

SwitchTM 3D Gun

3A8004E

EN

Swiveling applicator for robotic sealing applications. For professional use only.

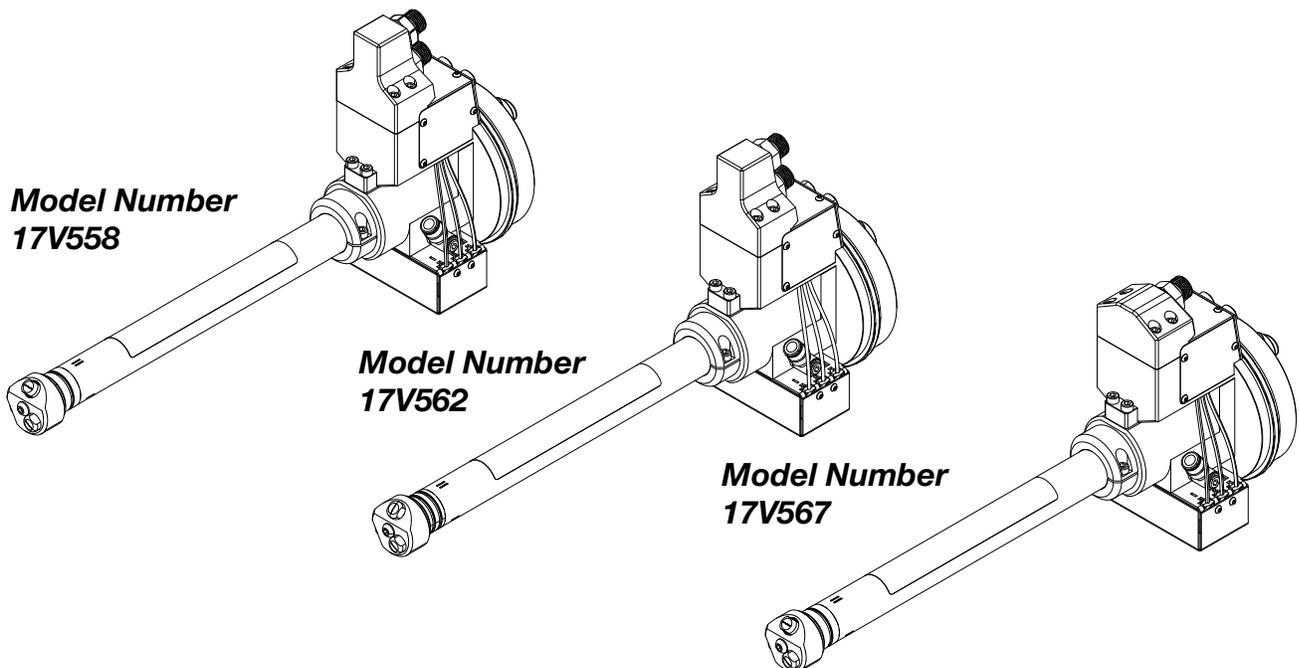
Not approved for use in European explosive atmosphere locations.

See page 3 for model information including maximum working pressure.



Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment.
Save these instructions.



Contents

Related Manuals	2	Kits and Tools	34
Models	3	Set Screw Kit 26D998	34
Series D	3	Nozzle Kits	34
Warnings	4	Service Kit, 25T484	34
Overview	6	Service Kit, 25T485	35
Description	6	Air Cylinder Housing Service Kit, 25T486	35
Component Identification	7	Valve Shaft Material Kit, 25T487	35
Main Assembly	7	Bearing Seals Kit, 25T488	35
Installation	8	Seal Insert and Removal Tool Kit, 25T489	36
Grounding	8	Seal Insert and Removal Tool Instructions	36
Switch 3D Gun Installation	8	5 Pin Cable Kit, 17V857	37
Operation	12	8 Pin Cable Kit, 15N265	37
Operation Overview	12	Material Seat Insertion/Removal Tool, 17V972	37
Pressure Relief Procedure	12	Tool Kit, 17V859	37
Flush the Switch 3D Gun	12	PCF to 3D Gun Cable Kit 25U441	38
Maintenance	13	Sensor Upgrade Kits, 25U225 No Sensor, 25U226 Temp Sensor, 25U227 Temp, Press Sensor, 25U228 Two Temp Sensors	39
Preventive Maintenance	13	Protective Strips Kit 15N649	40
Factors Affecting Switch 3D Gun Life	14	Performance Charts	41
Recycling and Disposal	14	Pattern Width Versus Tip Sizes	41
End of Product Life	14	Material Pressure Versus Tip Sizes	42
Troubleshooting	15	Pattern Height / Width Versus cc/sec	43
Repair	16	Bead Pattern	43
Removal of Switch 3D Gun From Robot for Repair 16		Dimensions	44
Switch 3D Gun Disassembly	16	Wiring Diagrams	46
Switch 3D Gun Assembly	21	5 Pin and 8 Pin Connector	46
Testing Before Installation	25	5 Pin Cable Schematic	46
Parts	26	8 Pin Cable Schematic	46
Parts Key	26	5 Pin - No Sensor for 17V558, 17V562 and 17V564 47	
Central Body Assembly	27	5 Pin and 8 Pin Connections for Temperature and Pressure Sensors. Model No. 17V559, 17V561, 17V565 and 17V567	48
Nozzle Head Assembly	28	5 Pin and 8 Pin- 2 Temperature Sensors for 17V563 49	
Lock Ring Assembly	28	Technical Specifications	50
Rod Shutoff Valve and Cylinder Assembly	29	California Proposition 65	51
Swivel Chamber	30	Graco Standard Warranty	52
Connection Housing	32		

Related Manuals

Manual in English	Description
3A8066	Switch 3D Gun Mounting Kit

Models

Part No.	Series	Maximum Working Pressure psi (MPa, bar)	Material Port Options	Sensor Types	Cable Type
17V558	D	3350(23.1,231)	Two Port One Material With Recirculation	No Sensors	5 Pin
17V559	D	3350(23.1,231)	Two Port One Material With Recirculation	Temperature	5 Pin and 8 Pin
17V561	D	3350(23.1,231)	Two Port One Material With Recirculation	Temperature and Pressure	5 Pin and 8 Pin
17V562	D	3350(23.1,231)	Two Port Two Material No Recirculation	No Sensors	5 Pin
17V563	D	3350(23.1,231)	Two Port Two Material No Recirculation	Dual Temperature	5 Pin and 8 Pin
17V564	D	3350(23.1,231)	One Port One Material No Recirculation	No Sensors	5 Pin
17V565	D	3350(23.1,231)	One Port One Material No Recirculation	Temperature	5 Pin and 8 Pin
17V567	D	3350(23.1,231)	One Port One Material No Recirculation	Temperature and Pressure	5 Pin and 8 Pin

Series D

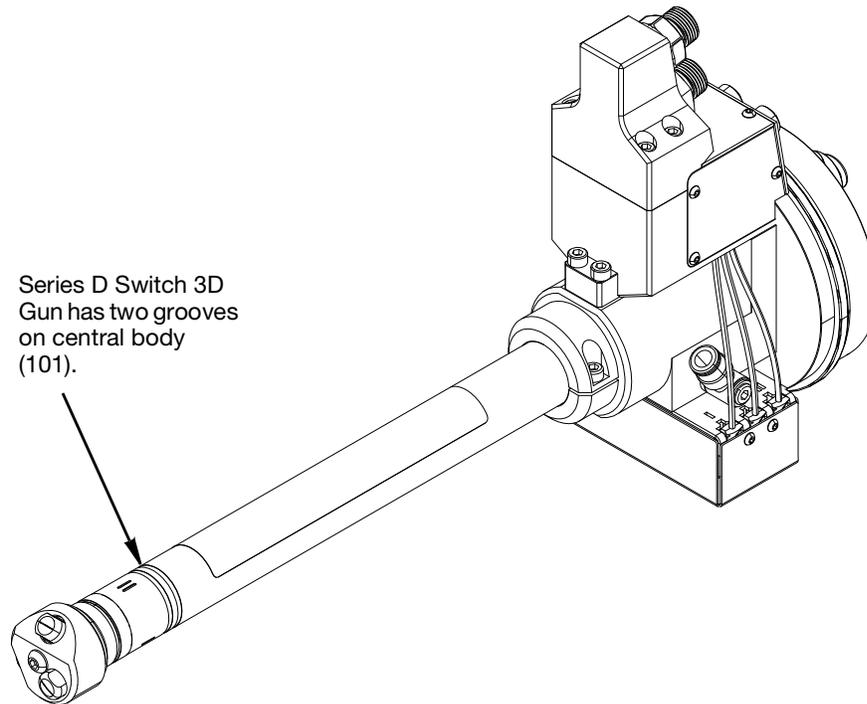


FIG. 1

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h2 style="margin: 0;">WARNING</h2>	
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Specifications in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Specifications in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer. • Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. • Make sure all equipment is rated and approved for the environment in which you are using it. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.

 <h1 style="margin: 0;">WARNING</h1>	
	<p>PRESSURIZED ALUMINUM PARTS HAZARD</p> <p>Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.</p> <ul style="list-style-type: none"> • Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents. • Do not use chlorine bleach. • Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.
	<p>BURN HAZARD</p> <p>Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> • Do not touch hot fluid or equipment.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Overview

Description

The Graco Switch 3D Gun is a lightweight, high-pressure, multi-nozzle material applicator for robotic applications that requires high precision and quality. The Switch 3D Gun is equipped with a swivel for optimum robot flexibility and has three individually operated nozzles. The swivel makes it possible for the robot to rotate the nozzle head independently of the cables and the hoses supplying the Switch 3D Gun.

The nozzle head can be specified for various nozzle angles and slot directions.

Due to its flexibility, the Switch 3D Gun is designed for applications like:

- Underbody coating (UBC).
- Underbody sealing (UBS).
- Seam sealing, ISS, HEM.

The Graco Switch 3D Gun is designed to handle most types of single component adhesives and sealants with medium to high viscosity.

The solenoid valves operating the pistons for the material valves are mounted externally for easy maintenance.

Material circulation is provided through the entire length of the Switch 3D Gun for material thixotropic breakdown and temperature control.

If required, the following optional features can be added to the basic configuration of the Switch 3D Gun:

- One PT 100 temperature sensor in the material inlet, measuring the inlet material temperature
- The material pressure can be monitored by a pressure transducer mounted in the material channel.

Component Identification

Main Assembly

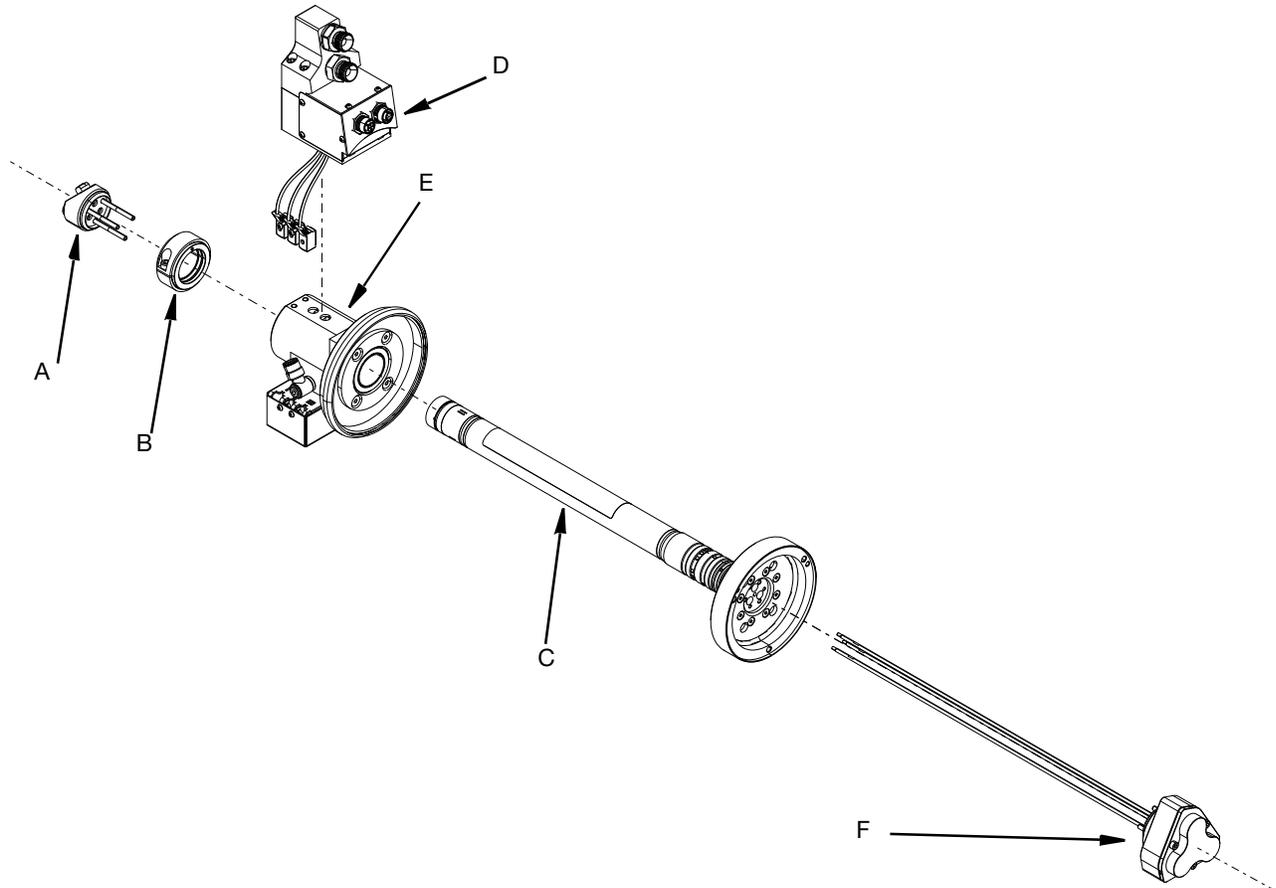


FIG. 2

Key:

- A. Nozzle Head Assembly
- B. Lock Ring Assembly
- C. Central Body Assembly
- D. Connection Housing (two inlet shown)
- E. Swivel Chamber
- F. Rod Shutoff Valve and Cylinder Assembly

Installation



To avoid personal injury, be especially careful when connecting the high pressure material supply system and always keep clear of the nozzles when test spraying.

Before starting installation of the Graco Switch 3D Gun, refer to the **Description** on page 6, and **Component Identification** on page 7, in order to be familiar with the various parts of the Switch 3D Gun.

To ensure trouble free operation of the Switch 3D Gun, it is important that the unit is properly installed on the robot. It is important that the function of the Switch 3D Gun is carefully checked before start up.

The Switch 3D Gun has multiple robot mounting options which can be purchased separately from Graco inc. See Switch 3D Gun Mounting Kits Manual, (3A8066) for instructions and parts for mounting to a specific robot. For typical installation of a Switch 3D Gun see **Switch 3D Gun Installation** in this section.

Inspect the Switch 3D Gun for shipping damage. If there is damage notify the shipping carrier immediately.

Grounding



The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

The following grounding instructions are minimum requirements for a basic Switch 3D gun installation. The specific system and robot being used may include other equipment or objects that must be grounded. Check local codes for detailed grounding instructions.

Switch 3D Gun: Ground through a connection to a properly grounded material hose and pump.

Pump: See your pump manual.

Material hoses: Use only electrically conductive hoses with a maximum of 100 ft. (30.5 m) combined hose length to ensure grounding continuity. Check the electrical resistance of the material hoses at least once

a week. If the total resistance to ground exceeds 25 megohms, replace the hose immediately. Use a meter that is capable of measuring resistance at this level.

Fluid supply container: Follow local codes.

Solvent pails used when flushing: Follow local codes. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts grounding continuity.

To maintain grounding continuity when flushing or relieving pressure: hold metal part of the Switch 3D Gun firmly to the inside of a grounded metal pail, then trigger the valves.

Switch 3D Gun Installation



Typical Required Parts and Installation of Switch 3D Gun

The following parts are used in a typical installation of the Switch 3D Gun and are normally required. Some parts may vary depending on specific robot and options. Switch 3D Gun mounting kits may be purchased separately from Graco Inc.

- 1 pc. Graco Switch 3D Gun with nozzle head and nozzle cap
- 1 pc. robot mounting flange
- 1 pc. anti-rotation bracket
- 1 pc. **5 Pin Cable Kit, 17V857** for all Switch 3D Guns.
- 1 pc. **8 Pin Cable Kit, 15N265** for Switch 3D guns with temperature and/or pressure sensor
- 2 pcs. guide pin Ø 6mm
- 3 pcs. M6 x 20 hex socket head screws
- 4 pcs. hex socket head screws
- 3 pcs **Nozzle Kits**
- 1 pc. 8 mm polyurethane air hose
- 1 or 2 pc. material supply and return hoses with 3/8 BSPP fittings

Robot Mounting Flange

1. Attach the mounting flange onto the sixth axis of the robot with the required bolts supplied with the Switch 3D Gun mounting kit.
2. The mounting flange is then attached to the body of the Switch 3D Gun with three M6x20 hex socket screws. Torque to 98.2 in-lbs (11.1 N•m). It is important to make sure the 6mm guide pins supplied with the kit are inserted into the correct positions. See FIG. 3.

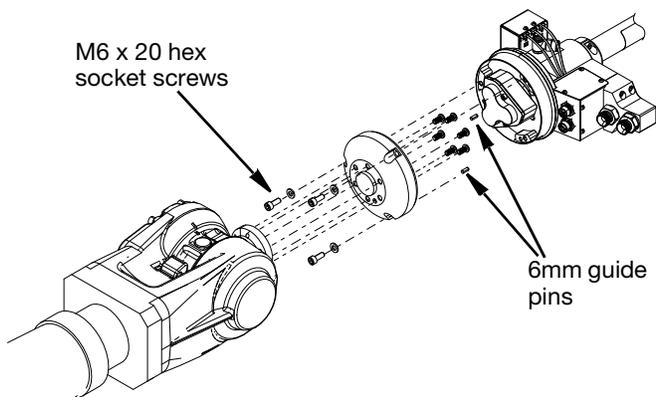


FIG. 3

Anti-Rotation Brackets

After the Switch 3D Gun is mounted to the robot, the anti-rotation brackets must be attached to the swivel housing (619) and to the fixation point on the robot using the hex head screws. Exact fitting of the anti-rotation brackets will depend on the robot and kit being used. See FIG. 4 for installation example and page 30 for swivel chamber part reference.

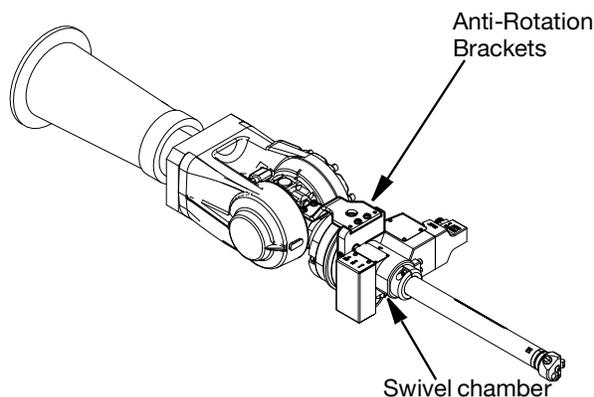


FIG. 4

Nozzles

NOTE: Nozzles are not supplied with the Switch 3D Gun and must be purchased separately to match customer specifications. See **Nozzle Kits** page 34, for nozzle size options.

1. Place three nozzle packing gaskets (303) into matching recess's of the nozzle head (301).
2. Nozzles (302) must be inserted in the nozzle cap (305) making sure the nozzle is keyed into the nozzle cap.
3. The nozzle cap with the nozzles inserted, must be firmly fixed to the nozzle head (301) using the M6 hex button head screw (306) in the center of the cap. Torque to 29.2 in-lbs (3.3 N•m). See FIG. 5.

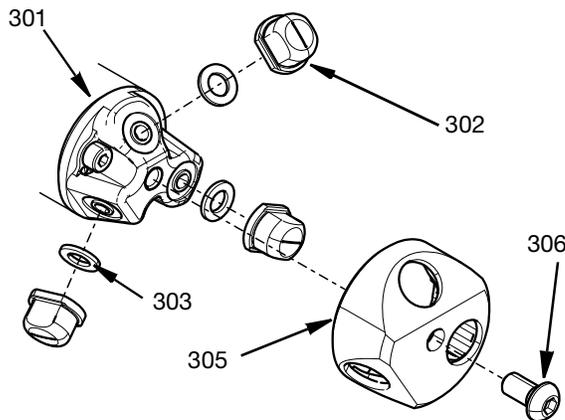


FIG. 5

Cable Connections

NOTE: Cables and hoses are attached only after Switch 3D Gun is bolted to robot.

Connect cable (1001) for all Switch 3D Guns, and (1003) for Switch 3D guns with sensors. Then connect other end of the cables by making the appropriate connections to the robot's control cabinet. See FIG. 6.

See the **Models** table page 3, for the cable type needed for your Switch 3D Gun mode.

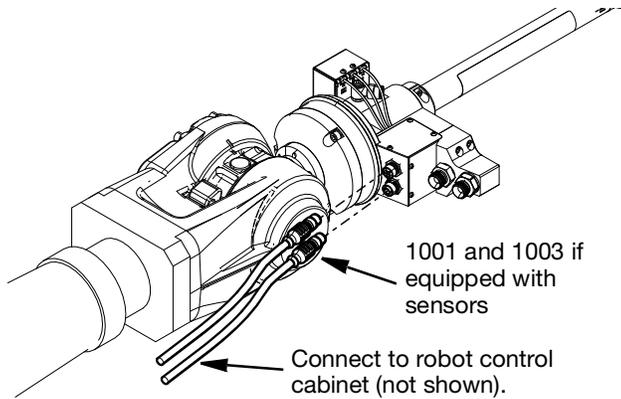


FIG. 6

Hose Connections

NOTICE

Only use air fittings that are rated at a temperature equal to or higher than the operating temperature of the fluid dispensing system. Lower rated air fittings could melt and cause damage to the Switch 3D Gun.

The air supply is connected to the Switch 3D Gun with an 8 mm polyurethane hose to the elbow swivel fitting (620) on the side of the swivel housing (619). Customer must install air bleed valve between air supply and Switch 3D Gun connection. See FIG. 7.

The material supply and return hoses use 3/8 BSPP connectors. The material supply hose is connected to the port marked "Inlet". The material return hose is connected to the port marked "Return Inlet 2". (If no circulation is selected, the Return Inlet 2 port is plugged with a 3/8 BSPP plug (132879). If dual materials are selected both connections are inlets (no return possible). See FIG. 7.

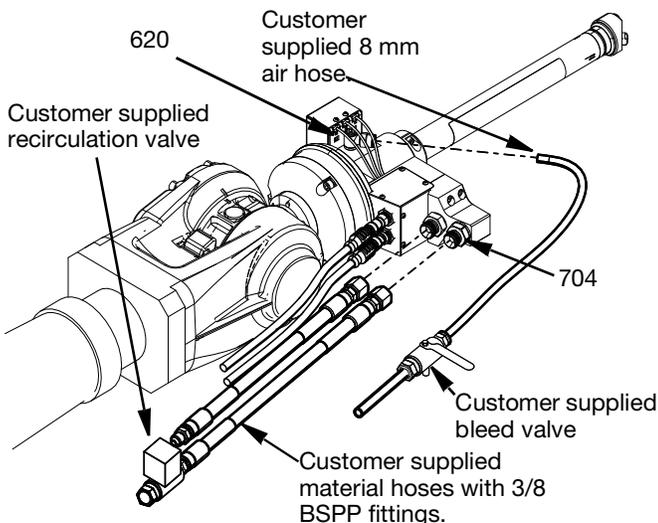


FIG. 7

PCF Installation

NOTE: The following installation is for Switch 3D Guns that use a Precision Continuous Flow Unit (PCF). See **PCF to 3D Gun Cable Kit 25U441** on page 38 for parts.

1. Remove the PCF cover (A).
2. Disconnect the dispense valve air solenoid cable from FCM port 1(B). Secure the loose end of the cable to the PCF fluid mounting plate (C).
3. Disconnect the regulator air line (D) from the incoming air wye fitting (E).
4. Disconnect the incoming air wye fitting (D) from the incoming air elbow fitting (F). Secure the incoming air wye fitting to the PCF fluid mounting plate (C). See FIG. 8.

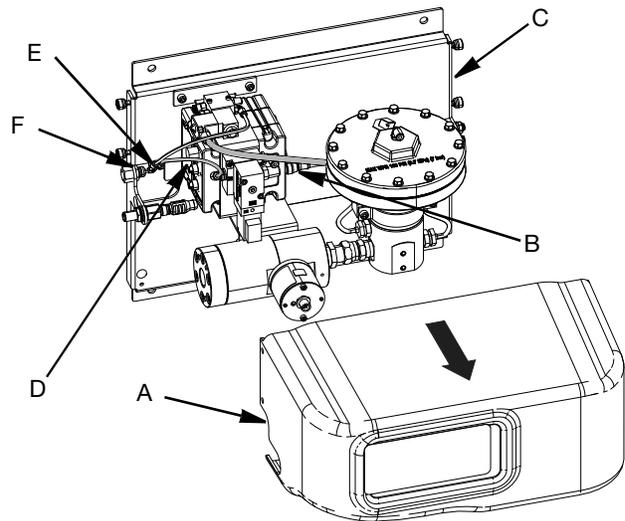


FIG. 8

5. Insert the regulator air line (D) into the incoming air elbow fitting (F).
6. Install the M12 thru connector (1301) into the PCF fluid mounting plate (C).
7. Install the GCA M12 cable (1302) to FCM port 1 and M12 thru connector (1301).
8. Reinstall the PCF cover (A). See FIG. 9 page 11.

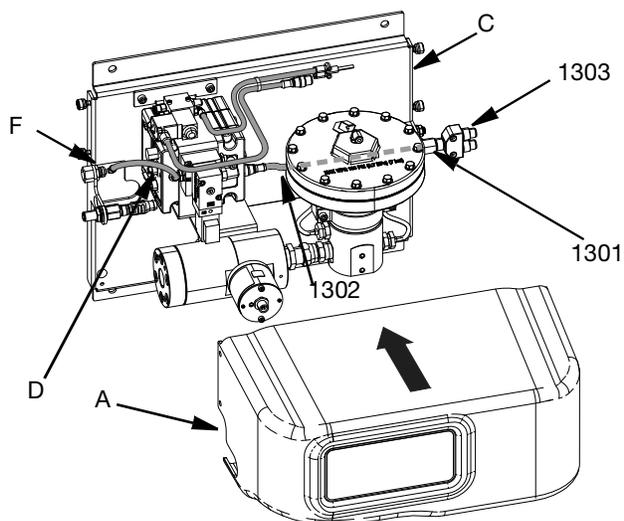


FIG. 9

- d. Position the Switch 3D Gun into a grounded metal pail and purge all nozzles one by one until the unit is completely filled with material and all entrapped air is removed from the supply system.
- e. Open the customer supplied recirculation valve and purge the material through the valve until all trapped air in the material return is removed. See FIG. 7.

Check for Free Movement

After completing the installation of the hoses and cables, the free movement must be checked by moving the fifth axis of the robot. The hoses and cables must be able to move freely without stretching or scratching the robot arm.

Flush Switch 3d Gun Before Using

The Switch 3D Gun was tested with lightweight mineral oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the Switch 3D Gun with a compatible solvent before using.

Leak Test and Priming for Use

After the Switch 3D Gun is completely installed on the robot, the Switch 3D Gun can be tested for leaks. This procedure also primes the Switch 3D Gun for use.

- a. Open the air supply. There must be no sound from leaking air.
- b. Check that the solenoid valves (613), shown on swivel chamber parts page 30, are working properly by opening and closing each valve from the robot pendant and listen to the sound of the piston in operation.
- c. Apply material supply pressure and check for leakage.

Operation

Operation Overview

The Switch 3D gun dispenses ribbons of material onto a substrate. The height and width of the material bead is dependent on the flow rate of the material and the speed of the robot movement. The size of the bead can also be determined by the size of the nozzle. See **Performance Charts** starting on page 41 to help determine settings of the Switch 3D Gun.

Pressure Relief Procedure

 Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection and splashing fluid, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

This procedure describes how to relieve pressure from the Switch 3D Gun. See your supply system manual for instructions on relieving pressure from the entire system.

1. Shut off the material supply.
2. Position the Switch 3D Gun into a grounded metal pail to relieve the fluid pressure.
3. Relieve all air pressure in the air lines by shutting off the Customer supplied bleed valve. See FIG. 7.
4. If the nozzle tip or material hose is clogged or if pressure has not been fully relieved after following the steps above, very slowly loosen the customer supplied material hose from the 3/8 in. BSPP inlet fitting (704), (see FIG. 7).

Flush the Switch 3D Gun



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.

Setup



1. With the Switch 3D Gun fully primed and cable connections integrated into the robot control system, the Switch 3D Gun is ready for dispensing material onto the substrate.
2. Calculate the flow rate by the required height and width versus the robot speed.
3. Adjust the material control system supplied with the robot to the required flow rate.
4. Program the robot with the desired nozzle used to dispense the material. The nozzle must be perpendicular to the substrate.
5. Run the program and validate the height and width of the bead.
6. The flow rate, robot speed, and nozzle size can be adjusted to achieve the desired height and width of the material bead.
7. Nozzle distance from target can affect the quality of the bead. The further the nozzle is from target the more air can be trapped between the bottom of the bead and substrate. See **Bead Pattern** and FIG. 42. on page 43.
8. After the correct height, width, and quality of the bead is confirmed, the Switch 3D Gun is ready for dispensing.

Maintenance



NOTE: Before disassembly, make sure all spare parts are available (new in an unopened package if delivered), and other parts are thoroughly cleaned. Suitable lubricant and thread locking compound should also be available.

Inspect the Switch 3D Gun, material, and air lines at least once every two weeks. Inspect for leakage and other visible damage.

The following tables list recommended maintenance procedures and frequencies for typical usage. The maintenance is divided between mechanical and electrical tasks. A typical application is the Switch 3D Gun mounted on a robot dispensing a moderately abrasive sealant.

Table 1: Mechanical

Task	Weekly	Monthly or 100,000 cycles
Inspect for leaks	✓	
*Check hoses for wear	✓	
*Check/tighten material connections		✓
*Check/tighten air connections		✓
*Check/tighten mounting hardware connections	✓	

* Assumes movement from automation.

Table 2: Electrical

Task	Weekly	Monthly
Check cables for wear	✓	
Verify cable connections	✓	

Preventive Maintenance

Typical wear parts in the Switch 3D Gun are the sealing rings inside the swivel chamber, the rod shutoff valves, rod seals and the rod shutoff valve seats.

Due to the different materials that can be used in the Switch 3D Gun, the frequency for preventative maintenance has to be evaluated for each case of application.

Based on average usage, **Service Kit, 25T484** is provided for maintenance once a year and **Service Kit, 25T485** is provided for maintenance once every two years (see page 34). Both of these kits are can be purchased through Graco Inc.

1. Dismount and disassemble the Switch 3D Gun. See **Switch 3D Gun Disassembly** starting on page 16.
2. Clean all parts included in the service kits.
3. Reassemble the Switch 3D Gun. See **Switch 3D Gun Assembly** starting on page 21. Then test all functions of the Switch 3D Gun, to make sure that all parts are installed correctly.

Factors Affecting Switch 3D Gun Life

The maintenance tables should be used as a guideline for the frequency of maintenance tasks. Additional factors that could affect Switch 3D Gun life include the following:

- **Material Fluid** - Abrasive or fiber filled fluids are much harder on seals, shafts, and seats than non-abrasive fluids such as oil.
- **Pressure drop across the valve seat** - As the internal valves open or close, the fluid is accelerated to a high velocity at the rod shutoff valve/seat contact area. The rate of wear at the rod shutoff valve/seat contact area will be much greater at 3000 psi than at 1000 psi. Changing the tip size to reduce fluid velocity can have a substantial affect on wear.
- **Number of cycles** - This has a much greater affect on Switch 3D gun wear than number of gallons. If you can do the same job with fewer on/off cycles, the Switch 3D Gun will last longer.
- **Speed of actuation** - Opening and closing the internal valves quickly will increase rod shutoff valve and seat life.

Recycling and Disposal

End of Product Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure**, Page 12
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Remove circuit boards, and other electronic components. Recycle according to applicable regulations.
- Deliver remaining product to a recycling facility.

Troubleshooting



1. Follow **Pressure Relief Procedure**, page 12, before checking or repairing the Switch 3D Gun.

Problem	Cause	Solution
Air leaks from Switch 3D Gun.	Worn gasket.	Replace gasket.
	Loose or worn air connections.	Tighten air connections.
	Worn o-rings.	Replace o-rings.
	Loose end cap screws.	Tighten screws.
Material leaks from front of Switch 3D Gun.	Tip seal or seats are worn.	Replace seat seals.
		Replace nozzle head assembly
		Replace rod shutoff valve.
	Obstruction inside Switch 3D Gun.	Remove nozzle head.
Material leaks from Switch 3D Gun weep hole.	Seals not installed correctly.	Check rotary seals and replace as needed.
	Seals are worn.	
Switch 3D Gun does not shut off.	Loose air connections or air supply turned off.	Tighten air connections and turn on air.
	Worn rod shutoff valve-seat interface.	Replace nozzle head and rod shutoff valve rod shutoff valve seat.
	Broken piston, debris in air cylinder, or debris inside the fluid section.	Disassemble Switch 3D Gun. Check and if necessary replace, piston, piston rod, and o-rings.
	Spring broken or not installed correctly.	Disassemble Switch 3D Gun. Check spring and replace if necessary.
Switch 3D Gun does not open or dispense material.	Loose air connections or air supply turned off.	Tighten air connections.
	Broken rod, piston, or tip. Debris or cured material inside fluid section.	Disassemble Switch 3D Gun. Check and if necessary replace, piston, piston rod, and o-rings.

Repair



To help prevent serious injury from pressurized fluid, relieve pressure before cleaning, checking or servicing the equipment

Removal of Switch 3D Gun From Robot for Repair

NOTE: Clean the Switch 3D Gun, robot and all parts surrounding it before removing the Switch 3D Gun.

1. Make sure air and material pressures are relieved.
 - a. Follow the **Flush the Switch 3D Gun** page 12.
 - b. Follow the **Pressure Relief Procedure** page 12.
2. Disconnect the material inlet hose and the material return hose. Always use two wrenches when loosening the high pressure hose connection. See FIG. 10
3. Disconnect the 8mm air hose. See FIG. 10
4. Unplug the cable connectors by unscrewing the fitting on the 5 pin cable connector (1001) and 8 pin cable connector (1003) if fitted. See FIG. 10

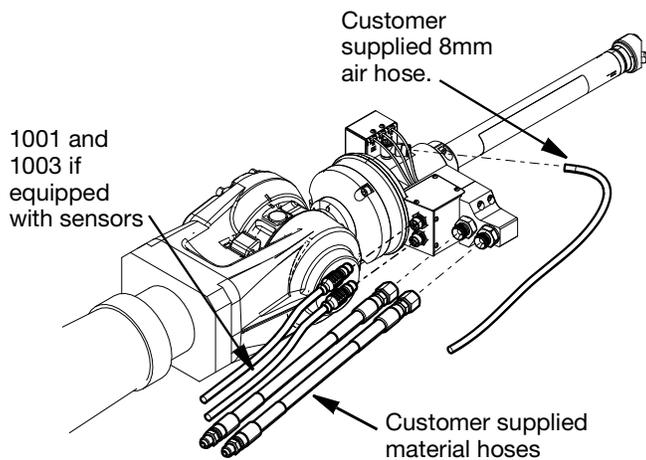


FIG. 10

5. Remove the screws that attach the swivel housing (619) to the anti-rotation bracket.
6. Unscrew the three screws that mount the Switch 3D Gun to the robot mounting flange. See FIG. 11.

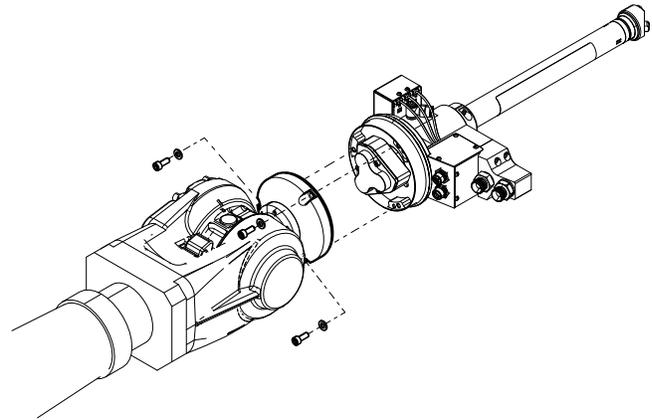


FIG. 11

7. The Switch 3D Gun can be now be removed from the robot.

Switch 3D Gun Disassembly

The Switch 3D Gun can be disassembled after being removed from the robot. See **Removal of Switch 3D Gun From Robot for Repair**.

1. Remove the nozzle head assembly.
 - a. Remove the nozzle cap (305/306) with attached nozzles (302) by removing the M6 button head screw (307).
 - b. Nozzle packing (303) can then be removed. See FIG. 12

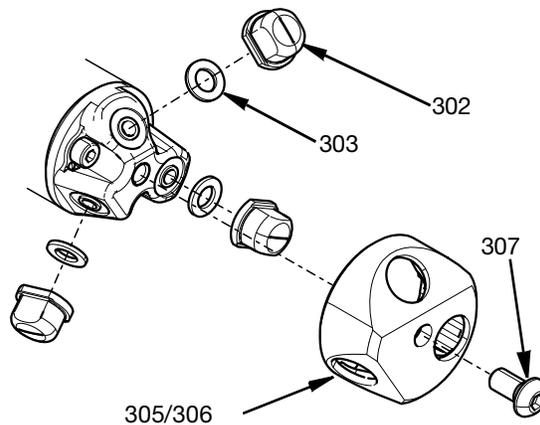


FIG. 12

2. To access the shutoff valve rods (512) and pistons (506), first evenly remove the three M4 screws

(501). The cylinder cover (502) along with the springs (503) can then be removed. See FIG. 13.

NOTICE

Remove the three M4 screws evenly. Since the cover has spring tension, the screws could damage the threads in the air cylinder housing (509) if unscrewed unevenly.

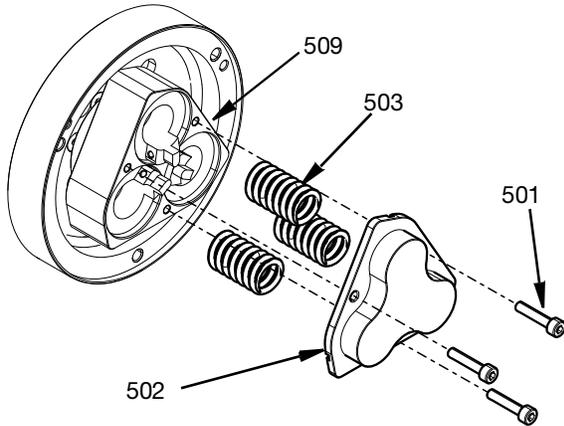


FIG. 13

3. Remove the piston (506) by loosening the two M4 set screws (507) which unlock the piston and rod shutoff valve. Once the screws are removed the piston (506) is accessible. The O-Ring (505), and the guide ring (504), can be removed. See FIG. 14

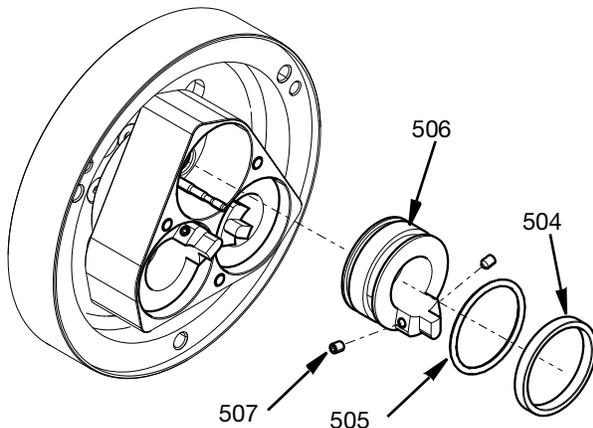


FIG. 14

4. Unscrew the three M4 hex head screws (304) that attaches the nozzle head (301) and adapter (104/105) to the front end of the central body (101). The shutoff valve rods (512) can then be removed. See FIG. 15.

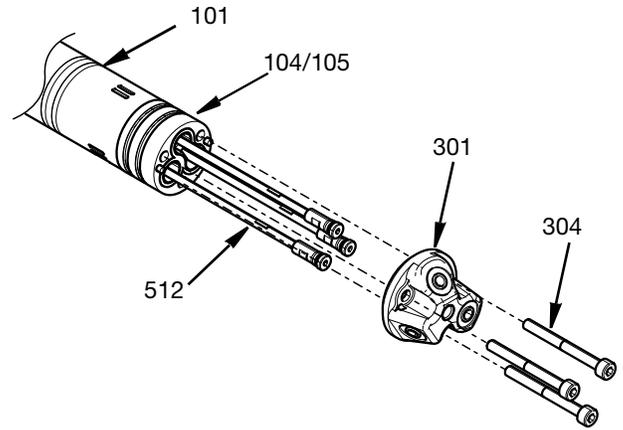


FIG. 15

5. If necessary, remove the lower one material gasket (106), or lower two material gasket (104). The one material adapter (105), or two material adapter (103) and the adapter gasket (102) can now be removed. See FIG. 16.

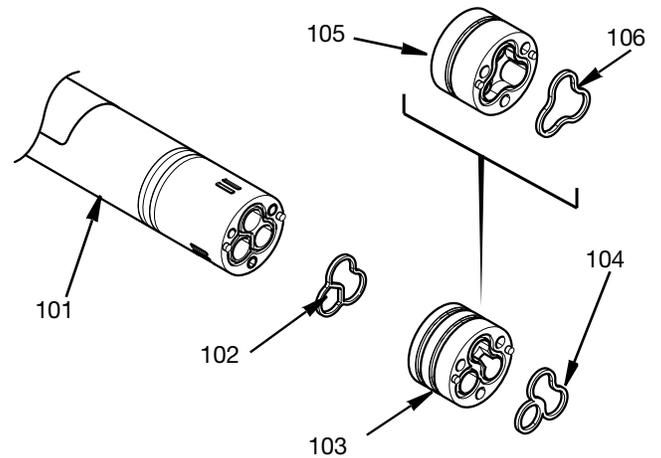


FIG. 16

6. Remove the three M4 screws (508) securing the air cylinder housing (509). After the air cylinder housing is removed the cylinder housing gasket (511) and the rod seals (201) can be removed. See **Seal Insert and Removal Tool Kit, 25T489**, page No. 36 for removing rod seals. See FIG. 17.

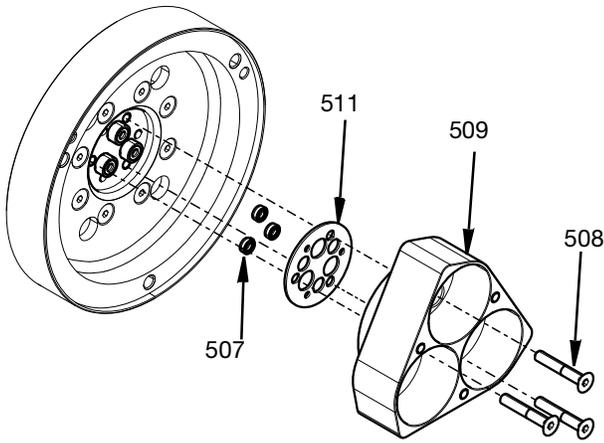
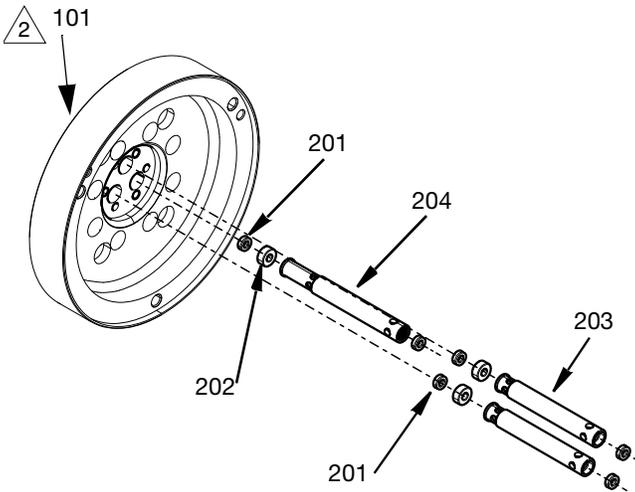


FIG. 17

7. Pull out the packing spacers (203 and 204), rod seals (201) and rod bearing (202). See **Seal Insert and Removal Tool Kit, 25T489**, page No. 36 for removing rod seals. NOTE: there are 2 sizes of spacers (203 and 204). See FIG. 18.



2 Do not disassemble part 25T656 (101). See **Central Body Assembly** on page 27 to view repairable parts.

FIG. 18

8. With the adapter removed from the central body, loosen the two M5 screws (403) and remove the lock ring assembly (401) with washer (402). See FIG. 19.

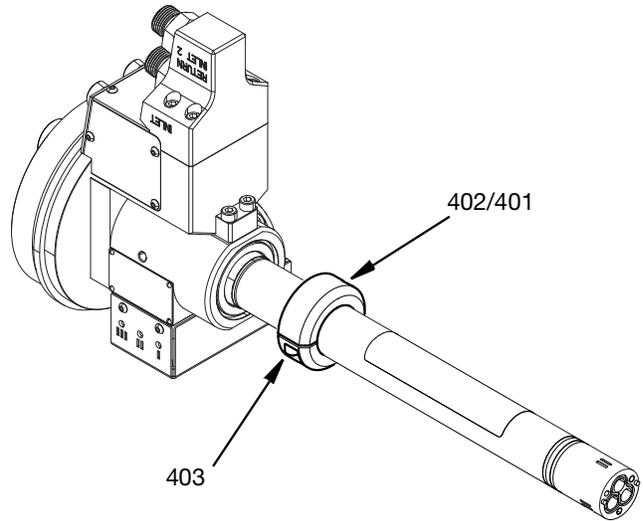


FIG. 19

9. Slide off the swivel chamber assembly with connection housing. See FIG. 20.

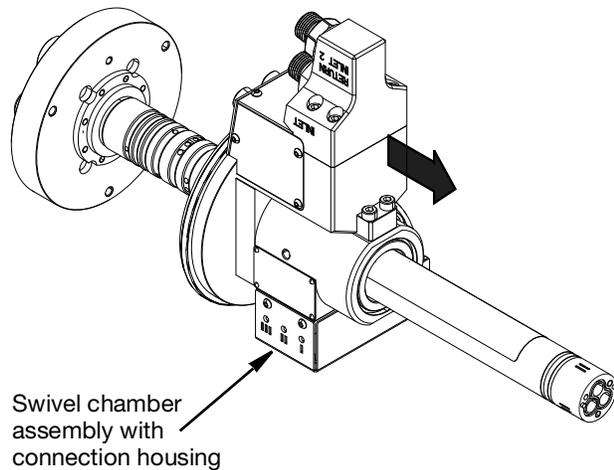


FIG. 20

10. The internals of the connection housing assembly can be accessed by the following:
- Remove the top cover (707) by removing the two M3 cover screws (705).
 - The four M5 screws (701) can then be removed to separate the connection housing assembly from the swivel chamber assembly.

Sensors or plugs can now be accessed. O-Rings (722) should be replaced with new ones before reassembly. See FIG. 21.

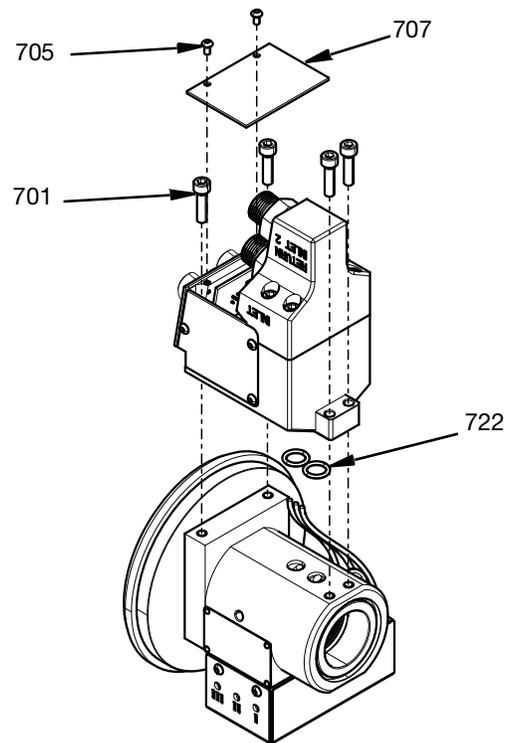


FIG. 21

11. All internal parts and seals can now be removed from the swivel housing (619). All internal gaskets and seals should be replaced if the swivel chamber is dismantled. See FIG. 22.

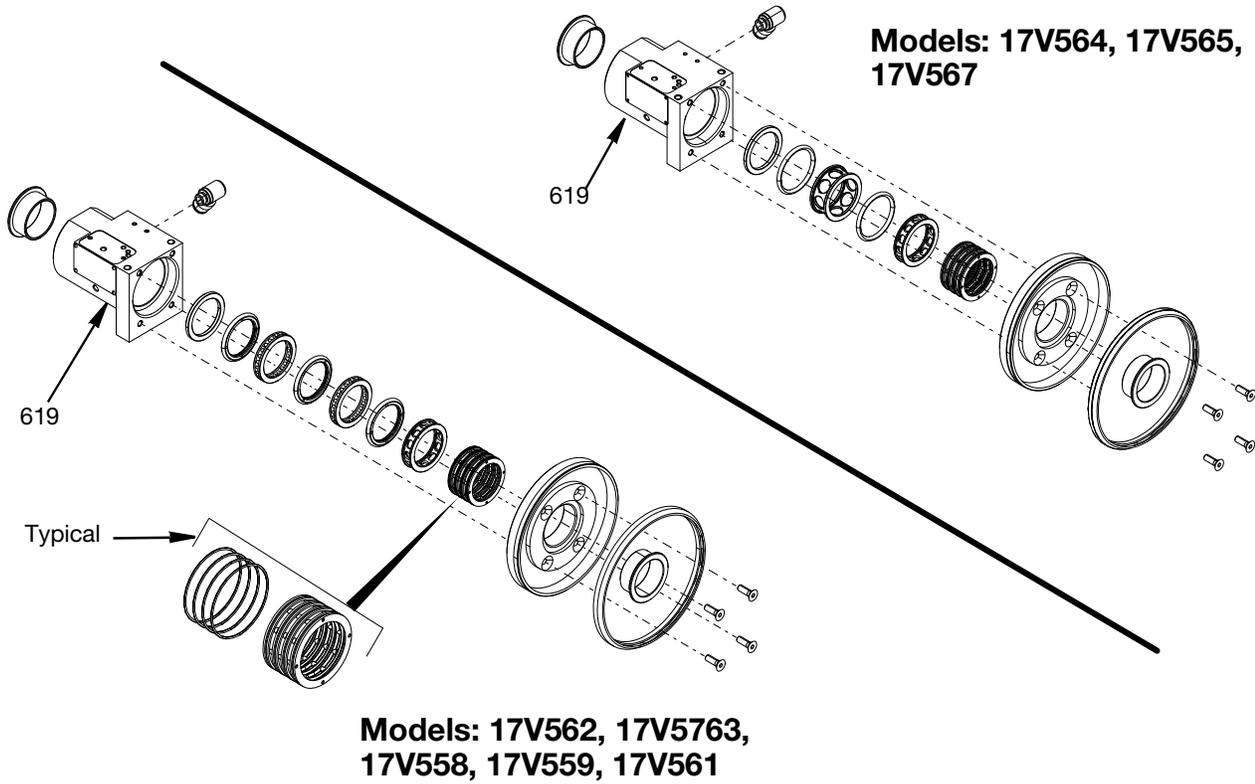


FIG. 22

12. The solenoid valves and manifold can be accessed by removing the cover (612) and removing the four M3 screws (611). The cable connectors (723) can be unplugged and the solenoid valves (613) can be removed by their attached screws. See FIG. 23.

With all the parts removed, clean all the parts that will be used again. Clean parts with a compatible solvent for each part. Discard parts not needed for reassembly.

NOTE: Refer to **Parts** page 26 for additional information and spare parts numbers

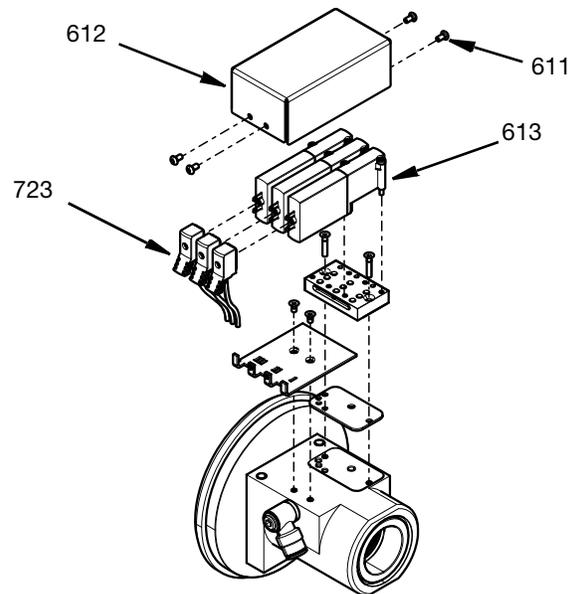


FIG. 23

Switch 3D Gun Assembly

NOTE: Before assembly, make sure all spare parts are available and other parts thoroughly cleaned. The approved thread locker is Loctite 243 or Loctite 242 TL. The approved lubricant is Lubriplate 630-AA or equivalent.

1. Apply lubricant to all gaskets and O-rings prior to fitting them in the internal parts of the swivel housing.
2. Insert flange bearings (602) into swivel housing (619) and bearing housing (604). See Fig. 24.

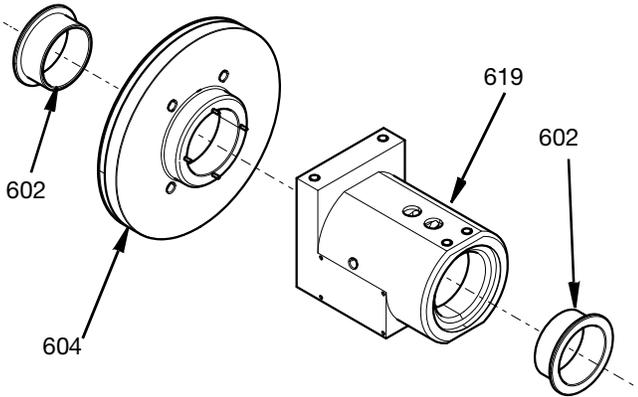


FIG. 24

3. Assemble the swivel housing (619) seals in the order shown in Fig. 26: 610, 608, 609, 608, 609, 608, 607.

NOTICE

To prevent damage to o-ring 608, apply a thin coat of grease to the outside of the seal, and insert at an angle as shown in Fig. 25.

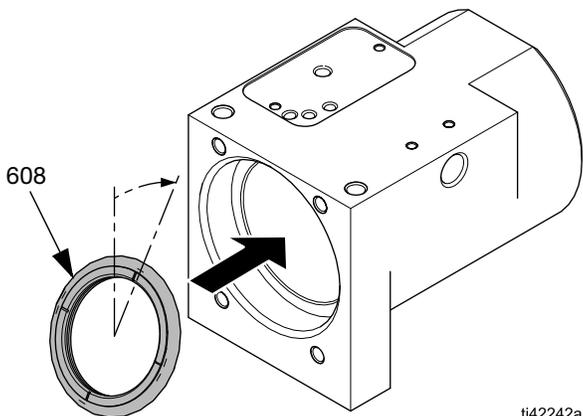


FIG. 25

4. Assemble the seals (606) onto the air ring distributor adapter (605).

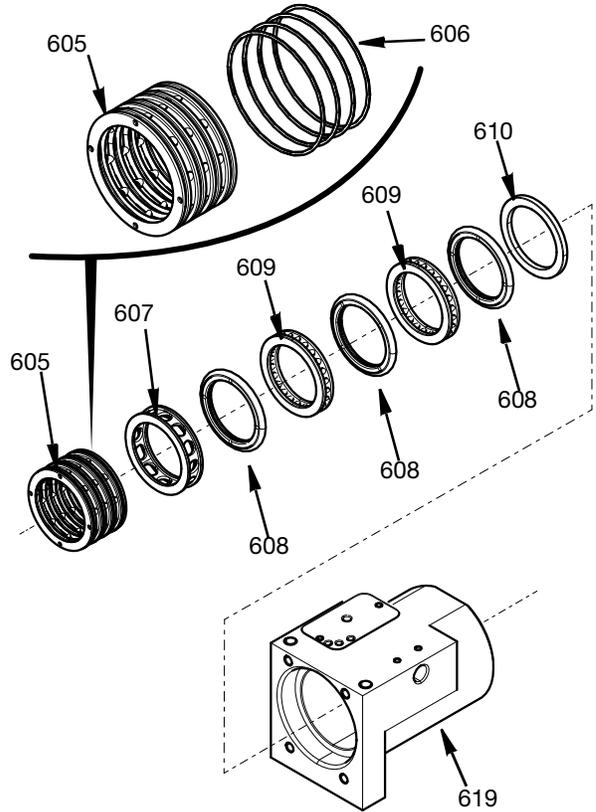


FIG. 26

5. Insert the air ring distributor adapter (605) into the swivel housing (619). Use a protective strip (sold separately) to prevent damage to the external o-rings. See **Protective Strip (Kit 15N649) Instructions** on page 40.
6. Connect the bearing housing (604) to the swivel housing (619) with four M5 screws (601). Apply threadlocker to the M5 screws and install finger tight. The Four M5 screws will be tightened in step 8.

Repair

NOTE: The four pins in the bearing housing line up and interlock into the four holes in the air ring distributor adapter (605).

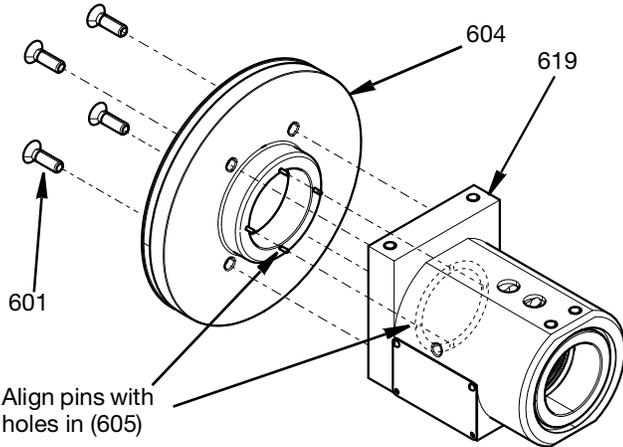


FIG. 27

7. Place seal ring (603) into the groove on outside of the bearing housing (604). Slide the completed unit onto the central body (101) and make sure the face of the bearing housing is tight against the face of the central body. Torque the four M5 screws (601) to 57 (6.5 N•m) in lbs. The screw heads can be accessed through the four holes in the center body (101). With a soft faced mallet, tap the face of the center body (101) to ensure it is fully seated against the upper bearing (602).

8. Slide lock ring (401) onto the center body and tighten the two M5 screws (403). Apply threadlocker to screws, and torque to 80 in-lbs (9.0 N•m). See FIG. 28.

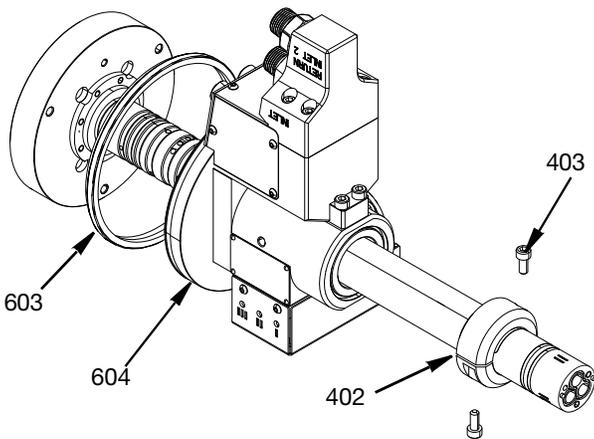


FIG. 28

9. Insert the rod seals (201) into the central body (101). Insert inlet the rod bearings (202) into the central body. Insert the rod seals (201) into the top end of both packing spacers (203) and the return packing spacer (204). Insert the packing spacers (203) and the return packing spacer (204) into the central body (101). Note that longer return packing spacer (204) is placed in chamber III as marked on the front of the central body (101). See FIG. 29.

NOTICE
There are nine rod seals (201) in this gun. All of the seals are installed such that a special installation tool is required. Improper installation will result in air and/or material leakage.
All seals must be inserted into the installation tool tube with the springs facing out. See Seal Insert and Removal Tool Instructions on page 36.

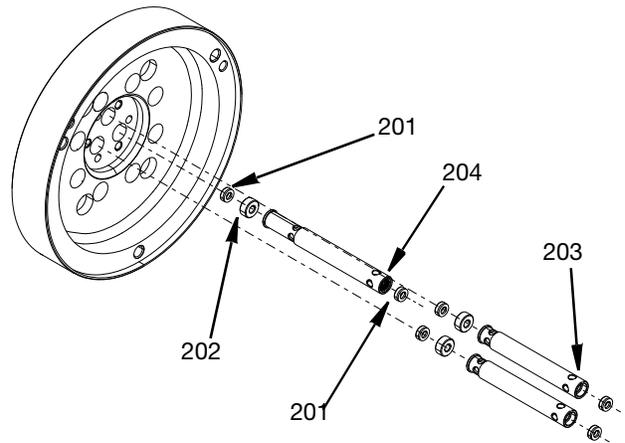


FIG. 29

10. Mount the three remaining rod seals (201) into the air cylinder housing (509), See **Seal Insert and Removal Tool Instructions** page No. 36 for installing rod seals. Fit a new gasket (511) and use three M4 screws (508) to secure the air cylinder housing to the central body (101). Apply threadlocker to the M4 screws and torque to 29.2 in-lbs (3.3 N•m). See FIG. 30.

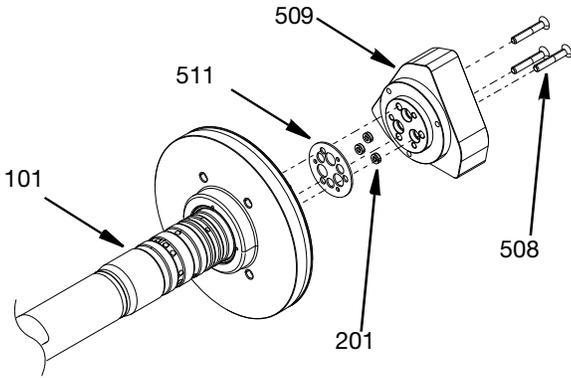


FIG. 30

11. Insert a new adapter gasket (102) into the slot on the face of the central body (101). Push the appropriate adapter (103/105) onto the central body while lining up the adapter pin holes with the locating pins. Place a new gasket (104) for two material adapter (103) or gasket (106) for one material adapter (105). See FIG. 31.

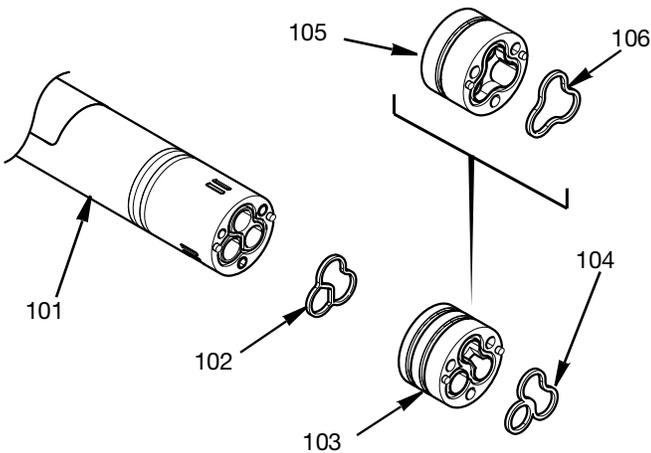


FIG. 31

12. Apply a thin coat of lubricant to the top 4 inches (100 mm) of each rod shutoff valves (512) and insert into the central body (101) until the top end of the rod is protruding out of the air cylinder (509). See FIG. 32.

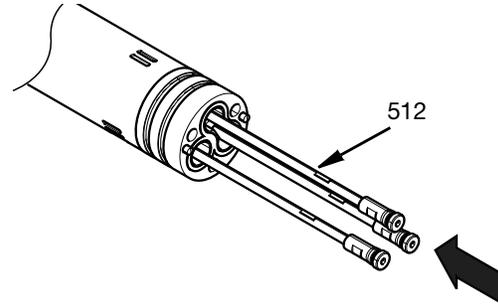


FIG. 32

13. Attach the nozzle head (301) to the adapter using the M4 screws (304) bolted through to the central body. Torque to 29.2 in-lbs (3.3 N•m). See FIG. 33.

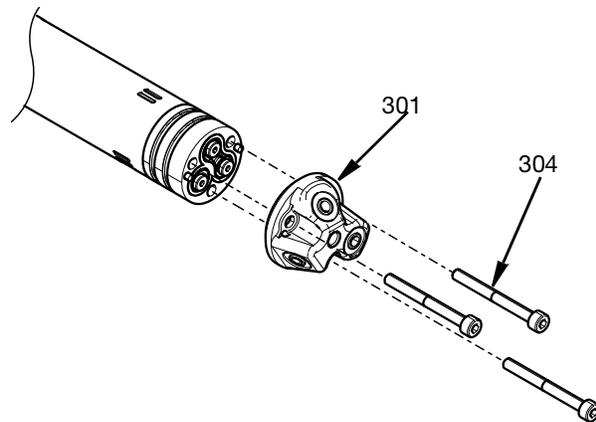


FIG. 33

14. For nozzle assembly see **Nozzles** page 9.

15. Assemble the pistons and rod shutoff valves:

- a. Apply lubricant to the O-rings (505) and the guide rings (504).
- b. Place O-rings and guide rings onto the pistons and make sure they are seated securely in their correct grooves.
- c. Insert the pistons into the cylinder housing (509) while aligning the rod shutoff valve hole with the rod shutoff valve (512).
- d. Push the pistons and rod shutoff valve together so the rod shutoff valves bottom out into the piston hole. See FIG. 34.

Repair

- e. Apply threadlocker to the two M3 set screws (507) and tighten to lock the piston and rod shutoff valve together. Torque to 5 in-lbs (.56 N•m).
- f. Pull up on the piston to ensure the set screws are seated correctly. If the piston cannot be pulled out of the air cylinder, the set screws are seated correctly.

16. Check the movement of the rod shutoff valve and piston so that they move freely and evenly without binding. See FIG. 34.

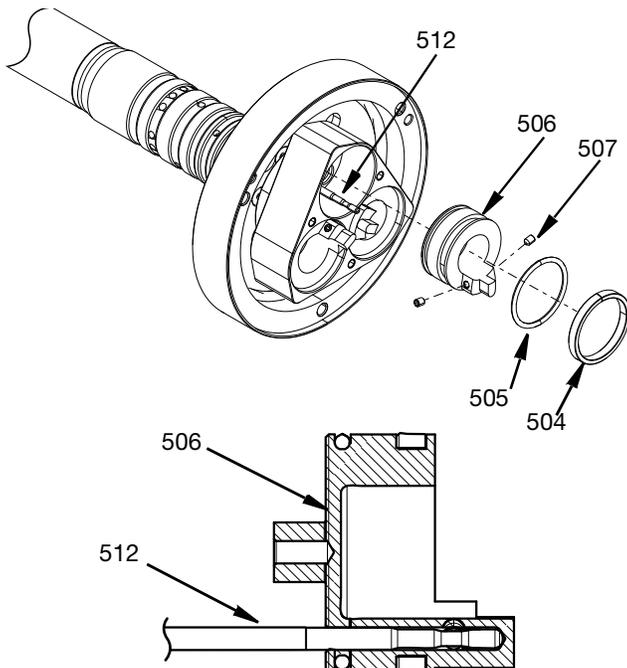


FIG. 34

17. Insert the springs (503) into the pistons, place the cylinder cover (502) over the springs. Apply threadlocker to screws (501). Tighten screws gradually to prevent binding. Torque to 27 in-lbs (3.1 N•m). See FIG. 35.

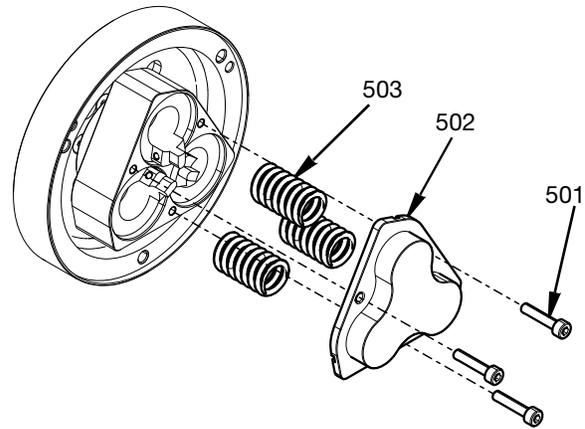


FIG. 35

18. Assemble the Connection Housing. See **Connection Housing** on page 32 for illustration.

- a. Apply lubricant to seals (711) and threadlocker to the threads of plugs (712/714) and/or sensors (720/721) and install into the fluid housing (724/725). Torque plugs and/or sensors to 80 in-lbs (9.0 N•m).
- b. Install electrical connector (715) into bracket (717). Torque retaining nuts to 11 in-lbs (1.2 N•m) no threadlocker.
- c. Apply lubricant to O-rings (722). Secure fluid housing (724/725) and bracket (717) to the swivel housing (619) with screws (716). Apply threadlocker to screws and torque to 80 in-lbs (9.1 N•m).
- d. Make all electrical connections. Refer to the electrical schematic on pages 43 through 46.
- e. Apply lubricant to O-rings (722). Secure the inlet adapter (702/726) to the fluid housing (724/725) with screws (701). Apply thread locker and torque to 80 in-lbs (9.1 N•m).
- f. Install covers (706/707) and secure with screws (705). Torque screws to 8 in-lbs (.9 N•m) no threadlocker.
- g. Apply lubricant to seals (703) and install fittings (704) or customer supplied fittings.

19. Assemble the Air Solenoid. See **Swivel Chamber** on page 30 for illustration.
- Insert the gasket (618) into the pocket in the swivel housing (619). Be careful to align the three air passages in the gasket with the three air ports in the swivel housing. Locate the manifold assembly (615) onto the gasket. The slot in the edge of the manifold must face the interior of the swivel housing. Secure the manifold to the swivel housing with screws (614). Apply threadlocker and torque screws to 8 in-lbs (.9 N•m).
 - Locate the bracket (617) on the swivel housing and secure with screws (616). Apply threadlocker and torque to 8 in-lbs (.9 N•m).
 - Install air solenoids (613). Apply a light film of lubricant to the gaskets supplied with the solenoids and torque the screws to 8 in-lbs (.9 N•m).
 - Install cover (612) secure with screws. Apply threadlocker and torque screws to 8 in-lbs (.9 N•m).
 - Install fitting (620) or customer supplied fitting.

Testing Before Installation

If the Switch 3D Gun has been assembled after a major repair or maintenance operation, it is recommended to perform a function test before the Switch 3D Gun is returned to production.

A minimum level of function test is to connect the compressed air supply and check for air leakage by opening each of the solenoid valves (613) manually.

The cable connections can be checked using an Ohm-meter to test the connections from the plug to the terminals and to make sure that there are no short-circuits.



Make a last check on all assembly screws and then follow the **Installation** instructions on page 8 to mount the Switch 3D Gun on the robot.

Parts

Parts Key

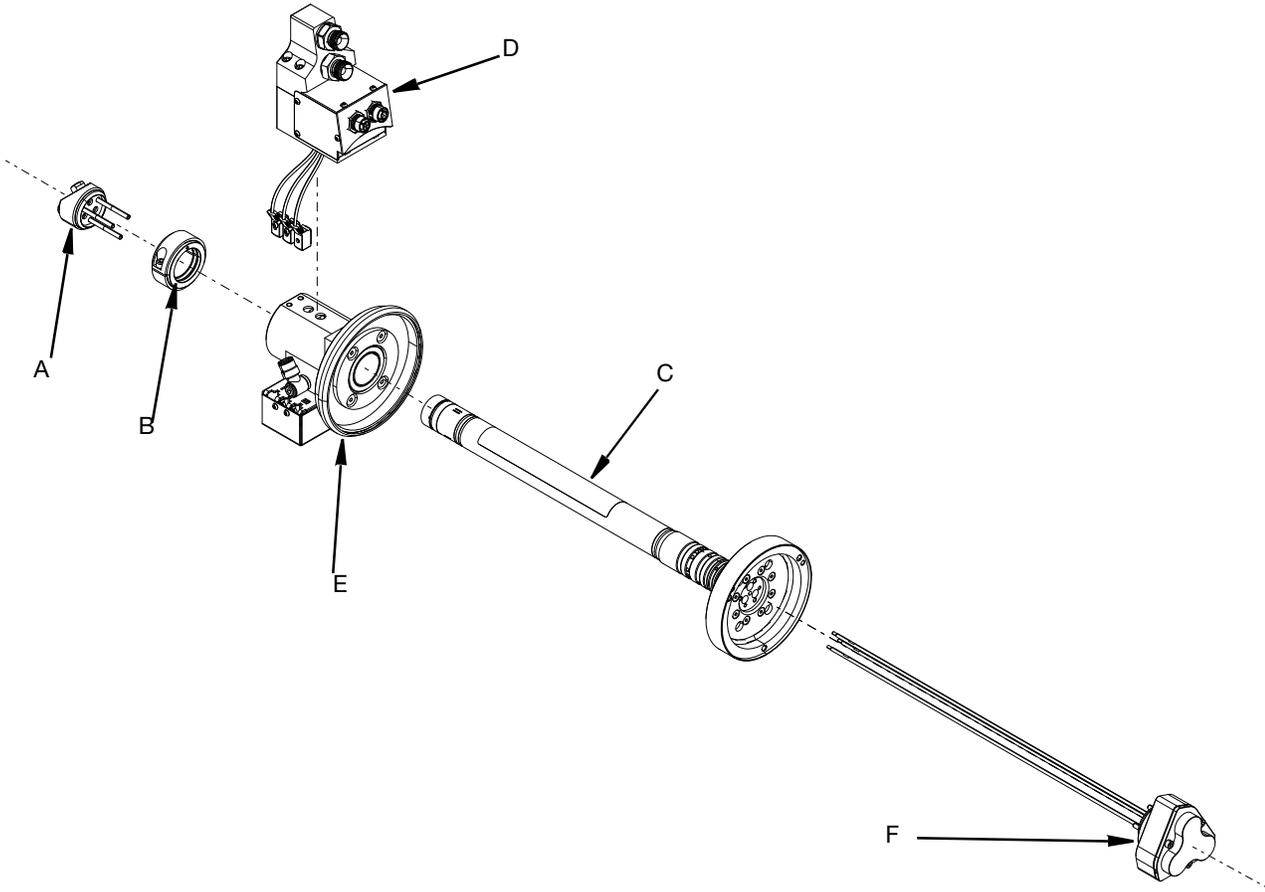
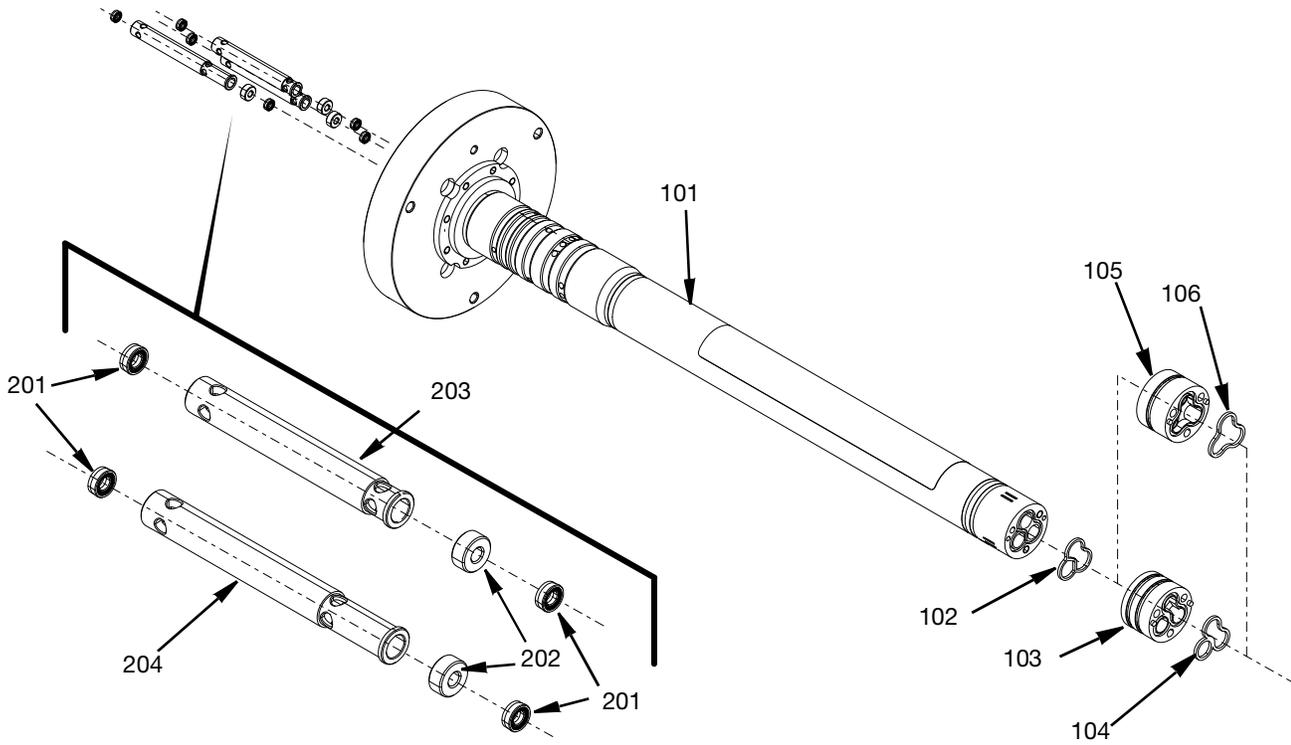


FIG. 36

Key:

- A. **Nozzle Head Assembly** page No. 28
- B. **Lock Ring Assembly** page No. 28
- C. **Central Body Assembly** page No. 27
- D. **Connection Housing** (two inlet shown) page No. 32
- E. **Swivel Chamber** page No. 30
- F. **Rod Shutoff Valve and Cylinder Assembly** page No. 29

Central Body Assembly



Central Body Assembly Parts List

Ref.	Part	Description	Quantity Per Model Number							
			17V558	17V559	17V561	17V562	17V563	17V564	17V565	17V567
101	25T656	BODY, central	1	1	1	1	1	1	1	1
102*	17V839	GASKET, adapter	1	1	1	1	1	1	1	1
103	17V856	ADAPTER, two material				1	1			
104*	18C660	GASKET, lower, two material				1	1			
105	18C662	ADAPTER, one material	1	1	1			1	1	1
106*	18C715	GASKET, lower, one material	1	1	1			1	1	1

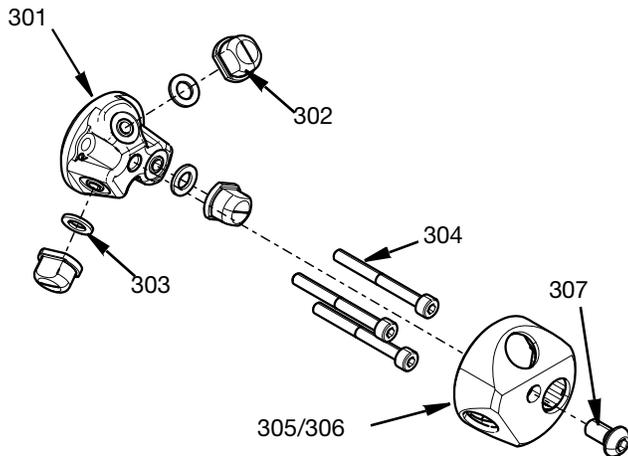
Ref.	Part	Description	Qty.
201*◆	17V813	SEAL, rod	4
202*◆	17V831	BEARING, rod	2
203	17V819	SPACER, packing, inlet	2
204	17V820	SPACER, packing, return	1

* Included in **Service Kit, 25T484** page 34.

◆ Included in **Bearing Seals Kit, 25T488**

NOTE: There are two tools available to remove and install the packing sets, see the **Seal Insert and Removal Tool Kit, 25T489**.

Nozzle Head Assembly



Nozzle Head Parts List

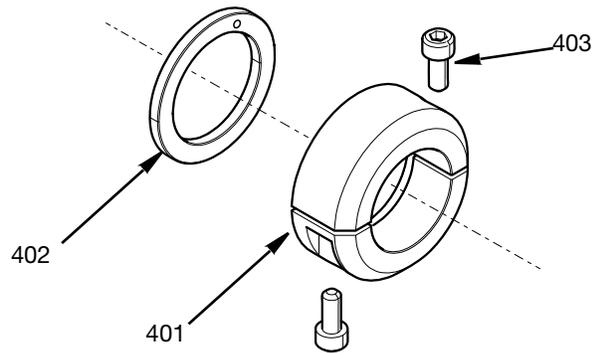
Ref.	Part	Description	Qty.
301	17V875	HEAD, nozzle	1
302	-----	NOZZLE (reference)	3
303*	17V833	PACKING, nozzle	3
304	133073	SCREW, M4x30, SCHS	3
305◆	17V872	CAP, nozzle	1
306★	17V873	CAP, nozzle	1
307	17V806	SCREW, M6x12, BHCS	1

* Included in **Service Kit, 25T484**.

◆ 17V872 used for two material models.

★ 17V873 used for one material models.

Lock Ring Assembly

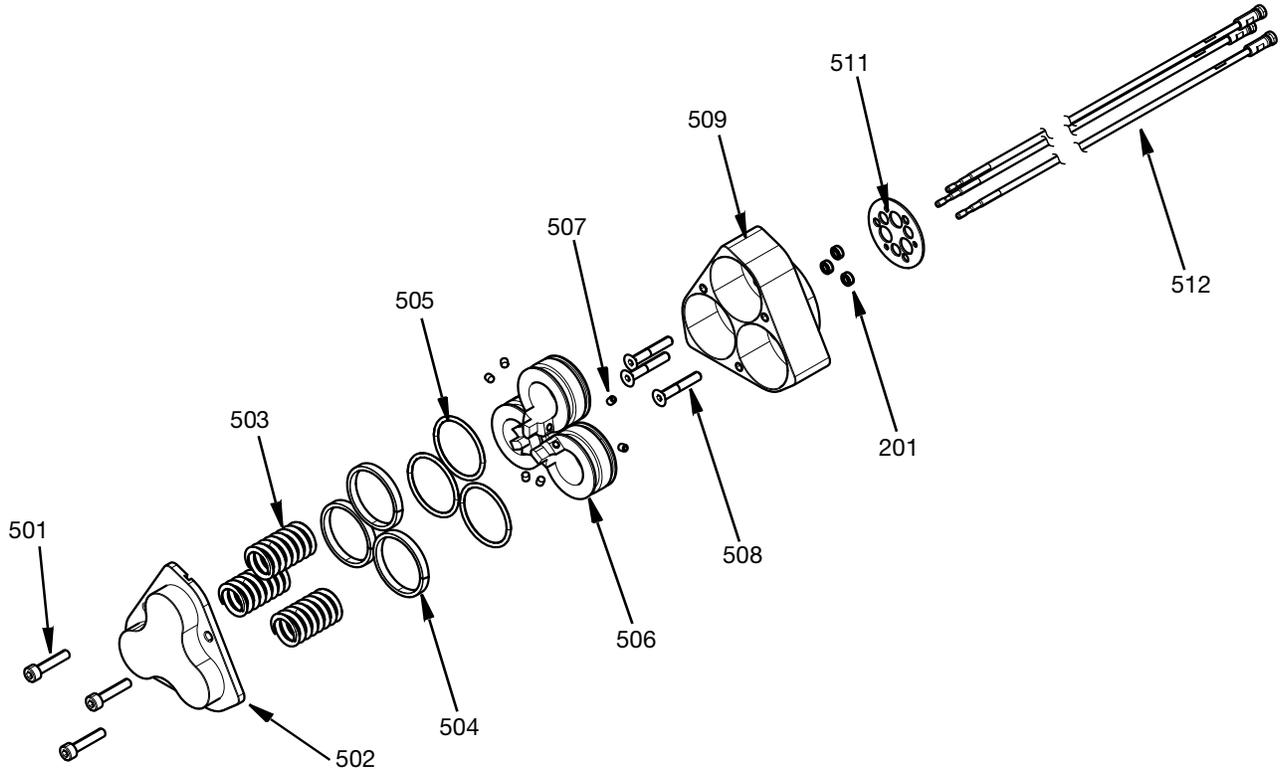


Lock Ring Parts List

Ref.	Part	Description	Qty.
401*	17V910	RING, lock assembly	1
402	17V817	WASHER	1
403	117026	SCREW, M5x12, SHCS	2

* Assembly 17V910 includes parts 17V817 and 117026.

Rod Shutoff Valve and Cylinder Assembly



Rod Shutoff Valve and Cylinder Assembly Parts List

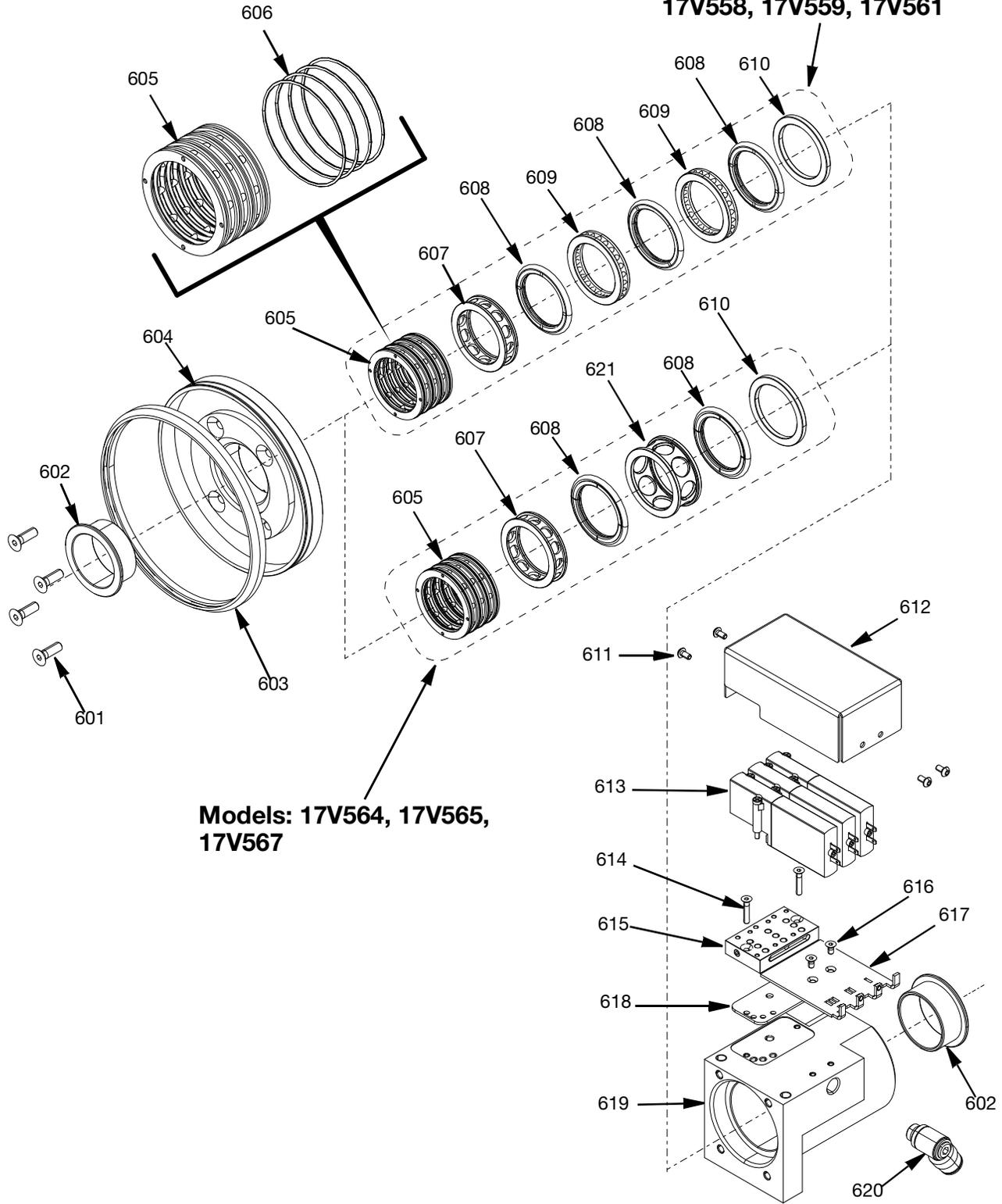
Ref.	Part	Description	Qty.
501	116474	SCREW, M4x20, SHCS	3
502	17V818	COVER, cylinder	1
503	17V830	SPRING	3
504	17V832	RING, guide	3
505	17V812	O-RING	3
506	17V826	PISTON	3
507†	134149	SCREW,SET, M4x5	6
508	134147	SCREW, FHSC, M4x20	3
509*	25T486	HOUSING, air, cylinder	1
201	17V813	SEAL, rod	3
511	18C977	GASKET, cylinder housing	1
512	25T487	ROD, shutoff, valve	3

† Purchase replacements in **Set Screw Kit 26D998**.
See page 34 for torque values.

* Air Cylinder Housing includes three Rod Seals (201).

Swivel Chamber

**Models: 17V562, 17V5763,
17V558, 17V559, 17V561**

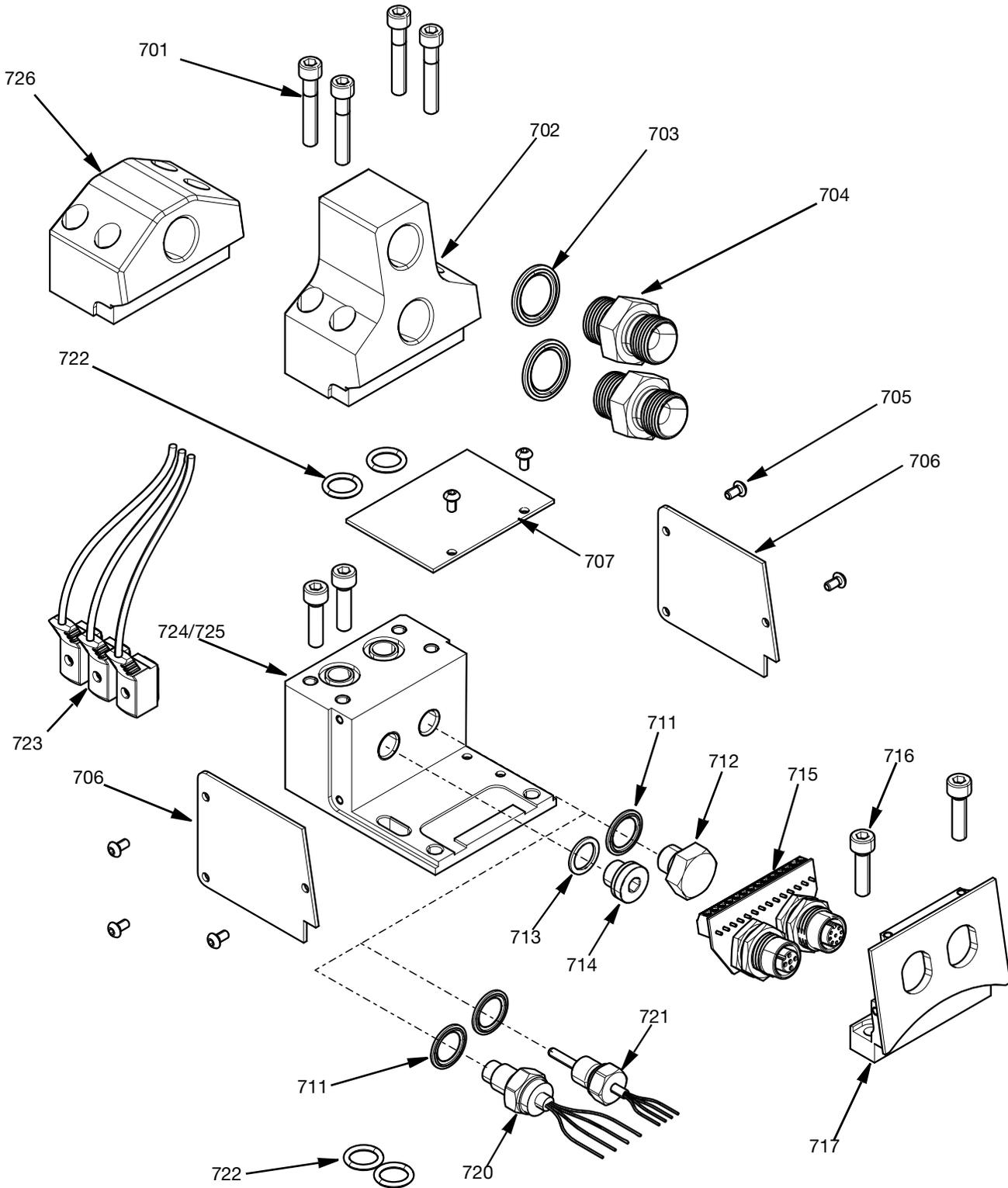


Central Body Assembly Parts List

Ref.	Part	Description	Quantity Per Model Number							
			17V558	17V559	17V561	17V562	17V563	17V564	17V565	17V567
601	134150	SCREW, FHCS, M5x16	4	4	4	4	4	4	4	4
602	17V828	BEARING, flange	2	2	2	2	2	2	2	2
603	17V893	RING, seal, hr	1	1	1	1	1	1	1	1
604	17V901	HOUSING, bearing	1	1	1	1	1	1	1	1
605*	17V894	ADAPTER, distributor, air ring	1	1	1	1	1	1	1	1
606	17V821	O-RING	4	4	4	4	4	4	4	4
607	17V825	RING, distributor, weepage	1	1	1	1	1	1	1	1
608	17V895	SEAL, rotary	3	3	3	3	3	2	2	2
609	17V841	RING, distributor, material	2	2	2	2	2	-	-	-
610	17V827	DISK, support	1	1	1	1	1	1	1	1
611	132559	SCREW, M3x6, BHCS	4	4	4	4	4	4	4	4
612	17V888	COVER	1	1	1	1	1	1	1	1
613	17V890	VALVE, solenoid, 3/2	3	3	3	3	3	3	3	3
614	17V805	SCREW, M3x16 , FHMS	2	2	2	2	2	2	2	2
615	17V886	MANIFOLD, solenoid, valve	1	1	1	1	1	1	1	1
616	132555	SCREW, M3x6, FHMS	2	2	2	2	2	2	2	2
617	17V889	COVER, inner	1	1	1	1	1	1	1	1
618	17V887	GASKET, manifold	1	1	1	1	1	1	1	1
619	25T490	HOUSING, swivel	1	1	1	1	1	1	1	1
620	17V816	FITTING, elbow, swivel	1	1	1	1	1	1	1	1
621	15N116	RING, distributor, material	-	-	-	-	-	1	1	1

* ADAPTER, distributor, air ring (605) will come with O-RINGS (606) installed.

Connection Housing



Connection Housing Parts List

Ref.	Part	Description	Quantity Per Model Number							
			17V558	17V559	17V561	17V562	17V563	17V564	17V565	17V567
701	17V803	SCREW, M5x30, SCHS	4	4	4	4	4	4	4	4
702	17V902	ADAPTER, dual inlet	1	1	1	1	1			
703	17V809	SEAL, washer, 16MM	2	2	2	2	2	1	1	1
704	17V916	FITTING, nipple,3/8 BSPP	2	2	2	2	2	1	1	1
705	132559	SCREW, M3x6, BHCS	8	8	8	8	8	8	8	8
706	17V843	COVER, side, blue	2	2	2	2	2	2	2	2
707	17V844	COVER, top, blue	1	1	1	1	1	1	1	1
711‡	17V808	SEAL, washer, 10MM	1	1	2	1	2	1	1	2
712	17V795	SCREW, M10x10, HHCS	1			1		1		
713†	17V807	WASHER, 10/14x1, copper	1	1		1		1	1	
714	17V815	PLUG, M10x1	1	1		1		1	1	
715	15N126	CONNECTOR, dual, cable	1	1	1	1	1	1	1	1
716	108326	SCREW, M5x20, SCHS	4	4	4	4	4	4	4	4
717	15N115	BRACKET, connector, dual	1	1	1	1	1	1	1	1
720	17V829	SENSOR, pressure, transducer			1					1
721	15N089	SENSOR, RTD		1	1		2		1	1
722	117059	O-Ring	4	4	4	4	4	4	4	4
723	17V891	CABLE, connection solenoid valve	3	3	3	3	3	3	3	3
724	17V903	HOUSING, fluid, temp, press sensors	1	1	1	1		1	1	1
725	17X635	HOUSING, fluid, 2 temperature sensors					1			
726	18C895	ADAPTER, single, inlet						1	1	1

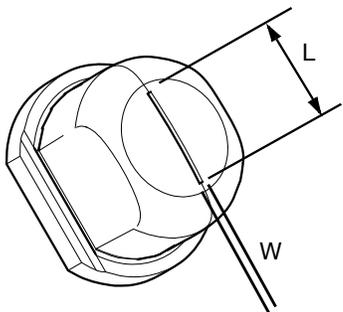
Kits and Tools

Set Screw Kit 26D998

Replacement set screws for part 507.

Ref.	Description	Torque Value	Qty.
507	SCREW, M4x5	17 in-lb (1.9 N•m)	6
	SCREW, M3x5	5 in-lb (.56 N•m)	6

Nozzle Kits

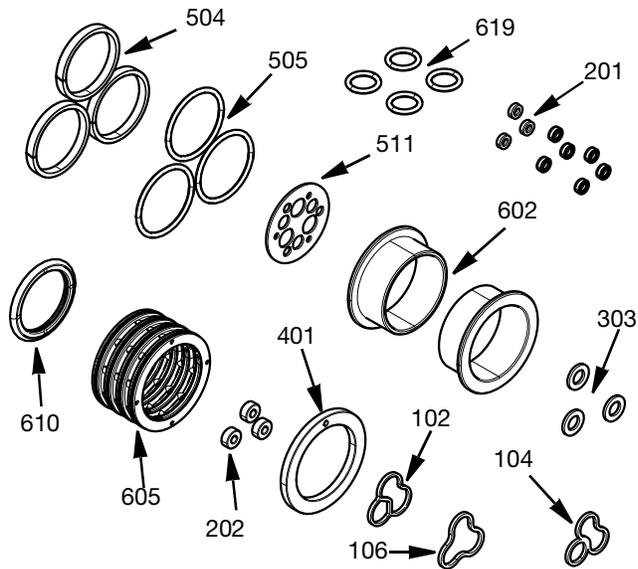


Nozzle Parts List

Ref.	Part	W in. (mm)	L in. (mm)
801	17V669	0.012 (0.30)	0.27 (7)
802	17V670	0.012 (0.30)	0.31 (8)
803	17V671	0.012 (0.30)	0.35 (9)
804	17V672	0.012 (0.30)	0.39 (10)
805	17V673	0.015 (0.38)	0.31 (8)
806	17V674	0.015 (0.38)	0.35 (9)
807	17V675	0.015 (0.38)	0.39 (10)
808	17V676	0.015 (0.38)	0.43 (11)

NOTE: Kits include nozzle and 1 packing.

Service Kit, 25T484

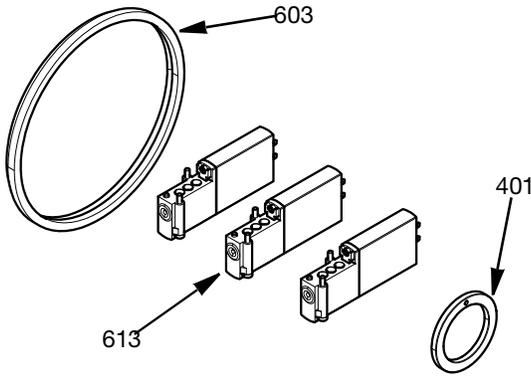


Service Kit Parts List, 25T484

Ref.	Part	Description	Qty.
619	117059	O-Ring, Viton	4
505	17V812	O-Ring	3
201	17V813	SEAL, rod	9
401	17V817	WASHER, lock ring	1
602	17V828	BEARING, flange	2
202	17V831	BEARING, rod	3
504	17V832	RING, guide	2
303	17V833	SEAL, nozzle	3
102	17V839	GASKET, adapter	1
511	18C977	GASKET, cylinder housing	1
605	17V894	RING, air distributor	1
610	17V895	SEAL, rotary	3
104	18C660	GASKET, lower, two material	1
106	18C715	GASKET, lower, one material	1

NOTE: Service Kit 25t484 is provided for preventive maintenance done on the Switch 3D Gun once a year based on average usage.

Service Kit, 25T485

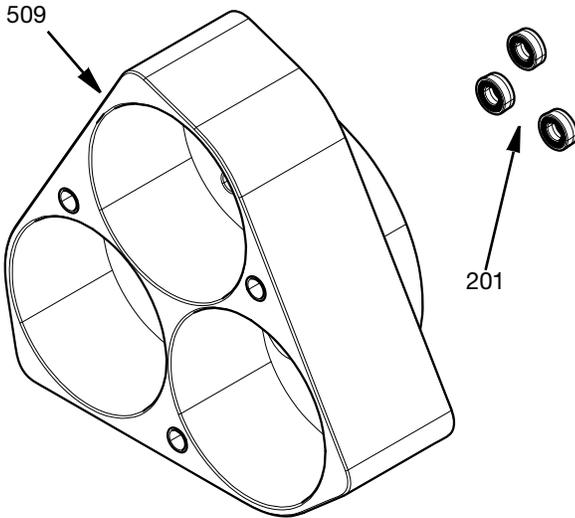


Service Kit Parts List, 25T485

Ref.	Part	Description	Qty.
401	17V817	WASHER, lock ring	1
613	17V890	VALVE, solenoid	3
603	17V893	RING, dust seal	1

NOTE: Service Kit 25t485is provided for preventive maintenance done on the Switch 3D Gun once every two years based on average usage.

Air Cylinder Housing Service Kit, 25T486

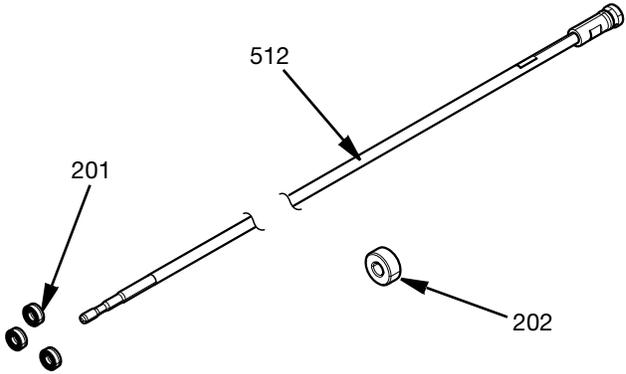


Air Cylinder Housing Service Kit Parts List, 25T486

Ref.	Part	Description	Qty.
201	17V813	SEAL, rod	3
509	17V892	HOUSING, air, cylinder	1

NOTE: Rod seals (510) come installed in the air cylinder housing

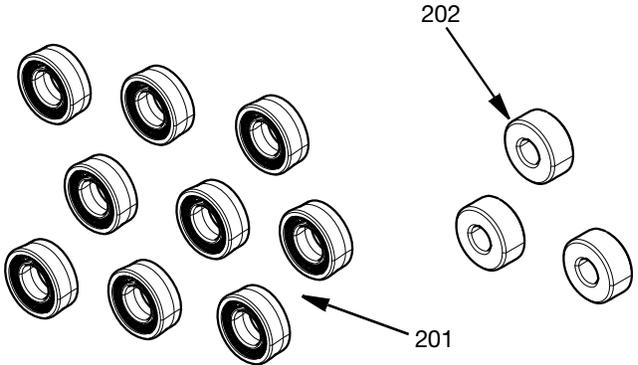
Valve Shaft Material Kit, 25T487



Valve Shaft Service Kit Parts List, 25T487

Ref.	Part	Description	Qty.
201	17V813	SEAL, rod	3
613	17V838	ROD, shutoff, valve	1
202	17V831	BEARING, rod	1

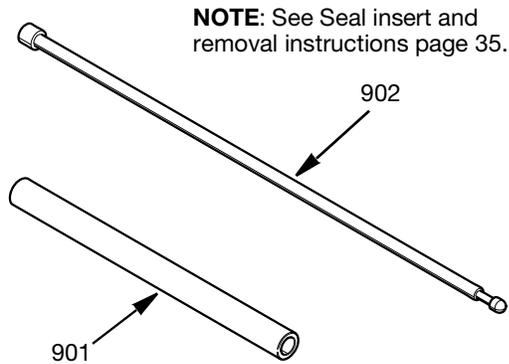
Bearing Seals Kit, 25T488



Valve Shaft Service Kit Parts List, 25T488

Ref.	Part	Description	Qty.
201	17V813	SEAL, rod	9
202	17V831	BEARING, rod	3

Seal Insert and Removal Tool Kit, 25T489



Seal Insert and Removal Kit Parts List, 25T489

Ref.	Part	Description	Qty.
901	17V860	TOOL, seal installation tube	1
902	17V861	TOOL, seal installation rod	1

Seal Insert and Removal Tool Instructions

Seal Removal

To remove a rod seal, place pointed end of the seal installation rod (902) through the center of the rod seal (201). Hook the indent of the tool onto the opposite face of the seal and retract seal from the packing spacers (203 and 204) or air cylinder housing (509). See FIG. 37.

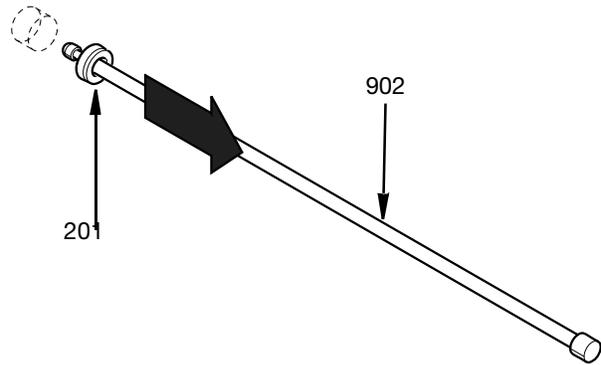


FIG. 37

Seal Installation

1. Place flat small end of rod seal into the end of the seal installation tube (901). NOTE: the spring end of the seal should be facing outwards.
2. Place the end of the seal installation tube with the seal squarely against the cavity of the item the seal needs to be inserted into.
3. Place the blunt end of the installation rod (902) into the open end of the installation tube.
4. Push the seal into the cavity with the rod. See FIG. 38

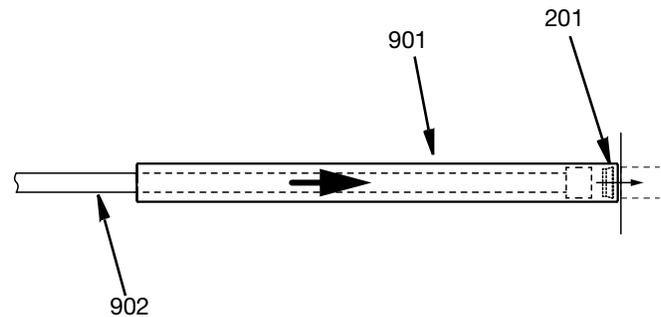
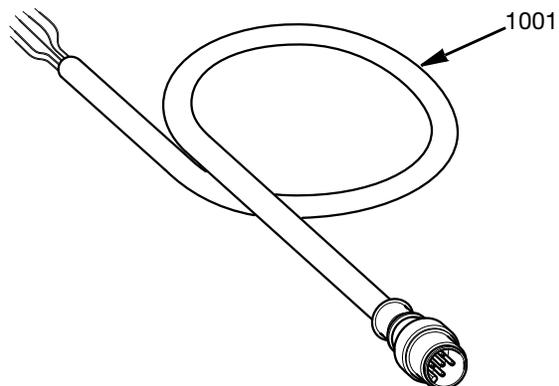


FIG. 38

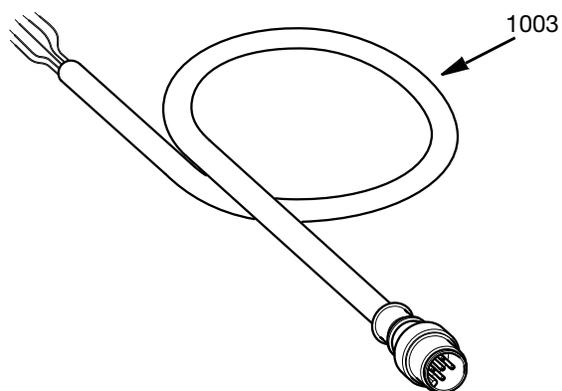
5 Pin Cable Kit, 17V857



5 Pin Cable Kit Part List, 17V857

Ref.	Part	Description	Qty.
1001	17V857	CABLE, M12, 5 pin	1

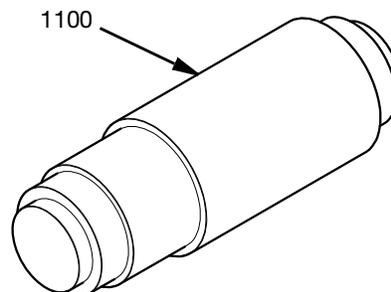
8 Pin Cable Kit, 15N265



8 Pin Cable Kit Part List, 15N265

Ref.	Part	Description	Qty.
1003	15N265	CABLE, M12, 8 pin	1

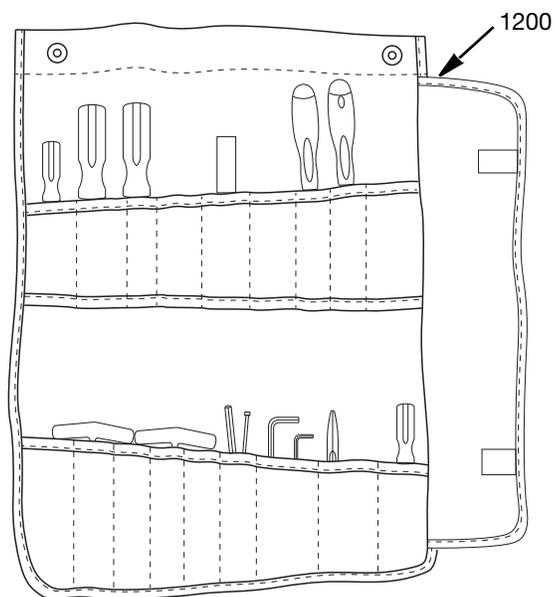
Material Seat Insertion/Removal Tool, 17V972



Material Seat Insertion/Removal Tool Part List, 17V972

Ref.	Part	Description	Qty.
1100	17V972	TOOL, mounting	1

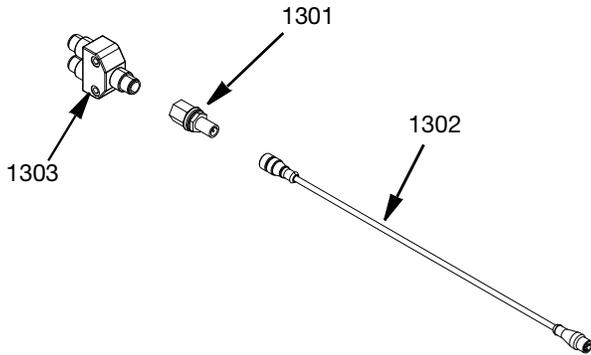
Tool Kit, 17V859



Tool Kit , 17V859

Ref.	Part	Description	Qty.
1200	17V859	TOOL, Kit	1

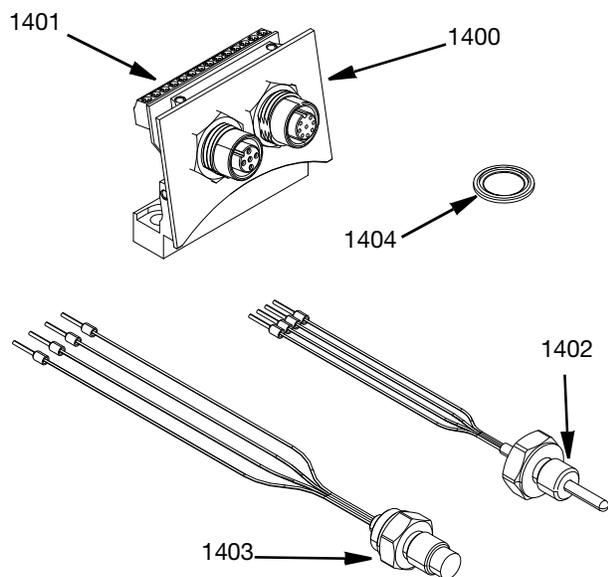
PCF to 3D Gun Cable Kit 25U441



PCF to 3D Gun Cable Kit Parts List

Ref.	Part	Description	Qty.
1301	121612	CONNECTOR, thru, M12, MXF,	1
1302	25U014	CABLE, GCA, M12 5P, M/F.).5M LG	1
1303	121807	CONNECTOR, splitter	1

Sensor Upgrade Kits, 25U225 No Sensor, 25U226 Temp Sensor, 25U227 Temp, Press Sensor, 25U228 Two Temp Sensors



Sensor Upgrade Kit Parts List, 25U225, 25U226, 25U227, 25U228

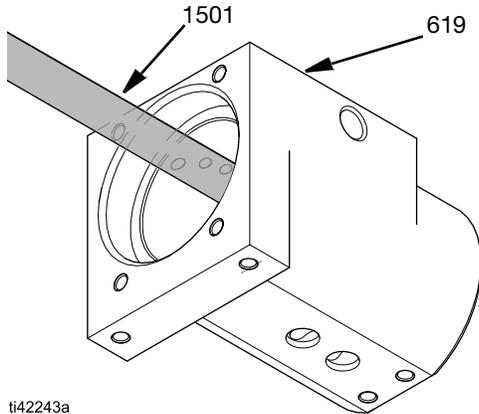
Ref.	Part	Description	Qty.			
			25U225	25U226	25U227	25U228
1400	15N115	BRACKET, connector, dual	1	1	1	1
1401	15N126	CONNECTOR, dual cable	1	1	1	1
1402	18C869	SENSOR, RTD	-	1	1	2
1403	18C870	TRANSDUCER, pressure, .5-4.5v, 350B	-	-	1	-
1404	17V808	SEAL, washer, 10mm	-	1	2	2

Protective Strips Kit 15N649

Ref.	Part	Description	Qty.
1501	15N649	Protective strips	5

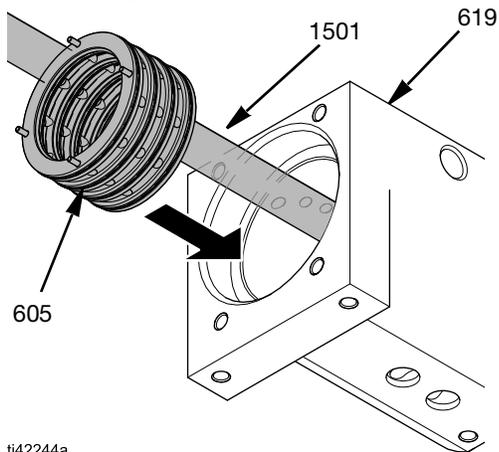
Protective Strip (Kit 15N649) Instructions

1. Lubricate both sides of a protective strip,
2. Place the strip over the three air inlet holes in the swivel housing (619).



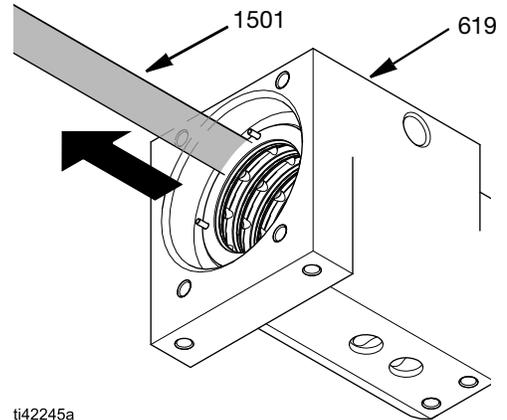
ti42243a

3. Install the seals (606) onto the air ring distributor adapter (605).
4. Insert the air ring distributor adapter (605) into the swivel housing (619).



ti42244a

5. Remove the protective strips.



ti42245a

Performance Charts

Pattern Width Versus Tip Sizes

The following tests were performed using a typical PVC seam sealer. See FIG. 39.

- 600,000 centipose
- Specific gravity 0.82

The graph below shows a fixed flow rate of 9.4 cc / sec and a fixed robot speed of 300 mm / sec.

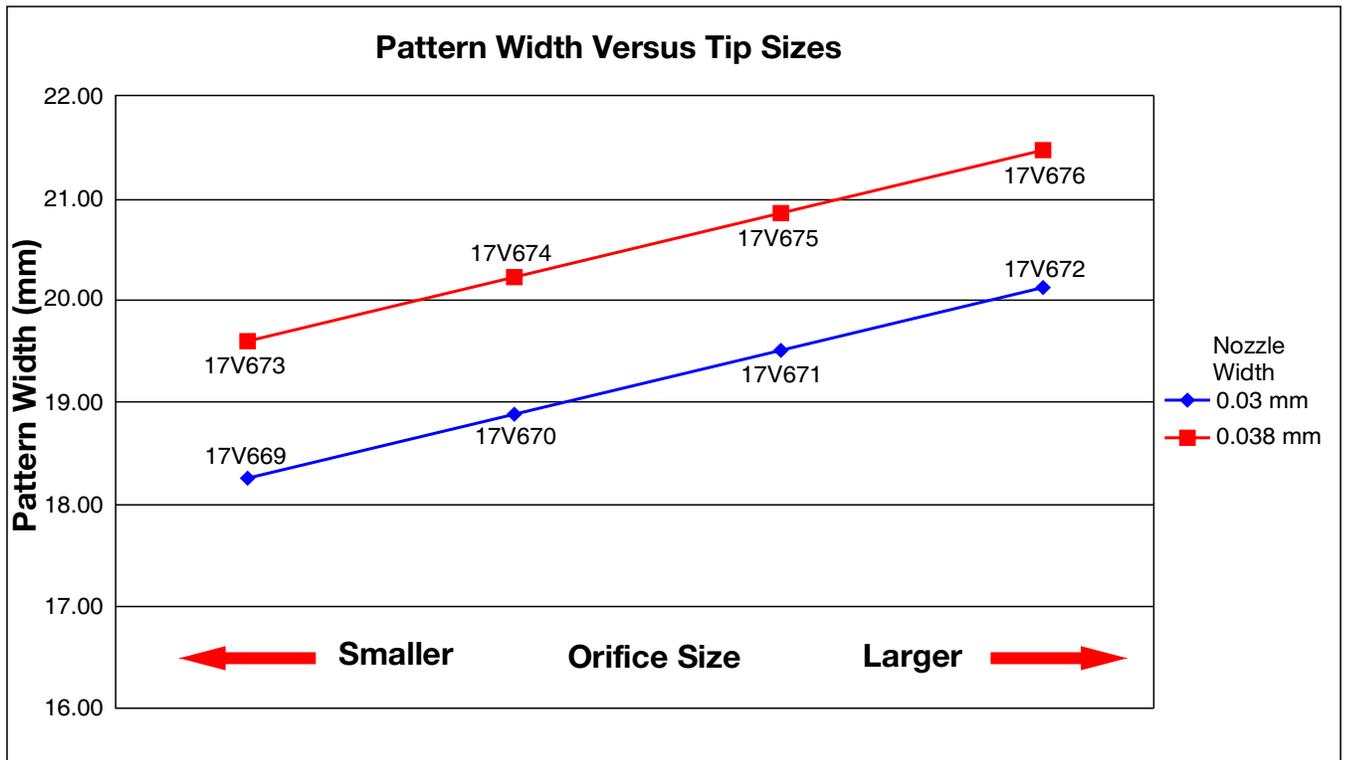


FIG. 39

Material Pressure Versus Tip Sizes

The graph below represents the pressures for each tip to achieve the width shown in the **Pattern Width Versus Tip Sizes** graph. See FIG. 39. Pressure data may be useful when choosing a tip size due to the pressure limitation of the metering equipment. See FIG. 40.

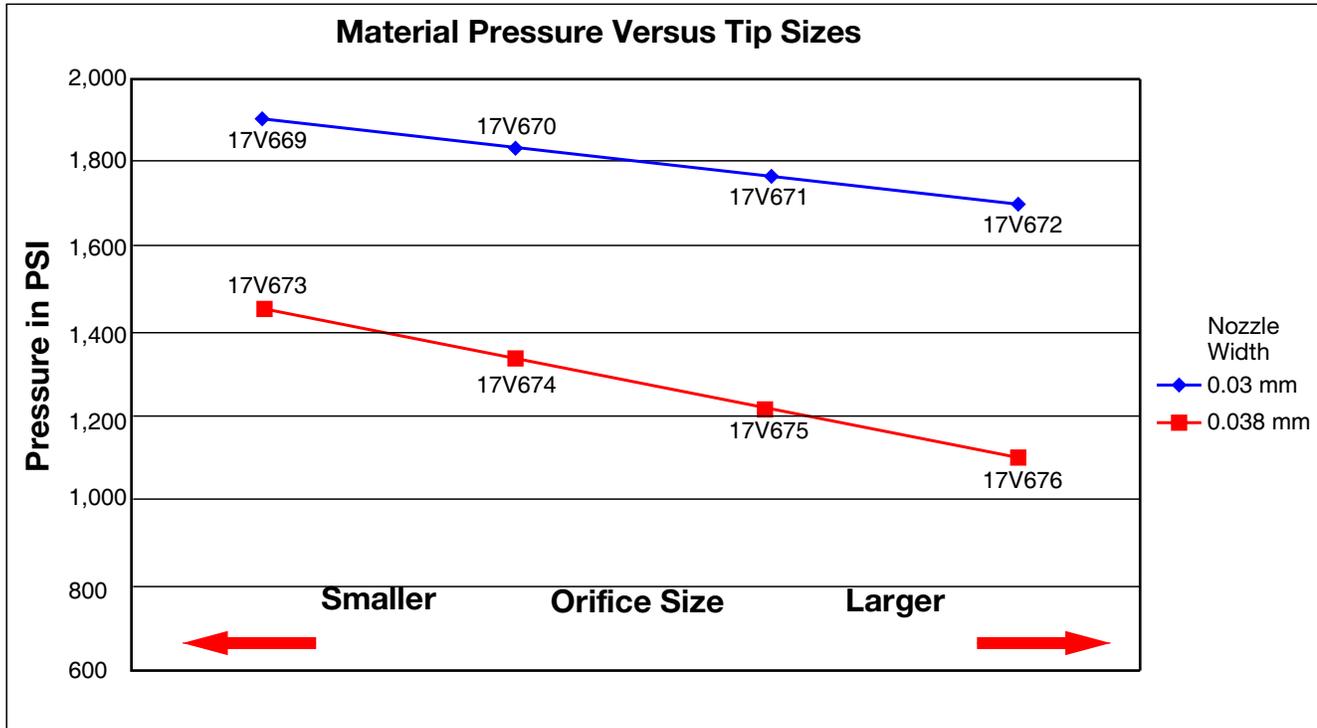


FIG. 40

Pattern Height / Width Versus cc/sec

Increasing the flow rate at the same robot speed will increase the width of the pattern and bead height. See FIG. 41

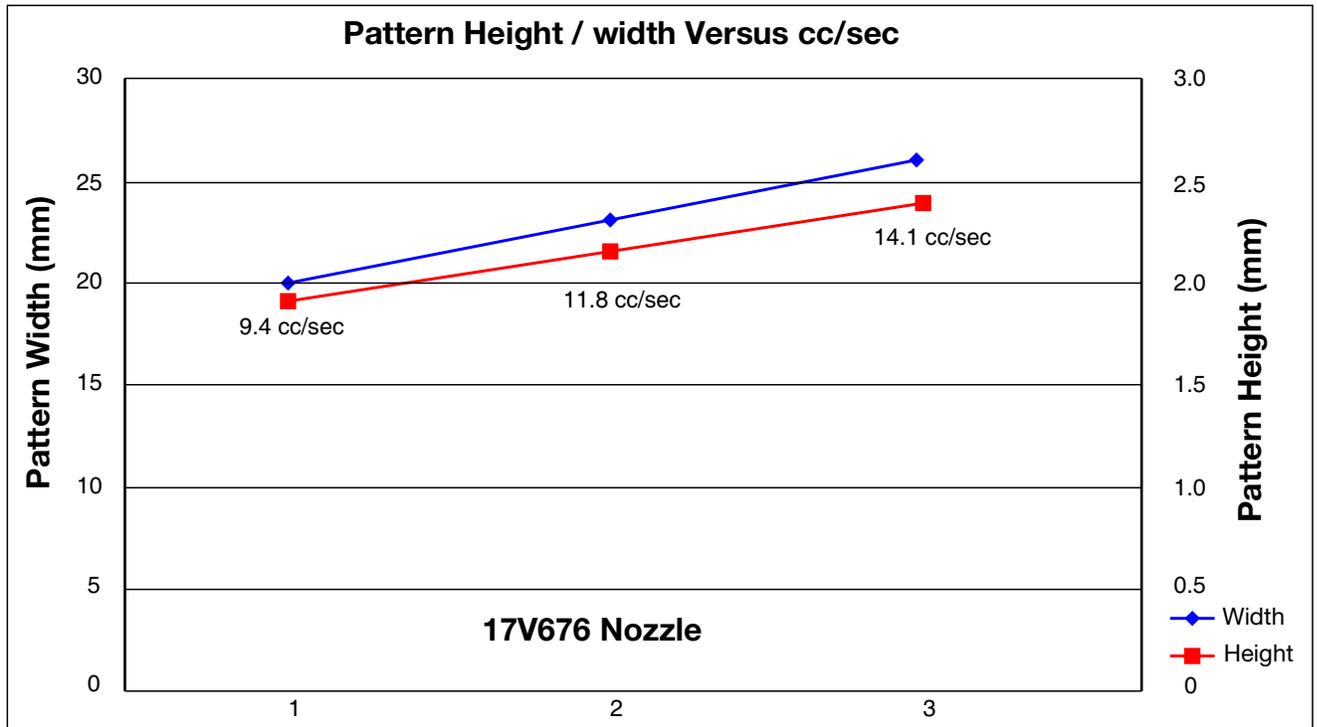


FIG. 41

Bead Pattern

Distance from the target affects the quality of the boundary layer between the sealer and the metal surface. Excessive distance can trap air in-between the bead and the metal surface, which could result in moisture penetrating between the layers. See FIG. 42**

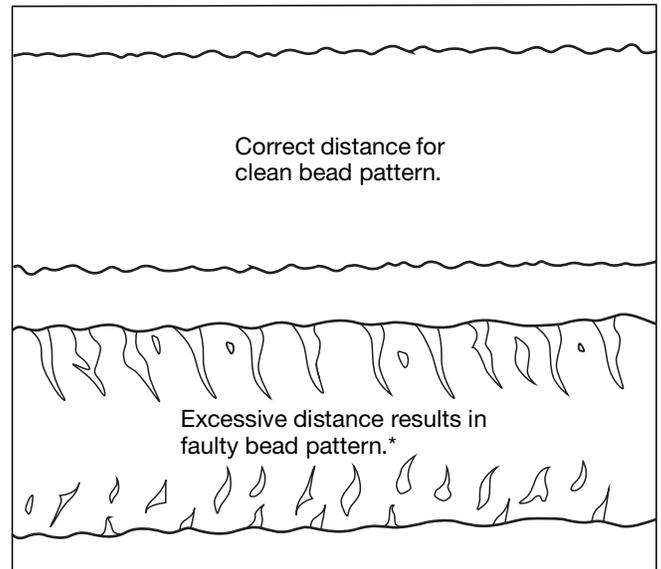


FIG. 42

* Your results may vary.

** Heat curing may reduce this effect.

Dimensions

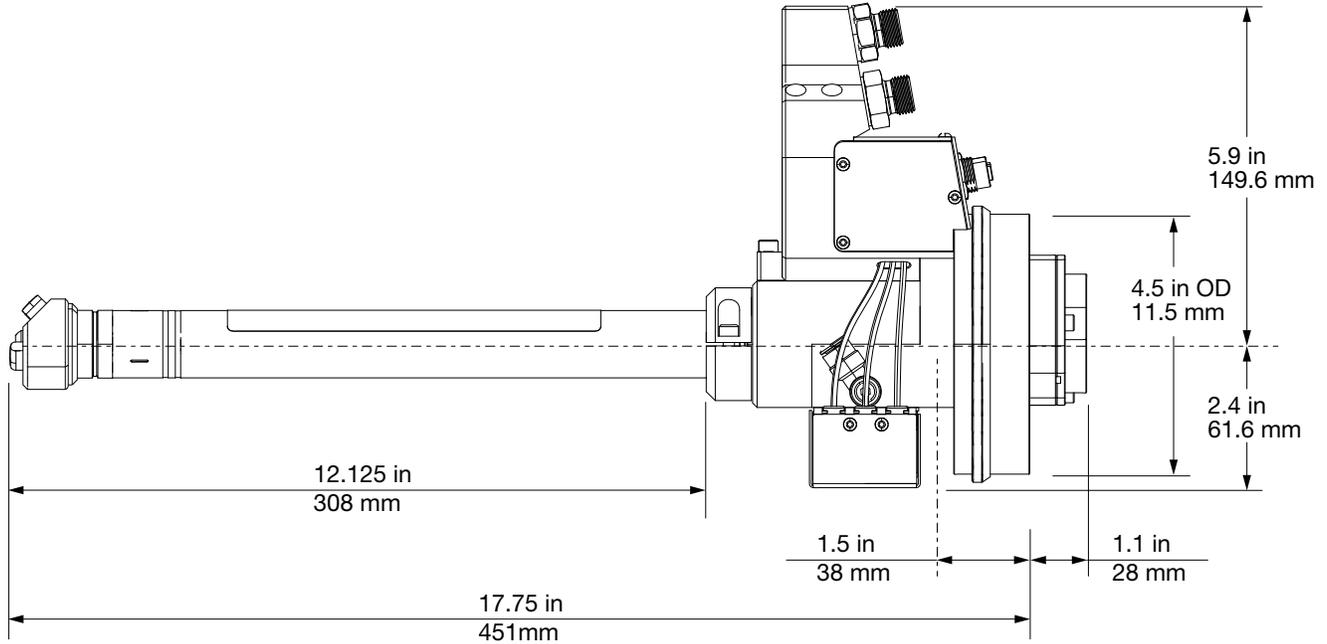


FIG. 43 Side View Typical for 17V558, 17V559, 17V561, 17V562, 17V563

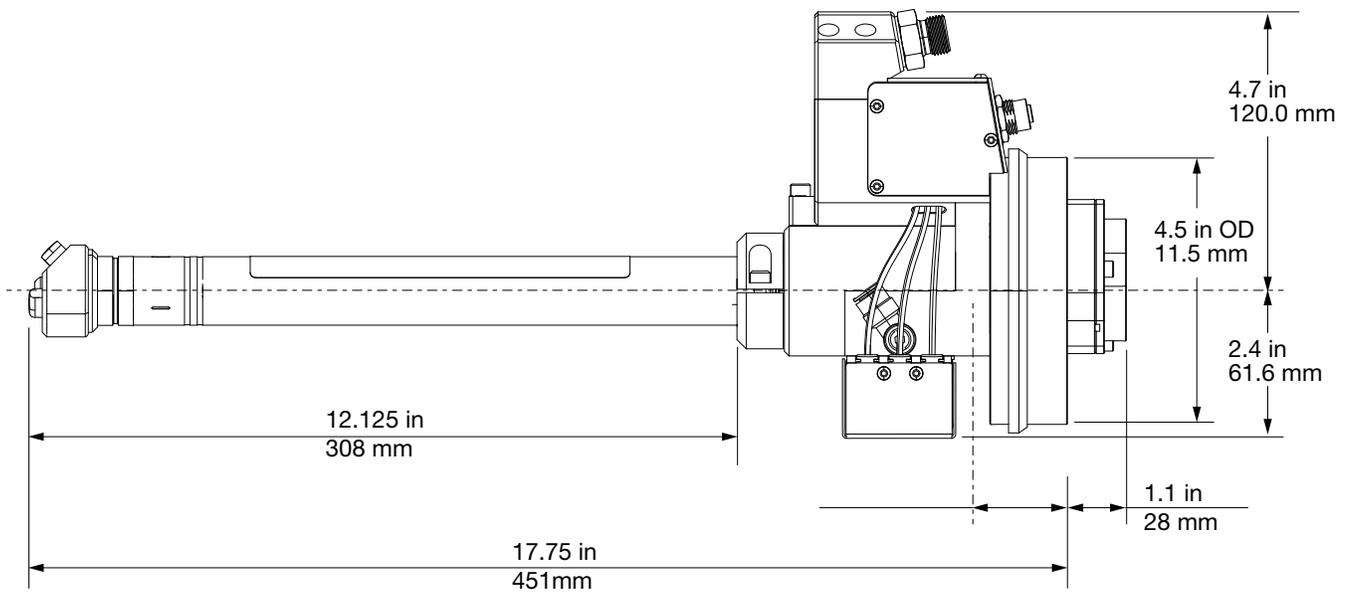


FIG. 44 Side View Typical for 17V564, 17V565, 17V567

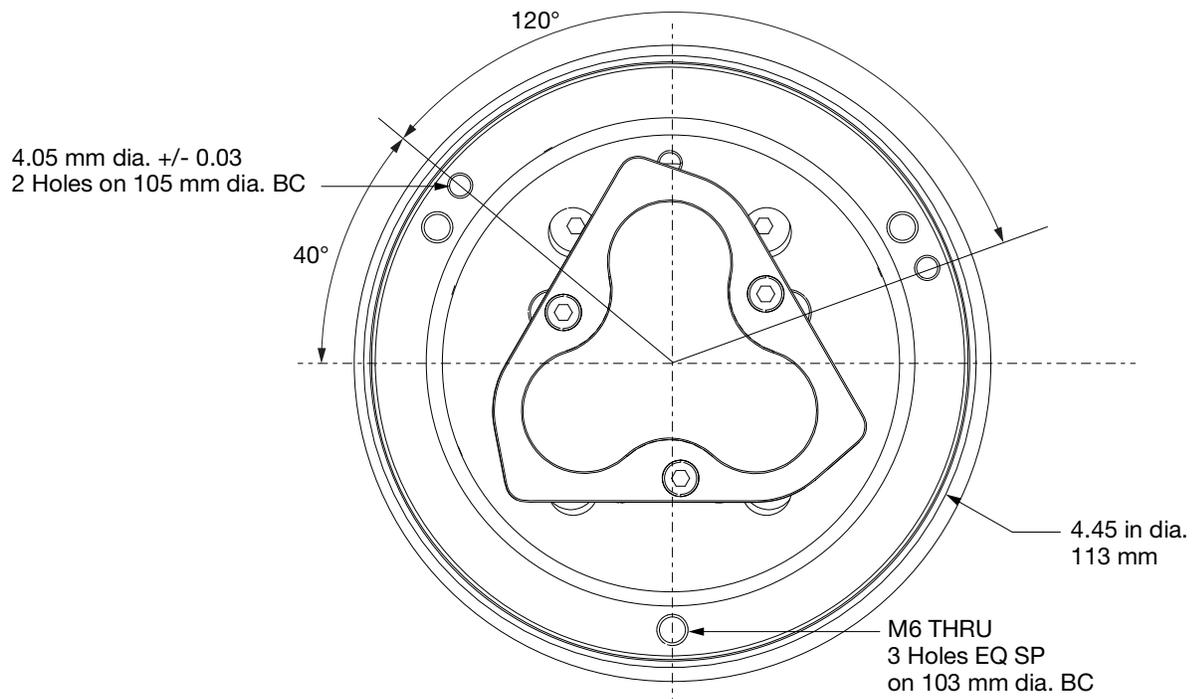


FIG. 45 Robot Mounting Flange Typical for all Switch 3D Guns

Wiring Diagrams

5 Pin and 8 Pin Connector

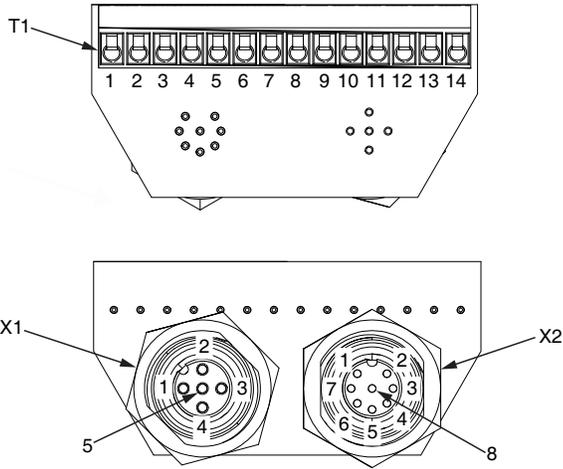
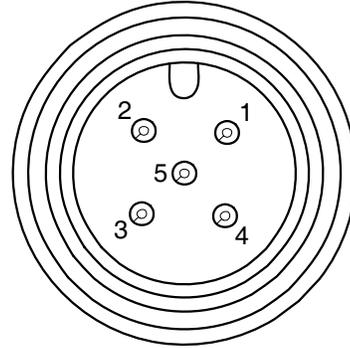


FIG. 46

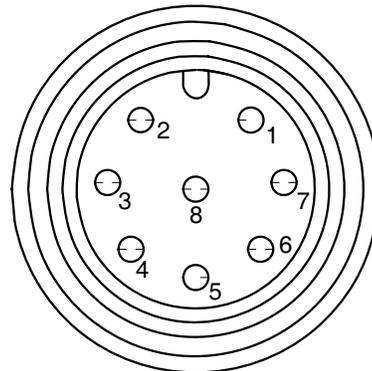
T1	X1	X2	Wire Color
1		6	Pink
2		4	Yellow
3		3	Green
4		2	Brown
5		8	Red
6		1	White
7		7	Blue
8		5	Grey
9	3		Blue
10	2		White
11	1		Brown
12	4		Black
13	4		Black
14	4		Black

5 Pin Cable Schematic



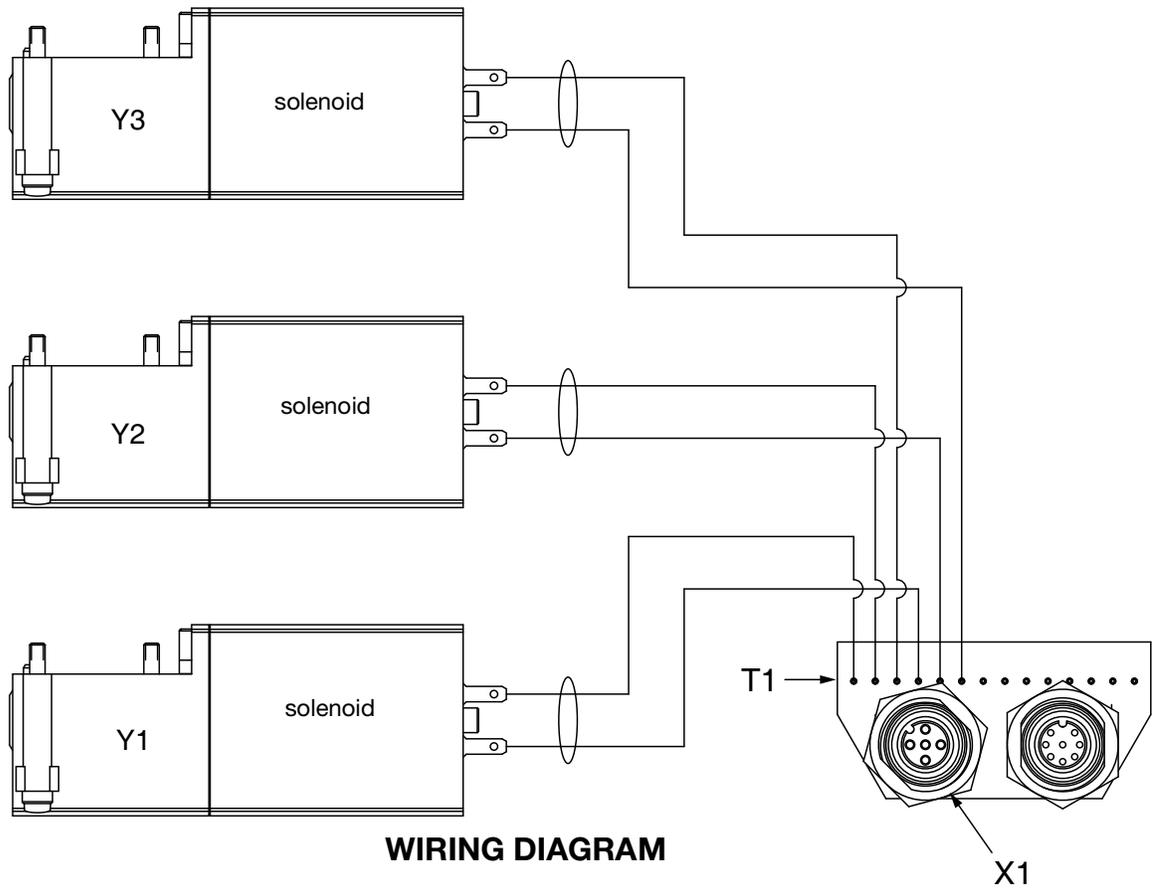
Pin No.	Wire Color
1	Brown
2	White
3	Blue
4	Black
5	Grey

8 Pin Cable Schematic

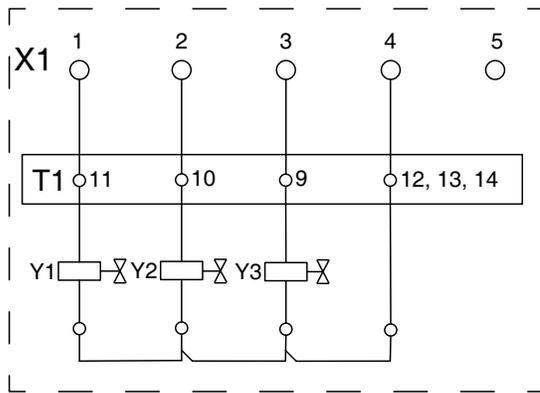


Pin No.	Wire Color
1	White
2	Brown
3	Green
4	Yellow
5	Grey
6	Pink
7	Blue
8	Red

5 Pin - No Sensor for 17V558, 17V562 and 17V564



WIRING DIAGRAM



SOLENOID WIRING SCHEMATIC

Fig. 47 Schematic for 17V558, 17V562 and 17V564

NOTE: See **Electrical Components** page 51 for specifications.

5 Pin and 8 Pin Connections for Temperature and Pressure Sensors. Model No. 17V559, 17V561, 17V565 and 17V567

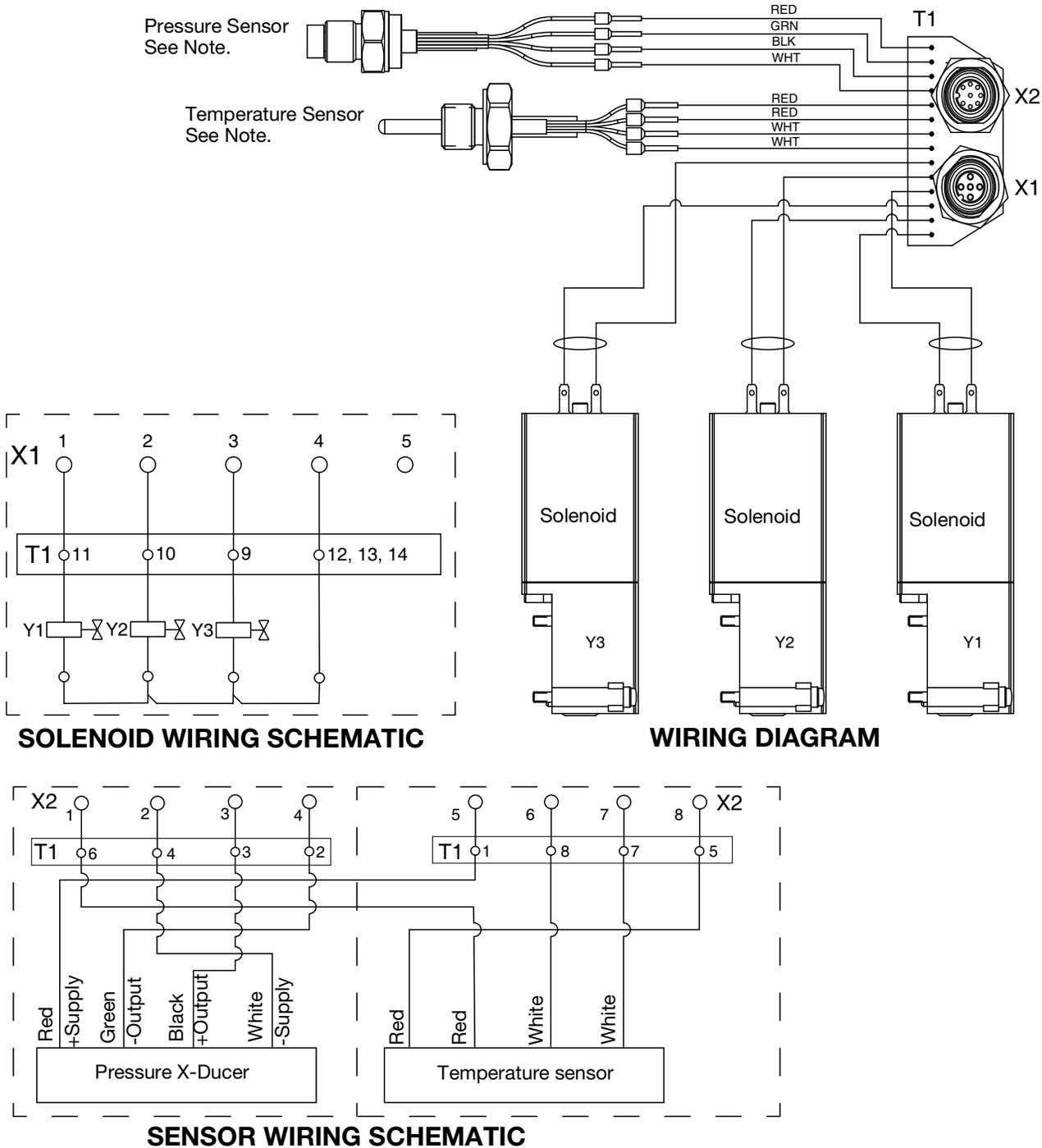


FIG. 48 Schematic for 17V559, 17V561, 17V565 and 17V567

NOTES:

1. For 17V561 and 17V567 use pressure transducer and temperature sensor.
2. For 17V559 and 17V565 use temperature sensor only.
3. See **Electrical Components** table page 51 for specifications.

5 Pin and 8 Pin- 2 Temperature Sensors for 17V563

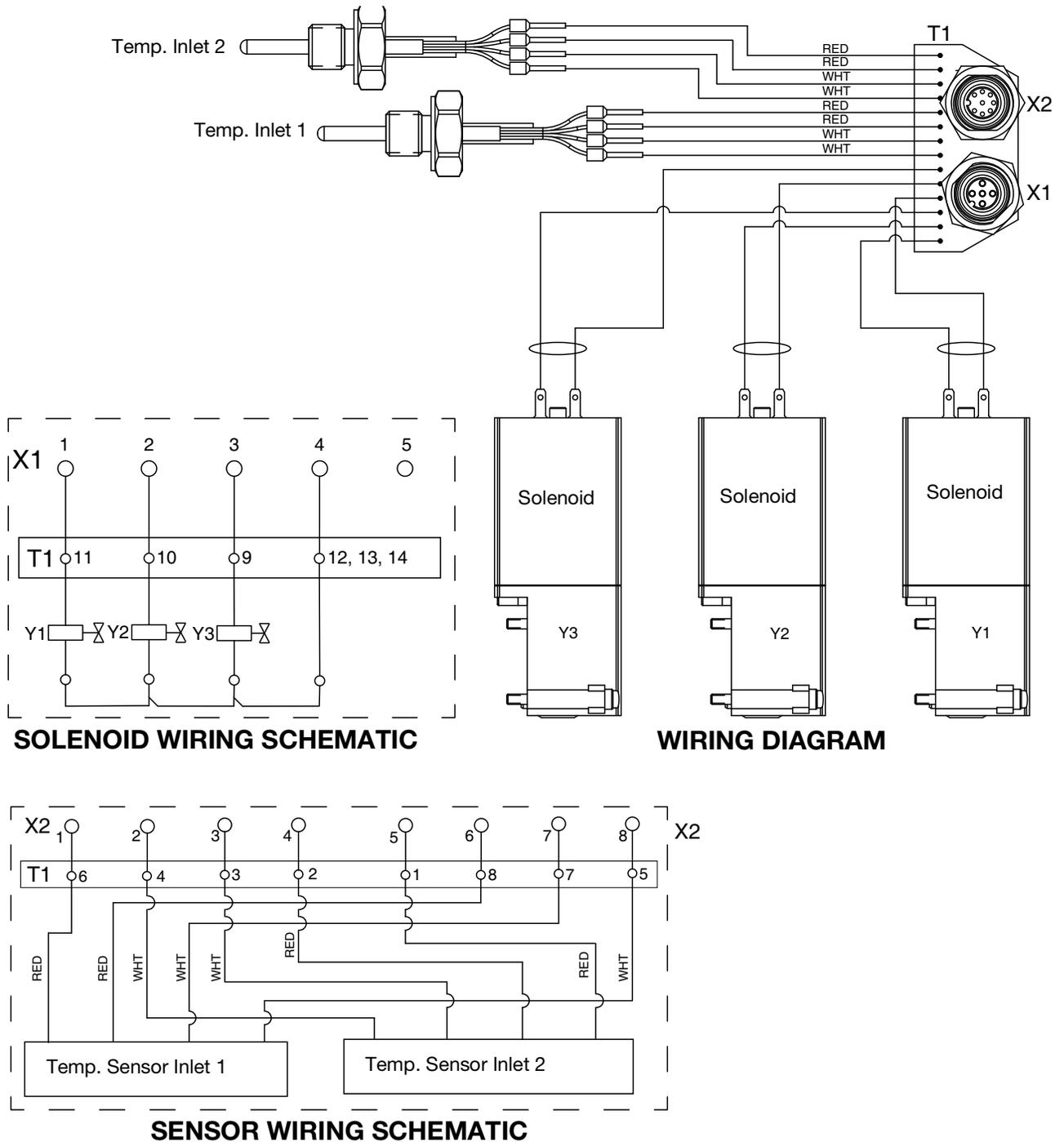


FIG. 49 Schematic for 17V563

NOTE: See **Electrical Components** page 51 for specifications.

Technical Specifications

Switch 3D Gun		
	US	Metric
Maximum fluid working pressure	3350 psi	23.1 MPa, 231 bar
Maximum fluid temperature	176° F	80° C
Minimum air pressure	80 psi	0.55 MPa, 5.5 bar
Maximum air pressure	116 psi	0.8 MPa, 8bar
Length	Varies by nozzle type; maximum: 20.16 in. / 516 mm	
Swivel height	6 in.	150 mm
Mounting Arrangement	Robot mounting flange	
Air ports	0.3 in	8 mm
Solenoid valve type	Mono stable 3/2 port	
Voltage	24 VDC	
Material Inlet		
All Models	Male 3/8 BSPP connector	
Material Return		
17V558, 17V559, 17V561	Male 3/8 BSPP connector	
17V562, 17V563, 17V564, 17V565, 17V567	N/A	
Torque Requirement		
M 2.5, screw	7.1 in-lb	0.8 N•m
M 3, Screw	12 in-lb	1.35 N•m
M 4, Screw	29.2 in-lb	3.3 N•m
M 5, Screw	57.5 in-lb	6.5 N•m
M 6, Screw	98.2 in-lb	11.1 N•m
M 8, Screw	235.4 in-lb	26.6 N•m
3/8 BSPP, Nipple	30-35 ft-lbs	41-48 N•m
Shaft Rotational Load		
All models	62-159.3 in-lb, 0 - 3335 psi	7-18 N•M 0 - 230 bar
Normal Shaft rotational load		
0 bar	65 in-lb	7.3 N•m
100 bar	79.7 -110 in-lb	9 - 12.43 N•m
200 bar	106.2 - 135 in-lb	12 - 15.25 N•m
Nozzle Angles		
All models	0 45 75	
Pin Contact Number		
17V558, 17V564, 17V562	5 Pin	
17V559, 17V561, 17V563, 17V565, 17V567	18 Pin	
Weight		
All Models	10.1 lb.	
Wetted Parts		
All Models	UHMW PE, Stainless Steel, Aluminum, Tungsten Carbide, Acetal, FKM, PTFE	

Electrical Components

Part Number	Description	Electrical Rating
17V829	Sensor, Temperature	100 ohm platinum rtd sensor
17X657	Transducer (350 bar, 5000 psi)	24 Vdc input, 0.5 to 4.5 Vdc output
17V890	Solenoid	24 Vdc: 2.88W

California Proposition 65

CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Original instructions. This manual contains English. MM 3A8004

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

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