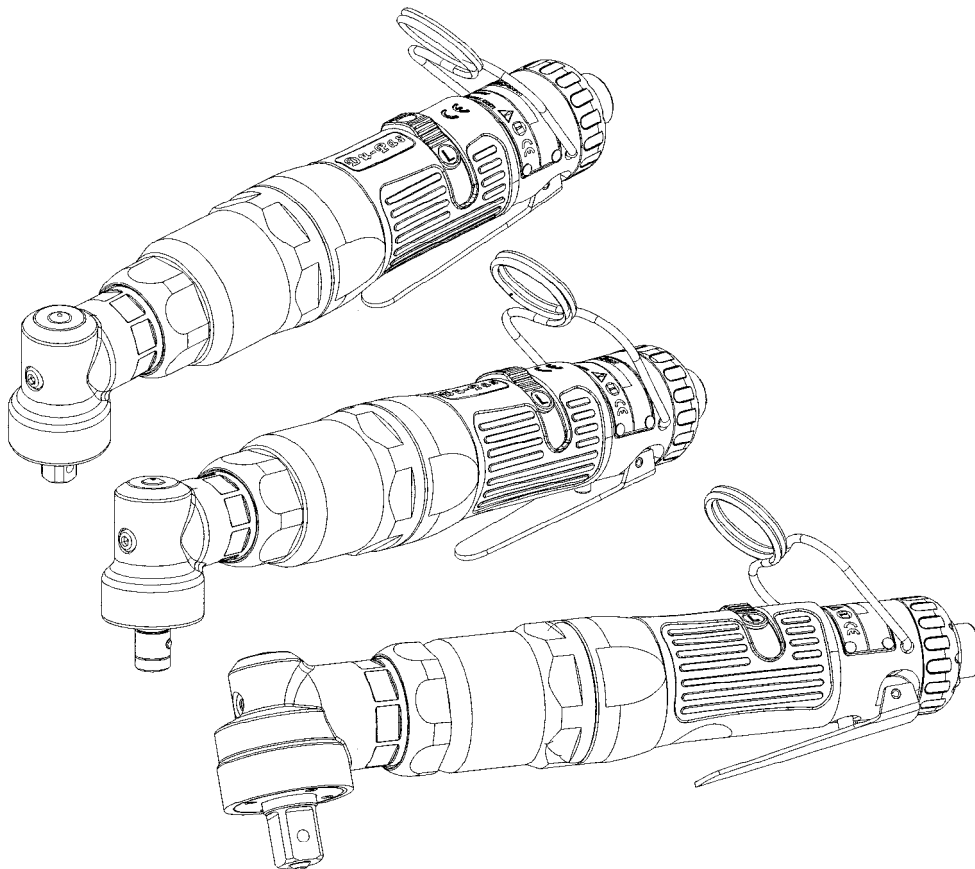


flexPower

by mountz

PULSE TOOLS INSTRUCTION MANUAL & MAINTENANCE

ANGLE TYPE



Rev 3.0 (7/12/2011)

- READ ALL THE INSTRUCTIONS COMPLETELY BEFORE OPERATION.
- COMPLY WITH ALL THE INSTRUCTIONS AND RULES IN THIS MANUAL AND SAVE THIS MANUAL FOR FUTURE REFERENCE.

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General Safety Rules

ALWAYS OBSERVE THE FOLLOWING RULES TO ASSURE SAFE USE OF THE TOOLS!!

- Do not operate the pulse tools unless you fully understand the instructions contained in this manual. If any unclear, please contact the agents.
- Never expose to rain or use in damp locations.
- Always use the proper pressure at air inlet. Apply either less or exceed air inlet pressure will affect the performance of the tools, including quality, torque, function, and life, then lead to damage.

Air inlet pressure standard

70PSI – 85PSI (5.2kg/cm² ~6.2kg/cm²)

- Always add oil about 0.5~1cc at air inlets at least every week to maintain the performance and the life of the pulse tools.
- Keep children away. Tools must need to be kept in a safe and clean position where children cannot reach.
- DO NOT force tools. The tool will be damaged easily and quickly if over-load over 15 seconds.
- Always use the proper length of air hose. The length of air hose shall not exceed **5 meters**, or the pressure reduces. Do be sure the air inlet pressure is in between the standard number(70PSI – 85PSI) before operating tools.
- Always use safety glasses and earphone.
- Always operate the tools by two hands. One hand operation may cause risk of injury to persons.
- Disconnect the air hose and the quick nipple after operating tools. Be sure to return tools to safety position. Tools drop or unintentionally contact can cause risk of injury.
- Install the safety buckle to avoid tools drop while operating in high position.
- Never contact with any electricity conducted objects to avoid electricity shock hazard.

Replacement and Maintenance

- (1) Never try to repair or replace the defective tools by others under the warranty period. The authorized service centers have the right to refuse or certain fee may incur for extra repair work.
- (2) Keep all related servicing records for future repairs, maintenance, and adjustment.
- (3) The warranty does not apply to accessories or damage caused where repairs have been made or attempted by others
- (4) Mountz will repair, without charge, any defects due to faulty material under the warranty period
- (5) The warranty does not cover part failures due to normal wear and tool abuse, and damage caused due to any appropriate appliances, i.e. tool over loaded, improper air inlet pressure and air hose size, unauthorized replacement parts.

Steps for Torque Adjustment – Angle Series

1. Remove the angle housing kit by loosening the lock nut in counter clockwise direction.

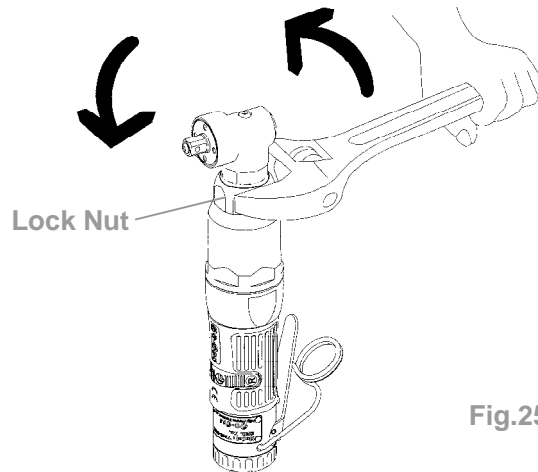


Fig.250

2. Rotate the anvil manually; make the valve screw inside the pulse unit aim at the hole (where the screw taken off). Then, use the attached tool to adjust the torque. Torque increased by turning clockwise and vice versa.

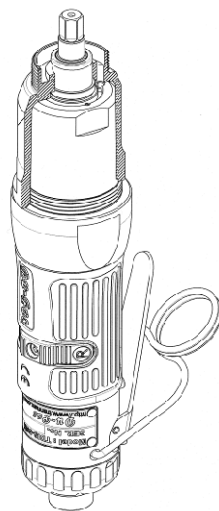


Fig.251

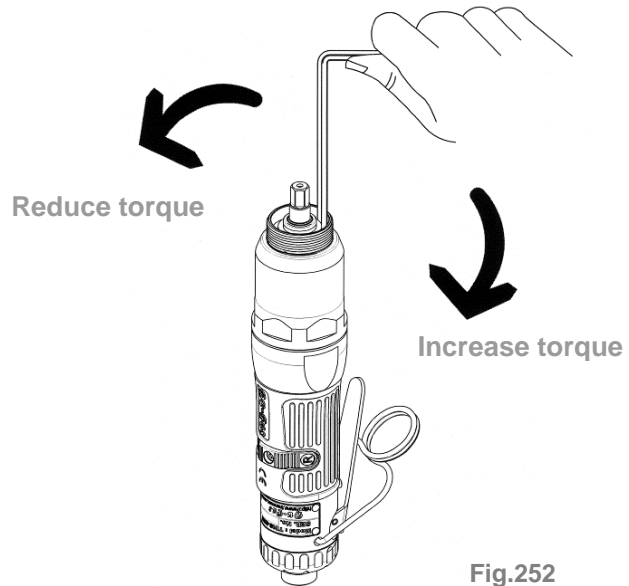


Fig.252

3. Install the angle housing kit back by tightening the lock nut in clockwise direction to the housing.

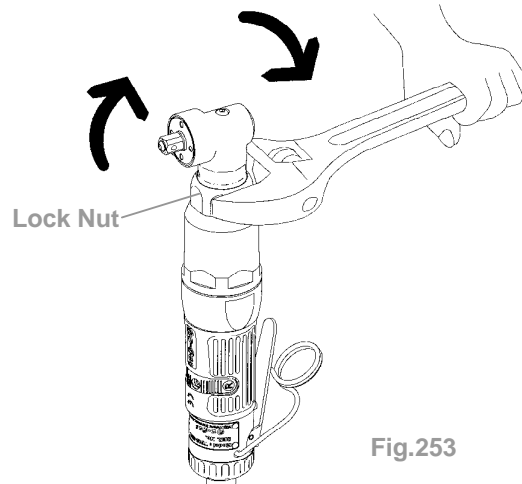


Fig.253

● **RECOMMENDATIONS FOR SERVICE**

The pulse tool requires regular maintenance to ensure the tool operates at optimal performance. The type of routine maintenance and the frequency is dependent on the application and how the tool is used. The pulse tool requires preventive maintenance like oil changes and have the parts inspected periodically. Regular oil changes will increase the life cycle of the tool, reduce maintenance costs and allow the tool operate properly.

When is first service required? There are several factors that influence the maintenance schedule: 1) Type of application, 2) The torque setting within the torque range of the pulse tool, and 3) The number of cycles the tool is used daily, weekly and monthly.

1) The first service is recommended at 250,000 pulse-seconds. The oil needs to be changed. Inspect all the soft parts of the pulse unit (the soft parts are referenced as the "Repair Kit" - see parts list document for that model). The Repair Kit includes all the necessary parts and it is recommend to be performed every six months at minimum, based upon use of the tool.

2) The second service is recommended at 500,000 pulse-seconds. The oil needs to be changed. All soft parts of the pulse unit need to be replaced (the soft parts are referenced as the "Repair Kit" - see parts list document for that model). Inspect the hard parts of the pulse tool (the hard parts are referenced as the "Service Kit" - see parts list document for that model). This maintenance service may occur once or twice a year at minimum, based upon use of the tool.

It is recommended that after 250,000 pulse-seconds the pulse tool should be evaluated for general performance and oil condition as part of its standard preventive maintenance. If the tool fails before the 250,000 pulses-seconds then the pulse unit needs to be rebuilt, with the "Repair Kit" and "Service Kit" (see parts list document for that model). **Note!** Always it is important to make sure the tool has clean, dry and lubricated air at the recommended pressure supplied to it.

A pulse-second is not every second the tool is running, only when it's "pulsing" and applying torque. Typically, the tool does not start pulsing until after the fastener is snug, unless there's considerable prevailing torque. When operating the tool on the fastener, start counting once the tool begins pulsing. You can use a watch with a second hand and time it until the tool automatically shuts-off. Use the information to calculate how many pulse-seconds the tool performs per application each day. Then perform some basic math to calculate the tool's maintenance schedule. Use this formula.

Pulsing Seconds ÷ Total of Pulsing Time = No Cycles

Note! Please include the rework, reverse, or retightening time involved on the operation to calculate the accurate pulsing time. Here is an example:

Pulsing Time = 2 seconds

Pulses- seconds recommended = 250,000

250,000 pulses-sec ÷ 2 sec = 125,000 cycles

Taking the example above, to estimate the maintenance period can be follow by the following

No of Fasteners	Pulsing Time per Fastener	No of parts assembled per day	Calculation	No of days to inspect the tool
7	2 seconds	300	125,000 / (300*7) = 59	59 days

Regularly the hard joint pulse in average 0.5 sec, and the soft joint is average is 2 seconds, based on the above example, if the tool has not drop-off the performance, the service to change the oil fluid is after approximately 59 work days. However the application can be expose of extreme conditions (poor air supply, extended pulsing times, torque setting at the high end of tool range, high number of cycles), the maintenances intervals may need to be reduced.

TOOL MODEL	Repair Kit Item No	Service Kit Item No
AUTO SHUT-OFF MODELS		
FLEXS-50R	63-IS50RRK -E05A	63-IS50RSK -E05A
FLEXS-60R	63-IS60RRK -E05A	63-IS60RSK -E05A
FLEXS-70R	63-IS70RRK -E05A	63-IS70RSK -E05A
FLEXS-70RH	63-IS70RHRK -E05A	63-IS70RHSK -E05A
FLEXS-50RX	63-IS50RDRK -E05A	63-IS50RDSK -E05A
FLEXS-60RX	63-IS60RDRK -E05A	63-IS60RDSK -E05A
FLEXS-70RX	63-IS70RDRK -E05A	63-IS70RDSK -E05A
NON SHUT-OFF MODELS		
FLEX-50R	63-I50RRK -E05A	63-I50RSK -E05A
FLEX-60R	63-I60RRK -E05A	63-I60RSK -E05A
FLEX-70R	63-I70RRK -E05A	63-I70RSK -E05A
FLEX-70RH	63-I70RHRK -E05A	63-I70RHSK -E05A
FLEX-50RX	63-I50RDRK -E05A	63-I50RDSK -E05A
FLEX-60RX	63-I60RDRK -E05A	63-I60RDSK -E05A
FLEX-70RX	63-I70RDRK -E05A	63-I70RDSK -E05A

DISASSEMBLY / ASSEMBLY FOR ANGLE SERIES

FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX, FLEX-70R, FLEX-70RX, FLEX-70RH

● PULSE MECHANISM DISASSEMBLY

1.0 Spring Holder disassembly: (for Model No. FLEX-50RX, FLEX-60RX, FLEX-70RX)

Use a needle like stuff to get the spring holder out, then take the steel ball.



The steel ball may drop off when taking out the spring holder.

Note: Handle rubber must be covered by a piece of cloth to avoid damage

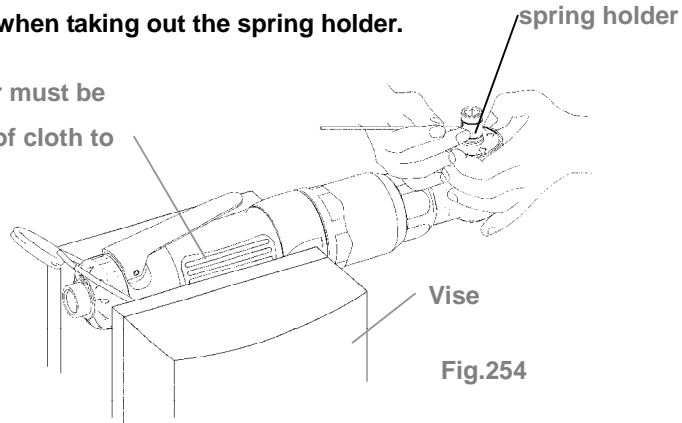


Fig.254

2.0 Angle Housing Unit Disassembly:

2.1 Use an adjusChart wrench counterclockwise to loosen the lock nut of the pulse unit housing. Then, take off the angle unit.

2.2 Use 2mm L-type wrench counterclockwise to loosen the screws.

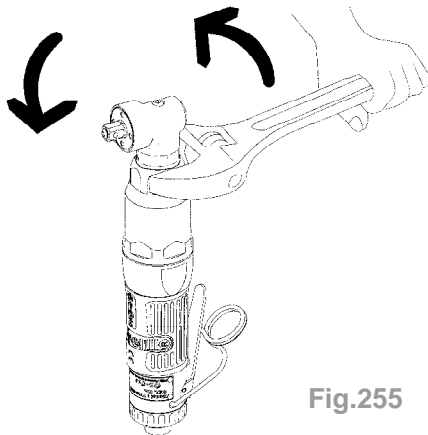


Fig.255

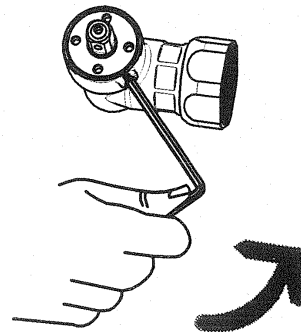


Fig.256

2.3 Fix the angle unit. Use the torque wrench and the appliance to loosen the lock nut of the shaft gear counterclockwise. Then take off some parts. See the Chart 39 for selecting the proper appliance.

NOTE: Loctite® might be applied when assembling the gear shaft.

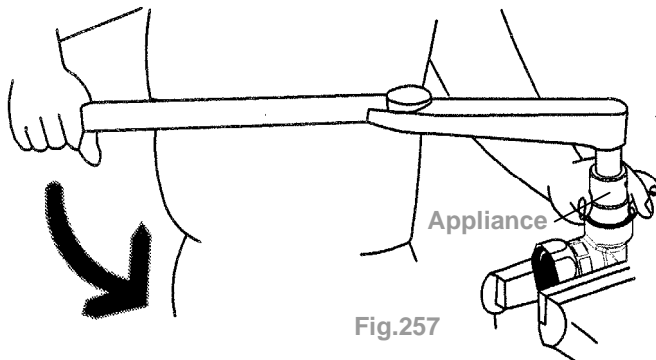


Fig.257

Appliance No.	Apply to
63-TDI-50RRT001	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX, FLEX-70R, FLEX-70RX,
63-TDI-70RHRT001	FLEX-70RH

Chart 39

2.4 Fix the angle unit. Use the torque wrench and the appliance to loosen the lock nut of the main shaft gear counterclockwise. Then take off the remaining parts. See the Chart 40 for selecting the proper appliance.

NOTE: Loctite® might be applied when assembling the main gear shaft.

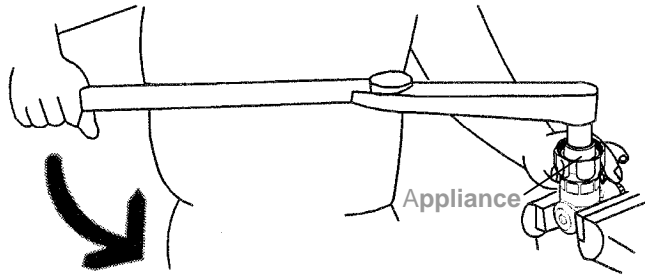


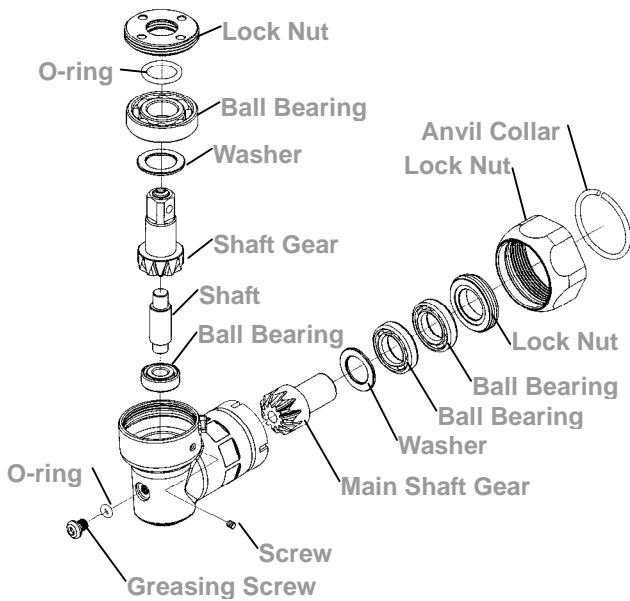
Fig.258

Appliance No.	Apply to
63-TDI-50RRT002	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX, FLEX-70R, FLEX-70RX,
63-TDI-70RHRT002	FLEX-70RH

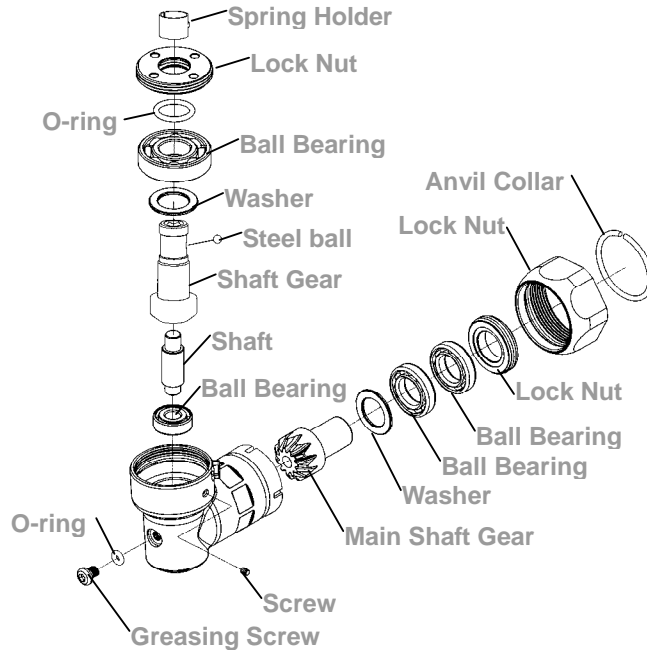
Chart 40

2.5 Parts of Angle Housing Unit:

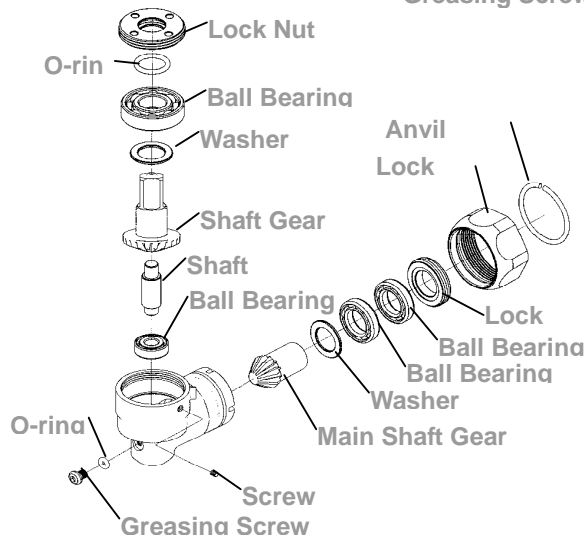
a. R Series



b. RX Series



c. RH Series



3.0 Pulse Unit Housing Disassembly:

Fix the tool by a vise, use an adjustable wrench clockwise to loosen the pulse unit housing until the pulse unit housing detach from the motor housing. Then, take the pulse unit out, Fig. 259.

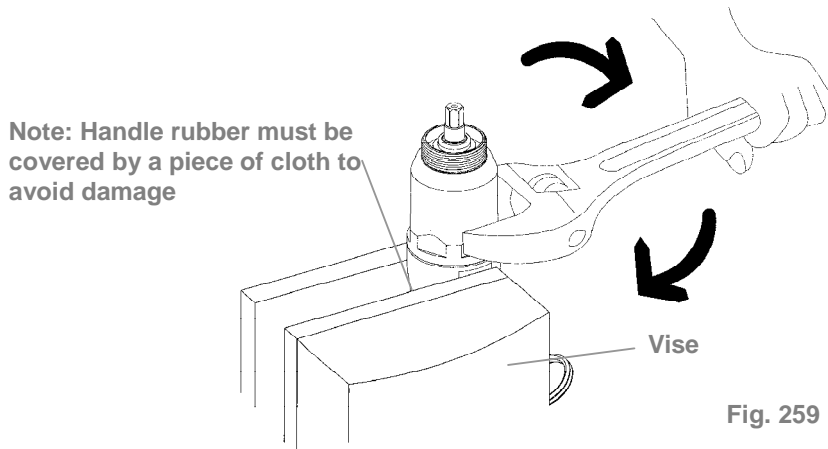


Fig. 259

4.0 Pulse Unit Disassembly:

4.1 Fix the pulse unit by a vise. Use the appliance (see Chart 41) to loosen the lock nut on the pulse unit, Fig. 260.

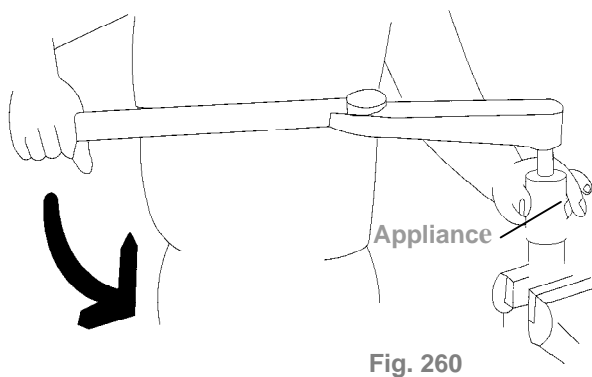


Fig. 260

Appliance No.	Apply to
63-TDI-40RT001	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX
63-TDI-70RT001	FLEX-70R, FLEX-70RX, FLEX-70RH

Chart 41

Note: Loctite® was applied on the lock nut when tools assembled.

4.2 Put the Appliance, see Chart 42, on the anvil and tap on it slightly to detach the interior parts from the pulse unit, Fig. 261.

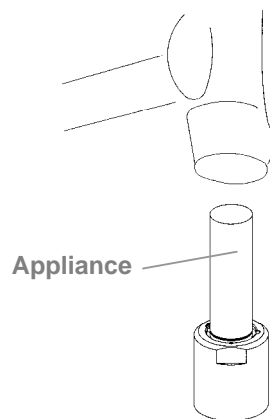


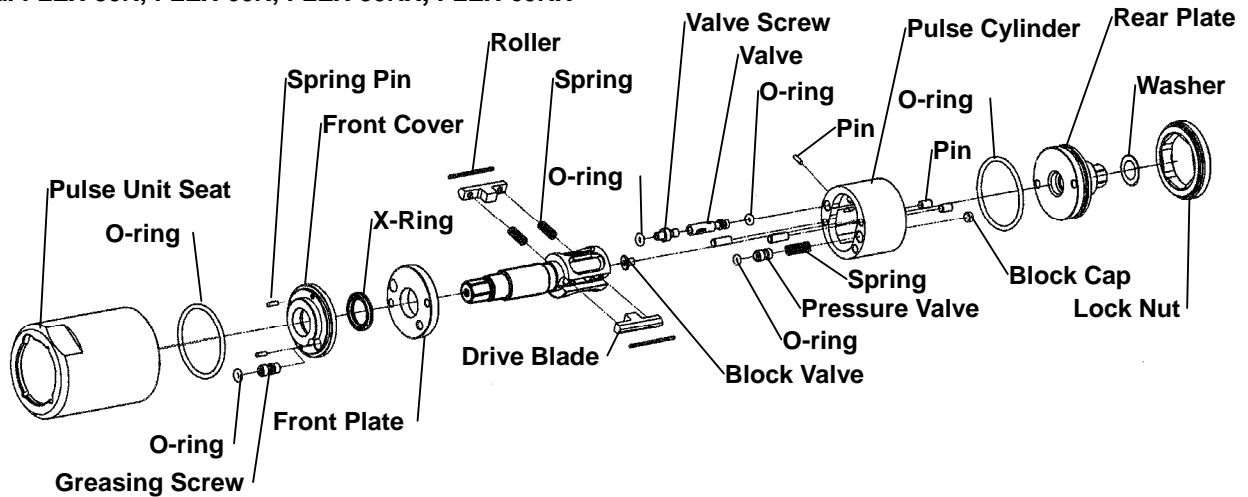
Fig. 261

Appliance No.	Apply to
63-TDI-40RT002	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX, FLEX-70R, FLEX-70RX, FLEX-70RH

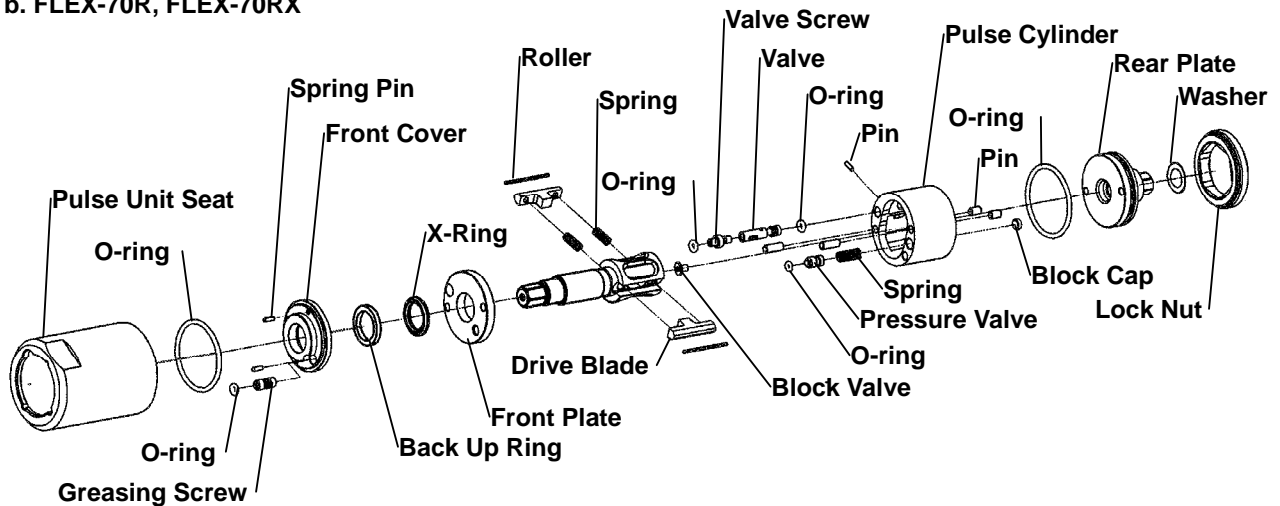
Chart 42

5.0 Parts of Pulse Cylinder Unit:

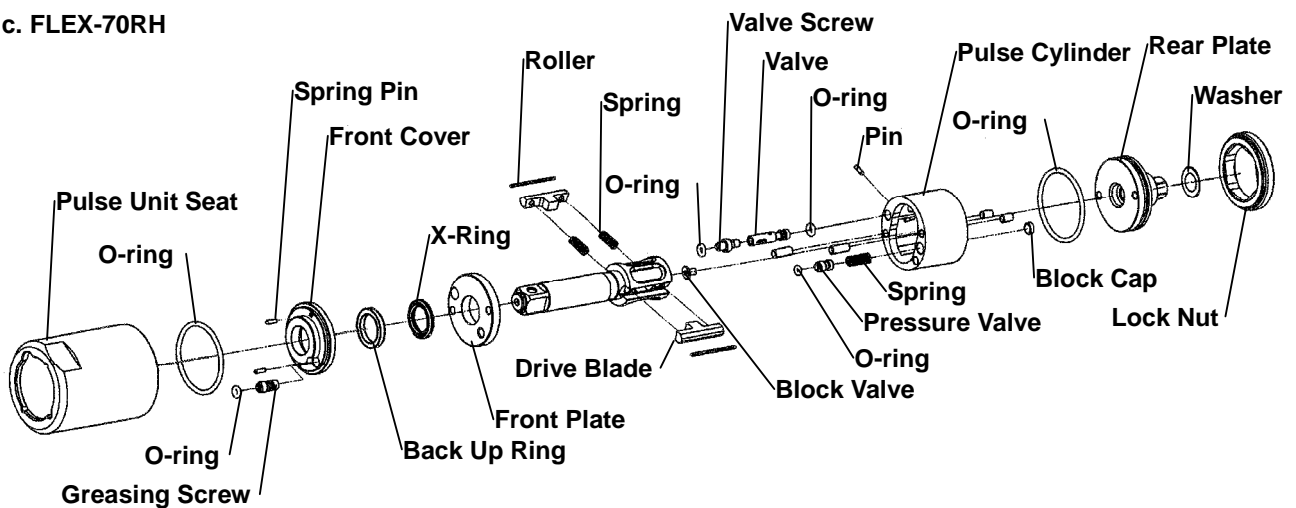
a. FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX



b. FLEX-70R, FLEX-70RX



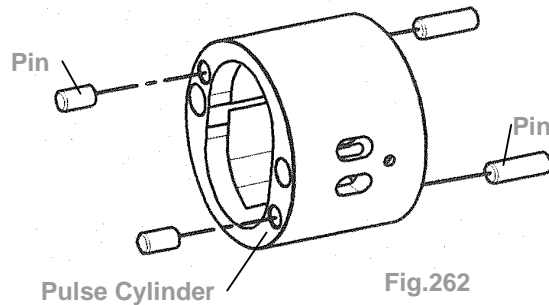
c. FLEX-70RH



● **PULSE UNIT ASSEMBLY:**

1.0 Pulse Cylinder Unit Assembly:

1.1 Install the pins on both sides of the pulse cylinder. (Fig. 262)

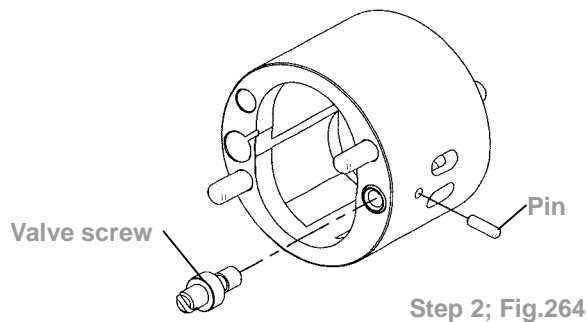
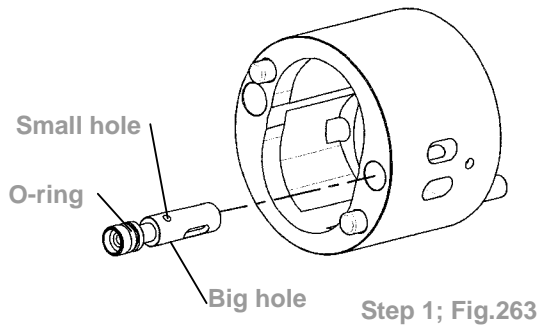


1.2 Sleeve the O-ring to the valve and install the valve into the big hole on the pulse cylinder. (Step 1; Fig.263)

1.3 Insert the pin into the hole on the side of the pulse cylinder. (Step 2; Fig.264)

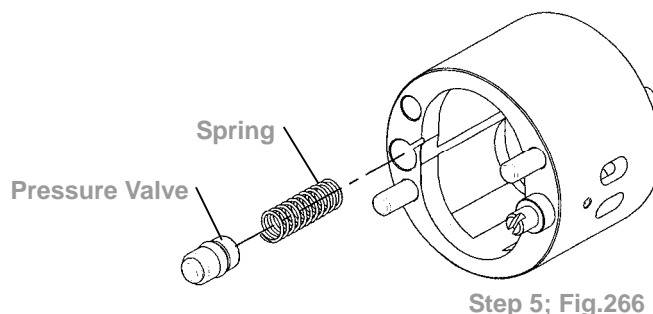
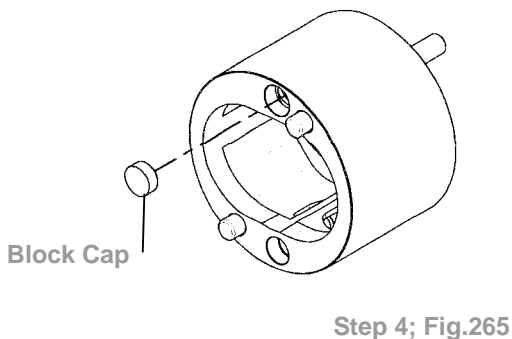
1.4 Screw the valve screw to the pressure valve. (Step 3; Fig.264)

NOTE: the valve screw MUST screw to the most bottom position certainly.

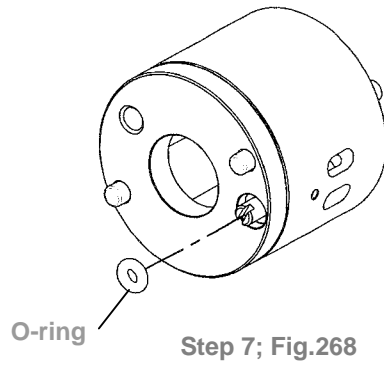
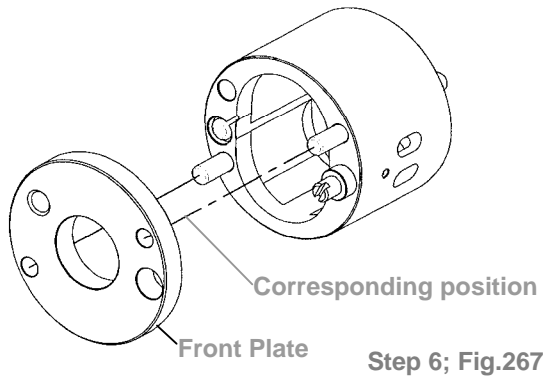


1.5 Plug the block cap into the hole and make sure it is parallel to the surface of the pulse cylinder. (Step 4; Fig. 265)

1.6 Put the spring into the hole then install the pressure valve that with the O-ring sleeved. (Step 5; Fig. 266)



- 1.7 Install the front plate and make sure the corresponding position with the pins. (Step 6; Fig. 267)
- 1.8 Sleeve the O-ring on the valve screw and press into the hole. Make sure it is parallel to the surface of the front plate. (Step 7; Fig. 268)



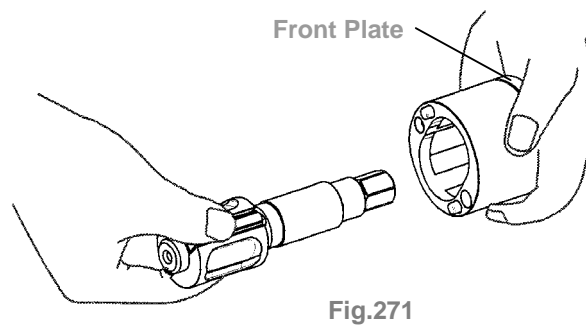
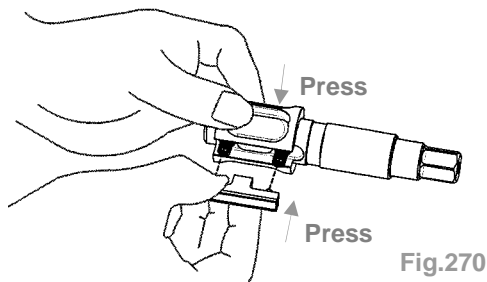
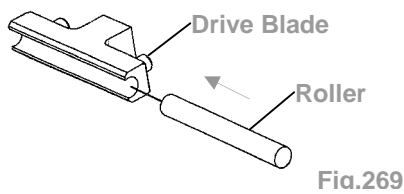
2.0 Anvil Unit Assembly

Install the roller to the drive blade, then insert the springs into the anvil and press the blades from both sides. Finally put the anvil to the pulse cylinder to complete the anvil unit assembly.

⚠ MUST follow the direction as Fig.271 showed while installing the anvil unit into the pulse cylinder; be sure to aim at the highest points by two sides of the interior pulse unit and press the two drive blades in slowly.

NOTE: RECOMMENDED UTILIZE THE SPECIAL FIXTURE FOR EASIER INSTALLATION FOR THE ANVIL WITH THE ROLLER AND THE BLADE INTO THE CYLINDER (No picture showed)

FIXTURE PART No	TOOL MODEL
63-I40AST-001K	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX,
63-I70AST-001K	FLEX-70R, FLEX-70RX, FLEX-70RH,

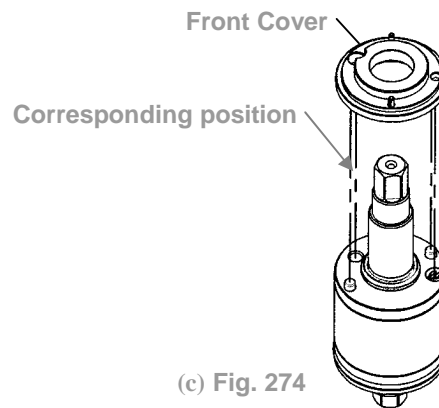
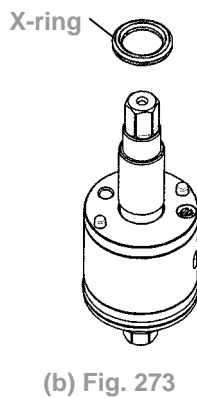
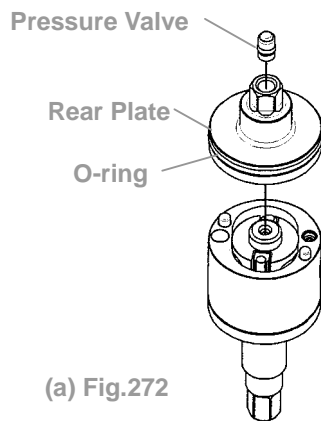


3.0 Front Cover and Rear Plate of Pulse Cylinder Assembly (For the models: FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX)

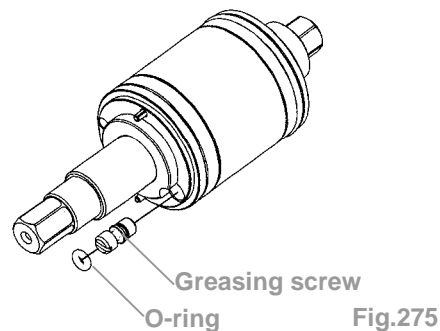
3.1 (a) Install the rear plate to the pulse cylinder and be sure the positions of the pin and the hole are corresponded. (Fig. 272) Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.

(b) Put the X-ring on the anvil with the oil applied. (Fig. 273)

(c) Install the front cover to the pulse cylinder by the corresponding positions. (Fig. 274)



3.2 After installing the front cover, put the O-ring on the greasing screw, then tighten the greasing screw but not tighten it completely.

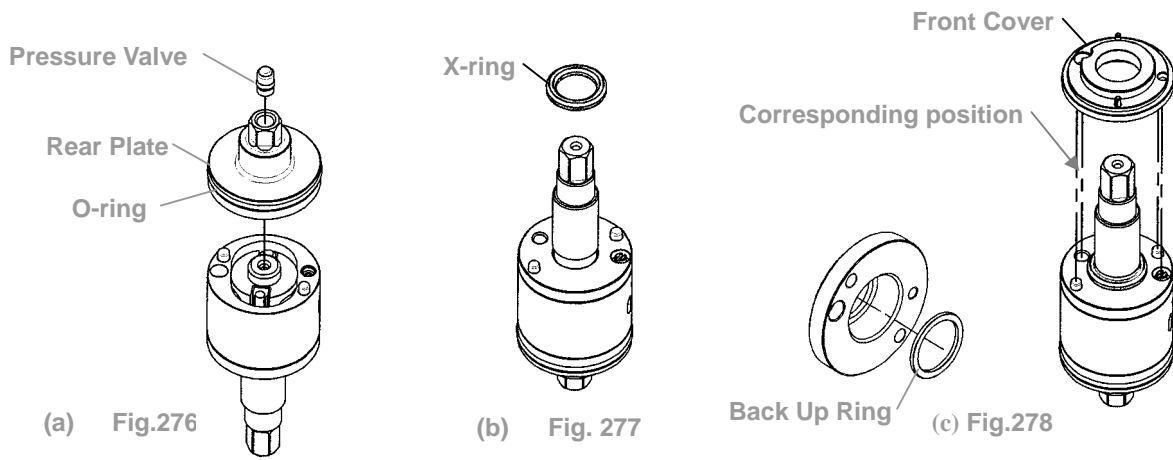


→ FLEX-70R, FLEX-70RX

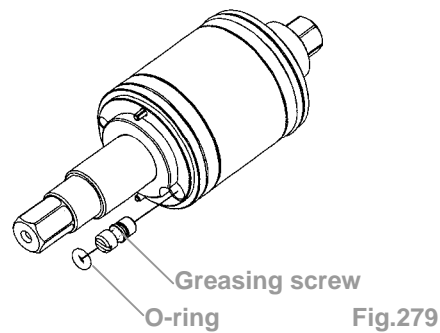
(a) Install the rear plate that with the O-ring sleeved (Fig. 276). Make sure the positions of the pin and hole are exactly matched. Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.

(b) Put the X-ring on the anvil with the oil applied. (Fig. 277)

(c) Put the back up ring into the front cover, and install the front cover to the pulse cylinder by the corresponding positions. (Fig. 278)



3.3 After installing the front cover, put the O-ring on the greasing screw, then tighten the greasing screw but not tighten it completely.

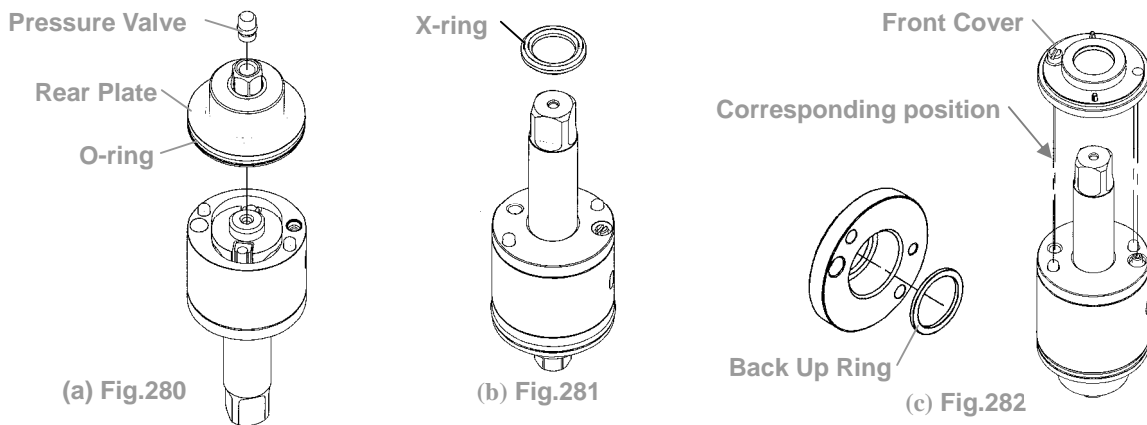


→ FLEX-70RH

(a) Install the rear plate that with the O-ring sleeved (Fig. 280). Make sure the positions of the pin and hole are exactly matched. Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.

(b) Put the X-ring on the anvil with the oil applied. (Fig. 281)

(c) Put the back up ring into the front cover, and install the front cover to the pulse cylinder by the corresponding positions. (Fig. 282)



3.4 After installing the front cover, put the O-ring on the greasing screw, then tighten the greasing screw but not tighten it completely.

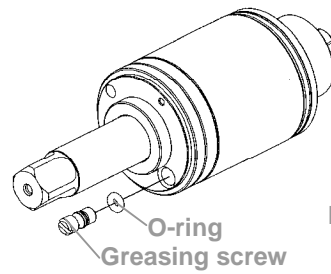


Fig.283

4.0 Pulse Cylinder Seat and Lock Nut of Pulse Cylinder Assembly

4.1 Place the O-ring inside the bottom of the pulse cylinder seat, then combine the pulse cylinder seat with the assembled pulse cylinder unit. (Fig. 284, Fig. 285)



Make sure the half-circle gaps aim at the corresponding positions.

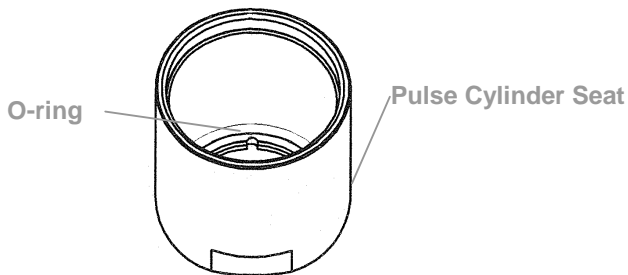


Fig. 284

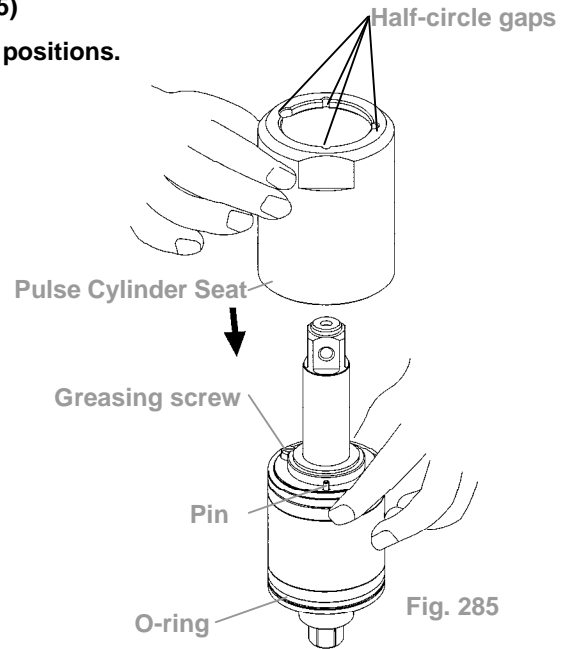


Fig. 285

4.2 Use the appliance to push out the rear plate from the pulse cylinder seat. See Chart 42 in reference to the proper appliance selection. (Fig. 286)

4.3 Fill up the interior pulse cylinder with the pulse oil about 90% full by a syringe. (Fig. 287)

4.4 Install the rear plate taken from the step 2 on the pulse cylinder. Note the corresponding positions.

4.5 Turn the assembled unit up side down so the rear plate is at the bottom. Then press the pulse cylinder seat all the way down to the fixed position. Make sure the corresponding positions are matched exactly.

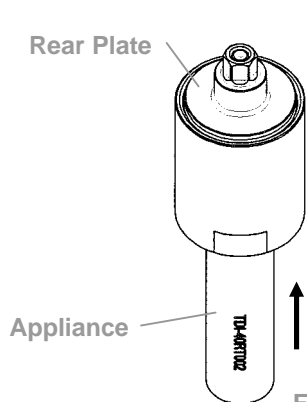


Fig.286

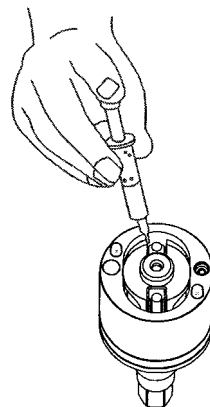


Fig.287

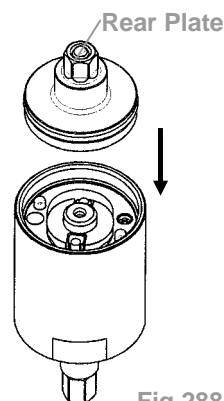


Fig.288

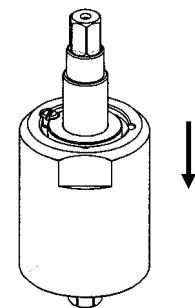


Fig.289

4.6 Fix the pulse cylinder seat by a vise. Use an appliance and a torque wrench, and then turn clockwise to tighten the lock nut of the pulse cylinder. See Chart 43 and 44 in reference to the proper appliance and tightness. (Note: Loctite® needed when tightening the lock nut of the pulse cylinder)

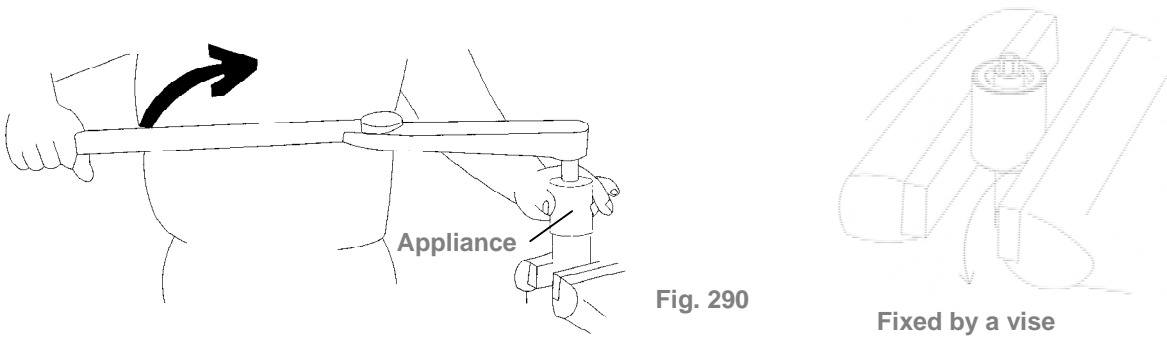


Fig. 290

Fixed by a vise

Appliance No.	Apply to
63-TDI-40RT001	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX
63-TDI-70RT001	FLEX-70R, FLEX-70RX, FLEX-70RH

Chart 43

Model No.	Tighten torque	Model No.	Tighten torque
FLEX-50R	80 N.M	FLEX-70R	100 N.M
FLEX-60R	80 N.M	FLEX-70RX	100 N.M
FLEX-50RX	80 N.M	FLEX-70RH	100 N.M
FLEX-60RX	80 N.M		

Chart 44

5.0 After completing the above steps, test to make sure the square drive of the anvil rotates freely.

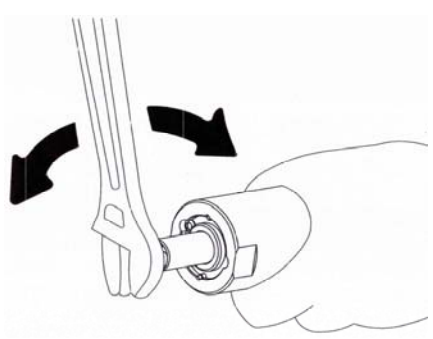


Fig. 291

6.0 Steps for Pulse Cylinder Oiling

6.1 Loosen the greasing screw, and inject the authorized oil by a syringe until it is full and overflow.

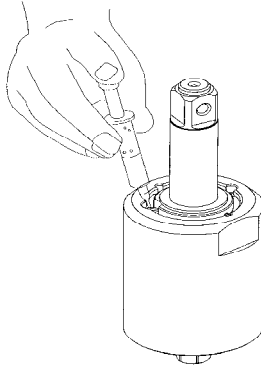


Fig. 292

6.2 Take the unit and dip it in an oil tank, then rotate the anvil by a wrench to release air and the unit would be full with oil completely.

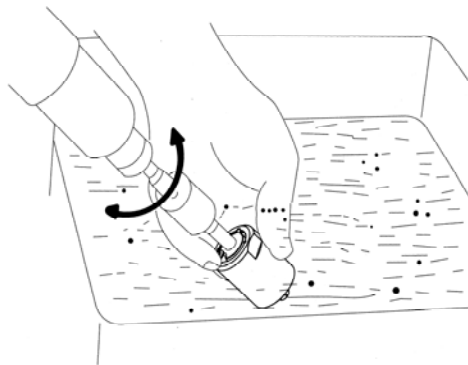


Fig.293

6.3 Use the screwdriver to tighten the greasing screw, Fig. 294

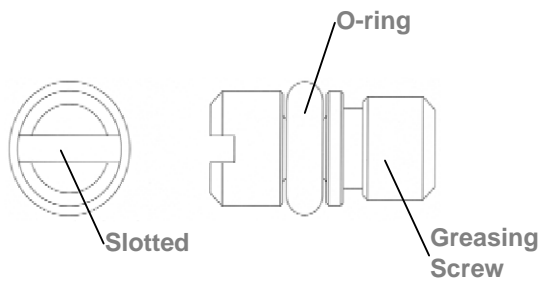
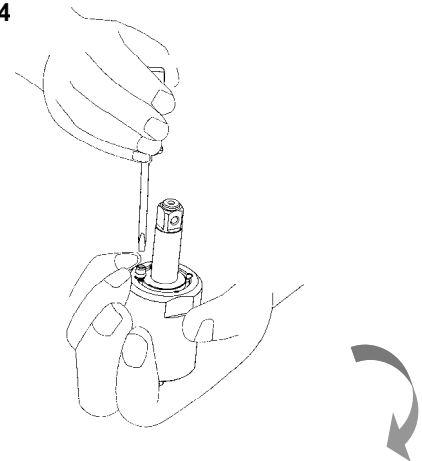


Fig. 294



6.4 Use an air spray gun to blow off the oil on the cylinder seat Fig. 295.

Fig. 295



6.5 Loosen the greasing screw again and use a syringe to draw out a little amount of oil (see Chart 45).
 Finally, tighten the greasing screw back to the pulse cylinder unit, Fig. 296.

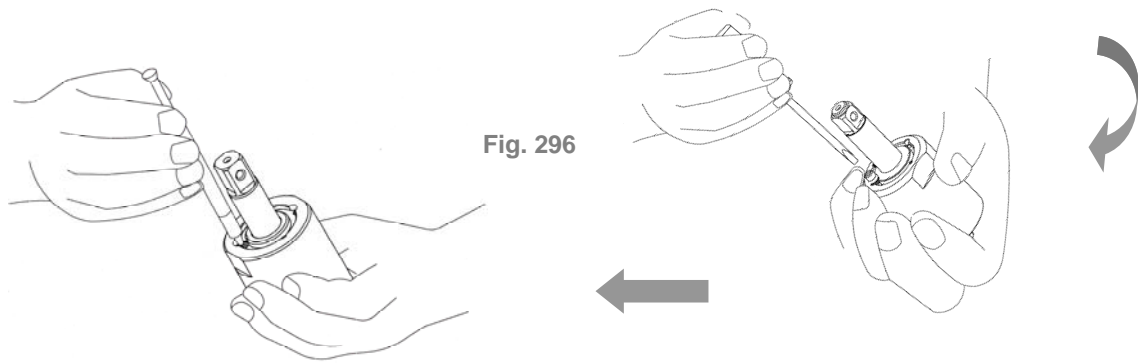


Fig. 296

Model No.	Amount of oil draw	Model No.	Amount of oil draw
FLEX-50R	0.3 CC	FLEX-70R	0.4 CC
FLEX-60R	0.4 CC	FLEX-70RX	0.4 CC
FLEX-50RX	0.3 CC	FLEX-70RH	0.4 CC
FLEX-60RX	0.4 CC		

Chart 45

7.0 Torque Testing

7.1 Put the washer on the front end of the anvil, then put another washer on the rear plate.

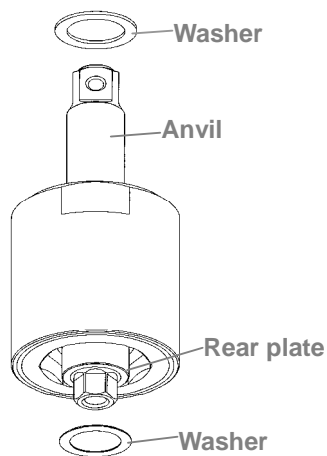


Fig. 297

7.2 Tighten the clutch housing by hands.

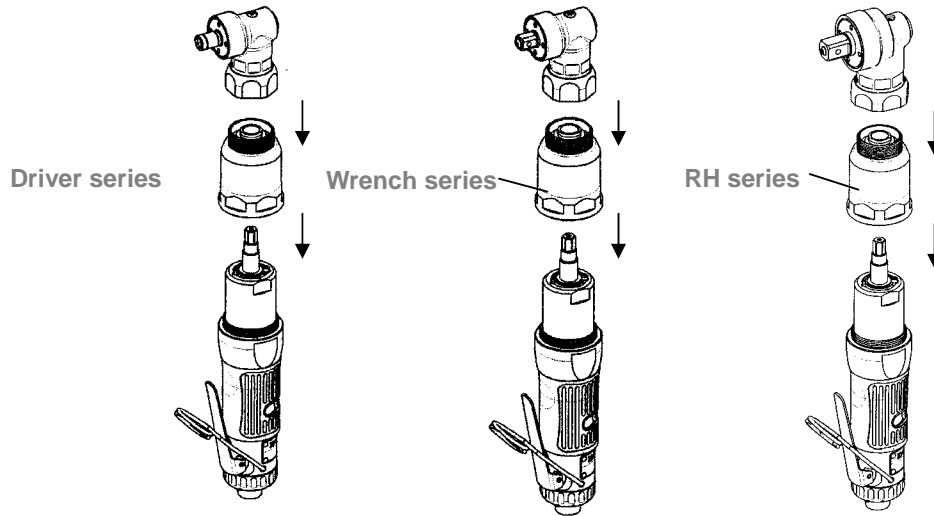


Fig.298

7.3 Test the forward torque by a digital torque tester and make sure the tool pulses smoothly.

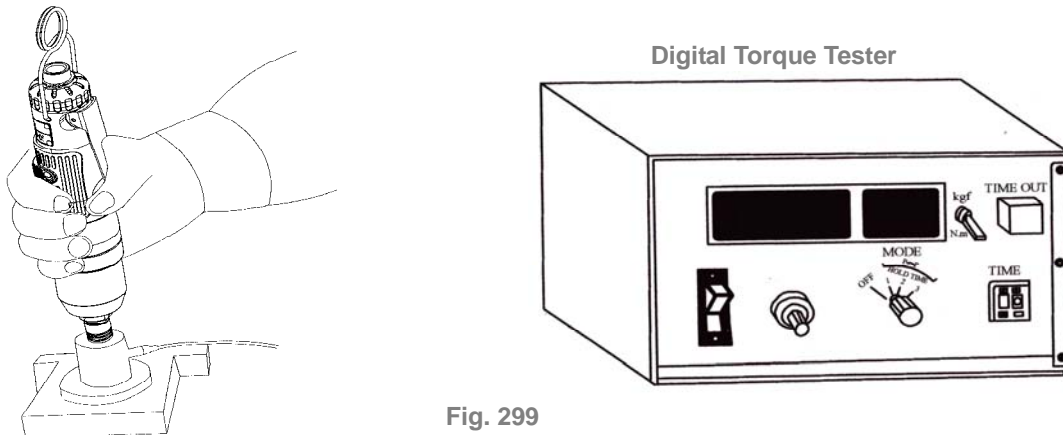


Fig. 299

Model No.	Air inlet pressure 85 PSI
	N.M (at least)
FLEX-50R	17
FLEX-60R	24
FLEX-50RX	26
FLEX-60RX	22
FLEX-70R	31
FLEX-70RX	29
FLEX-70RH	60

Chart 46

7.4 If the test result is NG (see Chart 46 in reference to the torque standard), MUST draw out or add a little amount of oil and do the following steps:

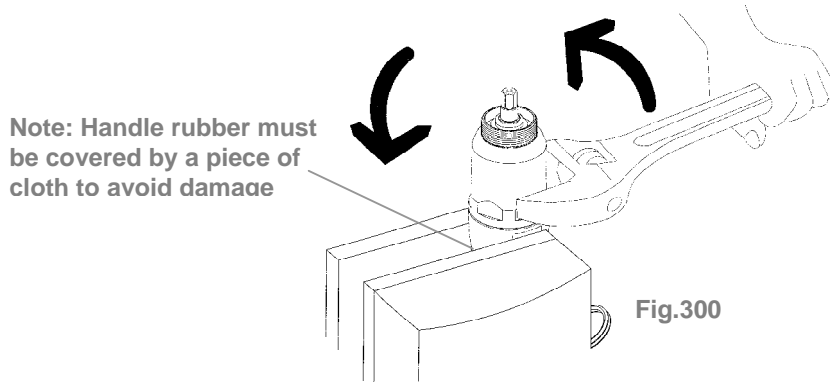
- 7.4.1 Loosen the pulse unit housing by hands.**
- 7.4.2 Loosen the greasing screw.**
- 7.4.3 Draw out or add a little amount of oil.**
- 7.4.4 Tighten the greasing screw back.**

7.4.5 Tighten the pulse unit housing.

7.4.6 Test the torque again. If the test result is still NG, repeat the Steps 7.4.1 to 7.4.5 until the proper torque is reached.

8.0 Pulse Unit Housing Assembly

Fix the housing by a vise. Turn the wrench in counter clockwise direction to tighten the pulse unit housing.



9.0 Angle Housing Unit Assembly:

9.1 Assemble the parts in Fig. 301 one by one orderly into the angle housing. Then, fix the angle housing unit. Use the torque wrench and the appliance clockwise to tighten the lock nut of the shaft gear. See Chart 47 in reference to the proper appliance selecting.

Note: (1) Make sure to apply the grease on the gear.

(2) Make sure to apply the Loctite® on the lock nut of the shaft gear.

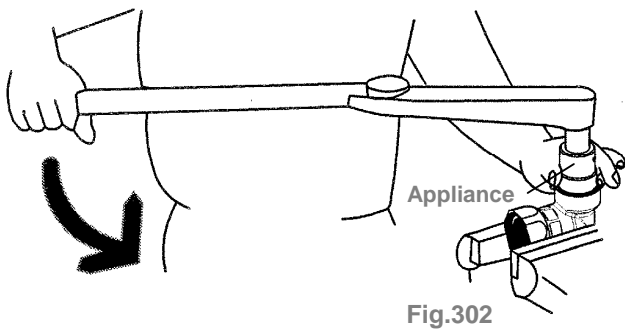
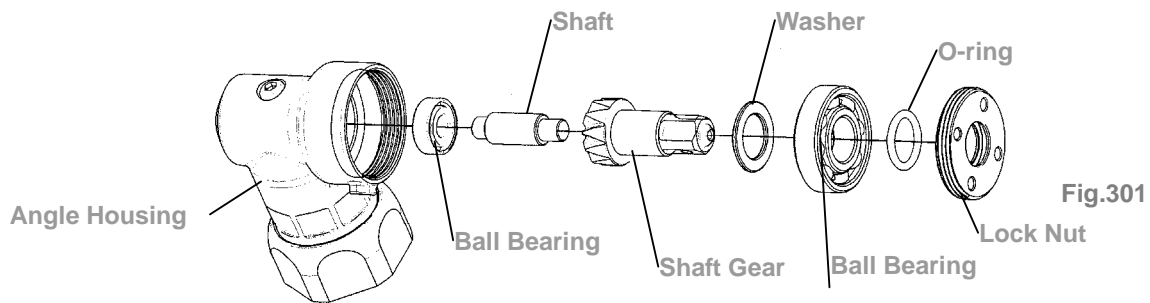


Chart 47

Appliance No.	Apply to
63-TDI-50RRT001	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX, FLEX-70R, FLEX-70RX
63-TDI-70RHRT001	FLEX-70RH

9.2 Assemble the parts in Fig. 303 one by one orderly into the angle housing. Then, fix the angle housing unit. Use the torque wrench and the appliance clockwise to tighten the lock nut of the main shaft gear. See Chart 48 in reference to the proper appliance selecting.

- Note: (1) Make sure to apply the grease on the gear.
 (2) Make sure to apply the Loctite® on the lock nut of the main shaft gear.

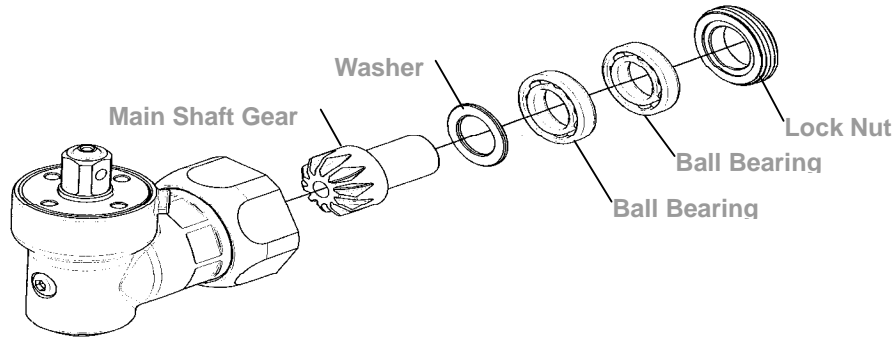


Fig.303

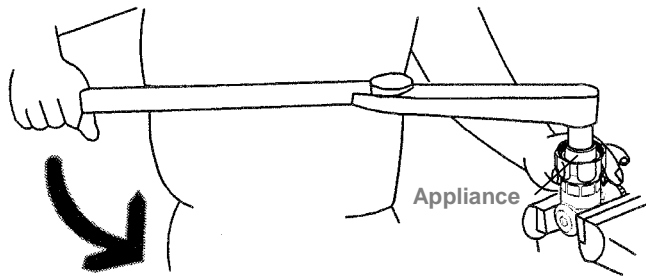


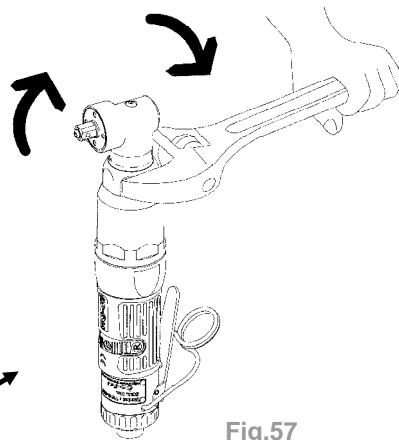
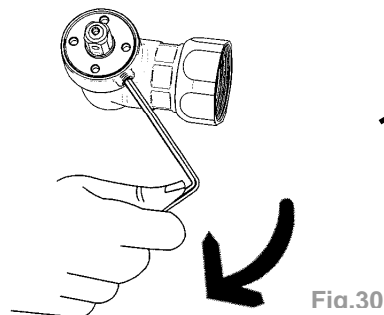
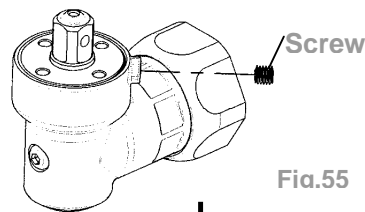
Fig.304

Chart 48

Appliance No.	Apply to
63-TDI-50RRT002	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX, FLEX-70R, FLEX-70RX
63-TDI-70RHRT002	FLEX-70RH

9.3 Use 2mm L-type wrench clockwise to loosen the screws.

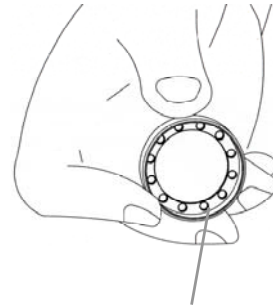
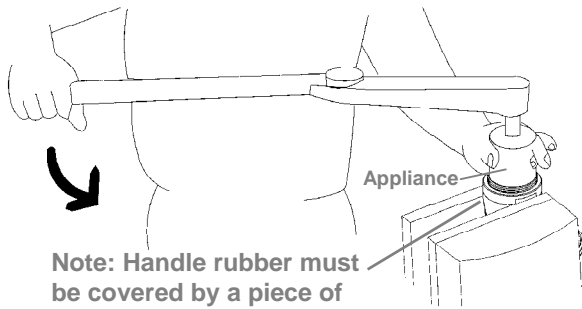
9.4 Assemble the angle housing unit to the pulse unit housing and use the torque wrench clockwise to tighten it.



● **HOUSING AND MOTOR SET DISASSEMBLY:**

1.0 Cylinder Unit Disassembly:

1.1 Fix the tool by a vise. Use the appliance (see Chart 49) to take the lock nut out of cylinder by turning clockwise.



Lock Nut of Cylinder

Fig. 306

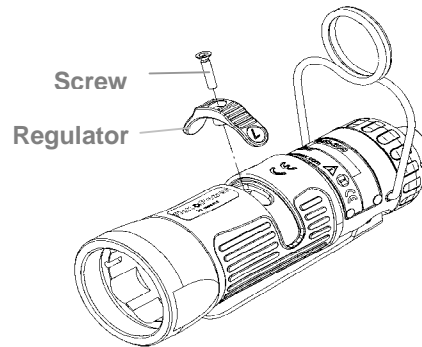
Appliance No.	Apply to
63-TDI-40RT004	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX
63-TDI-70SRT001	FLEX-70R, FLEX-70RX, FLEX-70RH

Chart 49

1.2 Use a wrench to loosen the screw on the side of the motor housing and detach the parts of the regulator.



Fig. 307



1.3 Take a piece of cloth and lay it on a Chart before disassembly. Hold the housing downward to detach the cylinder unit out.

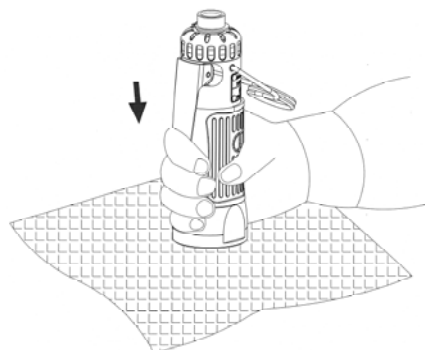
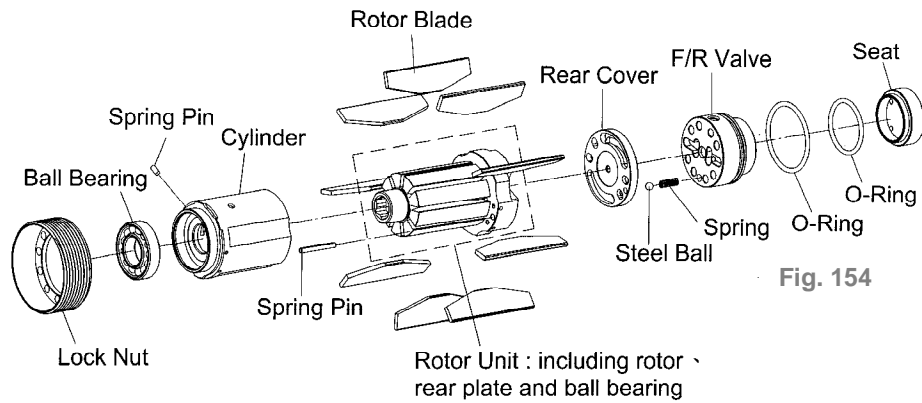


Fig. 308

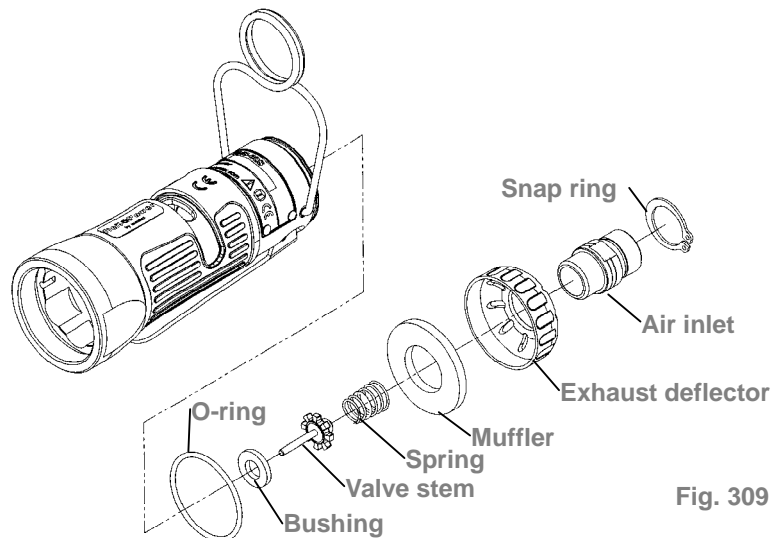
1.4 Parts of Motor Set:



The rotor and the rear end plate must be press fit. The clearance of the two parts must be in between 0.01~0.02 mm. It would not be easy to assemble the two parts by repair centers in general. Therefore, as there is a need of repair on the parts of the rotor, the rear end plate, and the ball bearing, we strongly suggest replacing a complete ROTOR UNIT, which is including the rotor, the rear plate, and the ball bearing. The rotor unit would be full assembled and well-measured before delivery.

2.0 Air Inlet Disassembly:

Take off the snap ring from the air inlet, and then take off the exhaust deflector. Use an open wrench to open the air inlet in counter clock wise direction. All the interior parts are detached.



3.0 Trigger Set Disassembly:

Remove the spring pin from the trigger to detach the interior parts. And then, remove the housing rubber and the hanger to complete the disassembly.

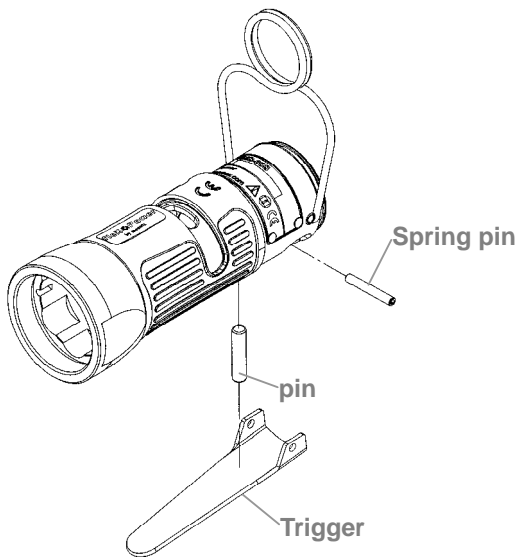


Fig. 310

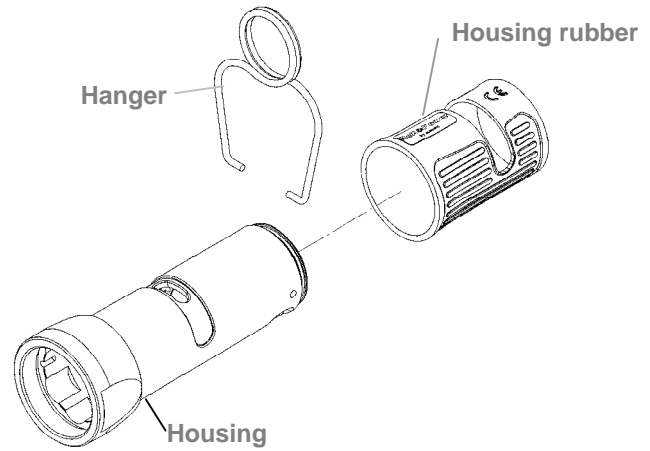


Fig. 311

● HOUSING AND MOTOR SET ASSEMBLY:

1.0 Cylinder Unit Assembly

- 1.1 Place the rotor blades into the rotor. Insert the spring pin A and B into the cylinder. Make sure the pins aim at the pin holes when putting the cylinder down.

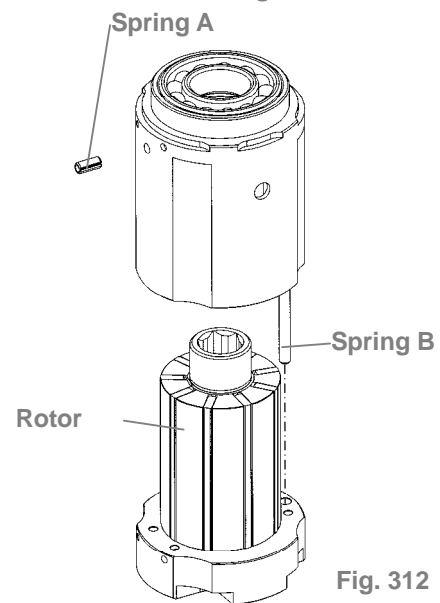


Fig. 312

- 1.2 Make the groove of the air inlet plate toward the rear end plate and assemble. Make sure the holes aim at the pin while assembling, Fig. 313.
- 1.3 Assemble the regulator with the rotor- air inlet unit. Make sure the steel balls of the regulator are placed on the holes of the air inlet plate. Then, place the seat with the O-ring sleeved on the regulator. Assembly is complete.

 Apply the lubricator between parts while assembling.

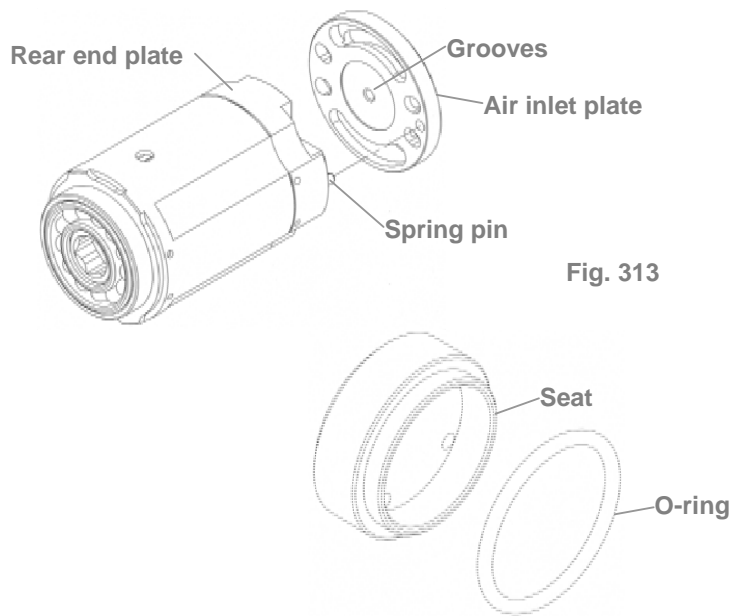


Fig. 313

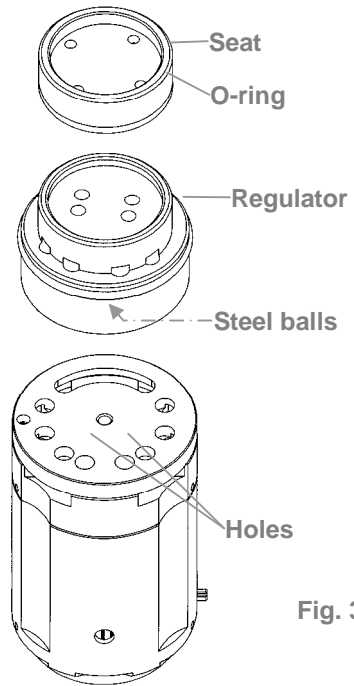


Fig. 314

3.0 Housing, Motor set unit and Lock Nut of Cylinder Assembly:

3.1 Put the housing rubber on the housing.

3.2 Install the motor set into the housing. Make sure the direction is correct, i.e. the spring pin on the side of the cylinder aims at the hole inside the housing.

3.3 Have the hole on the regulator aim at the screw hole on the side of the F/R valve and make sure the screw is tightened into the regulator and the F/R valve.

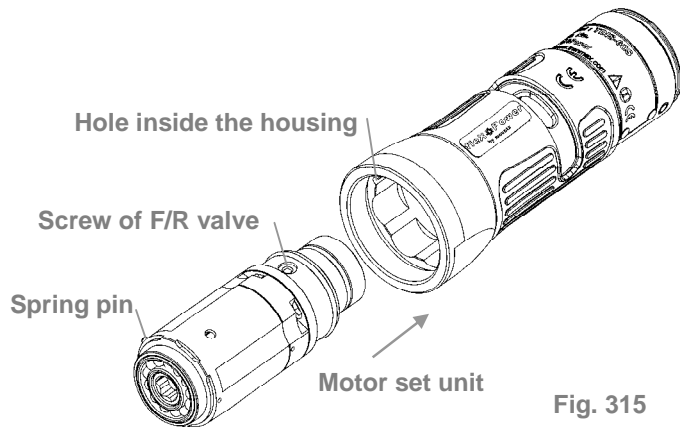


Fig. 315

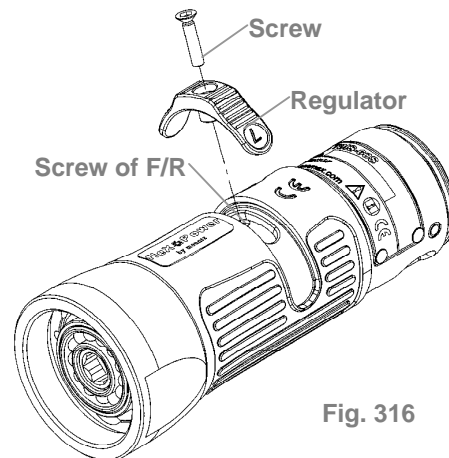


Fig. 316

3.4 Fix the tool by a vise. Place the lock nut of the cylinder nut and tighten by the appliance in counterclockwise direction to complete the assembly. See the Chart 50 and 51 in reference to appliance use and tighten torque.

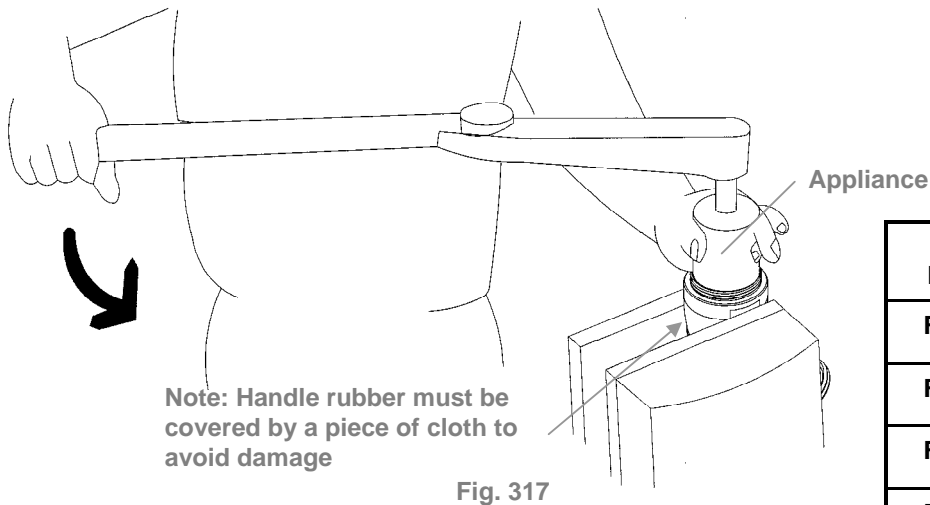


Fig. 317

Model No.	Tighten torque
FLEX-50R	40 N.M
FLEX-60R	40 N.M
FLEX-50RX	40 N.M
FLEX-60RX	40 N.M
FLEX-70R	60 N.M
FLEX-70RX	60 N.M
FLEX-70RH	60 N.M

Appliance No.	Apply to
63-TDI-40RT004	FLEX-50R, FLEX-60R, FLEX-50RX, FLEX-60RX
63-TDI-70SRT001	FLEX-70R, FLEX-70RX, FLEX-70RH

Chart 50

4.0 **Housing and Air Inlet Assembly:**

Install and tighten the parts of air inlet one by one and orderly. (NOTE: Apply the Loctite on the threads of air inlet before assembly)

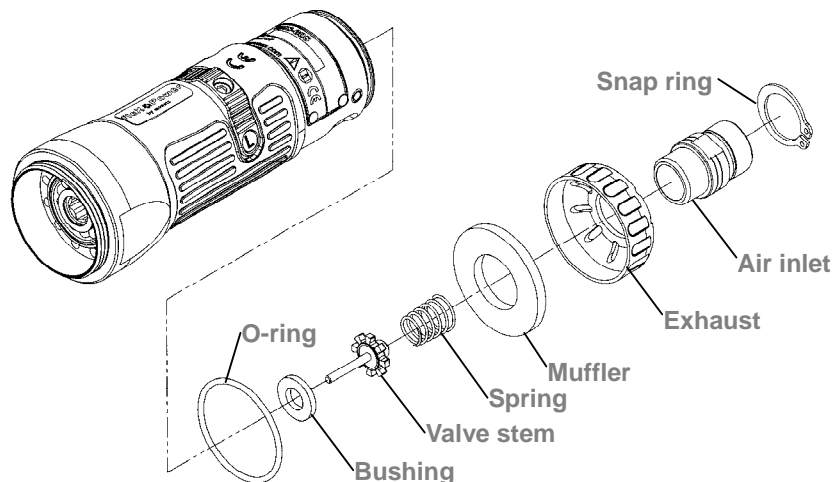


Fig. 318

4.0 Housing and Trigger Set Assembly:

4.1 Install the parts of the trigger set orderly (see Fig. 319 drawing for reference). Then, Insert the spring pins to fix all the parts. And, install the hanger to complete the assembly.

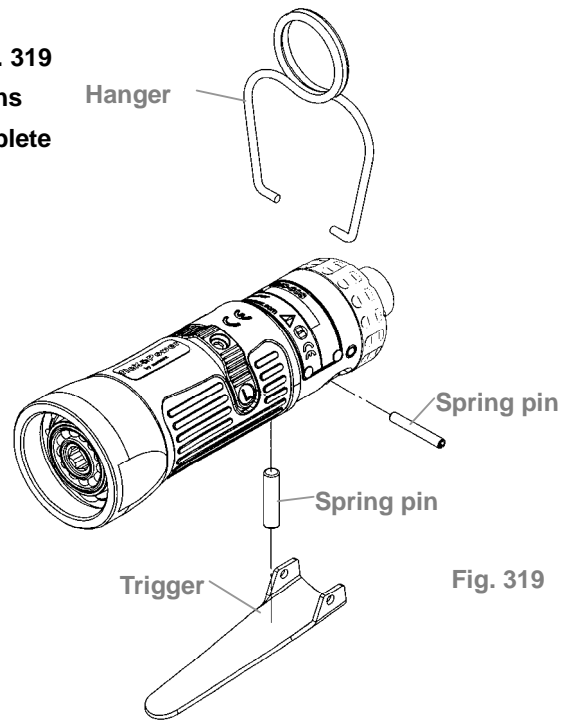


Fig. 319



After all the assembly is complete, test to make sure the anvil rotates freely, then connect the air hose and test the torque.

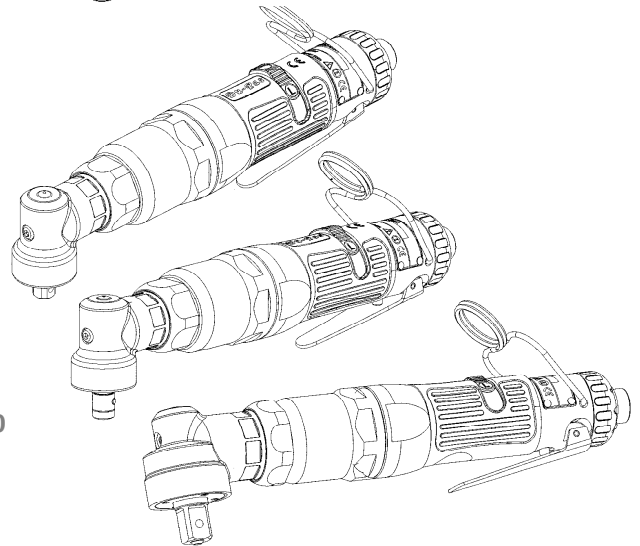


Fig. 320

DISASSEMBLY / ASSEMBLY FOR ANGLE SERIES

FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX, FLEXS-70R, FLEXS-70RX, FLEXS-70RH

PULSE MECHANISM DISASSEMBLY

1.0 Spring Holder disassembly: (for Model No. FLEXS-50RX, FLEXS-60RX, FLEXS-70RX)

Use a needle like stuff to get the spring holder out, then take the steel ball.



The steel ball may drop off when taking out the spring holder.

Note: Handle rubber must be covered by a piece of cloth to avoid damage

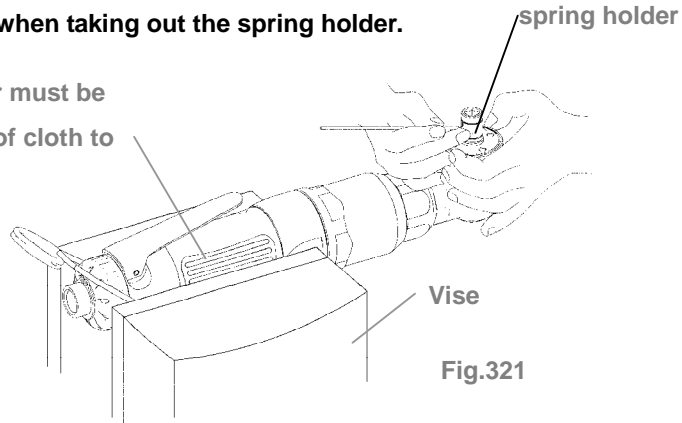


Fig.321

2.0 Angle Housing Unit Disassembly:

2.1 Use an adjusChart wrench counterclockwise to loosen the lock nut of the pulse unit housing. Then, take off the angle unit.

2.2 Use 2mm L-type wrench counterclockwise to loosen the screws.

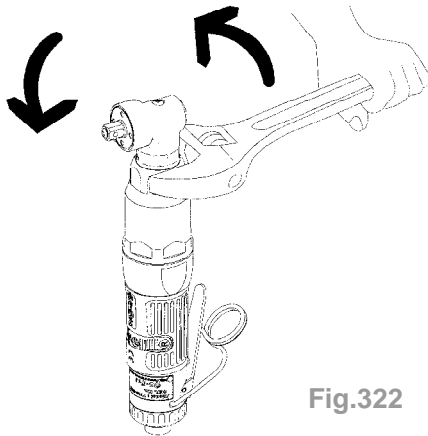


Fig.322

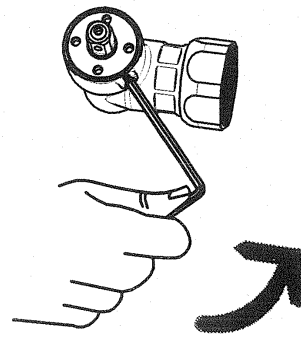


Fig.323

2.3 Fix the angle unit. Use the torque wrench and the appliance to loosen the lock nut of the shaft gear counterclockwise. Then take off some parts. See the Chart 52 for selecting the proper appliance.

NOTE: Loctite® might be applied when assembling the gear shaft.

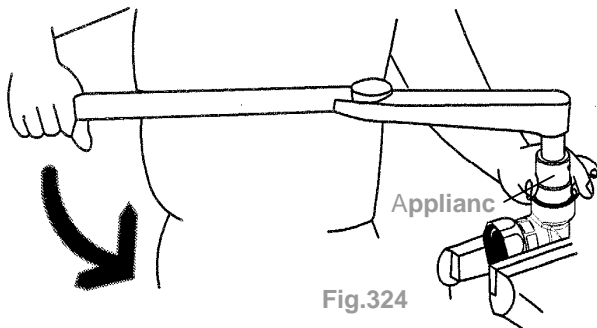


Fig.324

Appliance No.	Apply to
63-TDI-50RRT001	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX, FLEXS-70R, FLEXS-70RX
63-TDI-70RHRT001	FLEXS-70RH

Chart 52

2.4 Fix the angle unit. Use the torque wrench and the appliance to loosen the lock nut of the main shaft gear counterclockwise. Then take off the remaining parts. See the Chart 53 for selecting the proper appliance.

NOTE: Loctite® might be applied when assembling the main gear shaft.

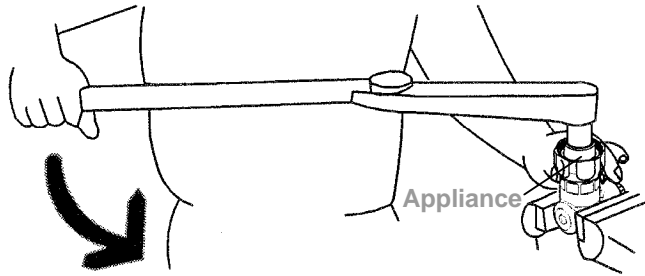


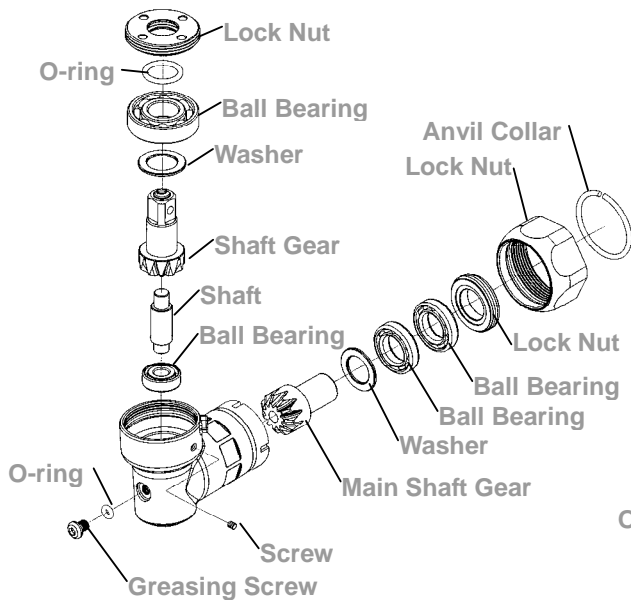
Fig.325

Appliance No.	Apply to
63-TDI-50RRT002	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX, FLEXS-70R, FLEXS-70RX
63-TDI-70RHRT002	FLEXS-70RH

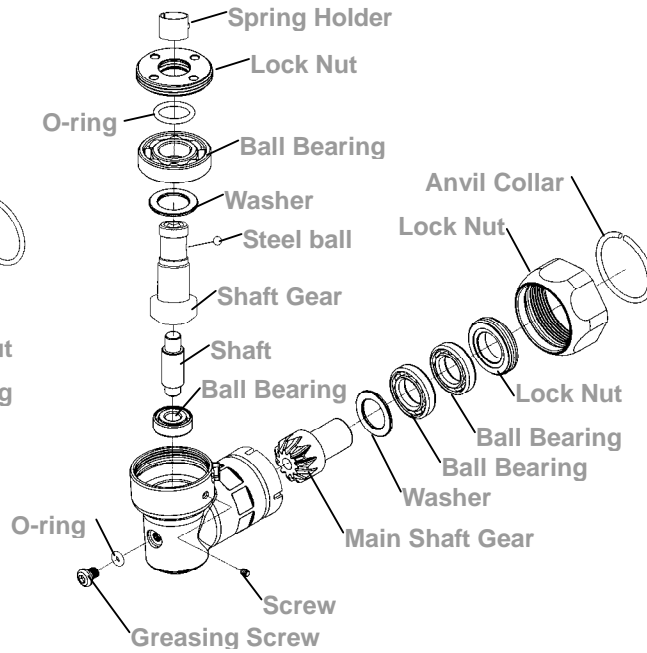
Chart 53

2.5 Parts of Angle Housing Unit:

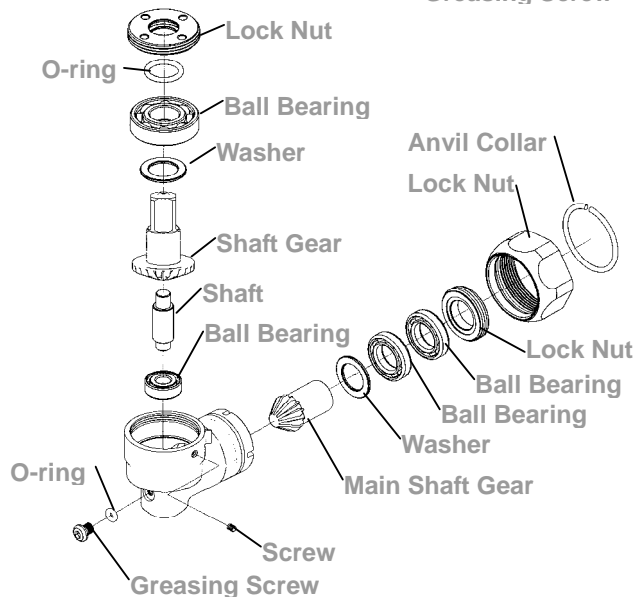
a. R Series



b. RX Series



c. RH Series



2.0 Pulse Unit Housing Disassembly:

Fix the tool by a vise, use an adjustable wrench clockwise to loosen the pulse unit housing until the pulse unit housing detach from the motor housing. Then, take the pulse unit out, Fig. 326.

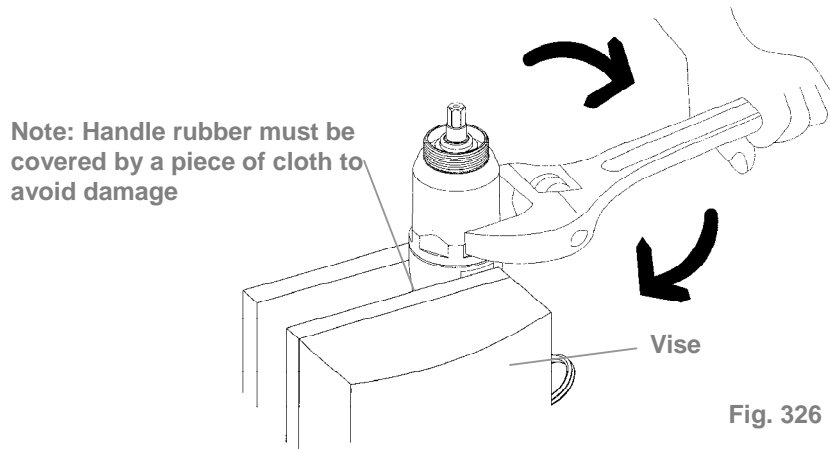


Fig. 326

3.0 Pulse Unit Disassembly:

3.1 Fix the pulse unit by a vise. Use the appliance (see Chart 54) to loosen the lock nut on the pulse unit, Fig. 327.

Note: Loctite® was applied on the lock nut when tools assembled.

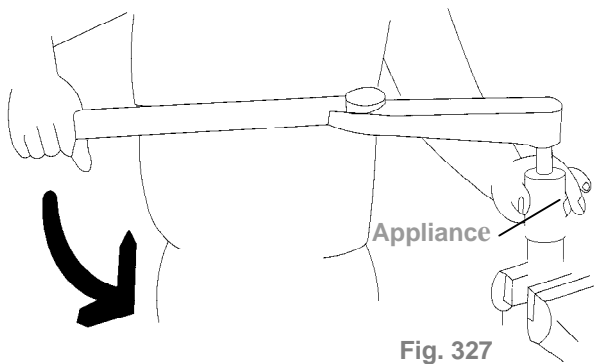


Fig. 327

Appliance No.	Apply to
63-TDI-40RT001	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX
63-TDI-70RT001	FLEXS-70R, FLEXS-70RX, FLEXS-70RH

Chart 54

3.2 Put the Appliance, see Chart 55, on the anvil and tap on it slightly to detach the interior parts from the pulse unit, Fig. 328.

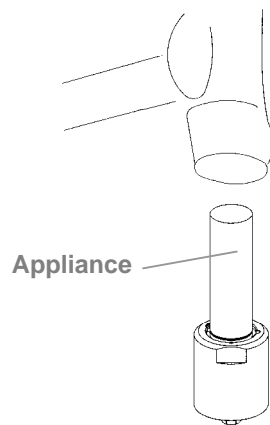


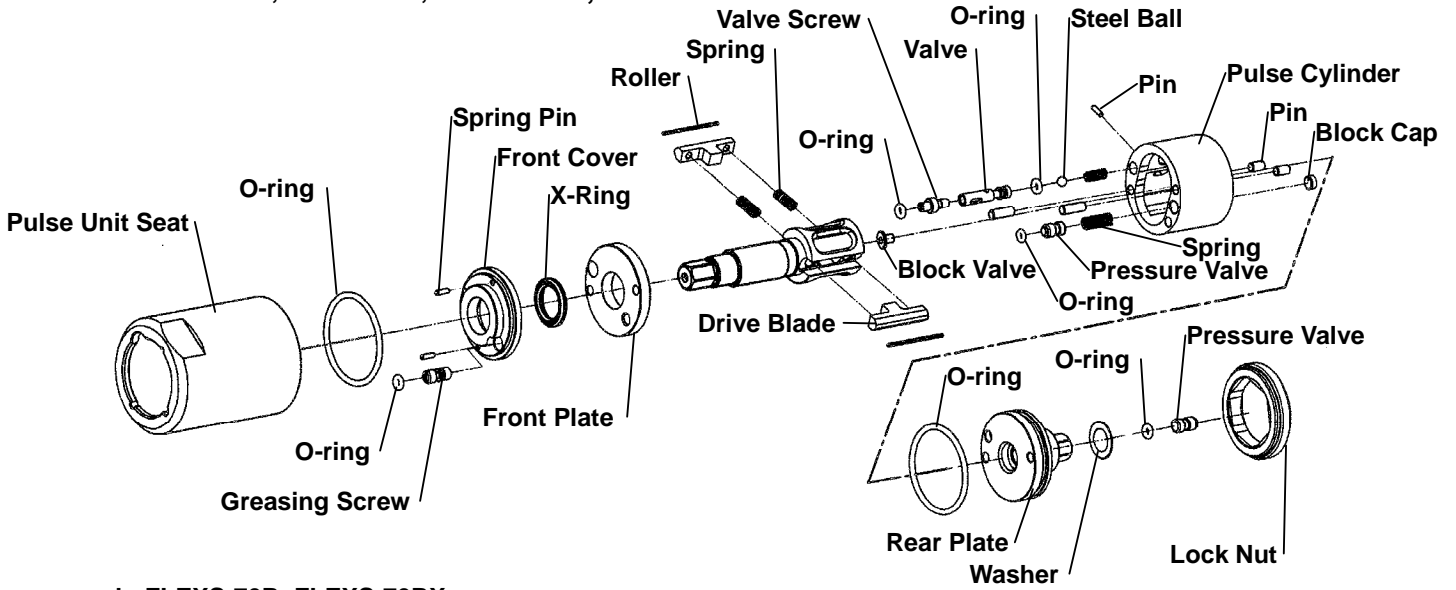
Fig. 328

Appliance No.	Apply to
63-TDI-40RT002	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX, FLEXS-70R, FLEXS-70RX, FLEXS-70RH

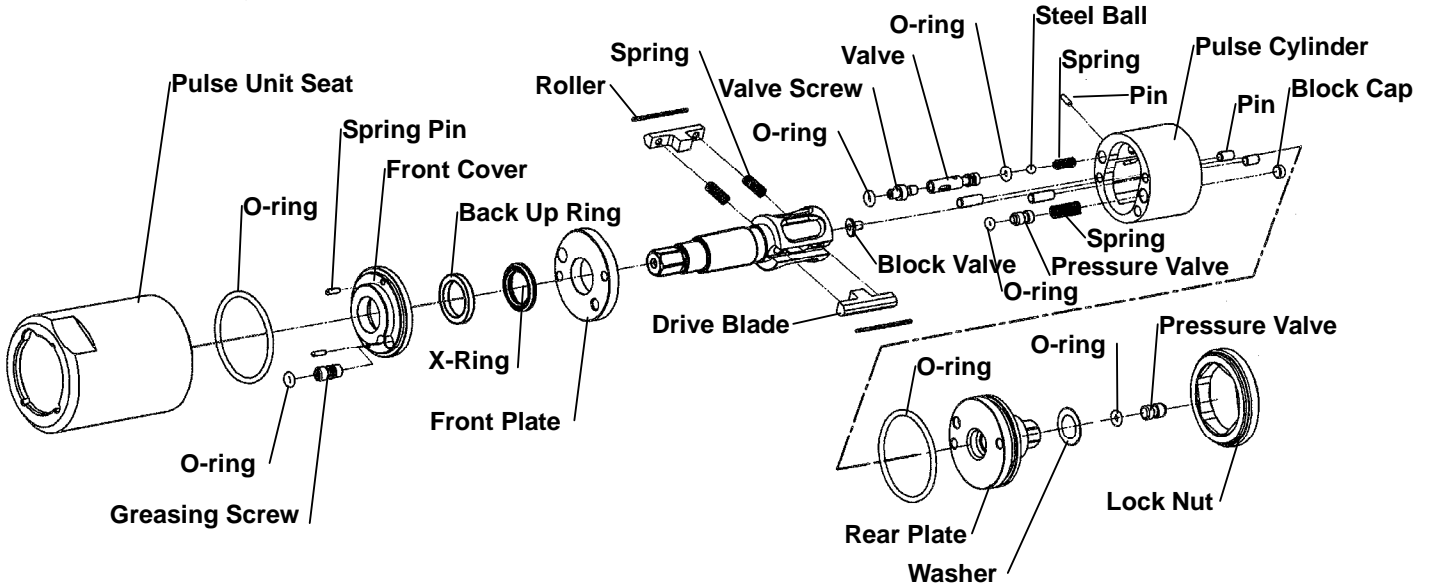
Chart 55

4.0 Parts of Pulse Cylinder Unit:

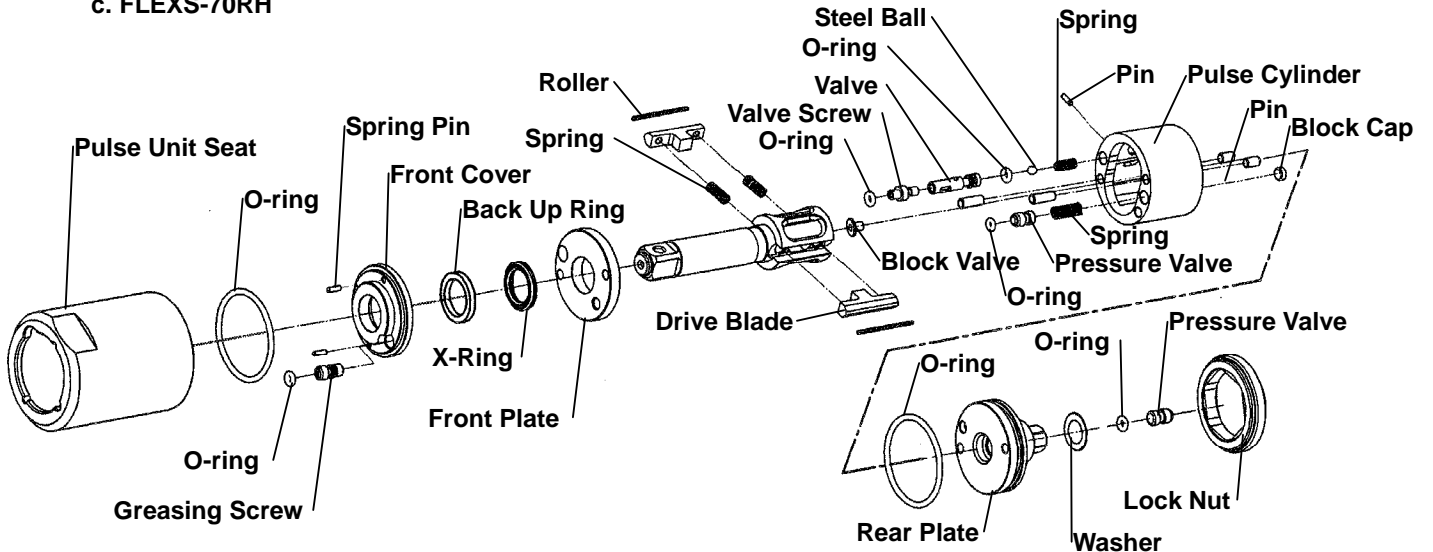
a. FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX



b. FLEXS-70R, FLEXS-70RX



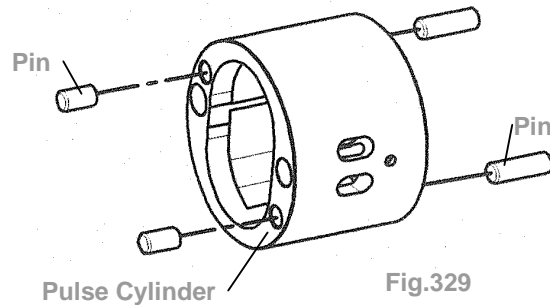
c. FLEXS-70RH



● **PULSE UNIT ASSEMBLY:**

1.0 Pulse Cylinder Unit Assembly:

1.1 Install the pins on both sides of the pulse cylinder. (Fig. 329)

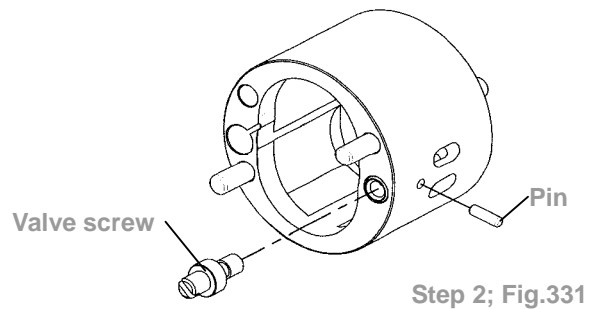
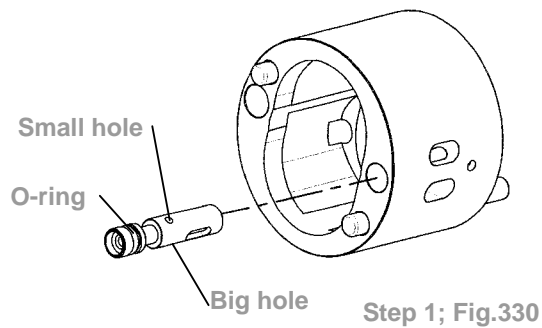


1.2 Sleeve the O-ring to the valve and install the valve into the big hole on the pulse cylinder. (Step 1; Fig.330)

1.3 Insert the pin into the hole on the side of the pulse cylinder. (Step 2; Fig.331)

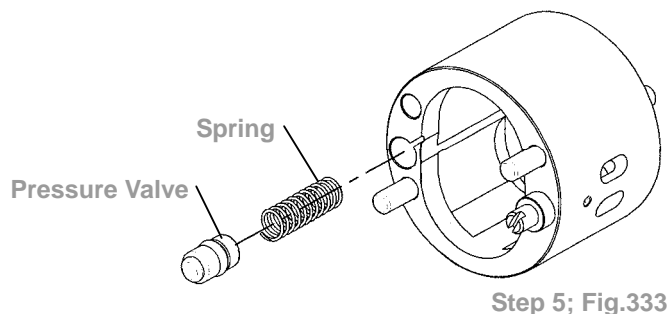
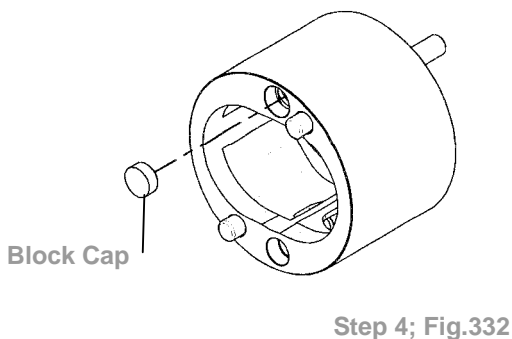
1.4 Screw the valve screw to the pressure valve. (Step 3; Fig.331)

NOTE: the valve screw MUST screw to the most bottom position certainly.

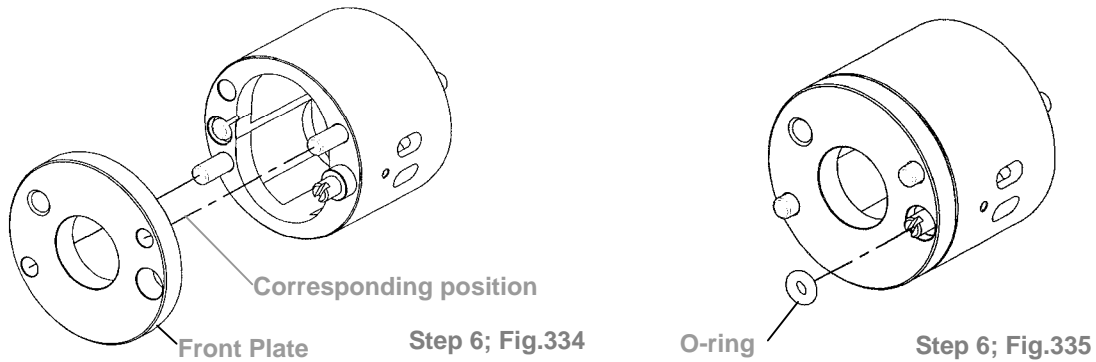


1.5 Plug the block cap into the hole and make sure it is parallel to the surface of the pulse cylinder. (Step 4; Fig. 332)

1.6 Put the spring into the hole then install the pressure valve that with the 0-ring sleeved. (Step 5; Fig. 333)



- 1.7 Install the front plate and make sure the corresponding position with the pins. (Step 6; Fig. 334)
- 1.8 Sleeve the O-ring on the valve screw and press into the hole. Make sure it is parallel to the surface of the front plate. (Step 7; Fig. 335)



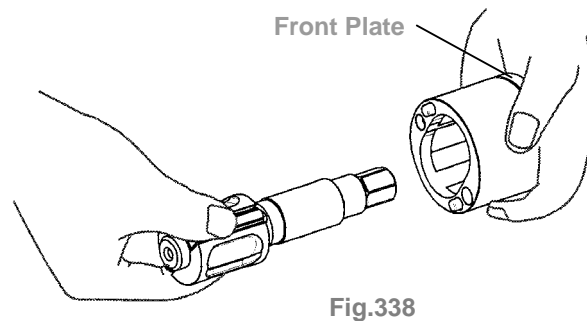
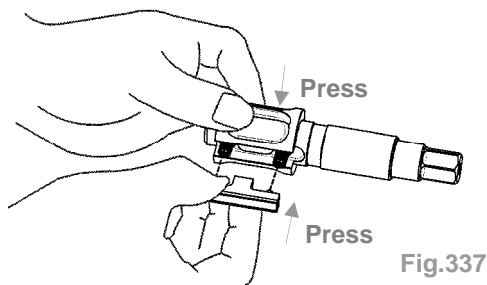
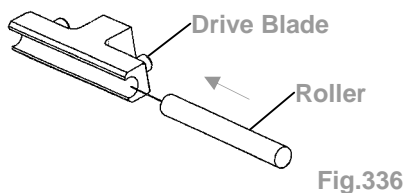
2.0 Anvil Unit Assembly

Install the roller to the drive blade, then insert the springs into the anvil and press the blades from both sides. Finally put the anvil to the pulse cylinder to complete the anvil unit assembly.

⚠ MUST follow the direction as Fig.338 showed while installing the anvil unit into the pulse cylinder; be sure to aim at the highest points by two sides of the interior pulse unit and press the two drive blades in slowly.

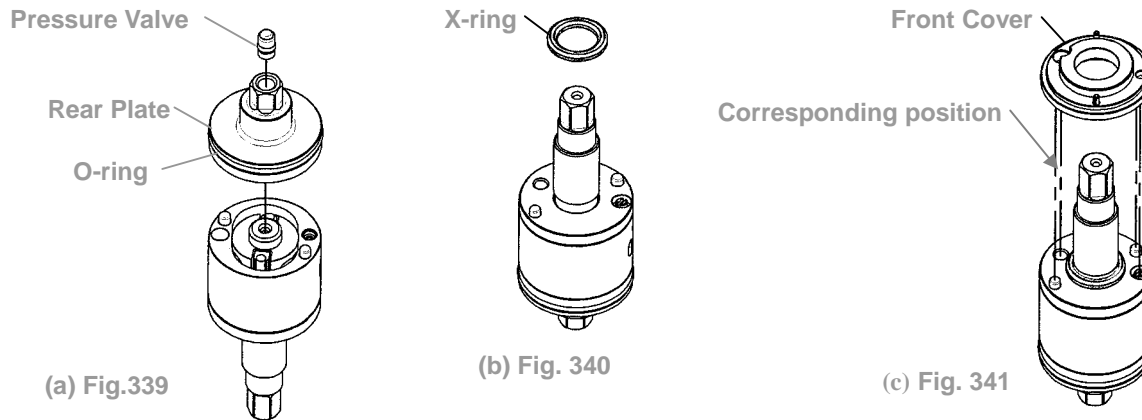
NOTE: RECOMMENDED UTILIZE THE SPECIAL FIXTURE FOR EASIER INSTALLATION FOR THE ANVIL WITH THE ROLLER AND THE BLADE INTO THE CYLINDER (No picture showed)

FIXTURE PART No	TOOL MODEL
63-I40AST-001K	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX,
63-I70AST-001K	FLEXS-70R, FLEX-70RX, FLEX-70RH

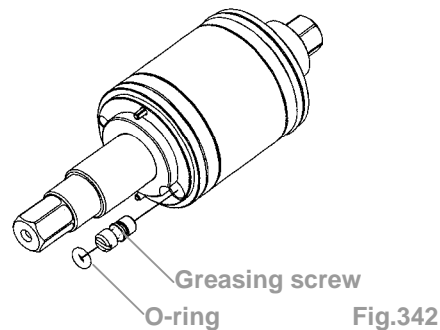


3.0 Front Cover and Rear Plate of Pulse Cylinder Assembly (For the models FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX)

- 3.1 (a) Install the rear plate to the pulse cylinder and be sure the positions of the pin and the hole are corresponded. (Fig. 339) Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.
- (b) Put the X-ring on the anvil with the oil applied. (Fig. 340)
- (c) Install the front cover to the pulse cylinder by the corresponding positions. (Fig. 341)

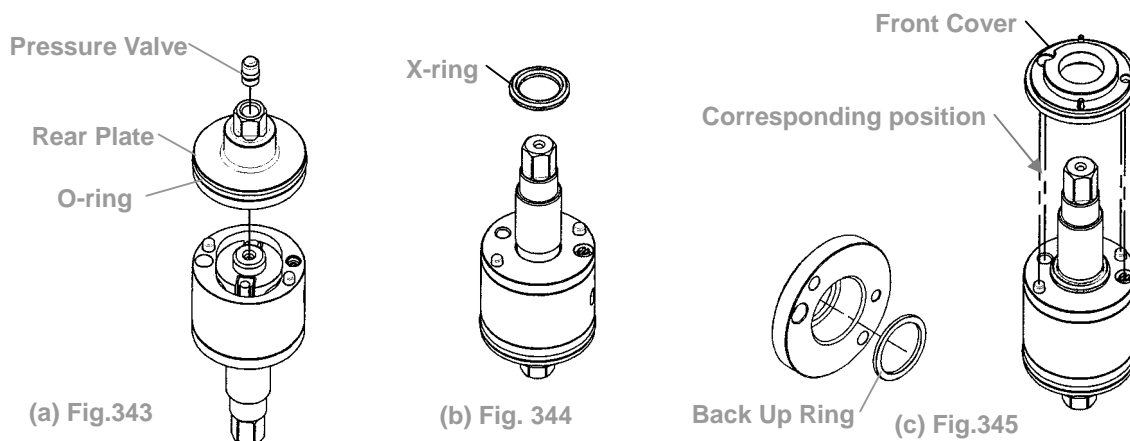


- 3.2 After installing the front cover, put the O-ring on the greasing screw, then tighten the greasing screw but not tighten it completely.

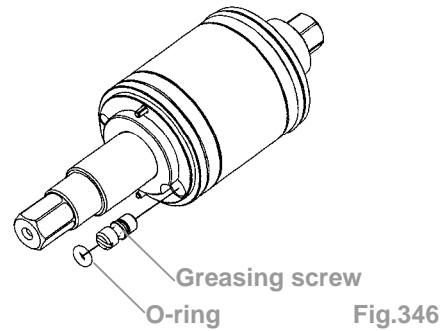


→ FLEXS-70R, FLEXS-70RX

- 3.1 (a) Install the rear plate that with the O-ring sleeved (Fig. 343). Make sure the positions of the pin and hole are exactly matched. Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.
- (b) Put the X-ring on the anvil with the oil applied. (Fig. 344)
- (c) Put the back up ring into the front cover, and install the front cover to the pulse cylinder by the corresponding positions. (Fig. 345)

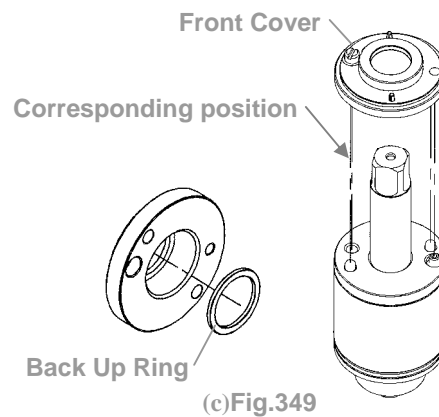
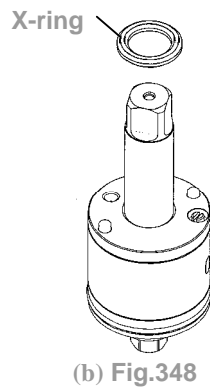
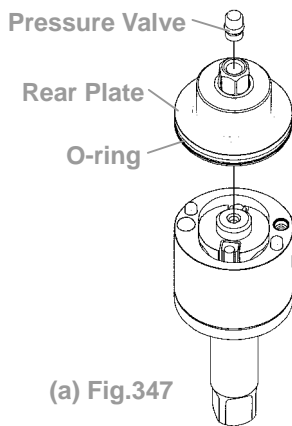


3.2 After installing the front cover, put the O-ring on the greasing screw, then tighten the greasing screw but not tighten it completely.

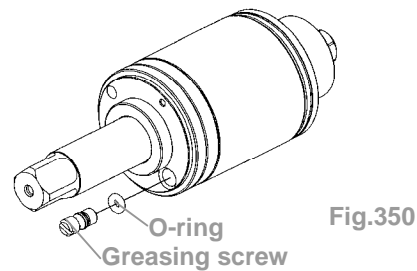


→FLEXS-70RH

- 3.1 (a) Install the rear plate that with the O-ring sleeved (Fig. 347). Make sure the positions of the pin and hole are exactly matched. Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.
- (b) Put the X-ring on the anvil with the oil applied. (Fig. 348)
- (c) Put the back up ring into the front cover, and install the front cover to the pulse cylinder by the corresponding positions. (Fig. 349)



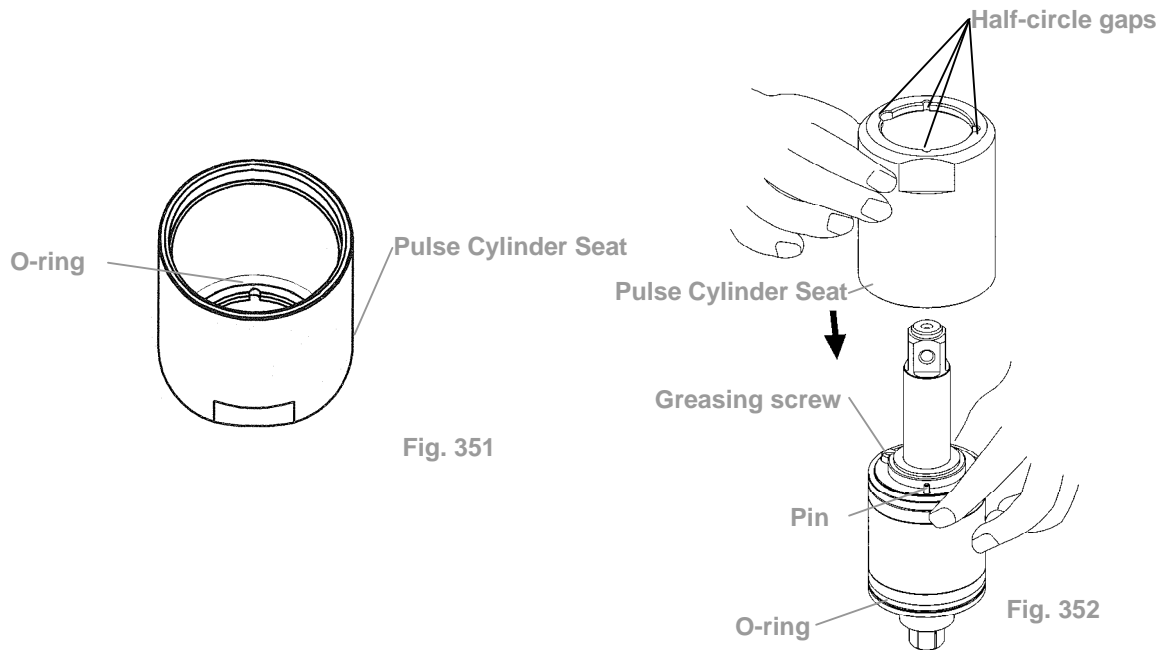
3.2 After installing the front cover, put the O-ring on the greasing screw, then tighten the greasing screw but not tighten it completely.



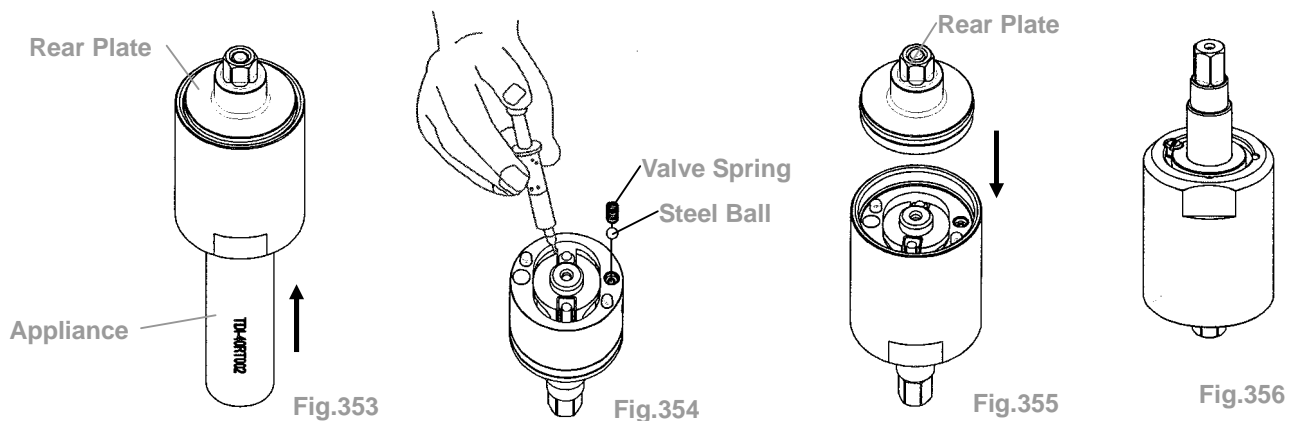
4.0 Pulse Cylinder Seat and Lock Nut of Pulse Cylinder Assembly

- 4.1 Place the O-ring inside the bottom of the pulse cylinder seat, then combine the pulse cylinder seat with the assembled pulse cylinder unit. (Fig. 351, Fig. 352)

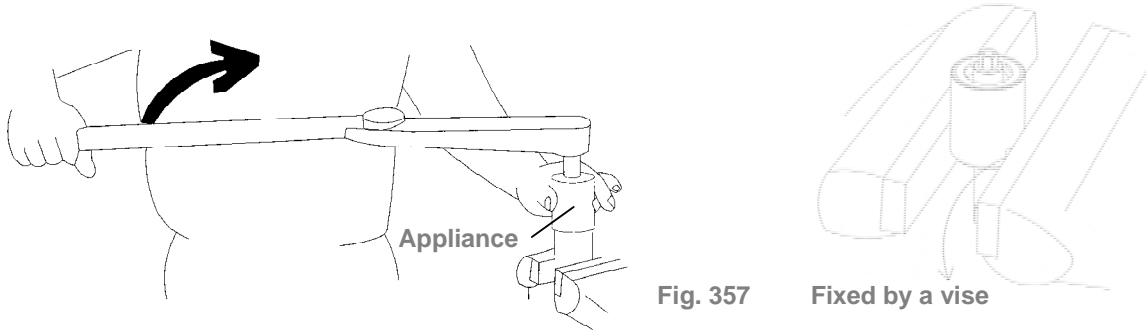
 Make sure the half-circle gaps aim at the corresponding positions.



- 4.2 Use the appliance to push out the rear plate from the pulse cylinder seat. See Chart 55 in reference to the proper appliance selection. (Fig.353)
- 4.3 Fill up the interior pulse cylinder with the pulse oil about 90% full by a syringe. (Fig. 30) Put the steel ball and the valve spring into the hole on the pulse cylinder in order. (Fig. 354)
- 4.4 Install the rear plate taken from the step 2 on the pulse cylinder. Note the corresponding positions
- 4.5 Turn the assembled unit up side down so the rear plate is at the bottom. Then press the pulse cylinder seat all the way down to the fixed position. Make sure the corresponding positions are matched exactly.



4.6 Fix the pulse cylinder seat by a vise. Use an appliance and a torque wrench, and then turn clockwise to tighten the lock nut of the pulse cylinder. See Chart 56 and 57 in reference to the proper appliance and tightness. (Note: Loctite® needed when tightening the lock nut of the pulse cylinder)



Appliance No.	Apply to
63-TDI-40RT001	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX
63-TDI-70RT001	FLEXS-70R, FLEXS-70RX, FLEXS-70RH

Chart 56

Model No.	Tighten torque	Model No.	Tighten torque
FLEXS-50R	80 N.M	FLEXS-70R	100 N.M
FLEXS-60R	80 N.M	FLEXS-70RX	100 N.M
FLEXS-50RX	80 N.M	FLEXS-70RH	100 N.M
FLEXS-60RX	80 N.M		

Chart 57

4.7 After completing the above steps, test to make sure the square drive of the anvil rotates freely.

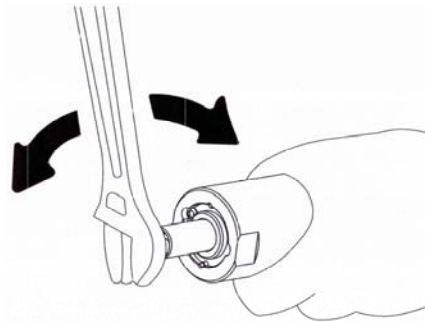


Fig. 139

5.0 Steps for Pulse Cylinder Oiling

5.1 Loosen the greasing screw, and inject the authorized oil by a syringe until it is full and overflow.

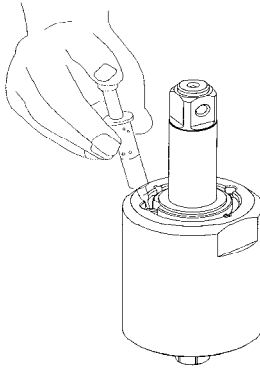


Fig. 358

5.2 Take the unit and dip it in an oil tank, then rotate the anvil by a wrench to release air and the unit would be full with oil completely.

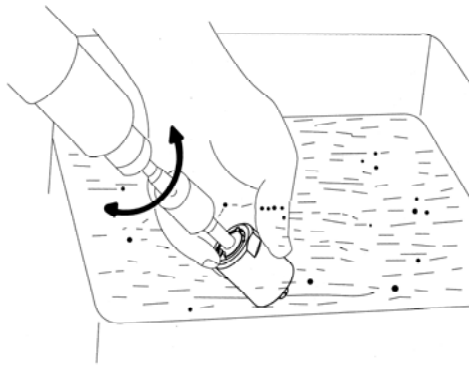


Fig. 359

5.3 Use the screwdriver to tighten the greasing screw, Fig. 360

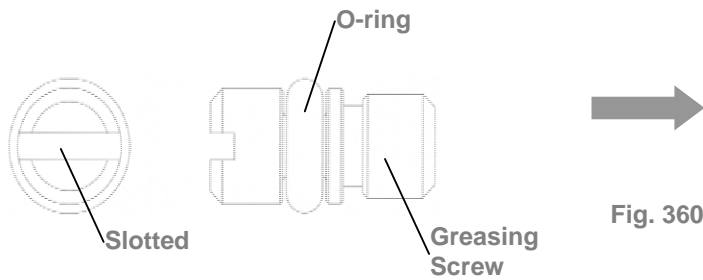
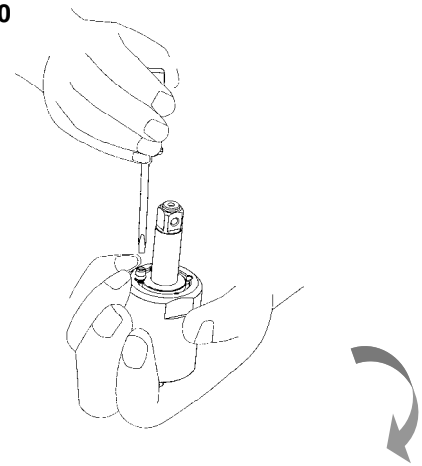


Fig. 360



5.4 Use an air spray gun to blow off the oil on the cylinder seat, Fig. 361.

Fig. 361



5.5 Loosen the greasing screw again and use a syringe to draw out a little amount of oil (see Chart 58) .
 Finally, tighten the greasing screw back to the pulse cylinder unit, Fig. 362.

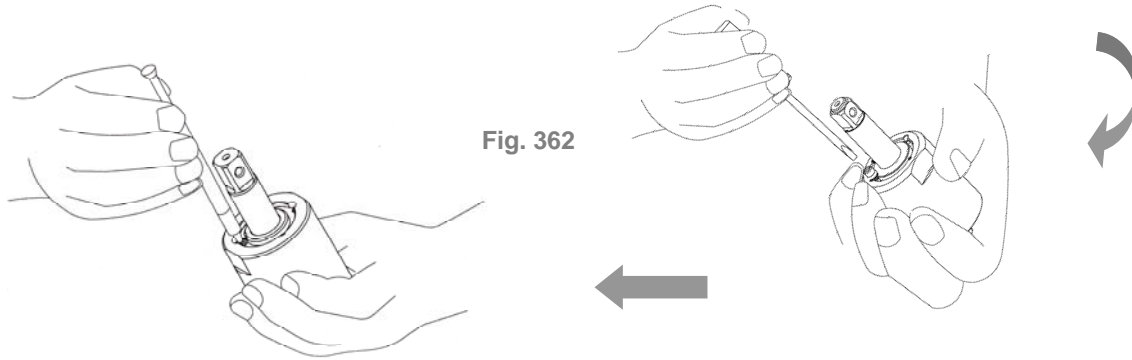


Fig. 362

Model No.	Amount of oil draw	Model No.	Amount of oil draw
FLEXS-50R	0.3 CC	FLEXS-70R	0.4 CC
FLEXS-60R	0.4 CC	FLEXS-70RX	0.4 CC
FLEXS-50RX	0.3 CC	FLEXS-70RH	0.4 CC
FLEXS-60RX	0.4 CC		

Chart 58

6.0 **Torque Testing**

6.1 Put the washer on the front end of the anvil, then put another washer on the rear plate.

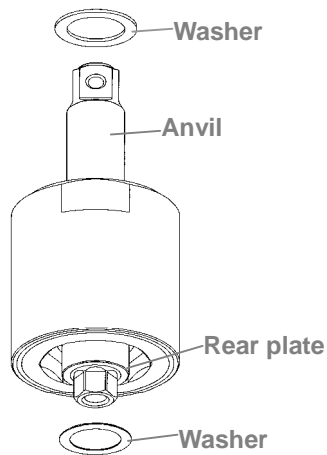


Fig. 363

6.2 Tighten the clutch housing by hands.

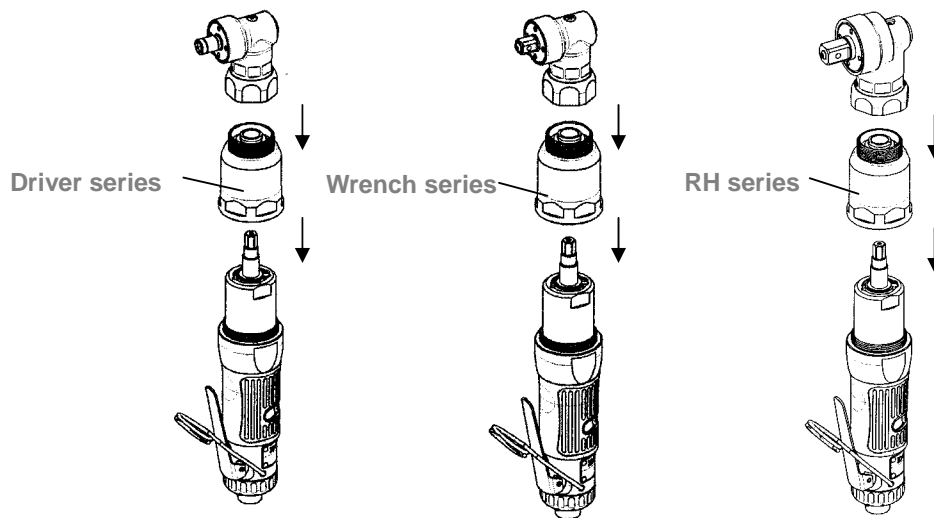


Fig.364

6.3 Test the forward torque by a digital torque tester and make sure the tool pulses smoothly.

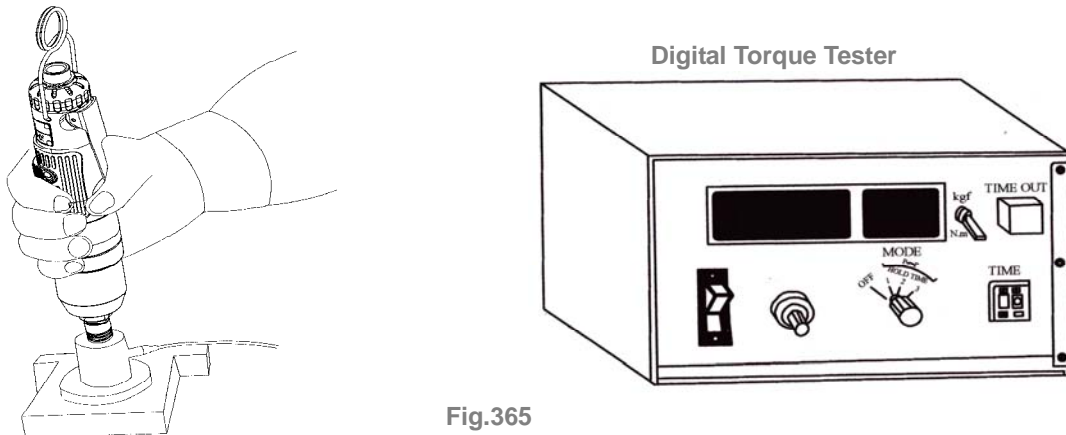


Fig.365

Model No.	Air inlet pressure 85 PSI
	N.M (at least)
FLEXS-50R	17
FLEXS-60R	24
FLEXS-50RX	26
FLEXS-60RX	22
FLEXS-70R	31
FLEXS-70RX	29
FLEXS-70RH	60

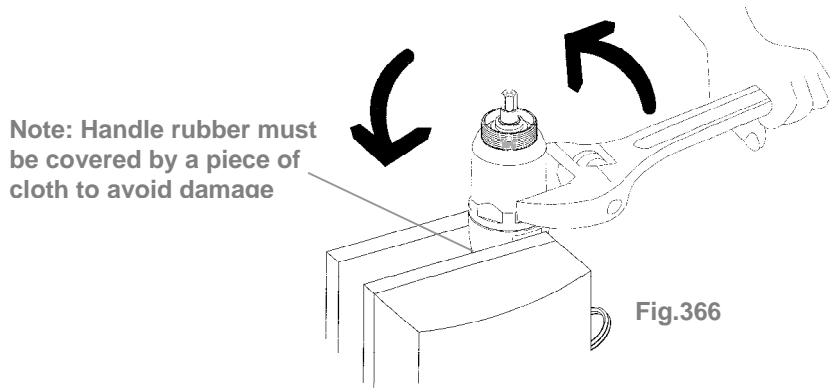
Chart 59

6.4 If the test result is NG (see Chart 59 in reference to the torque standard), **MUST** draw out or add a little mount of oil and do the following steps:

- 6.4.1 Loosen the pulse unit housing by hands.
- 6.4.2 Loosen the greasing screw.
- 6.4.3 Draw out or add a little amount of oil.
- 6.4.4 Tighten the greasing screw back.
- 6.4.5 Tighten the pulse unit housing.
- 6.4.6 Test the torque again. If the test result is still NG, repeat the Steps 6.4.1 to 6.4.5 until the proper torque is reached.

7.0 **Pulse Unit Housing Assembly**

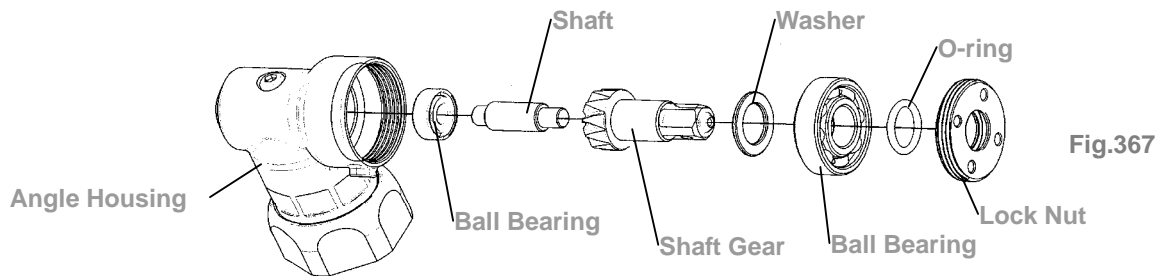
Fix the housing by a vise. Turn the wrench in counter clockwise direction to tighten the pulse unit housing.



8.0 **Angle Housing Unit Assembly:**

8.1 Assemble the parts in Fig. 367 one by one orderly into the angle housing. Then, fix the angle housing unit. Use the torque wrench and the appliance clockwise to tighten the lock nut of the shaft gear. See Chart 60 in reference to the proper appliance selecting.

- Note: (1) Make sure to apply the grease on the gear.
(2) Make sure to apply the Loctite® on the lock nut of the shaft gear.



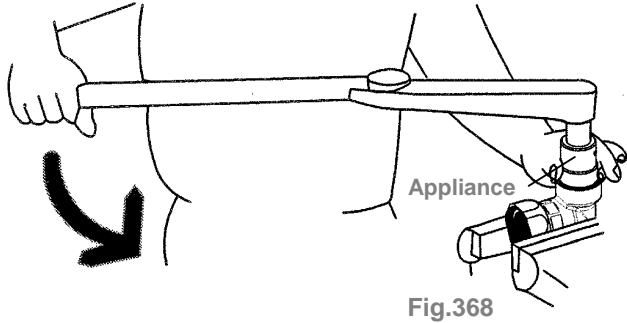


Fig.368

Appliance No.	Apply to
63-TDI-50RRT001	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX, FLEXS-70R, FLEXS-70RX
63-TDI-70RHRT001	FLEXS-70RH

Chart 60

8.2 Assemble the parts in Fig. 369 one by one orderly into the angle housing. Then, fix the angle housing unit. Use the torque wrench and the appliance clockwise to tighten the lock nut of the main shaft gear. See Chart 61 in reference to the proper appliance selecting.

Note: (1) Make sure to apply the grease on the gear.

(2) Make sure to apply the Loctite® on the lock nut of the main shaft gear.

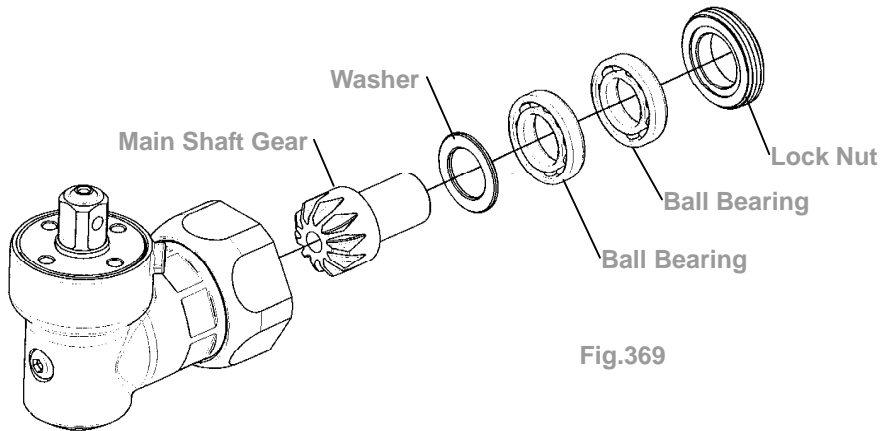


Fig.369

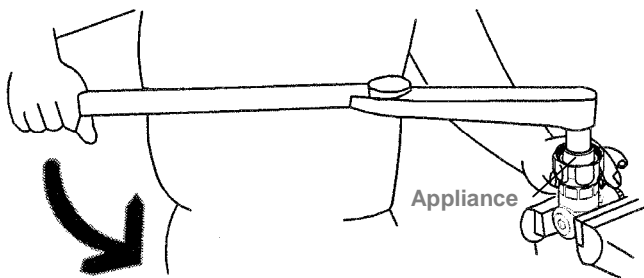


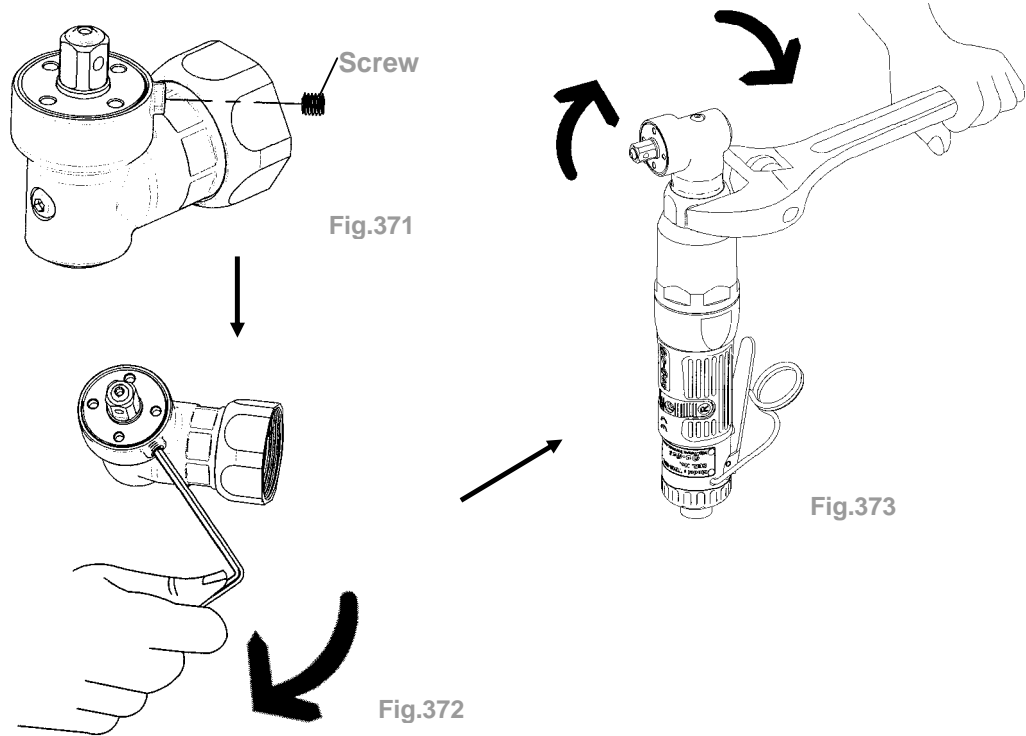
Fig.370

Appliance No.	Apply to
63-TDI-50RRT002	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX, FLEXS-70R, FLEXS-70RX
63-TDI-70RHRT002	FLEXS-70RH

Chart 61

8.3 Use 2mm L-type wrench clockwise to loosen the screws.

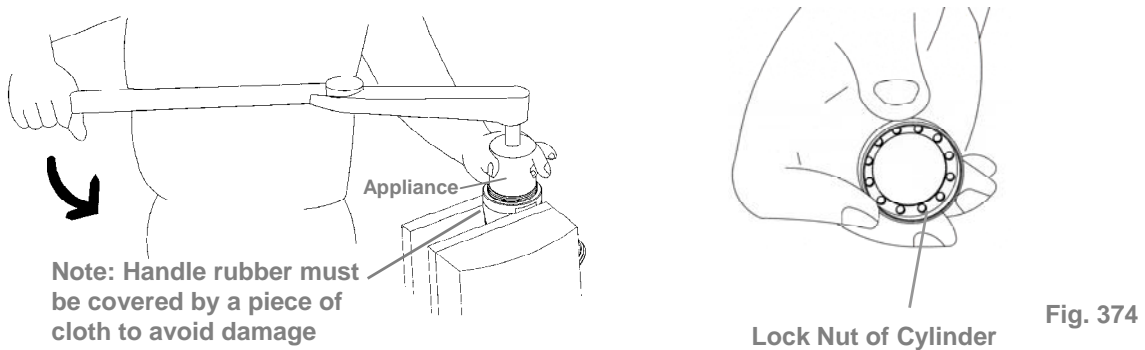
8.4 Assemble the angle housing unit to the pulse unit housing and use the torque wrench clockwise to tighten it



● **HOUSING AND MOTOR SET DISASSEMBLY:**

1.0 **Cylinder Unit Disassembly:**

1.1 Fix the tool by a vise. Use the appliance (see Chart 62) to take the lock nut out of cylinder by turning clockwise.



Appliance No.	Apply to
63-TDI-40RT004	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX
63-TDI-70SRT001	FLEXS-70R, FLEXS-70RX, FLEXS-70RH

Chart 62

1.2 Use a wrench to loosen the screw on the side of the motor housing and detach the parts of the regulator.

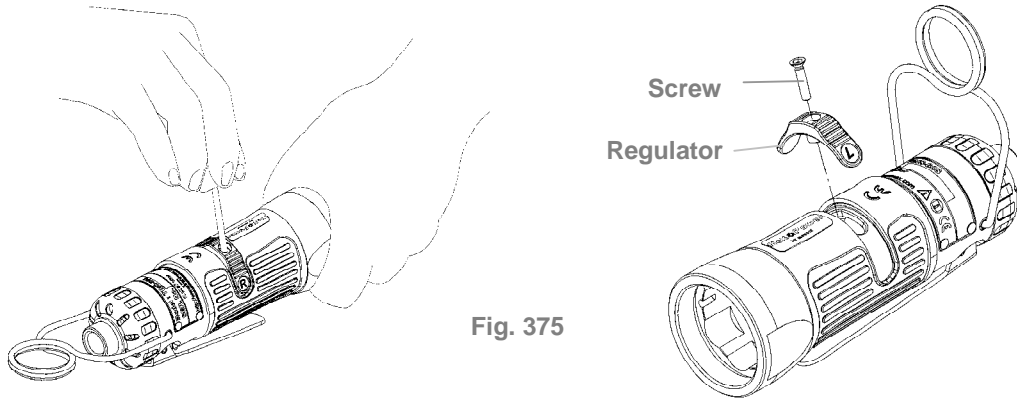


Fig. 375

1.3 Take a piece of cloth and lay it on a Chart before disassembly. Hold the housing downward to detach the cylinder unit out.

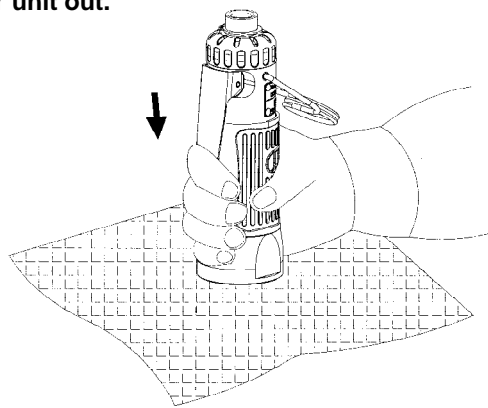


Fig. 376

1.4 Parts of Motor Set:

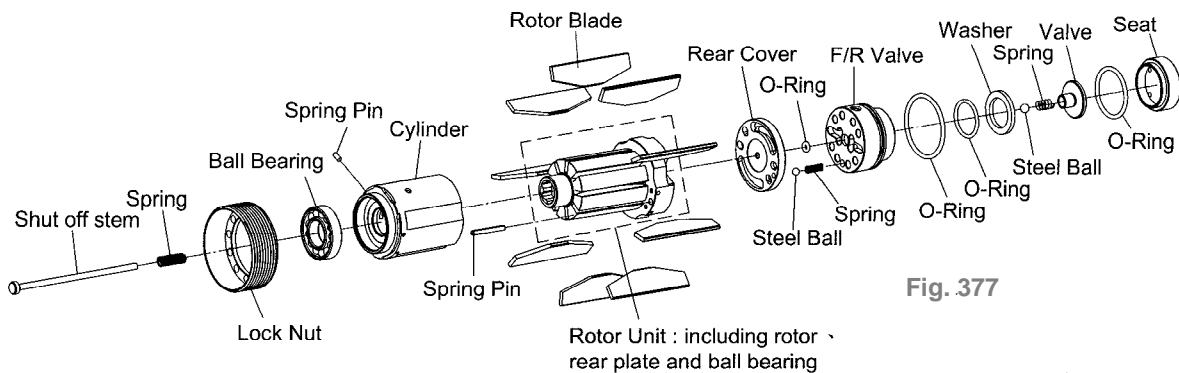


Fig. 377



The rotor and the rear end plate must be press fit. The clearance of the two parts must be in between 0.01~0.02 mm. It would not be easy to assemble the two parts by repair centers in general. Therefore, as there is a need of repair on the parts of the rotor, the rear end plate, and the ball bearing, we strongly suggest replacing a complete ROTOR UNIT, which is including the rotor, the rear plate, and the ball bearing. The rotor unit would be full assembled and well-measured before delivery.

2.0 Air Inlet Disassembly:

- 2.1** Take off the snap ring from the air inlet, and then take off the exhaust deflector. Use an open wrench to open the air inlet in counter clock wise direction. All the interior parts are detached.

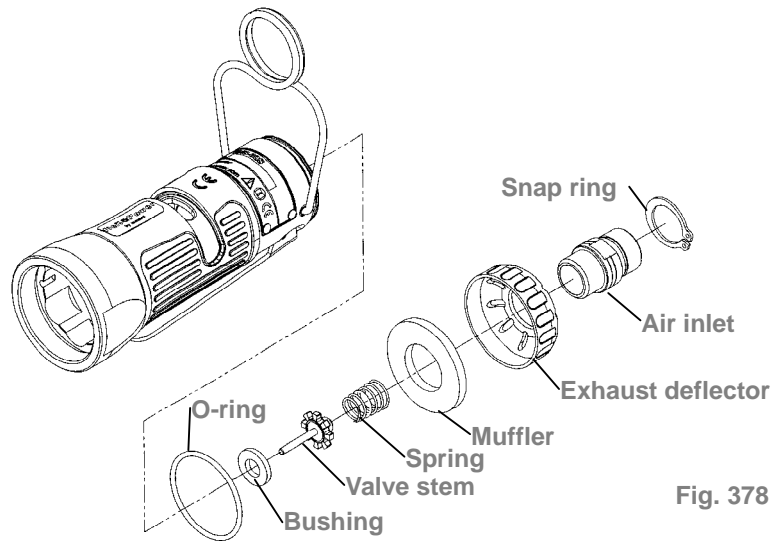


Fig. 378

3.0 Trigger Set Disassembly:

- 3.1** Remove the spring pin from the trigger to detach the interior parts. And then, remove the housing rubber and the hanger to complete the disassembly.

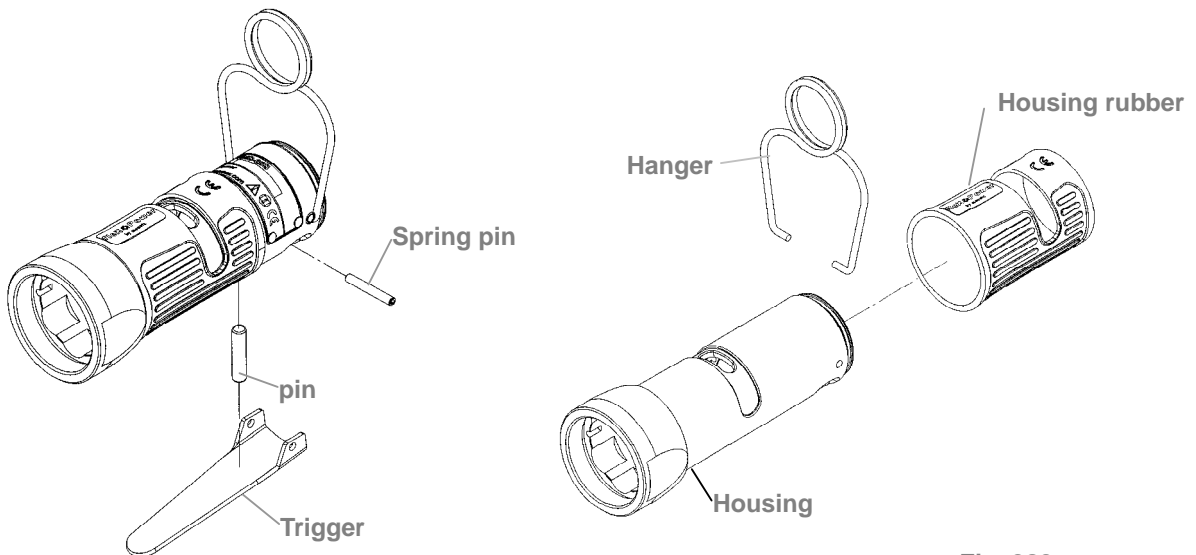


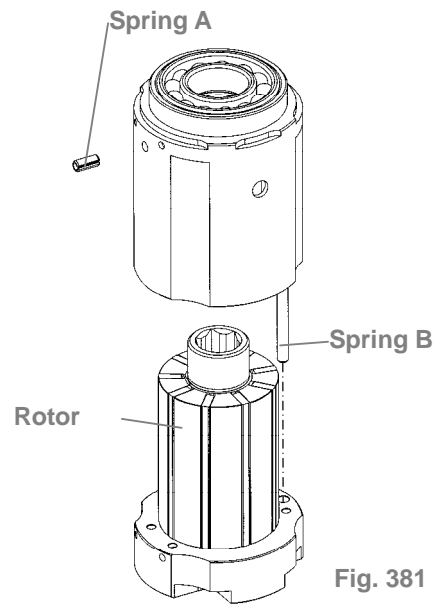
Fig. 379

Fig. 380

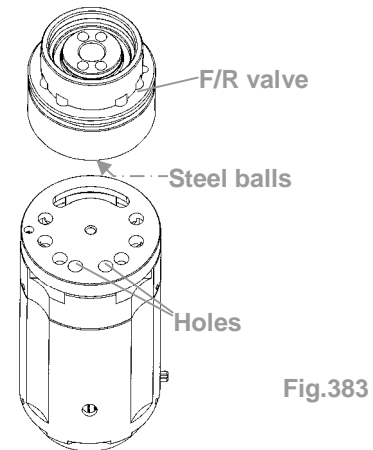
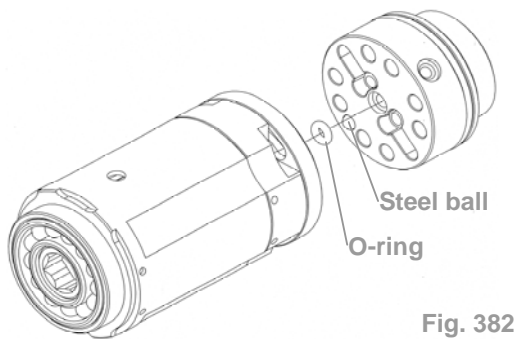
● **HOUSING AND MOTOR SET ASSEMBLY:**

1.0 Cylinder Unit Assembly

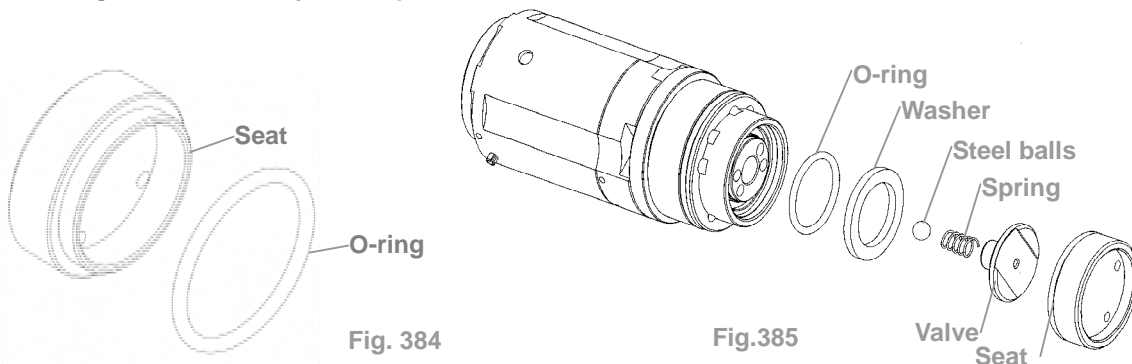
1.1 Place the rotor blades into the rotor. Insert the spring pin A and B into the cylinder. Make sure the pins aim at the pin holes when putting the cylinder down.



1.2 Place the O-ring into the groove of the F/R valve unit. And then, place the steel ball on the F/R valve unit into any hole on the air inlet plate.



1.3 Assemble the regulator with the rotor- air inlet unit. Make sure the steel balls of the regulator are placed on the holes of the air inlet plate. Then, place the seat with the O-ring sleeved on the regulator. Assembly is complete.



⚠ Apply the lubricator between parts while assembling.

2.0 Housing, Motor set unit and Lock Nut of Cylinder Assembly:

- 2.1 Sleeve the housing rubber to the housing.
- 2.2 Install the motor set into the housing. Make sure the direction is correct, i.e. the spring pin on the side of the cylinder aims at the hole inside the housing.
- 2.3 Have the hole on the regulator knob aim at the screw hole on the side of the F/R valve and make sure the screw is tightened into the regulator and the F/R valve.

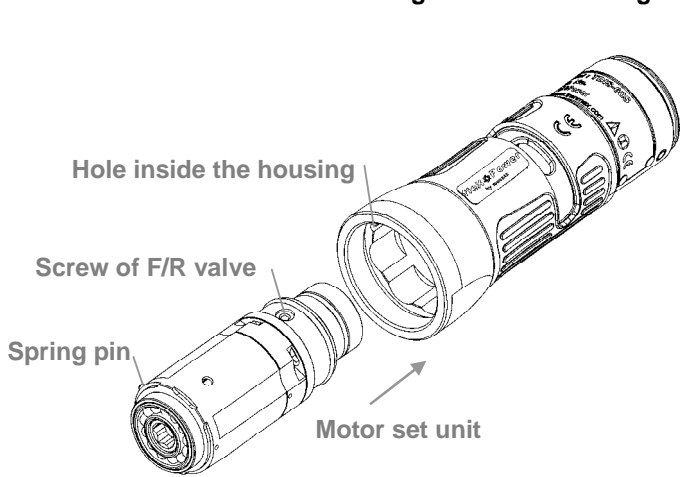


Fig. 386

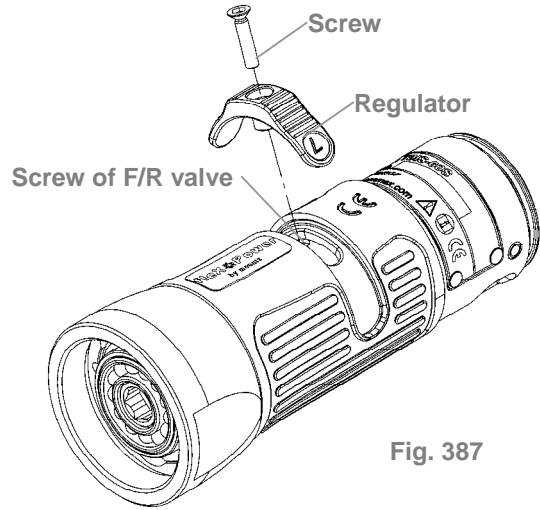


Fig. 387

- 2.4 Fix the tool by a vise. Place the lock nut of the cylinder nut and tighten by the appliance in counter clockwise direction to complete the assembly. See the (Chart 63 and 64) in reference to appliance use and tighten torque

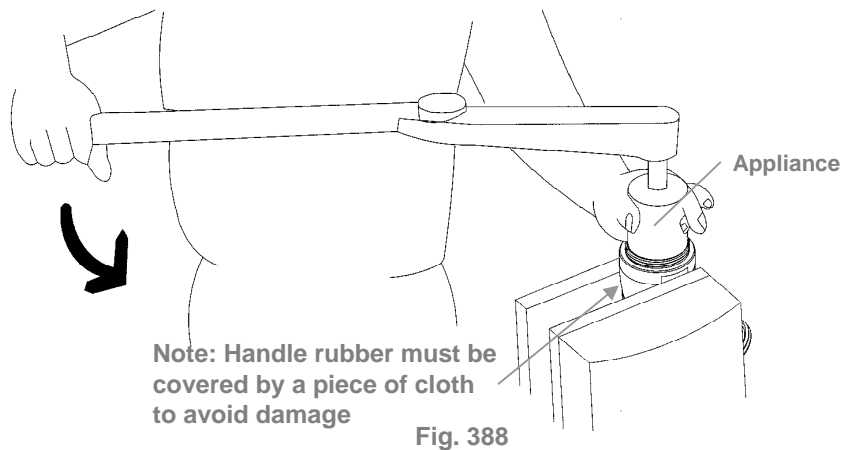


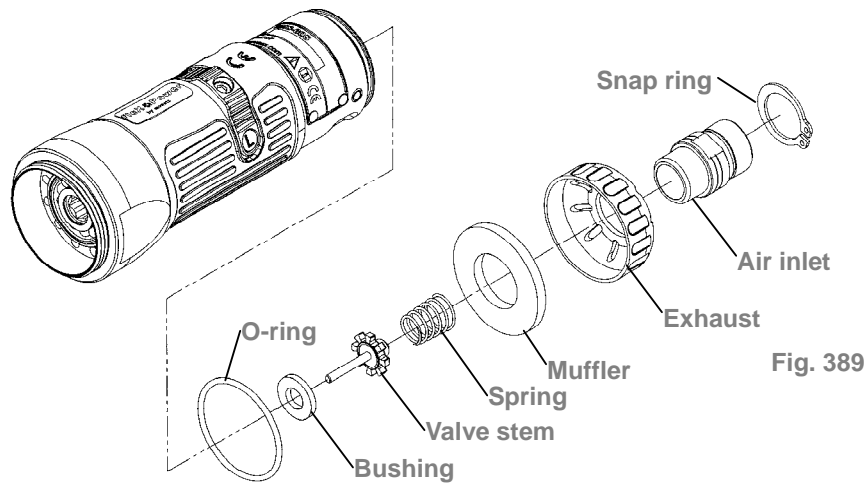
Fig. 388

Model No.	Tighten torque
FLEXS-50R	40 N.M
FLEXS-60R	40 N.M
FLEXS-50RX	40 N.M
FLEXS-60RX	40 N.M
FLEXS-70R	60 N.M
FLEXS-70RX	60 N.M
FLEXS-70RH	60 N.M

Appliance No.	Apply to
63-TDI-40RT004	FLEXS-50R, FLEXS-60R, FLEXS-50RX, FLEXS-60RX
63-TDI-70SRT001	FLEXS-70R, FLEXS-70RX, FLEXS-70RH

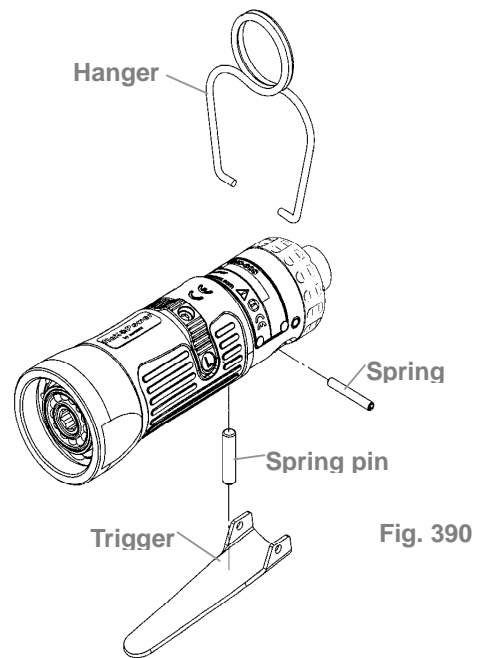
3.0 Housing and Air Inlet Assembly:

Install and tighten the parts of air inlet one by one and orderly. (NOTE: Apply the Loctite® on the threads of air inlet before assembly)

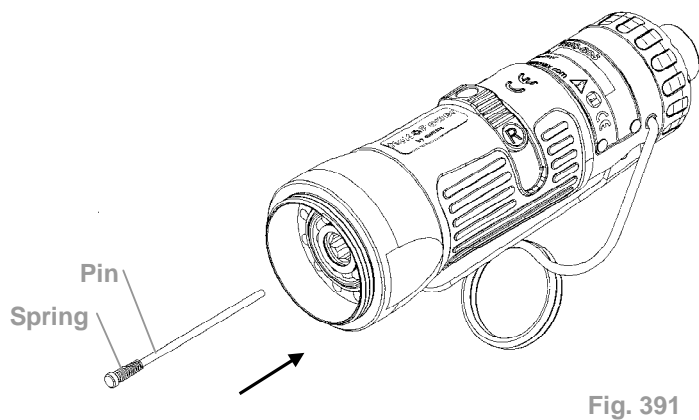


4.0 Housing and Trigger Set Assembly:

Install the parts of the trigger set orderly (see Fig. 390 drawing for reference). Then, Insert the spring pins to fix all the parts. And, install the hanger to complete the assembly.



5.0 Put the spring on the pin, and then install into the assembled housing.





After all the assembly is complete, test to make sure the anvil rotates freely, then connect the air hose and test the torque.

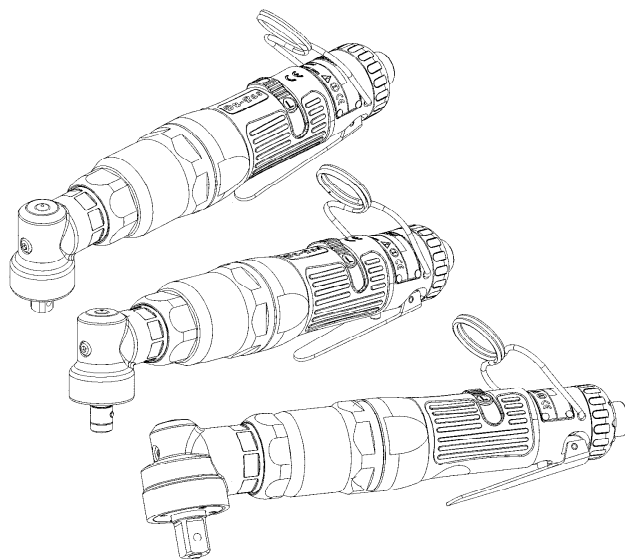


Fig. 392

For more specific information or assistance for your [FLEX POWER TOOLS](http://www.flexpowertools.com) , please contact your local Sales Engineer or contact any of our Service Center

Trouble Shooting

Trouble	Cause	Solution
No Shut-off occurs	Overfill oil or missing oil in the pulse unit	Draw or add the amount of oil needed.
	Push rod or spring worn out	Replace the push rod and spring.
	Low Air pressure or incorrect hose size and air fittings	Adjust desired air pressure when the tool is running freely. Select the correct hose size and the air fittings, according to the tool model.
	Missing Cap (rear plate)	Replace the parts.
	Oil and/or O-rings broke down	Change the oil O-rings if worn out or bad condition.
Premature Shut-off or uncompleted rundown	Excess of oil in the pulse unit	Draw the excess of oil from the pulse unit.
	Torque setting	Adjust the target torque as recommended.
	Extensions or extra length sockets	Use sleeve drive sockets for extension or different length need.
	Join characteristic	Use a bigger model or a non-shut off tool, if the joint is soft or there is a prevailing torque.
Inconsistence torque output or low Torque	Low air pressure or fluctuates	Adjust desired air pressure when the tool is running freely.
	Lack of CFM on the air motor	Check the air compressor capacity.
	Dry blades of the air motor	Lubricate the air motor and recommended to add two or three drops per week.
	Oil and/or O-rings broke down	Change the oil O-rings if are worn out or bad conditions.
Low RPM's	Low air pressure or fluctuates	Adjust desired air pressure when the tool is running freely.
	Dry blades of the air motor	Lubricate the air motor and recommended to add two or three drops per week.

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