzle I.D. (see page 7 for available sizes). To remove/install reamer blade: Use an adjustable wrench to hold the top of the air motor cap, then use a 17mm wrench to remove the reamer, in a counter-clockwise direction. Considerable force may be needed to remove the reamer blade (as much as 20 ft. lbs.) as the blade self-tightens during use. Installation is the opposite of removal.

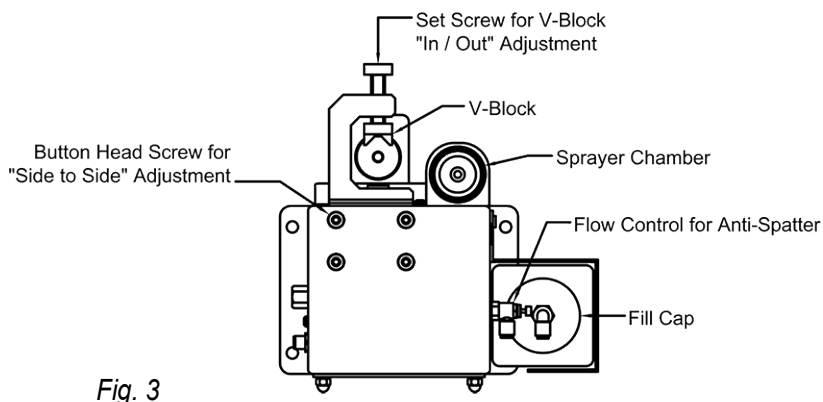


Fig. 3

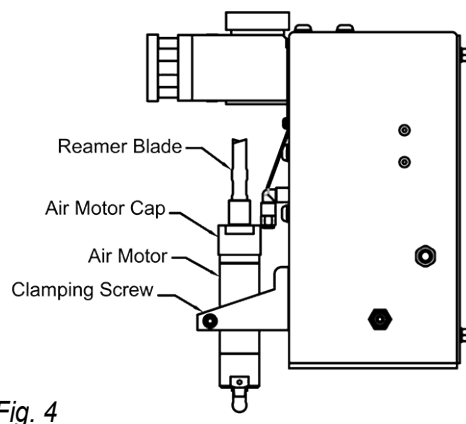


Fig. 4

Step 5: Nozzle Alignment / Nozzle Clamp Adjustment

1. Correct alignment of the welding nozzle is critical to the proper operation of the unit. The clamping V-Block must be adjusted according to the nozzle diameter, so as to center the nozzle above the reamer when the clamp is closed. The V-Block is adjusted by turning the set screw behind the V-Block in or out as shown in Fig. 3.
2. The “side to side” alignment of the clamping unit with respect to the reamer is set at the factory and normally will not require adjustment. However, if realignment is necessary, the entire clamping unit can be moved from “side to side” by loosening the (4) socket head cap screws located on the inside of the nozzle cleaning station holding the clamping cylinder to clamping block assembly.
3. Insertion depth of the reamer blade into the welding nozzle is controlled by the robot torch/nozzle. Adjustments should be made by the robot torch operator with the robot torch with respect to the nozzle placement into the clamping unit.

Caution: Use caution to avoid possible interference with the reamer to the robot torch head or nozzle components when setting this adjustment. Additional adjustment can be accomplished by loosening the clamp screw on the reamer motor clamping arm and moving the motor up or down (see Fig. 4).

Caution: Use caution to avoid possible interference between the reamer blade and clamping device.

Step 6: Anti-Spatter Solution

1. Anti-Spatter solution is added to the unit by removing the fill cap on top of the bottle (see Fig. 3). The bottle capacity is approximately 1 quart.

Operation:

Step 1: Robot Programming / Ream Function

1. The cycle time for nozzle cleaning (reaming) is controlled by the robot program. With the ground “on” on Line 4 (see Fig. 2), the reamer starts upward travel, the blade begins rotating, and the clamp secures the welding nozzle in place. With the ground still applied, the reamer reaches the top of its stroke (cleaning position), and remains there as long as the ground is “on”. When the ground is turned “off”, the reamer will begin its downward travel, continuing to rotate with the clamp still closed. Upon reaching the bottom of its stroke (home position), the blade will stop rotating and the clamp will open.
2. Line 2 (see Fig. 2) is a “cycle status” line which informs the robot of the clamp status. When the clamp is open, the robot will see a 24VDC signal on this line. As the clamp is closed (during the cleaning cycle), Line 2 will read 0VDC. The robot program should not allow any robot movements when Line 2 is a 0VDC.

Step 2: Robot Programming / Spray Function

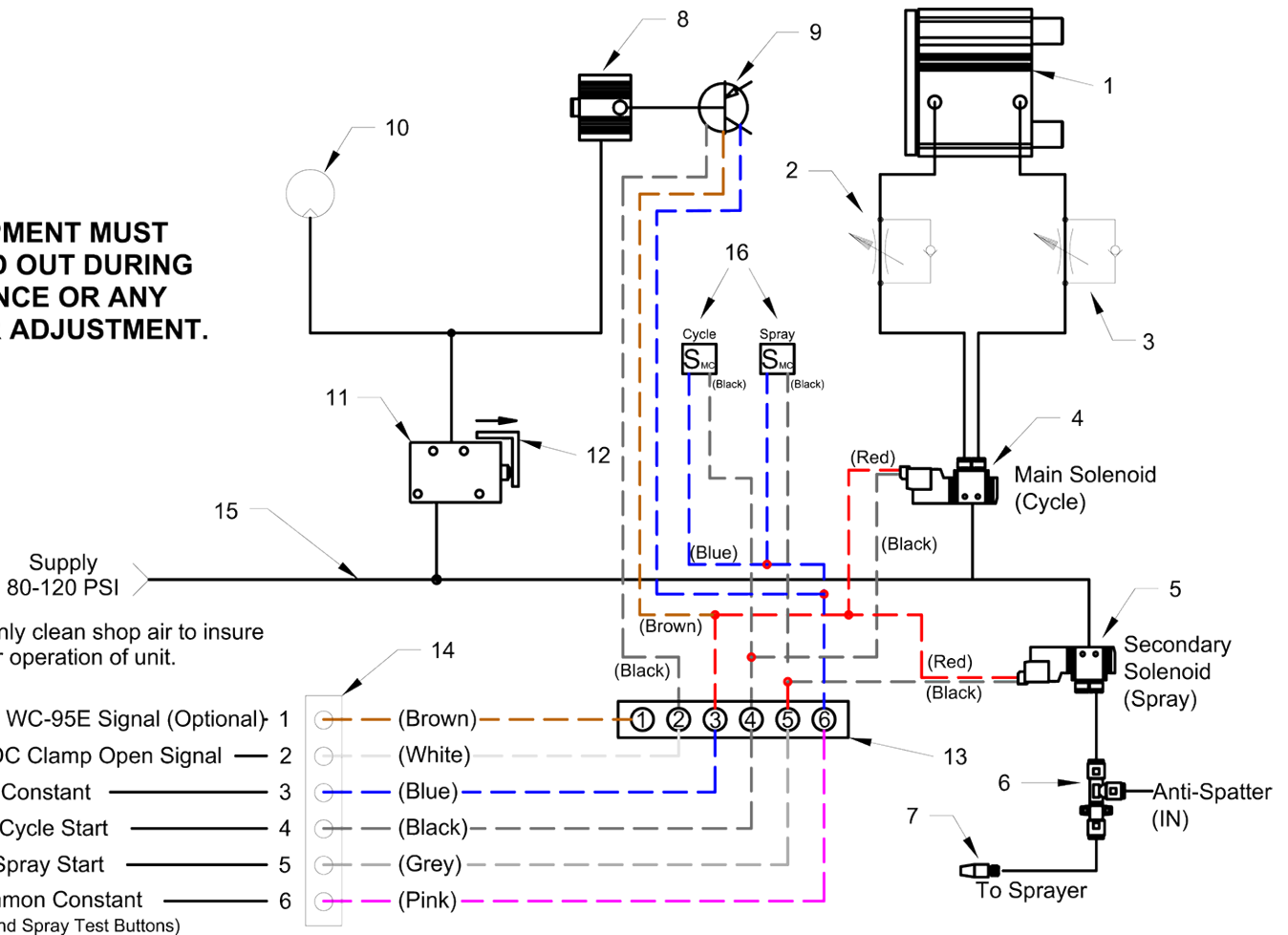
1. The anti-spatter sprayer is activated by the same type of signal as the “cycle” Line 4 (see Fig. 2). The robot should be programmed by Line 5, to move directly over the sprayer body to spray either before or after the reaming process. With the ground “on” on Line 5 (see Fig. 2), the sprayer will dispense anti-spatter until the ground is turned “off”. Spray dispensation should be determined by the robot operator.
2. The amount of anti-spatter delivered can be controlled in (2) ways. First, the length of time that the Line 5 is activated to ground “on”, and second is the adjustment of the flow control located on the side of the unit directly above the anti-spatter bottle. The flow control can be used to richen or lean the anti-spatter mixture.

Step 3: Feed Rate Adjustment

1. Feed rate “up” or “down” can be controlled by adjusting the flow control fittings (see item 8 in Parts Breakdown) located inside the unit. The top fitting controls the speed of the “up” direction. The bottom fitting controls the speed of the “down” direction.

Wiring Schematic for AR2200 Auto-Reamer

CAUTION:
THIS EQUIPMENT MUST
BE LOCKED OUT DURING
MAINTENANCE OR ANY
OPERATOR ADJUSTMENT.



Item #	Part #	Description
1	650-25-236	Motor Lift Cylinder
2	650-25-256	Cylinder Speed Adjustment Fitting (Down)
3	650-25-256	Cylinder Speed Adjustment Fitting (Up)
4	650-25-251	Solenoid Valve (Cycle)
5	650-25-251	Solenoid Valve (Spray)
6	650-25-716	Vacuum Valve
7	650-25-714	External Spray System Assembly (AR2200S)
7	650-25-271	Sprayer Body (AR2200)
8	650-25-748	Clamping Block Cylinder
9	650-25-749	Proximity Switch
10	650-25-105	Pneumatic Motor Assembly
11	650-25-247	Mechanical Valve
12	650-25-237	Valve Actuating Bracket
13	650-25-273	Terminal Block
14	650-25-260	Plug, 6-Poles
15	650-25-275	1/4" Tubing - Clear Blue
16	650-25-360	Momentary Test Buttons

REAM FUNCTION:

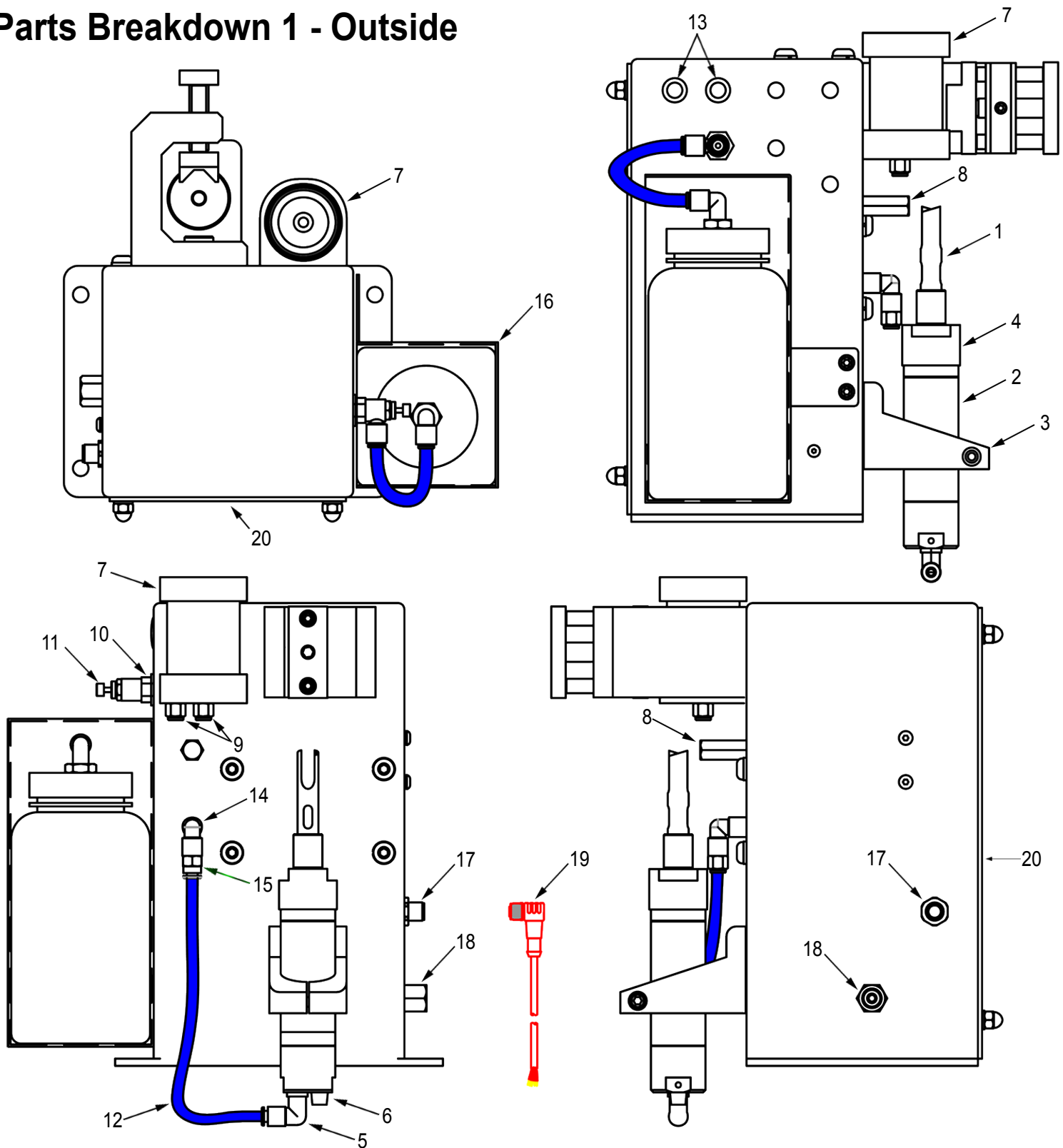
OPERATION SEQUENCE	VALVE ACTION	CYCLE STATUS
GROUND "OFF" (LINE 4)	VALVE 11 "ON"	REAMER OFF, CLAMP OPEN
GROUND "ON" (LINE 4)	VALVE 4 "ON"	REAMER UPWARD TRAVEL
HOLD GROUND "ON" (LINE 4)	VALVE 11 "OFF"	REAMER ON, CLAMP CLOSED
" " " " " "	" " " " " "	REAMER AT TOP OF STROKE
GROUND "OFF" (LINE 4)	VALVE 4 "OFF"	REAMER DOWNWARD TRAVEL
" " " " " "	VALVE 11 "ON"	REAMER OFF, CLAMP OPEN

SPRAY FUNCTION:

OPERATION SEQUENCE	VALVE ACTION	CYCLE STATUS
TORCH IN SPRAY POSITION	VALVE 5 "ON"	SPRAYER ON
TORCH AWAY	VALVE 5 "OFF"	SPRAYER OFF

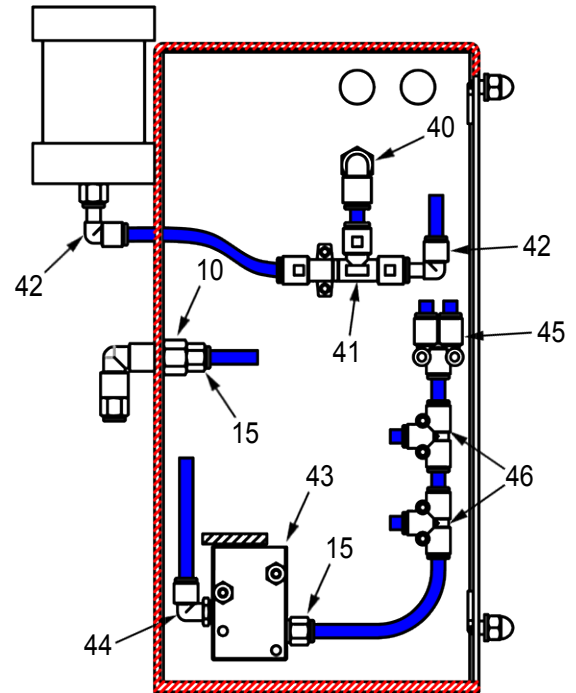
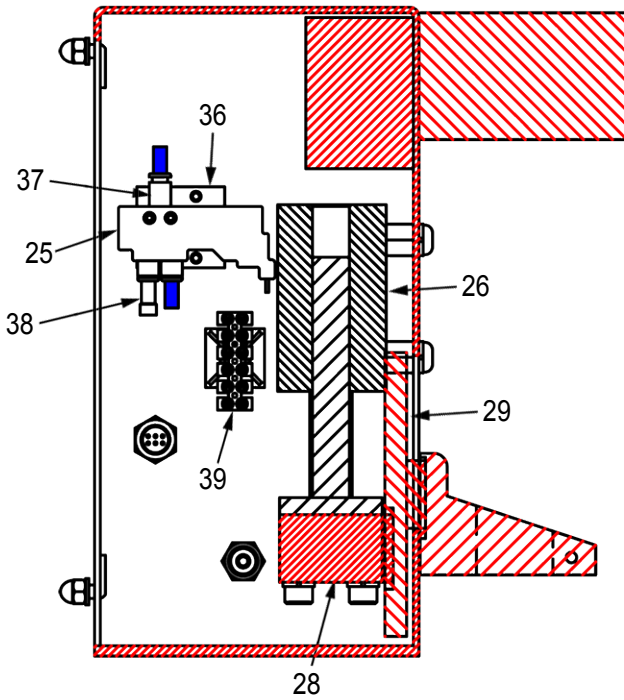
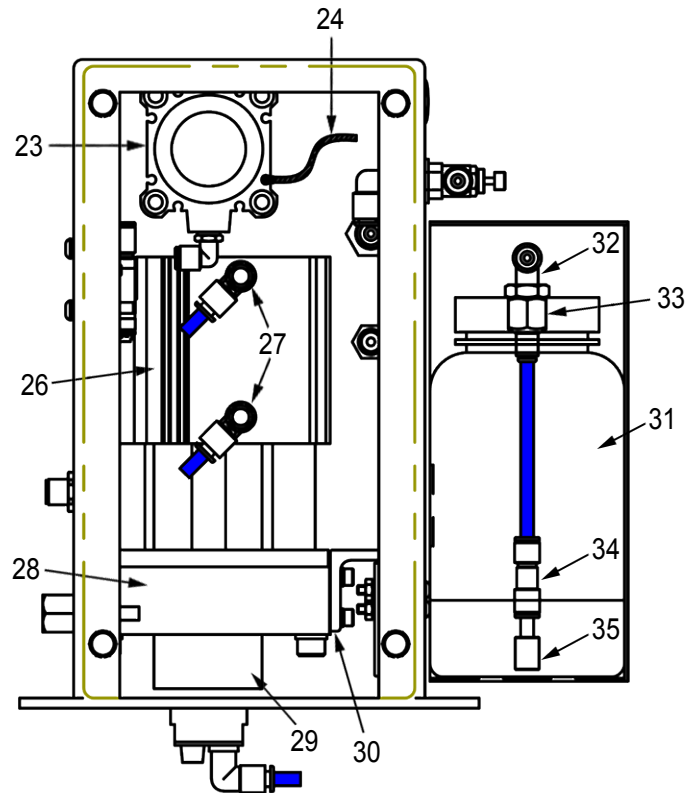
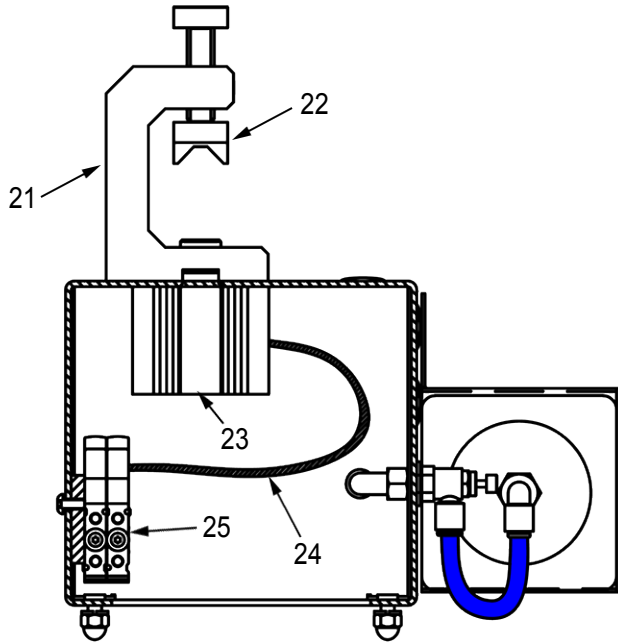
NOTE: WIRING SHOWN FOR STANDARD "SINKING" LOGIC

Parts Breakdown 1 - Outside



Item #	Part #	Description	Item #	Part #	Description
1		See Reamer Chart on page 7	11	650-25-715	Flow Control - Anti-Spatter
2	650-25-105	Pneumatic Motor Assembly	12	650-25-275	1/4" Tubing
3	650-25-701	Motor Clamp Block	13	650-25-360	Momentary Test Buttons
4	650-25-126	Motor Cap	14	650-25-734	Fitting, Female Elbow 1/8" x 1/8"
5	650-25-272	Fitting, Elbow 1/4" NPT x 1/4" Compression	15	650-25-733	Fitting, Male Connector 1/8" x 1/4" Push
6	650-25-725	Motor Muffler	16	650-25-752	Bottle Box
7	650-25-714	External Spray System Assembly (AR2200S)	17	650-25-260	Receptacle 6-Pin
8	650-25-271	Sprayer Body (AR2200)	18	650-25-717	Bulkhead Connector 1/4" NPT x 1/4" Push
9	650-25-718	Fitting, Male Connector for Spray Tip	19	650-25-283	Cordset, 4m std. (650-25-358, Cordset 6m - optional)
10	650-25-736	Adaptor, 1/8" M x 1/8" F	20	650-25-214	Rear Cover Plate

Parts Breakdown 2 - Inside



Item #	Part #	Description	Item #	Part #	Description
21	650-25-747	Clamping Block	34	650-25-287	Check Valve
22	650-25-230	V-Block	35	650-25-288	Filter, Anti-Spatter
23	650-25-748	Clamping Block Cylinder	36	650-25-239	Solenoid Mounting Plate
24	650-25-749	Proximity Switch	37	650-25-278	Fitting, Male Connector 10-32 x 1/4" Push
25	650-25-251	Solenoid Valve (2), Cycle & Spray	38	650-25-737	Plug, 1/4"
26	650-25-236	Motor Lift Cylinder	39	650-25-273	Terminal Block
27	650-25-256	Fitting, Flow Control, Cylinder Speed Adjust.	40	650-25-729	Fitting, Elbow 1/8"F x 1/4" Push
28	650-25-703	Motor Clamp Block Base	41	650-25-716	Vacuum Valve, 1/4" Tube
29	650-25-702	Motor Clamp Block Slide Plate	42	650-25-731	Fitting, Plug-In Elbow, 1/4" Push
30	650-25-239	Valve Actuating Bracket	43	650-25-247	Mechanical Valve
33	650-25-290	Anti-Spatter Bottle	44	650-25-264	Fitting, Elbow 1/8" NPT x 1/4" Push
32	650-25-730	Fitting, Elbow 1/4" x 1/4" Push	45	650-25-735	Fitting, Union "Y", 1/4" Push
33	650-25-732	Fitting, Female Connector 1/4" x 1/4" Push	46	650-25-268	Fitting, Union "T", 1/4" Push

Ordering Information



650 - 25 - 800

800 - AR2200A
801 - AR2200C
802 - AR2200CW
805 - AR2200S
806 - AR2200SW

- AR2200A - Auto-Reamer, Ream Only, No Sprayer**
- AR2200C - Auto-Reamer w/ Anti-Spatter Sprayer Collection System**
- AR2200CW- Auto-Reamer w/ Anti-Spatter Sprayer Collection System & Wire Cutter**
- AR2200S - Auto-Reamer w/ Anti-Spatter Sprayer**
- AR2200SW- Auto-Reamer w/ Anti-Spatter Sprayer & Wire Cutter**

Reamer Blade Sizes Available

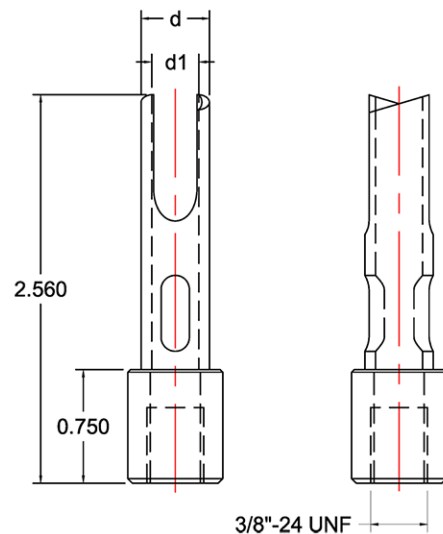
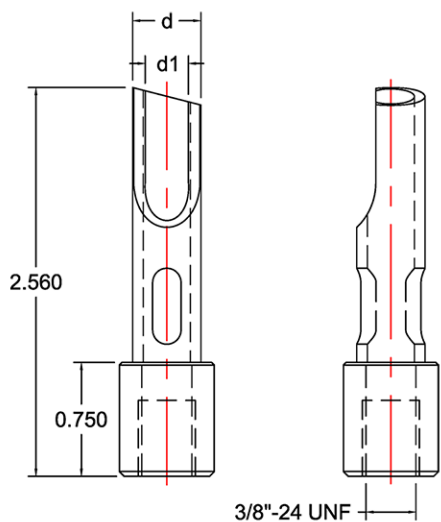
1 Blade Reamers

<u>Part Number</u>	<u>d=O.D. (mm)</u>	<u>d1=O.D. (mm)</u>	<u>Nozzle Size</u>
651-09-07	9	7	3/8" - 10mm
651-09.5-07	9.5	7	3/8" - 10mm
651-10-08	10	8	3/8" - 10mm
651-10.5-08	10.5	8	7/16" - 11mm
651-11-07	11	7	7/16" - 11mm
651-11.5-08.5	11.5	8.5	7/16" - 11mm
651-12-07	12	7	1/2" - 13mm
651-12-08-46	12	8	1/2" - 13mm
651-12-09	12	9	1/2" - 13mm
651-12-10	12	10	1/2" - 13mm
651-12.5-09	12.5	9	1/2" - 13mm
651-12.5-10	12	10	1/2" - 13mm
651-13-09	13	9	14mm
651-14-09	14	9	9/16" - 15mm
651-14-11	14	11	9/16" - 15mm
651-14-12	14	12	9/16" - 15mm
651-14.5-12.5	14	12.5	
651-15-09	15	9	5/8" - 16mm
651-15-11	15	11	5/8" - 16mm
651-15-13	15	13	5/8" - 16mm
651-15.5-08	15.5	8	5/8" - 16mm
651-15.5-13	15.5	13	5/8" - 16mm
651-16-11	16	11	16mm
651-17-11	17	11	11/16" - 17mm
651-17-14	17	14	11/16" - 17mm
651-18-11	18	11	3/4" - 18mm
651-18-13	18	13	3/4" - 18mm
651-18-13-80	18	13	3/4" - 18mm
651-19-15	19	15	3/4" - 19mm

2 Blade Reamers

<u>Part Number</u>	<u>d=O.D. (mm)</u>	<u>d1=O.D. (mm)</u>	<u>Nozzle Size</u>
652-09-07	9	7	3/8" - 10mm
652-10-07	10	7	3/8" - 10mm
652-10.5-08	10.5	8	7/16" - 11mm
652-11-07	11	7	7/16" - 11mm
652-11-08.5	11	8.5	7/16" - 11mm
652-12-09	12	9	1/2" - 13mm
652-12-10	12	10	1/2" - 13mm
652-12.5-09	12.5	9	1/2" - 13mm
652-12.5-10	12.5	10	1/2" - 13mm
652-13-09	13	9	14mm
652-13-10.5	13	10.5	14mm
652-14-09	14	9	9/16" - 15mm
652-14-11	14	11	9/16" - 15mm
652-15-10.5-80	15	9	5/8" - 16mm
652-15-11	15	11	5/8" - 16mm
652-15-11-80	15	11	5/8" - 16mm
652-15-12	15	12	5/8" - 16mm
652-15-12.5	15	12.5	5/8" - 16mm
652-15-12.5-80	15	12.5	5/8" - 16mm
652-15.5-13	15.5	13	5/8" - 16mm
652-15.5-13-75	15.5	13	5/8" - 16mm
652-16-11	16	11	16mm
652-16-11-80	16	11	16mm
652-16-12.5	16	12.5	16mm
652-17-11	17	11	11/16" - 17mm
652-17-11-80	17	11	11/16" - 17mm
652-17-14	17	14	11/16" - 17mm
652-17-15	17	15	11/16" - 17mm
652-17-15-80	17	15	11/16" - 17mm
652-18-13	18	13	3/4" - 18mm
652-18-13-80	18	13	3/4" - 18mm
652-19-15	19	15	3/4" - 19mm

Custom reamer blade sizes available upon request





WARNING

Read and follow the manufacturer's instructions, employer's safety practices, and Material Safety Data Sheets (MSDSs).

Only qualified personnel should install, use, or service this material and/or equipment.



WELDING SPARKS can cause fire or explosion

- Do not weld near flammable material
 - Do not weld on closed containers.
 - Remove combustibles from the work area and/or provide a fire watch.
 - Avoid oily or greasy clothing as a spark may ignite them.
-



ARC RAYS can injure eyes and burn skin

- Always wear correct eye, ear, and body protection
 - Always wear a welding helmet with the proper grade filter lens. Protect yourself and others from spatter arc flash rays by using protective screens, barriers and welding curtains.
 - Always wear protective gloves and clothing to cover exposed skin. This will aid in the prevention of arc and spatter burns.
-



ELECTRIC SHOCK can kill.

- Always wear dry installing gloves
 - Do not touch live electrical parts.
 - Always disconnect power source before hooking up or changing electrodes, nozzles and other parts.
-



FUMES AND GASES can be hazardous to your health.

- Keep your head out of the fumes
 - Use enough ventilation or exhaust at the arc to keep fumes and gases from your breathing zone, and general area.
 - Fumes from cutting and welding can deplete air quality, causing injury or death. Always wear an air supplied respirator in confined areas, or if breathing air is not safe.
-



LOUD NOISE can damage hearing.

- Always wear protective hearing devices to ensure protection when noise levels exceed OSHA standards
-

CALIFORNIA PROPOSITION 65 WARNING

This product contains chemicals, including lead, known to the State of California to cause cancer, birth defects, or other reproductive harm. Wash hands after use.

(California Health & Safety Code Section 25249.5)