POP® Rivet Tool

5400 Series Rivet Tools

PRT5400 / PRT5400LS / MCS5400 / MCS5400LS

Operator and Maintenance Manual

Emhart® Teknologies

POP®

INSTRUCTION MANUAL

WARNING: SERVICE PROCEDURES SHOULD BE PERFORMED ONLY BY TRAINED SERVICE PERSONNEL.

IMPORTANT

READ THE FOLLOWING SAFETY INSTRUCTIONS CAREFULLY.

DISCONNECT TOOL FROM AIR SUPPLY BEFORE ATTEMPTING SERVICE.

SERVICE SHOULD ONLY BE PERFORMED BY TRAINED PERSONNEL.

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SAFETY INSTRUCTIONS

1. Always wear ***eye protection*** when operating the tool.
2. To avoid injury ***do not point the tool at anyone.***
3. ***Do not exceed recommended maximum air pressure*** (100 psi max.).
4. ***Disconnect the tool from the air supply*** when not in use for an extended period of time or before proceeding with any maintenance procedures. Take care to control air hoses when disconnecting to prevent whipping.
5. ***Do not attempt to operate the tool with the Nose Housing removed.*** This exposes potential pinch points and could result in injury.
6. ***Do not tamper with the Clamp Screws or Fill Screw.*** Loosened screws may result in malfunction or injury due to air or hydraulic pressure.
7. ***Do not operate the tool without either the deflector (PRT Option) or the collector (MCS Option) installed on the tool.*** Spent rivet mandrels may be forcefully ejected.
8. ***Always clear the tool of spent rivet mandrels*** before setting a new fastener. Failure to do so may result in tool jams or forceful ejection of spent mandrels.
9. ***Use caution when holding the tool at an angle*** since compressed air is released through the Intensifier Chamber and may be directed toward the operator. Do not direct exhaust towards anyone.
10. Inspect the tool at regular intervals for damage and proper function. ***Replace damaged parts immediately. Do not connect a damaged tool to an air supply.***
11. ***Use only genuine Pop® brand replacement parts.***

DESCRIPTION AND MODEL IDENTIFICATION

The 5400 Series tools are lightweight air-hydraulic Rivet Tools capable of setting all commercial blind rivets up to and including 1/4" (6.4mm) diameter in all materials. Four models are available.

PRT5400	Standard model without mandrel collector.
MCS5400	Standard model with automatic vacuum mandrel collector attached.
PRT5400LS	Long stroke version without mandrel collector.
MCS5400LS	Long stroke version with automatic vacuum mandrel collector attached.

To determine model check length and height specifications or shipping carton label. Models PRT5400 and MCS5400 are shipped set up for 3/16" (4.8 mm) and smaller diameter rivets. A simple front end parts change is required to for setting larger diameter rivets. Refer to Service Procedures, Section 1 of this manual for more information. All the necessary parts are included in the carton. Models PRT5400LS and MCS5400LS are shipped set up for 1/4" (6.4 mm) diameter rivets. Parts to convert for smaller rivets are included in the carton.

PACKED IN CARTON - MODELS PRT5400 and MCS5400

Part Number	Part Name	Data
Model 5400	Rivet Tool	Assembled with air line
PRG540-56	Deflector	Safety device - PRT5400 (LS) only
MCS5400-8	Collector bottle	MCS5400(LS) only
PRT5500-8	Jaw Pusher	1/4" (6.4mm) diameter rivets
PRG540-44	Jaws	1/4" (6.4mm) diameter rivets
PRN414	Nosepiece	1/8" (3.2mm) open end rivets
PRN514	Nosepiece	5/32" (4.0mm) open end rivets
PRN811	Nosepiece	1/4" (6.4mm) open end rivets
PRG540-127	Screw	Use for Hydraulic oil replacement
P342	Operator's Instructions	
P343	Instruction Manual	

PACKED IN CARTON - MODELS PRT5400LS and MCS5400LS

Part Number	Part Name	Data
Model 5400	Rivet Tool	Assembled with air line
PRG540-56	Deflector	Safety device - PRT5400 (LS) only
MCS5400-8	Collector bottle	MCS5400(LS) only
PRT5500-6	Jaw Pusher	3/16" (4.8mm) and smaller dia. rivets
PRG540-46	Jaws	3/16" (4.8mm) and smaller dia. rivets
PRG540-43	Mandrel Guide Tube	3/16" (4.8mm) and smaller dia. rivets
PRN414	Nosepiece	1/8" (3.2mm) open end rivets
PRN514	Nosepiece	5/32" (4.0mm) open end rivets
PRN614	Nosepiece	3/16" (4.8mm) open end rivets
PRG540-127	Screw	Use for Hydraulic oil replacement
P342	Operator's Instructions	
P343	Instruction Manual	

SPECIFICATIONS

	PRT5400	MCS5400
Weight:	2.1 Kg (4.63 lbs.)	2.25 Kg (4.96 lbs.)
Length:	296.75mm (11.68 in.)	322.10mm (12.66 in.)
Height:	306.23mm (12.13 in.)	306.23mm (12.13 in.)
Stroke:	18mm (.708 in.)	18mm (.708 in.)
Pulling Force:	15.1 kN (3400 lbs.)	15.1 kN (3400 lbs.)
Operating Pressure:	5.8 bar (85 psi.)	5.8 bar (85 psi.)
Air Consumption:	.57 litres/rivet (.02 cu.ft.)	.57 litres/rivet (.02 cu.ft.) +.057 cu.m/min. (2 scfm)

	PRT5400LS	MCS5400LS
Weight:	2.15 Kg (4.74 lbs.)	2.3 Kg (5.07 lbs.)
Length:	304.75mm (12.00 in.)	326.49mm (12.93 in.)
Height:	336.59mm (13.25 in.)	336.59mm (13.25 in.)
Stroke:	26mm (1.02 in.)	26mm (1.02 in.)
Pulling Force:	15.1 kN (3400 lbs.)	15.1 kN (3400 lbs.)
Operating Pressure:	5.8 bar (85 psi.)	5.8 bar (85 psi.)
Air Consumption:	.78 litres/rivet (.028 cu.ft.)	.78 litres/rivet (.028 cu.ft.) +.057 cu.m/min. (2 scfm)

THEORY OF OPERATION

When the tool is connected to an air supply and the Trigger is operated, pressurized air pushes the air piston which acts on the Hydraulic Ram Assembly. The Hydraulic Ram Assembly forces hydraulic fluid from the reservoir in the handle into the main hydraulic bore where it moves the hydraulic piston together with the attached pulling mechanism rearward. As the pulling Jaws move rearward they close on and grip the rivet mandrel and set the rivet.

When the trigger is released air at line pressure forces the hydraulic piston forward to the starting position. As the hydraulic piston moves forward the hydraulic fluid is also forced back returning the hydraulic fluid and the Ram Assembly and air piston to the starting position. The compressed air used to set the rivet is quietly exhausted through the base of the Intensifier Chamber. When the hydraulic piston is fully returned the broken rivet mandrel is released as the Jaws are forced open again by the Nosepiece.

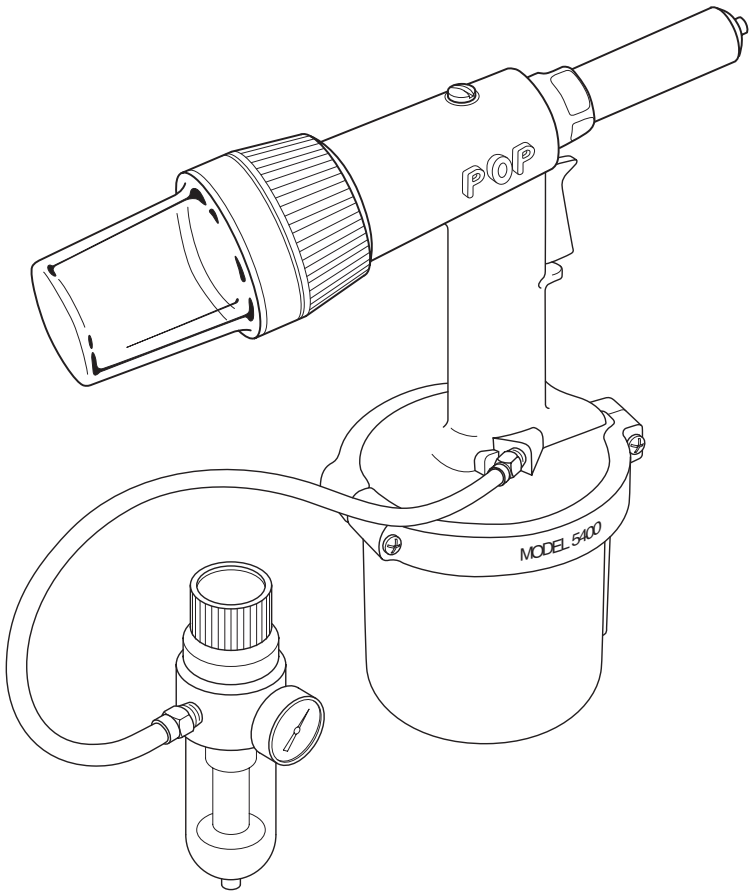
If the tool is equipped with a Mandrel Collection System (MCS models) the mandrel will be drawn out of the tool and deposited in the Collector Bottle.

PREPARATION FOR OPERATION

CAUTION:
Do not connect to air supply until all tool parts are properly installed.
Wear eye protection when operating this tool.

AIR SUPPLY REQUIREMENTS

1. **Use a dry, filtered air supply regulated to 75 - 85 psig (5 - 6 bar).** A minimum of 3.0 scfm (85.0 liters / min.) is recommended. It is not necessary and undesirable to lubricate the air supply. Excess oil, water or debris in the air supply will necessitate more frequent tool service and significantly reduce the operating efficiency of the Mandrel Collection System. If the recommended operating pressure is exceeded the tool may not function because there is a built in pressure limiter.
2. For optimum performance connect the tool air line to an air supply line at least as large in diameter as the air line supplied with the tool - 6.35mm (1/4 in.) minimum.
3. A lightweight, 6' (1.83 m) air line is supplied attached to the tool to minimize operator fatigue. Attaching an air line coupler at the tool adds weight and changes the balance of the tool.



PRT5400 / MCS5400

1. Select and attach the appropriate Nosepiece (**12-A, 12-B, 12-C**) based on the rivet size / mandrel diameter. The PRT5400 and MCS5400 Models arrive assembled with Nosepiece 12-C suitable for 3/16" (4.8mm) diameter open end rivets. To convert for smaller size rivets it is only necessary to change the Nosepiece.
2. To set up the tool for 1/4" (6.4mm) diameter open end rivets attach Nosepiece **12-D**, install Jaws **3-B**, and Jaw Pusher **22-B** and **remove** Mandrel Guide Tube **71**. Refer to **SERVICE PROCEDURES.** A wide variety of Nosepieces are available from your POP distributor for special rivets and special applications or to improve access problems.
3. Attach Deflector **47** or Collector **58** before operating tool.

PRT5400LS / MCS5400LS

1. Select and attach the appropriate Nosepiece (**12-A, 12-B, 12-C, 12-D**) based on the rivet size / mandrel diameter. The PRT5400LS and MCS5400LS Models arrive assembled with Nosepiece **12-D** suitable for 1/4" (6.4mm) diameter open end rivets.
2. To convert for smaller size rivets attach the appropriate Nosepiece (**12-A, 12-B, 12-C**) and install Jaws **3-A**, Jaw Pusher **22-A** and Mandrel Guide Tube **71**. Refer to **SERVICE PROCEDURES.**
3. Attach Deflector **47** or Collector **58** before operating tool.

Note: Numbers in **bold type** refer to call out numbers in illustration.

OPERATION

1. Attach Air Line **72** to air supply.
2. If so equipped, turn on the Mandrel Collection System by rotating the Switch/Deflector Ring **67** on the Mandrel collector until one of the indicators is aligned with the arrow on the top of the tool. There are three **ON** positions so that the air exhaust may be directed away from the operator.
3. Insert a rivet mandrel into the Nosepiece **14**. If the tool is equipped with a Mandrel Collection System (MCS Models) the rivet will be held in the tool by vacuum.
4. Guide the tool until contact is made between the face of the rivet head and the outer surface of the piece to be riveted.
5. Squeeze the trigger **13** to set the rivet. Once the rivet is set, release the trigger. If using a PRT5400 or PRT5400LS be sure to clear the mandrel from the tool by tipping the tool to let the mandrel slide either out the front or out the back of the tool. If using the MCS5400 or MCS5400LS the mandrel will be automatically propelled into the mandrel Collector Bottle.

Caution: *Read the* **Operator Instruction Leaflet** *before operating the tool.*

SERVICE PROCEDURES

CHANGING TOOL SET UP FOR DIFFERENT RIVET SIZES

To prevent mandrel jams from occurring and to maximize jaw life it is important to install the correct Nosepiece, Jaws, Jaw Pusher and Mandrel Guide tube.

For **3/16" (4.8mm)** diameter or smaller rivets use the following parts:

Item **3** Jaws, Part No. PRG540-46
Item **22** Jaw Pusher, Part No. PRT5500-6
Item **71** Mandrel Guide Tube, Part No. PRG540-43
Item **12** Nosepiece - PRN414 for 1/8" (3.2mm) diameter rivets
PRN524 for 5/32" (4.0mm) diameter rivets
PRN614 for 3/16" (4.8mm) diameter rivets

For **1/4" (6.4mm)** diameter rivets use the following parts:

Item **3** Jaws, Part No. PRG540-44
Item **22** Jaw Pusher, Part No, PRT5500-8
Item **12** Nosepiece - PRN811 for 1/4" (6.4mm) diameter rivets
(no Mandrel Guide Tube is required)

Equipment Needed: 7/16" (11mm) O.E. Wrench
Two adjustable wrenches 1" (26mm) or larger
Soft-jawed vise

Procedure

1. Place the tool in a soft-jawed vise, gripping the tool in the center of the handle.
2. Remove the Nosepiece **12**.
3. Remove the Nose Housing **44**.
4. Remove the Jaw Guide **11**, Jaws **3** and Jaw Pusher **22**.
5. Insert (or remove) the Mandrel Guide Tube **71** into the Jaw Pusher Spring **5**.
6. Install the correct Jaw Pusher **22**.
7. Install the correct Jaws **3**.
8. Re-install the Jaw Guide **11** and tighten to torque specifications in Table 1.
9. Replace the Nose Housing **44** and tighten to torque specifications in Table 1.
10. Install correct Nosepiece **12** and tighten to torque specifications in Table 1.

Note: Numbers in **bold type** refer to call out numbers in illustration.

SERVICING THE JAWS, JAW PUSHER AND JAW PUSHER SPRING

Regularly cleaning the Jaws and front end parts will prevent mandrels sticking in the Jaws and extend the life of the Jaws.

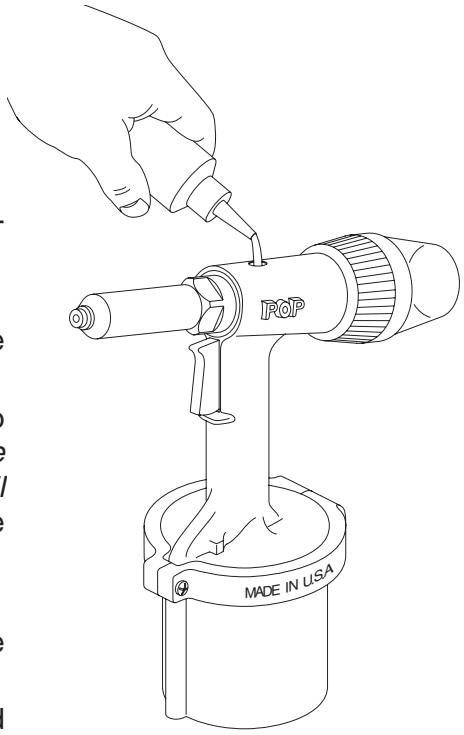
1. Disassemble the tool front end as described above. Clean Jaws **3** using a brush and solvent. If jaw teeth show significant wear replace both jaws.
2. Check Jaw Pusher Spring **5** for fatigue. A new spring measures 2-1/8" (54mm) in length. Replace spring if shorter than 1-7/8" (46mm).
3. Thoroughly clean the inside of the Jaw Guide **11**, Nose Housing **44**, the Jaw Pusher **22** and wipe out or blow out debris from around other exposed parts.
4. Lightly oil Jaws **3** and Jaw pusher **22** before reassembling.
5. Reassemble parts in reverse order tightening Jaw Guide **11**, Nose Housing **44** and Nosepiece **12** to torque specifications in Table 1.

REPLENISHMENT OF HYDRAULIC FLUID

A shortened stroke indicates minor hydraulic fluid loss. Small amounts of fluid can be replaced without disassembling the tool.

> **Caution: The tool must be disconnected from the air supply before attempting to replenish hydraulic fluid.**

Equipment Needed: Oil Replacement Screw, 3/8" - 24 Socket Head Cap Screw
Large slotted screwdriver
Hydraulic Fluid
Soft jawed vise
7/16" (11mm) open end wrench



Procedure

1. Place the tool in a soft-jaw vise, making sure the Fill Screw **10** is pointing up.
2. Remove the Nosepiece **12**, the Fill Screw **10** and Seal Washer **4**.
3. Screw the Oil Replacement Screw into the Nose Housing where the Nosepiece **12** was removed. Tighten only until resistance is felt.
4. To properly add fluid, the Hydraulic Piston **26** must be pushed back. To do this, *simultaneously turn the Oil Replacement Screw into the Nose Housing (approximately 8-10 turns of the screw) while adding the oil one drop at a time through the Fill Screw opening.* Do not tighten the Oil Replacement Screw since internal tool damage may result.
5. Allow bubbles to rise out of the oil and top off if necessary.
6. Reinstall Fill Screw **10** and Seal Washer **4**. Tighten securely. For torque specifications see Table 1.
7. Remove the Oil Replacement Screw. Replace the Nosepiece **12** and tighten securely.
8. Reconnect the air supply.
9. Loosen Fill Screw **10** very slightly, allowing excess oil to be forced out.

> **Caution: Do not depress the trigger when Fill Screw 10 is loose. This will cause oil to be forced out under great pressure.**

10. Wipe tool clean and tighten Fill Screw **10** to torque specifications in Table 1.

If oil loss is rapid or excessive, refer to the service manual for seal replacement procedures.

Note: Numbers in **bold type** refer to call out numbers in illustration.

PRT5400, MCS5400, PRT5400LS, MCS5400LS DISASSEMBLY & ASSEMBLY INSTRUCTIONS

IMPORTANT

READ SAFETY INSTRUCTIONS ON PAGE 2 OF INSTRUCTION MANUAL.
DISCONNECT TOOL FROM AIR SUPPLY BEFORE ATTEMPTING SERVICE.
SERVICE SHOULD BE PERFORMED BY TRAINED PERSONNEL ONLY.

SERVICE NOTES

All disassembly procedures should be performed in a clean, well lighted work area. O-rings, seals and sealing surfaces should be lightly lubricated with a white mineral oil based grease such as Lubriplate 130-AA or equivalent prior to assembly. Do not use solvents other than approved hydraulic fluid to clean O-rings or seals. Numbers in bold type in this manual refer to item numbers in illustrations.

RECOMMENDED TOOLS AND EQUIPMENT

Soft jawed vice
Cross recess screw driver
Large slotted screw driver
Small slotted screwdriver
Torque wrench
Small machinist's hammer
Narrow nose pliers
Hydraulic fluid
Clean soft rags
Small wire brush for jaws
Set of adjustable open end wrenches
19mm (3/4 inch) deep socket wrench
2mm (.080 inch) pin punch
Torque screwdriver
Internal retaining ring pliers
Slip joint pliers
Lubriplate 130-AA or equivalent

FRONT END ASSEMBLY

1. Place the tool in a soft jawed vise with the Nose Housing **44** pointing **upward**. Grip the tool gently on the aluminum casting in the middle of the handle grip area.
2. Remove Nosepiece **12**.
3. Remove Nose Housing **44**.
4. Remove Jaw Guide **11**.
5. Remove Jaws **3** and Jaw Pusher **22**.
6. Remove Mandrel Guide Tube **71** if so equipped.
7. Remove Jaw Pusher Spring **5**.

ASSEMBLE IN REVERSE ORDER

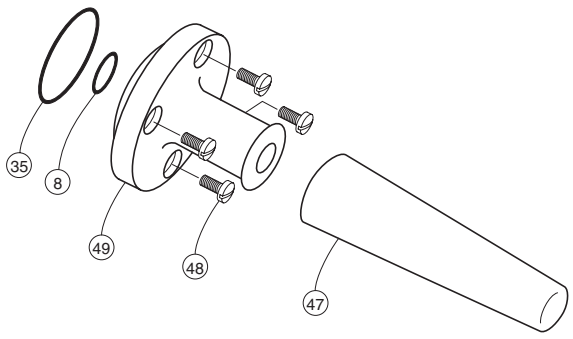
Assembly Notes:

1. Clean all parts including the serrated teeth of the Jaws, the inside of the Jaw Guide, between the Pulling Head Adaptor **28** and the Wiper Retainer Washer **24** and the inside of the Nose Housing. Replace any worn or damaged parts before reassembling.
2. Check to see if the Jaw Pusher Spring **5** has been shortened by use. Replace spring if shorter than 48mm (1-7/8 inches).
3. Lubricate Jaws **3** and Jaw Pusher **22** before reassembling.
4. Tighten Jaw Guide **11**, Nose Housing **44** and Nosepiece **12** to torque specifications in Table 1.

Note: Numbers in **bold type** refer to call out numbers in illustration.

HANDLE CAP ASSEMBLY (PRT OPTION)

1. Remove Deflector **47**.
2. Remove Handle Cap Screws **48**.
3. Pull off Handle Cap **49**.
4. Remove O-rings **8** and **35**.



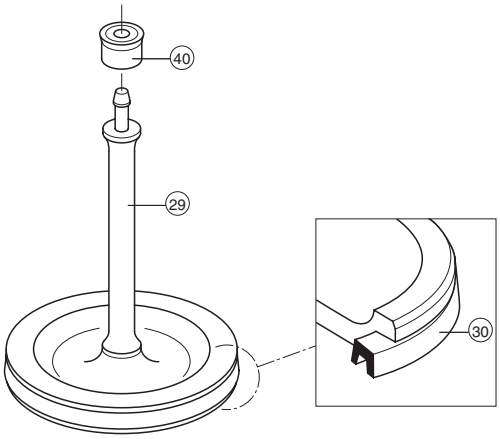
ASSEMBLE IN REVERSE ORDER

Assembly Notes:

1. Lubricate O-rings prior to installation.
2. Tighten Handle Cap Screws **48** to torque specification in Table 1.

INTENSIFIER ASSEMBLY (PNEUMATIC PISTON)

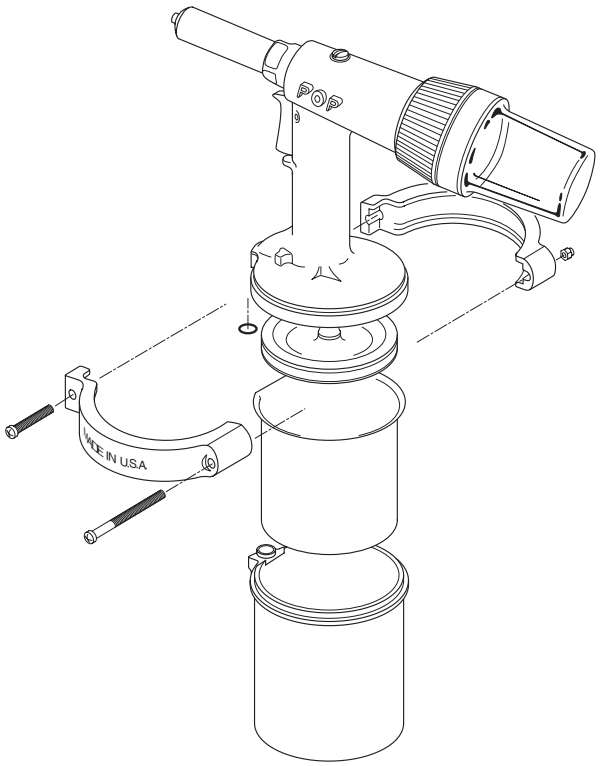
1. Loosen the Fill Screw **10**.
2. Place the tool in a soft jawed vise with the Intensifier Chamber **45** up. Grip the tool gently on the aluminum casting in the middle of the handle grip area.
3. Remove Clamp Screws **37** and **38**, Clamp Nuts **23**, Right Clamp **42** and Left Clamp **43**.
4. Remove Intensifier Chamber **45**, Intensifier Chamber Sleeve **46** and O-ring **8**. Pull out the Intensifier Chamber Sleeve **46** and remove Grommet **21**.
5. Slowly withdraw the Intensifier Assembly **29** by pulling up on the air piston.
6. Remove the Ram Seal **40** from the Ram using a plastic or wooden wedge to push the seal off the end of the Ram. Take care not to damage the sealing surfaces of the Ram stem.
7. Remove Air Piston Seal **30**.



ASSEMBLE IN REVERSE ORDER

Assembly Notes:

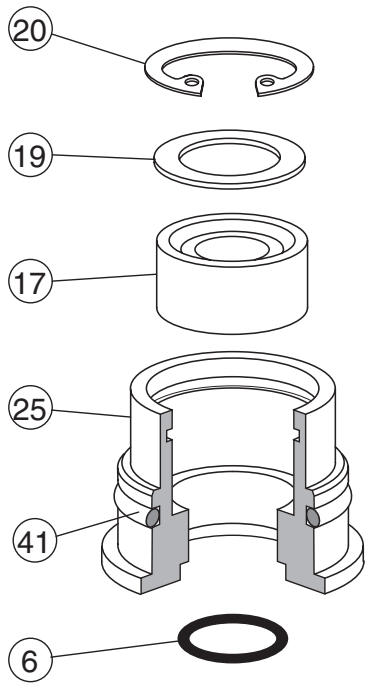
1. Lubricate all O-rings and seals prior to installation.
2. Lubricate the inside of the Intensifier Chamber Sleeve **46** prior to assembly.
3. Fill tool with hydraulic fluid prior to installation of Intensifier Assembly **29**. Refer to **HYDRAULIC FLUID CHARGING PROCEDURE** in this manual.
4. Tighten Fill Screw **10** and Clamp Screws and Nuts **37**, **38** and **23** to torque specifications in Table 1.



Note: Numbers in **bold type** refer to call out numbers in illustration.

PULLING HEAD ASSEMBLY (HYDRAULIC PISTON)

1. Remove Nose Housing **44** (steps 1-7 in the **FRONT END ASSEMBLY** section of this manual), Intensifier Chamber **45** and Intensifier Assembly **29** (steps 1-3 in the **INTENSIFIER ASSEMBLY** section of this manual).
2. Remove Handle Cap Assembly **49** (PRT Option - see **HANDLE CAP ASSEMBLY** section of this manual) or Mandrel Collection System Assembly (MCS Option - see **MANDREL COLLECTION SYSTEM ASSEMBLY** section of this manual).
3. Loosen but do not remove the Fill Screw **10**. Remove the tool from the vise. Invert the tool over a container to drain hydraulic fluid from the Ram Sleeve **32**. Then remove Fill Screw **10** and Fill Screw Washer **4**. Allow hydraulic fluid to drain out before continuing disassembly of the tool.
4. Using internal retaining ring pliers remove Sleeve Retaining Ring **18**.
5. Position the rear end of the Hydraulic Piston Rod **26** on a flat work surface and push down on the tool Handle **31** to push the Pulling Head Assembly out of the front of the Handle.
6. Firmly grasp the Pulling Head Adaptor **28** and gently but firmly pull the entire Pulling Head Assembly the rest of the way out of the Handle **31**.
7. Using a 19mm (3/4") deep socket wrench on Hydraulic Piston Rod **26** loosen and remove Pulling Head Adaptor **28** and slide Seal Sleeve assembly **25** off the Hydraulic Piston Rod.
8. To disassemble the Seal Sleeve **25**, remove Seal Snap Ring **20** using internal retaining ring pliers. Remove Seal Retainer Washer **19**, Rod Seal **17**, O-ring **41** and Piston Rod Seal **6**. Take care not to damage sealing surfaces on the Seal Sleeve.
9. Using narrow nose pliers squeeze and pull to remove Piston Seal **27**. Note: this is a two part seal - be sure to also remove the inner seal energizer ring. Do not reuse old seal or energizing ring. Take care not to scratch the sealing surfaces of the Hydraulic Piston Rod **26**.



ASSEMBLE IN REVERSE ORDER

Assembly Notes:

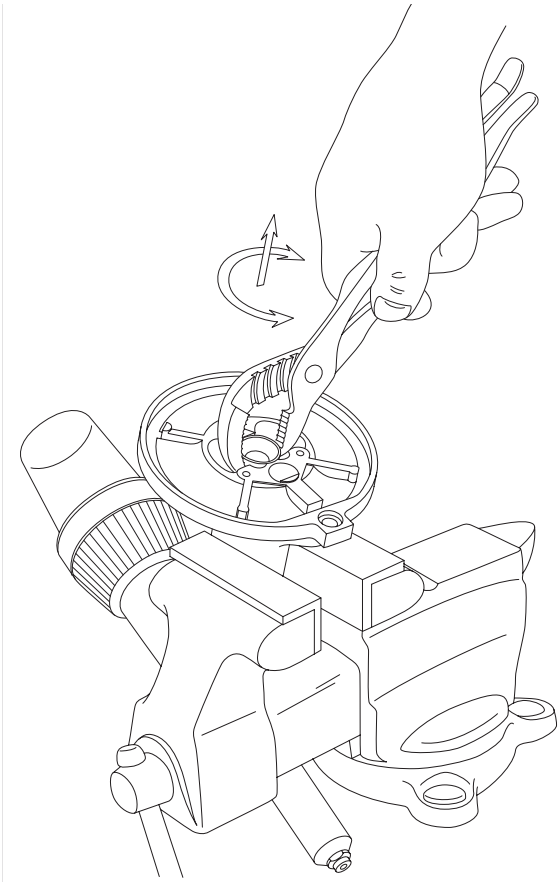
1. Lubricate all O-rings and seals prior to installation.
2. Refer to torque specifications in Table 1 when tighten Pulling Head Adaptor **28** to Piston Rod **26** and when installing Fill Screw **10**.

   Before reinstalling the Pulling Head Assembly into the tool lubricate the bore chamfer. Take care not to cut or damage Piston Seal **18**.
3. Do not force the Seal Sleeve **25** into final position. To seat the Seal Sleeve, screw in the Nose Housing **44** to gently and slowly push the Seal Sleeve into position then remove the Nose Housing and install the Sleeve Retaining Ring **18**.

Note: Numbers in **bold type** refer to call out numbers in illustration.

RAM SLEEVE ASSEMBLY

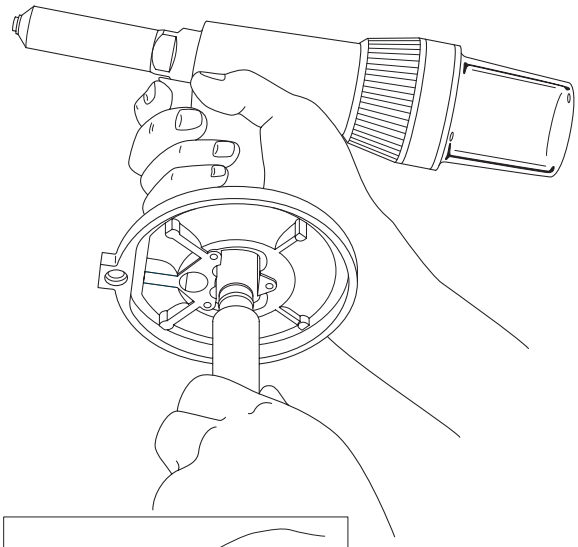
1. Remove Intensifier Assembly **29** (steps 1-4 in the **INTENSIFIER ASSEMBLY** section of this manual).
2. Drain hydraulic oil (step 3 in **PULLING HEAD ASSEMBLY** section of this manual).
3. Remove Retainer Plate Screws **1** and Lock Washers **9**.
4. Remove Ram Sleeve Retainer Plate **34**.
5. Invert tool and using a pair of pliers gently grasp the outside of the Ram Sleeve **32** and pull to remove. Take care not to grasp the inner surface of the Ram Sleeve or crush the Ram Sleeve.
6. Remove the Restrictor **2** and Restrictor Seat **33** from the end of the Ram Sleeve **32**. If the Restrictor and Restrictor Seat remain in the tool, they can be dislodged by blowing compressed air into the Fill Screw hole while covering the other end of the casting to catch the parts.
7. Remove O-ring **36**.

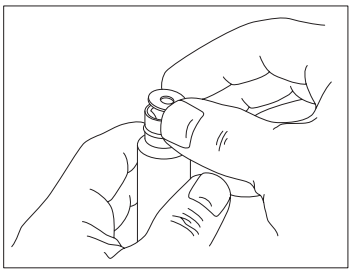


ASSEMBLE IN REVERSE ORDER

Assembly Notes:

1. Lubricate all O-rings and seals prior to installation.
2. Before installing the Ram Sleeve Assembly place Restrictor **2** in the upper recess of the Ram Sleeve **32**, then using a spot of lubricant adhere the Restrictor Seat **33** on the top rim of the Ram Sleeve. Carefully insert the entire assembly upward into the inverted tool Handle **31**. When resistance is felt carefully push on the end of the Ram Sleeve to seat O-ring **36**.
3. Tighten Retainer Plate Screws **1** to torque specifications in Table 1.





Note: Numbers in **bold type** refer to call out numbers in illustration.

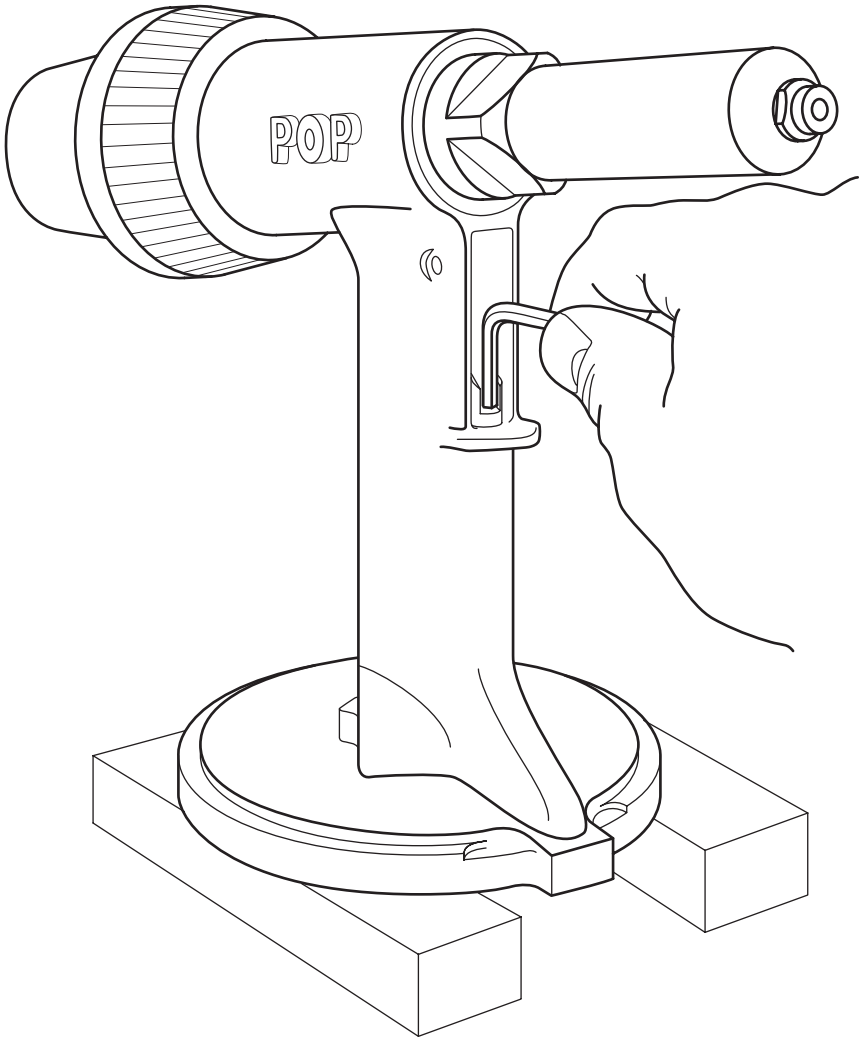
AIR VALVE AND PRESSURE REGULATOR ASSEMBLY

1. Remove Trigger **13** by driving out Trigger Pin **14** using 2mm (0.080") pin punch.
2. Remove Ram Sleeve Retainer Plate **34** (steps 1-4 in **RAM SLEEVE ASSEMBLY** section of this manual).
3. Using the pin punch or a screwdriver through the Trigger opening gently push out the Pressure Regulator **39**, the Air Valve Assembly **16**, and the Valve Plug **15**.
4. Remove O-rings **7**.

ASSEMBLE IN REVERSE ORDER

Assembly Notes:

1. Lubricate all O-rings and seals prior to installation.
2. Be sure to properly position the trigger slot in Pressure Regulator **39** so that the low side is forward toward the trigger.
3. Install the Air Valve Assembly **16** so that the holes are parallel to the Nose Housing **44**.



Note: Numbers in **bold type** refer to call out numbers in illustration.

MANDREL COLLECTION SYSTEM ASSEMBLY (MCS OPTION)

1. Remove Collector **58** and Collector Gasket **55**.
2. Remove Vacuum Cap Screws **65**, Filter Cover **59** and Filter **61**.
3. Pull the Entire MCS Assembly from the Handle **31**.
4. Grasp the Switch Deflector Ring **67** and the Vacuum Cap Body Assembly **63** and twist to remove the Vacuum Cap Body Assembly. Take care not to lose O-rings **54** and **56** positioned between the two sections.
5. Remove the Muffler **62**, the Air Block **68** and the Switch Deflector Ring **67**.

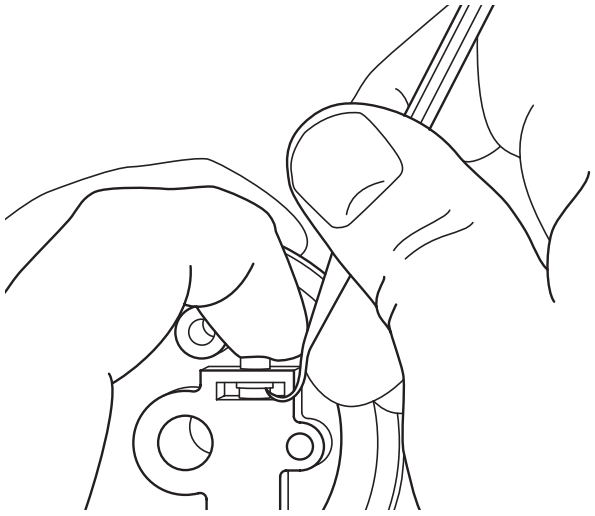
ASSEMBLE IN REVERSE ORDER

Assembly Notes:

1. Lubricate all O-rings and seals prior to installation.
2. Take care not to wrinkle or cut O-rings during assembly.

VACUUM CAP BODY SUB-ASSEMBLY

1. Note: It is normally not necessary to disassemble the Vacuum Cap Body for cleaning. Blowing compressed air into the various openings will usually clean out any debris.
2. Remove O-ring **47**.
3. Using a small, pointed pick remove Pump Retainer **52**.
4. Remove Vacuum Pump Assembly **53** consisting of two brass turnings.
5. Remove two O-rings **70**.



ASSEMBLE IN REVERSE ORDER

Assembly Notes:

1. Lubricate all O-rings and seals prior to installation.
2. Take care not to wrinkle or cut O-rings during assembly.

VALVE HOUSING SUB-ASSEMBLY

1. Remove O-rings **8** and **35**.
2. Remove Valve Body Ring **69**.
3. To remove the Valve Body **60** from the Valve Housing **66** blow compressed air into the smallest hole at the front (tool end) of the Valve Housing **66** while covering the Valve Body **60** with a rag to catch the small parts as they are dislodged.
4. Remove Valve Stem **64**, Valve Guide **49**, Spring **48** and O-rings **51** and **57**.

ASSEMBLE IN REVERSE ORDER

Assembly Notes:

1. Lubricate all O-rings and seals prior to installation.
2. Take care not to wrinkle or cut O-rings during assembly.
3. Position Valve Body **60** so that outside curve matches curve of Valve Housing **66**.

Note: Numbers in **bold type** refer to call out numbers in illustration.

HYDRAULIC FLUID CHARGING PROCEDURE

IMPORTANT

TOOL MUST BE DISCONNECTED FROM THE AIR SUPPLY.
All procedures must be performed in a clean environment.
Use only approved hydraulic fluids specified in this manual.
Use hydraulic fluid that is clean and free from air bubbles.
Take care to prevent foreign matter from entering the tool.

APPROVED HYDRAULIC FLUIDS

MOBIL - DTE26*
EXXON - NUTO H-68
SHELL - TELLUS 68
TEXACO - RANDO HD-68

*Available in .945mL (1 qt.) containers part no. PRG540-130

Note: If recharging a completely assembled tool cycling the tool a couple of times before disconnecting from the air source will free up the seals.

CAUTION:

Disconnect the tool from the air supply before proceeding.

PROCEDURE

1. Loosen Fill Screw **10**.
2. Place the tool upside down in a soft jawed vise. Grip the tool gently on the aluminum casting in the middle of the tool handle grip area.
3. Remove Clamp Screws **37** and **38**, Clamp Nuts **23**, Right Clamp **42** and Left Clamp **43**.
4. Remove Intensifier Chamber **45**, together with Intensifier Chamber Sleeve **46**. Take care not to loosen O-ring **8** when removing these parts. Remove O-ring **8**.
5. Slowly withdraw the Intensifier Assembly **29** by pulling up on the air piston.
6. If Fill Screw **10** and Fill Screw Washer **4** have been removed during dismantling reinstall these before proceeding and tighten hand tight.
7. Remove Nose Housing **44**.
8. Pull out on the Pulling Head Adaptor **28** (or push on the rear of the Hydraulic Piston Rod **26**) to ensure that the Pulling Head Assembly (Hydraulic Piston) is fully forward.
9. Very slowly fill Ram Sleeve **32** with hydraulic fluid to the bottom of the chamfer. Take care to prevent aeration of the hydraulic fluid.
10. Position Ram Assembly **29** over Ram Sleeve **32** and tilt slightly to immerse one edge of Ram Seal **40** into the fluid, then straighten to fully immerse the seal without entrapping air. Push the Ram Assembly in as far as it will go. The Hydraulic Piston Rod **28** will move rearward.
11. Remove Ram Assembly **29** and repeat steps 8, 9 and 10 above.
12. Remove the tool from the vise and stand it on the Air Piston on a flat surface.
13. Allow a few seconds for any entrapped air to rise in the tool before proceeding.
14. Place a spacer approximately 6mm (1/4 inch) thick between the Air Piston and the Handle **31** then slightly loosen the Fill Screw **10** and slowly push down on the tool Handle expelling excess hydraulic fluid and entrapped air from the Fill Screw hole. Continue pushing down until the Handle rests on the spacer.
15. Tighten Fill Screw **10** to torque specifications in Table 1, wipe Handle dry.
16. Lubricate the inside of Intensifier Chamber Sleeve **46** and the outside edge of the Air Piston Seal **30**.
17. Reassemble Intensifier Chamber **45** and Clamps **42** and **43**. Install Clamp Screws **37** and **38** and Clamp Nuts **23** and tighten to torque specifications in Table 1.
18. Replace Nose Housing **44** and tighten to torque specification in Table 1.
19. Connect air supply to tool and check tool function and stroke length.

Note: Numbers in **bold type** refer to call out numbers in illustration.

MAINTENANCE SCHEDULE

DAILY

1. Inspect tool and air supply hose for damage. Replace damaged parts immediately.
2. Purge air supply filters to eliminate accumulated dirt, oil and water.
3. Check to see that pressure regulator is properly set at 5 bar (85 psi).
4. Check tightness of Clamp Screws and Clamp Nuts **37**, **38** and **23**.
5. Check tightness of Fill Screw **10**, Nosepiece **12** and Nose Housing **44**.
6. Lubricate Jaws **3**, with light oil or Jaw Lube (Part No. PRG510-130).

WEEKLY OR EVERY 15,000 CYCLES

1. Dismantle Front End Assembly, thoroughly clean all parts, check Jaws **3**, Jaw Pusher **22** and Jaw Pusher Spring **5** for wear and replace as needed.
2. Lightly lubricate all parts before reassembling.

ANNUALLY OR EVERY 500,000 CYCLES

1. Dismantle tool and replace all seals and O-rings. Inspect all parts for wear or damage and replace as needed.
2. Lightly lubricate all seals, O-rings and front end parts before reassembling.

Table 1 – TORQUE SPECIFICATIONS

Item	Description	Torque in Newton-Meters	Torque in Inch-Pounds	Torque in Foot-Pounds
12	Nosepiece	6.8 - 7.3	60 - 65	5.0 - 5.4
44	Nose Housing	52.0 - 54.2	460 - 480	38.3 - 40.0
11	Jaw Guide	20.3 - 24.9	180 - 220	15.0 - 18.3
28	Pulling Head Adaptor	61.0 - 63.3	540 - 560	45.0 - 46.7
10	Fill Screw	6.9 - 7.3	60 - 65	5.0 - 5.4
48	Handle Cap Screw	1.4 - 1.6	12 - 14	1.0 - 1.2
65	Vacuum Cap Screw	1.4 - 1.6	12 - 14	1.0 - 1.2
1	Retainer Plate Screw	0.9 - 1.1	8 - 10	0.7 - 0.8
37	Clamp Screw - Front	0.9 - 1.1	8 - 10	0.7 - 0.8
38	Clamp Screw - Rear	0.9 - 1.1	8 - 10	0.7 - 0.8
72	Air Line Assembly	3.4 - 4.5	30 - 40	2.5 - 3.3

Note: Numbers in **bold type** refer to call out numbers in illustration.

5400 SERIES PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY.
1	PRG540-100	RETAINER PLATE SCREW	3
2	PRT5400-2	RESTRICTOR	1
3-A	PRG540-46	JAWS (1/8"-3/16", 3.2mm-4.8mm) PRT5400 & MCS5400	2
3-B	PRG540-44	JAWS (1/4", 6.4mm) PRT5400LS & MCS5400LS	2
4	PRG540-102	FILL SCREW WASHER	1
5	PRG540-105	JAW PUSHER SPRING	1
6	PRG510-114	PISTON ROD SEAL	1
7	PRG540-117	O-RING	3
8	PRG540-118	O-RING	2
9	PRG540-120	LOCK WASHER	3
10	PRG540-122	FILL SCREW	1
11	PRH850-11	JAW GUIDE	1
12-A	PRN414	NOSEPIECE (1/8", 3.2mm)	1
12-B	PRN514	NOSEPIECE (5/32", 4.0mm)	1
12-C	PRN614	NOSEPIECE (3/16", 4.8mm) PRT5400 & MCS5400	1
12-D	PRN811	NOSEPIECE (1/4", 6.4mm) PRT5400LS & MCS5400LS	1
13	PRT5200-32	TRIGGER	1
14	PRT5200-33	TRIGGER PIN	1
15	PRT5200-35	VALVE PLUG	1
16	PRT5200-55	AIR VALVE ASSEMBLY	1
17	PRT5300-8	ROD SEAL	1
18	PRT5300-11	SLEEVE RETAINING RING	1
19	PRT5300-19	SEAL RETAINER WASHER	1
20	PRT5300-20	SEAL SNAP RING	1
21	PRT5400-26	GROMMET	1
22-A	PRT5400-6	JAW PUSHER (1/8"-3/16", 3.2mm-4.8mm) PRT/MCS5400	1
22-B	PRT5400-8	JAW PUSHER (1/4", 6.4mm) PRT/MCS5400LS	1
23	PRT5400-113	CLAMP NUT	2

ITEM	PART NO.	DESCRIPTION	QTY.
24	PRT5400-9	WIPER RETAINER WASHER	1
25	PRT5400-10	SEAL SLEEVE	1
26	PRT5400-14	HYDRAULIC PISTON ROD	1
27	PRT5400-15	PISTON SEAL	1
28	PRT5400-21	PULLING HEAD ADAPTOR	1
29	PRT5400-25	INTENSIFIER ASSEMBLY	1
30	PRT5400-28	AIR PISTON SEAL	1
31	PRT5400-31	HANDLE	1
32	PRT5400-46	RAM SLEEVE	1
33	PRT5400-47	RESTRICTOR SEAT	1
34	PRT5400-48	RETAINER PLATE	1
35	PRT5400-49	O-RING	1
36	PRT5400-59	O-RING	1
37	PRT5200-62	CLAMP SCREW - FRONT	1
38	PRT5200-63	CLAMP SCREW - REAR	1
39	PRT5400-50	PRESSURE REGULATOR	1
40	PRT5400-84	RAM SEAL	1
41	PRT5400-89	O-RING	1
42	PRT5400-42	RIGHT CLAMP	1
43	PRT5400-43	LEFT CLAMP	1
44-A	PRT5400-22	NOSE HOUSING (PRT/MCS5400)	1
44-B	PRT5400-72	NOSE HOUSING (PRT/MCS5400LS)	1
45-A	PRT5400-29	INTENSIFIER CHAMBER (PRT/MCS5400)	1
45-B	PRT5400-79	INTENSIFIER CHAMBER (PRT/MCS5400LS)	1
46-A	PRT5400-30	INTENSIFIER CHAMBER SLEEVE (PRT/MCS5400)	1
46-B	PRT5400-70	INTENSIFIER CHAMBER SLEEVE (PRT/MCS5400LS)	1
71	PRG540-43	MANDREL GUIDE (Installed on PRT5400 & MCS5400)	1
72	PRT5200-220*	AIR LINE ASSEMBLY	1

MCS OPTION

ITEM	PART NO.	DESCRIPTION	QTY.
47	MCS500-10*	O-RING (CAP BODY-VALVE BODY)	1
48	MCS5200-3*	SPRING	1
49	MCS5200-7*	VALVE GUIDE	1
50	MCS5200-13*	O-RING	1
51	MCS5200-18*	O-RING	1
52	MCS5200-19*	PUMP RETAINER	1
53	MCS5400-20*	VACUUM PUMP (Assembly)	1
54	MCS5200-21	O-RING	1
55	MCS5500-16	COLLECTOR GASKET	1
56	PRG520-47	O-RING	1
57	PRG520-106*	O-RING	1
58	MCS5400-8	COLLECTOR	1
59	MCS5400-2	FILTER COVER	1
60	MCS5400-4*	VALVE BODY	1
61	MCS5400-5	FILTER	1
62	MCS5400-6	MUFFLER	1
63	MCS5400-9*	VACUUM CAP BODY	1
64	MCS5400-10*	VALVE STEM	1
65	MCS5400-11	VACUUM CAP SCREW	4
66	MCS5400-14*	VALVE HOUSING	1
67	MCS5400-12	SWITCH/DEFLECTOR RING	1
68	MCS5400-16	AIR BLOCK	1
69	MCS5400-13*	VALVE BODY RING	1
70	MCS500-22*	O-RING	2

PRT OPTION

ITEM	PART NO.	DESCRIPTION	QTY.
47	PRG510-56	DEFLECTOR	1
48	PRT5200-37	HANDLE CAP SCREWS	4
49	PRT5400-36	HANDLE CAP	1

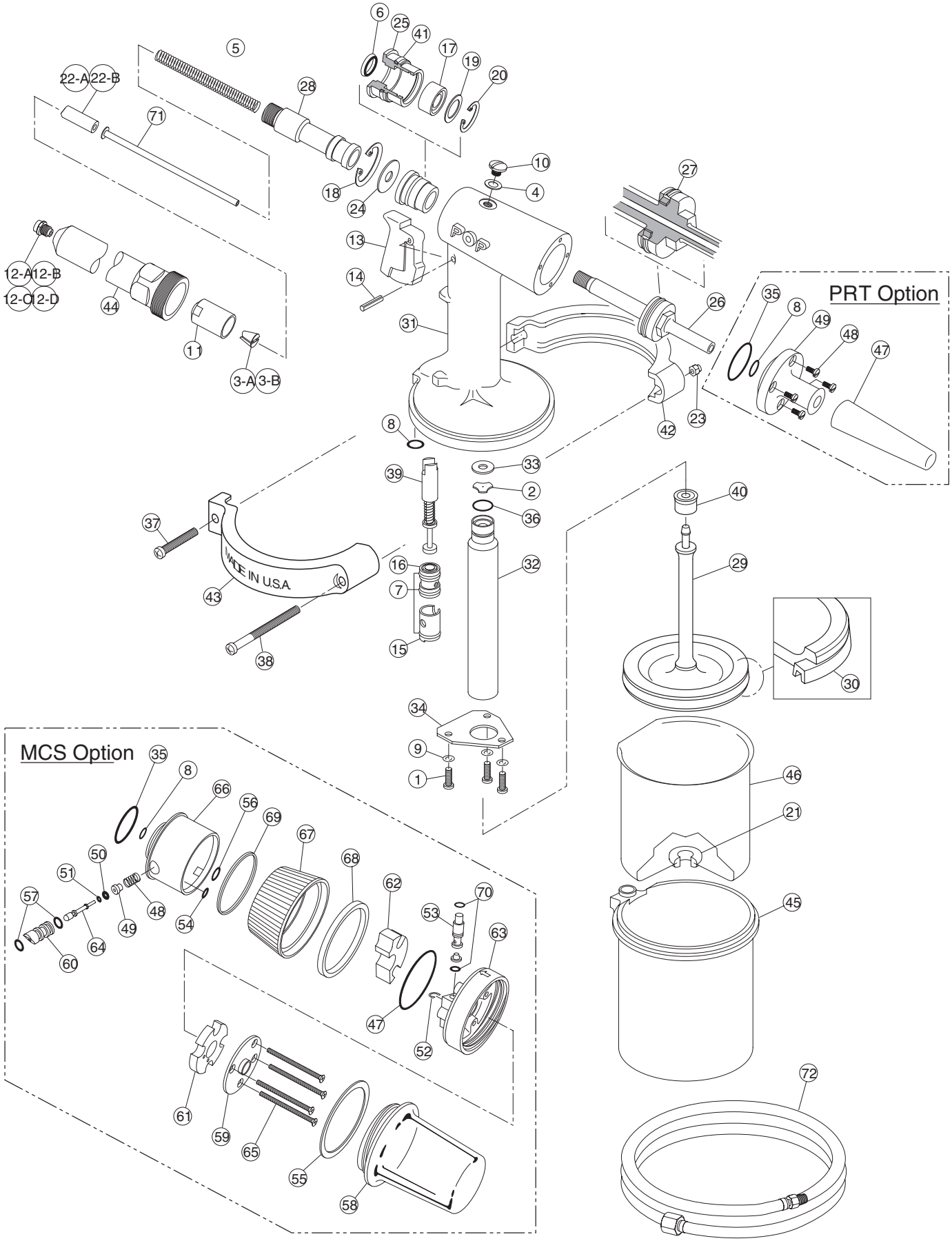
NOTES:

1. AIR LINE ASSEMBLY PRT5200-220 CONSISTS OF:

PRG540-39	AIR LINE	1
PRG540-40	AIR LINE FITTING, FEMALE	1
PRG540-45	O-CLAMP (Connects to air supply)	2
PRT5200-90	AIR LINE FITTING, MALE (Connects to tool)	1

2. ITEMS 48, 49, 50, 51, 57, 60, 64, 66 & 69 AVAILABLE AS AN ASSEMBLY - MCS5400-30 VALVE HOUSING ASSEMBLY

3. ITEMS 47, 52, 53, 63 & 70 AVAILABLE AS AN ASSEMBLY - MCS5400-40 VACUUM CAP BODY ASSEMBLY


PRT Option
MCS Option
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