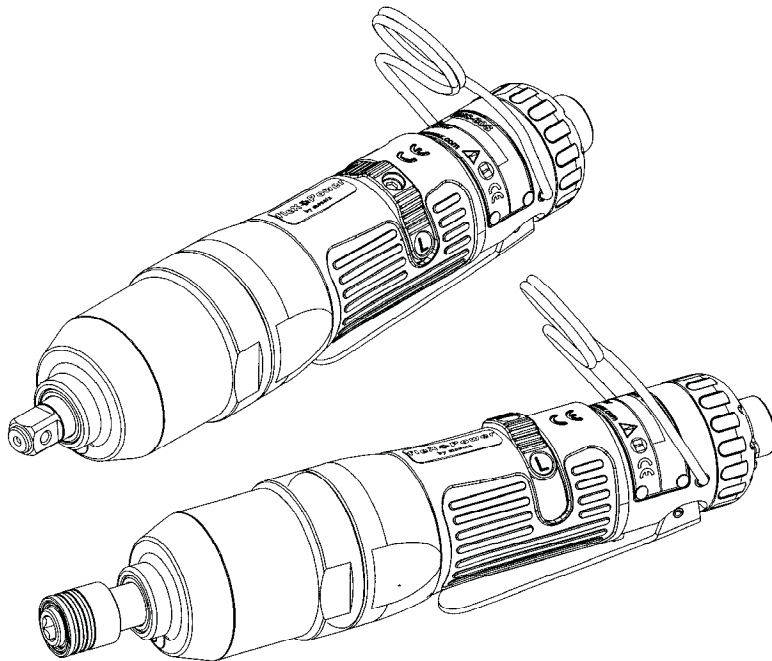


flexPower

by mountz

PULSE TOOLS INSTRUCTION MANUAL & MAINTENANCE

IN-LINE 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 – Straight Type

1. Loosen the screw on the pulse unit housing.

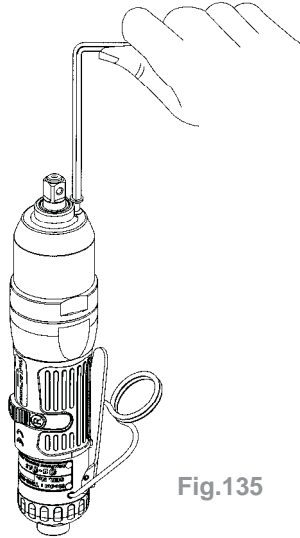


Fig.135

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.

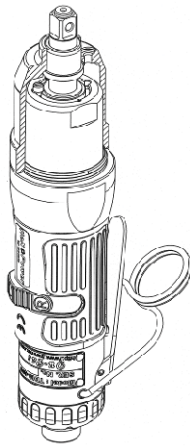


Fig. 136

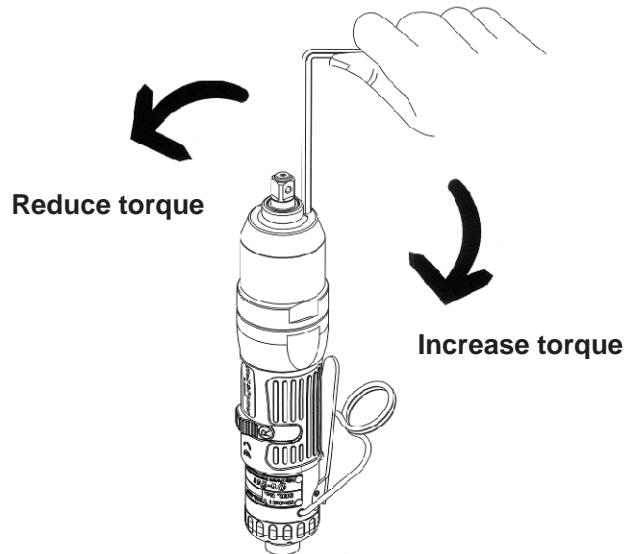


Fig. 137

3. Tighten the screw back to the pulse unit housing.

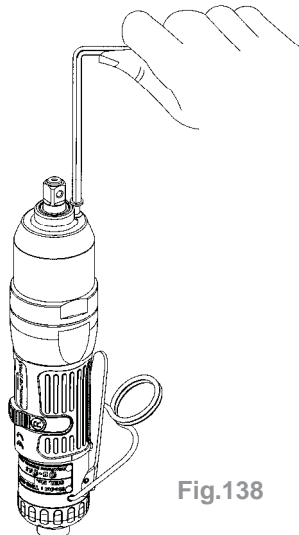


Fig.138

● **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-40S	63-IS40SRK -E05A	63-IS40SSK -E05A
FLEXS-50S	63-IS50SRK -E05A	63-IS50SSK -E05A
FLEXS-60S	63-IS60SRK -E05A	63-IS60SSK -E05A
FLEXS-70S	63-IS70SRK -E05A	63-IS70SSK -E05A
FLEXS-30SX	63-IS30SDRK -E05A	63-IS30SDSK -E05A
FLEXS-40SX	63-IS40SDRK -E05A	63-IS40SDSK -E05A
FLEXS-50SX	63-IS50SDRK -E05A	63-IS50SDSK -E05A
FLEXS-60SX	63-IS60SDRK -E05A	63-IS60SDSK -E05A
NON SHUT-OFF MODELS		
FLEX-40S	63-I40SRK -E05A	63-I40SSK -E05A
FLEX-50S	63-I50SRK -E05A	63-I50SSK -E05A
FLEX-60S	63-I60SRK -E05A	63-I60SSK -E05A
FLEX-70S	63-I70SRK -E05A	63-I70SSK -E05A
FLEX-30SX	63-I30SDRK -E05A	63-I30SDSK -E05A
FLEX-40SX	63-I40SDRK -E05A	63-I40SDSK -E05A
FLEX-50SX	63-I50SDRK -E05A	63-I50SDSK -E05A
FLEX-60SX	63-I60SDRK -E05A	63-I60SDSK -E05A

DISASSEMBLY / ASSEMBLY FOR PULSE WRENCHES

FLEX-40S, FLEX-50S, FLEX-60S, FLEX-70S, FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX

● PULSE MECHANISM DISASSEMBLY

1.1 Quick Change Holder disassembly: (for Model No. FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX)

Press down the hold spacer, and find the anvil collar. Use the a needle like stuff to get the anvil collar out, then take the quick change holder, the hold spacer, the spring, and the steel ball apart.



The steel ball may drop off when taking out the Quick Change Holder

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

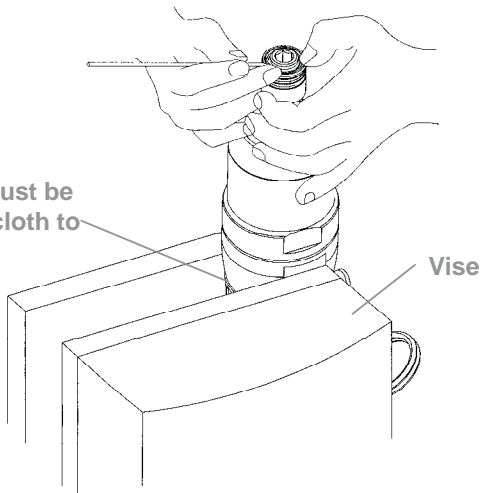


Fig. 139

1.2 Pulse Unit Housing Disassembly:

Fix the tool by a vise, use an adjust 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. 140.

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

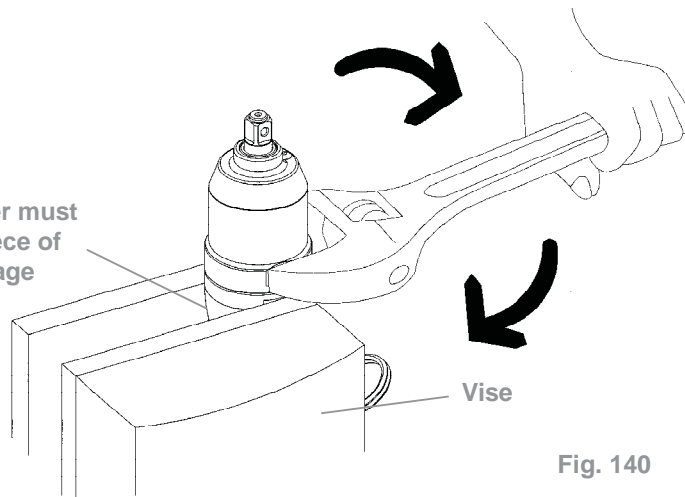


Fig. 140

1.3 Pulse Unit Disassembly:

Fix the pulse unit by a vise. Use the appliance (see Chart 21) to loosen the lock nut on the pulse unit, Fig. 141.

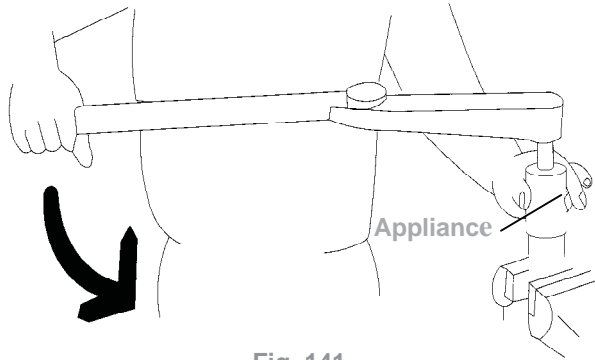


Fig. 141

Chart 21

Appliance No.	Apply to
63-TDI-40RT001	FLEX-40S, FLEX-50S, FLEX-60S, FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX
63-TDI-70RT001	FLEX-70S

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

1.4 Put the Appliance, see Chart 22, on the anvil and tap on it slightly to detach the interior parts from the pulse unit, Fig. 142.

Chart 22

Appliance No.	Apply to
63-TDI-40RT002	FLEX-40S, FLEX-50S, FLEX-60S, FLEX-70S, FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX

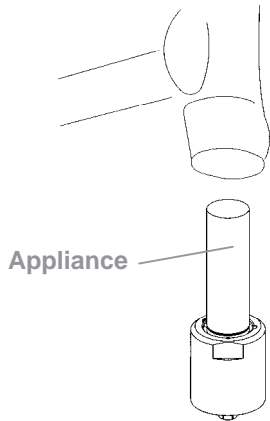
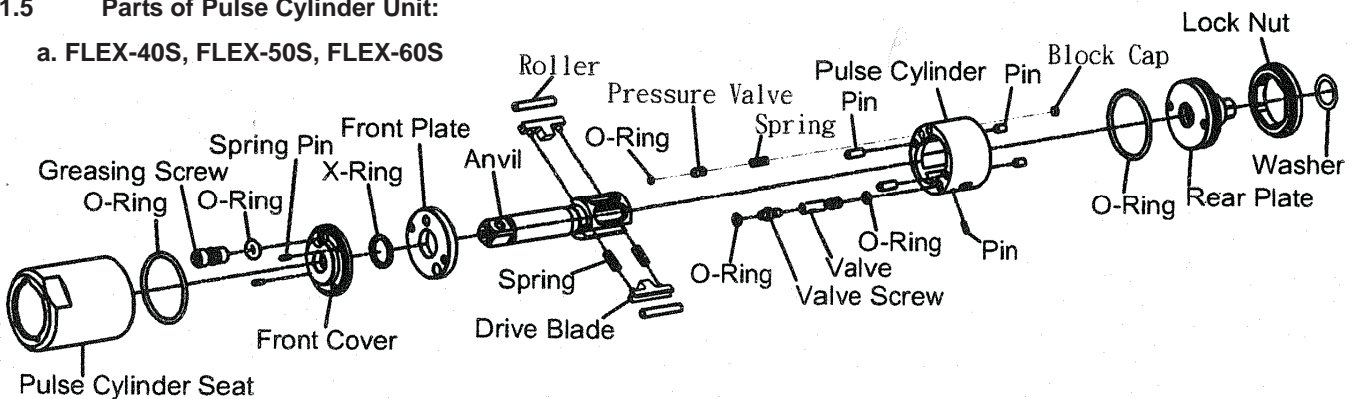


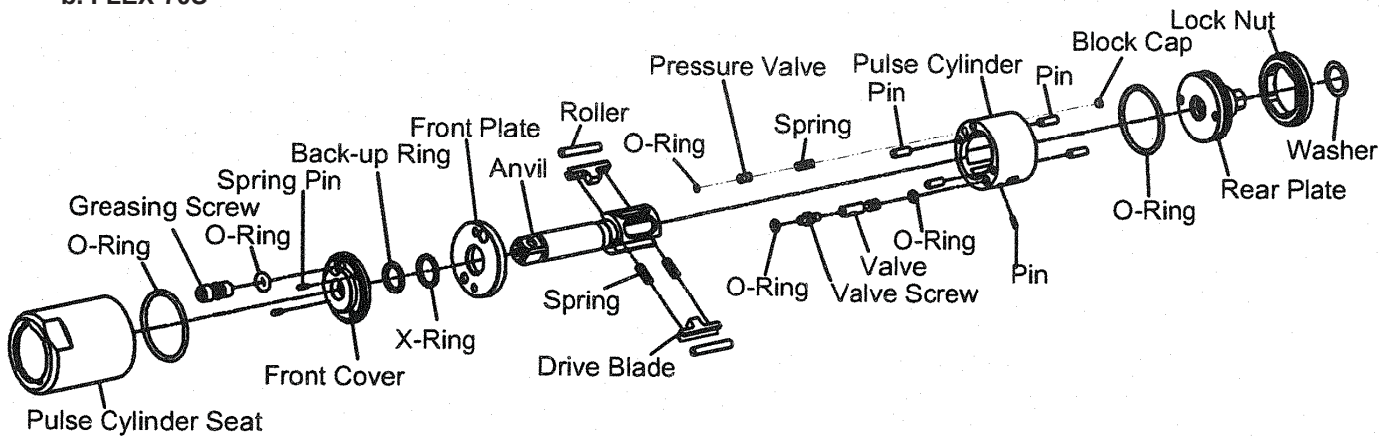
Fig. 142

1.5 Parts of Pulse Cylinder Unit:

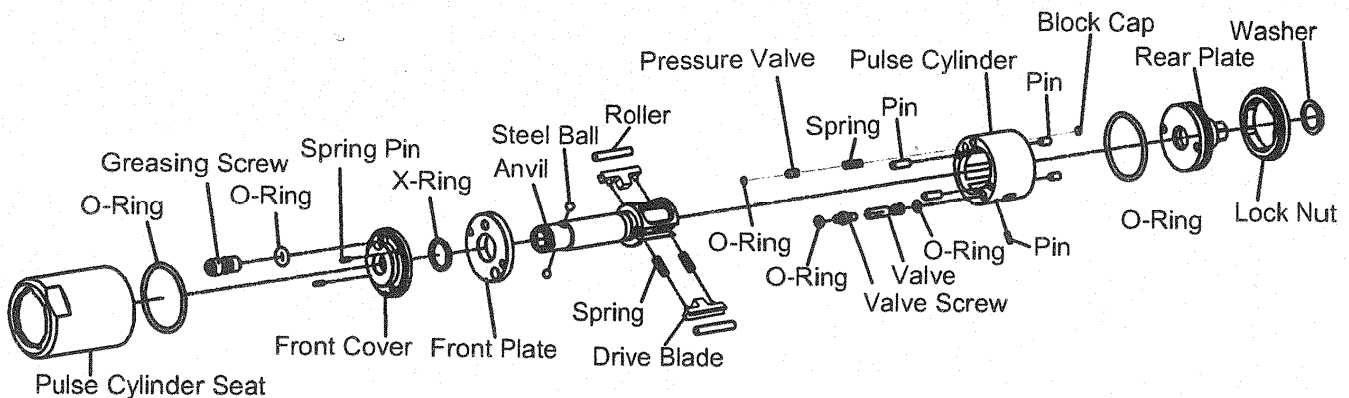
a. FLEX-40S, FLEX-50S, FLEX-60S



b. FLEX-70S



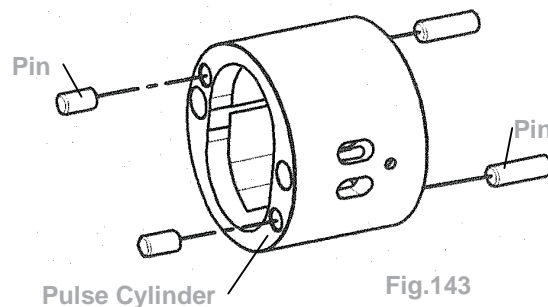
c. FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX



● **PULSE UNIT ASSEMBLY:**

1.0 Pulse Cylinder Unit Assembly:

1.1 Install the pins on both sides of the pulse cylinder. (Fig. 143)

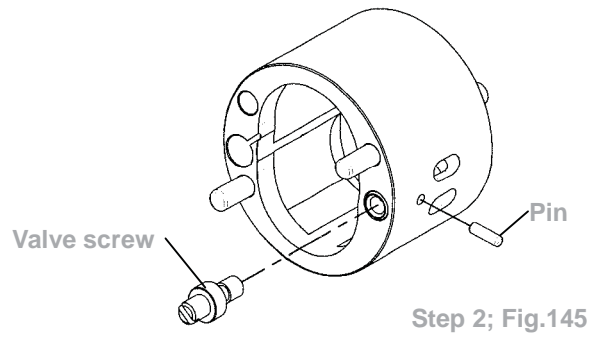
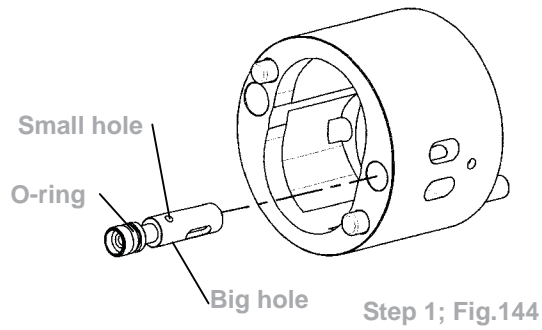


1.2 Sleeve the O-ring to the valve and install the valve into the big hole on the pulse cylinder. (Step 1; Fig.144)

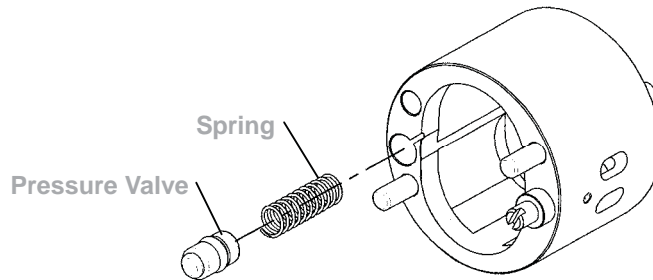
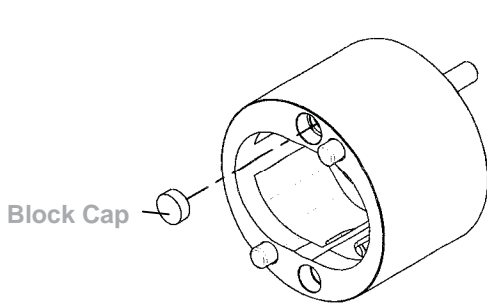
a) Insert the pin into the hole on the side of the pulse cylinder. (Step 2; Fig.145)

b) Screw the valve screw to the pressure valve. (Step 3; Fig.145)

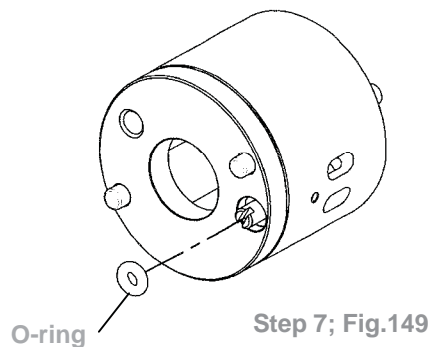
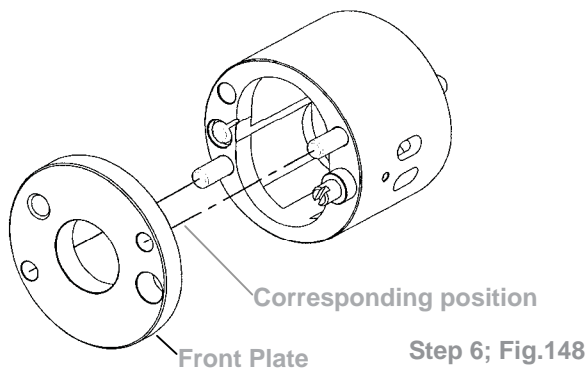
NOTE: the valve screw **MUST** screw to the most bottom position certainly.



- 1.3 Plug the block cap into the hole and make sure it is parallel to the surface of the pulse cylinder. (Step 4; Fig. 146)
- 1.4 Plug the spring into the hole then install the pressure valve that with the 0-ring sleeved. (Step 5; Fig. 147)



- 1.5 Install the front plate and make sure the corresponding position with the pins. (Step 6; Fig.148)
- 1.6 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. 149)



2.0 Anvil Unit Assembly

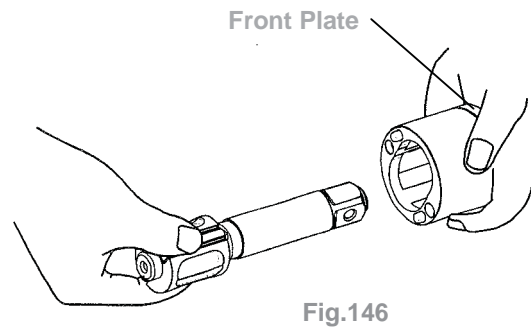
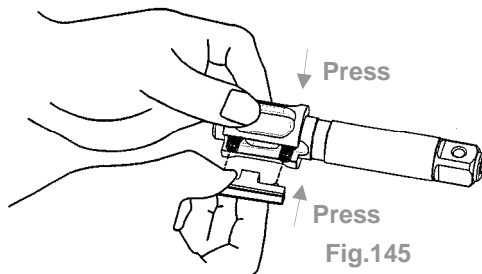
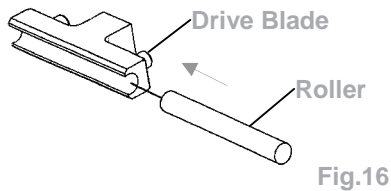
Install the roller to the drive blade, then insert the springs into the anvil and press the blades from both sides. Finally put the anvil to the pulse cylinder to complete the anvil unit assembly.



MUST follow the direction as Fig.146 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-40S, FLEX-50S, FLEX-60S, FLEX-40SX, FLEX-50SX, FLEX-60SX,
63-I70AST-001K	FLEX-70S

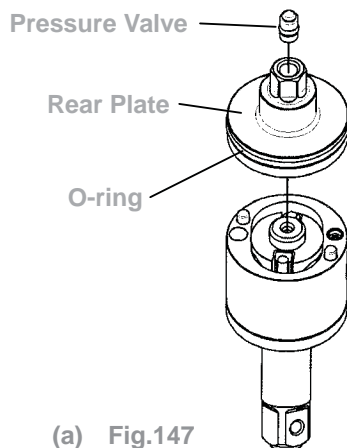


3.0 Front Cover and Rear Plate of Pulse Cylinder Assembly (for the models FLEX-40S, FLEX-50S, FLEX-60S, FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX)

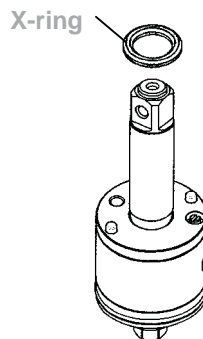
3.1 (a) Install the rear plate to the pulse cylinder and be sure the positions of the pin and the hole are corresponded. (Fig. 147) Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.

(b) Put the X-ring on the anvil with the oil applied. (Fig. 148)

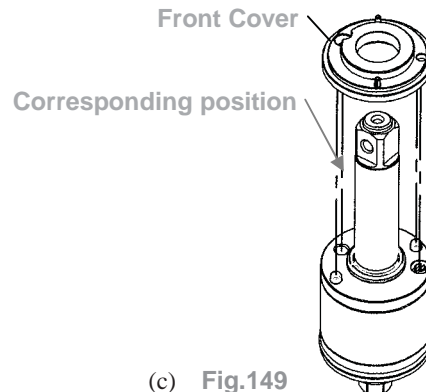
(c) Install the front cover to the pulse cylinder by the corresponding positions. (Fig. 149)



(a) Fig.147

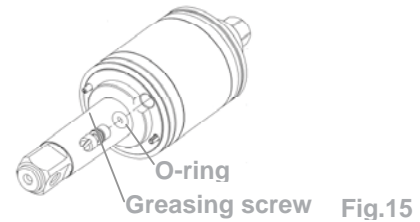


(b) Fig.148



(c) Fig.149

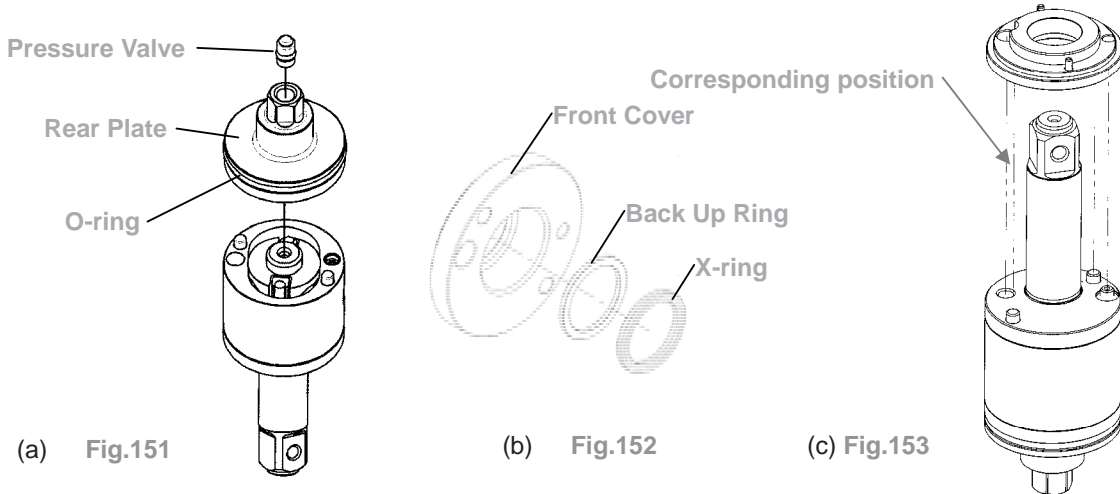
3.2 After installing the front cover, put the O-ring on the greasing screw, then tighten the greasing screw but not tighten it completely. (for FLEX70S)



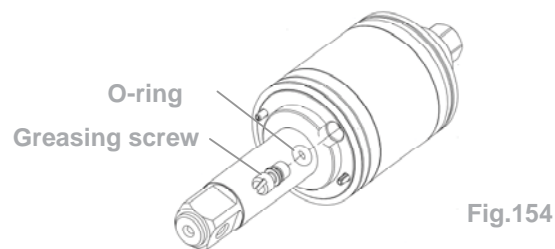
(a) Install the rear plate that with the O-ring sleeved (Fig. 151). Make sure the positions of the pin and hole are exactly matched. Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.

(b) Put the back up ring and the X-ring into the front cover. (Fig. 152)

(c) Install the front cover to the pulse cylinder by the corresponding positions. (Fig. 153)



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.



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. 155, Fig. 156)



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

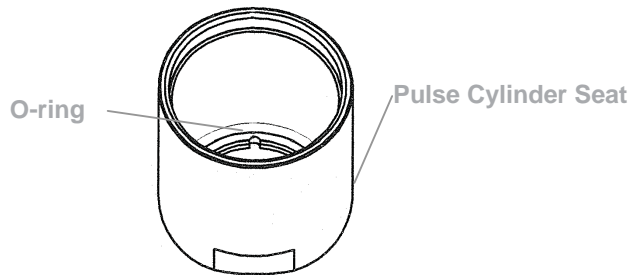


Fig. 155

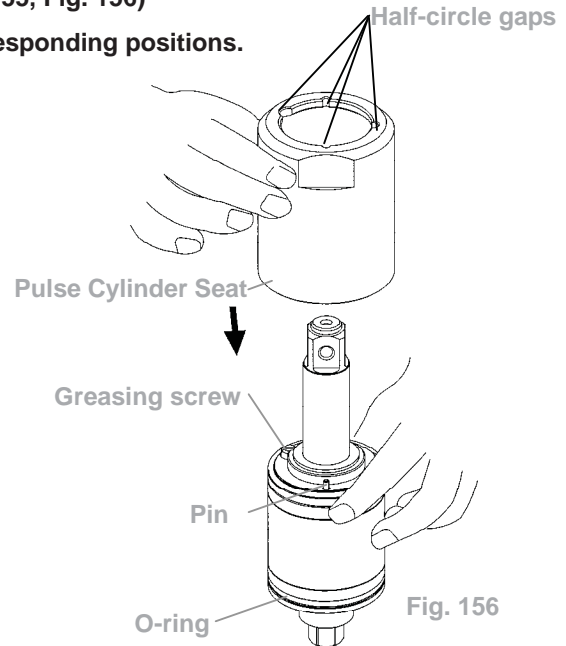


Fig. 156

- 4.2 Use the appliance to push out the rear plate from the pulse cylinder seat. See Chart 2 in reference to the proper appliance selection. (Fig. 157)
- 4.3 Fill up the interior pulse cylinder with the pulse oil about 90% full by a syringe. (Fig. 158)
- 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.

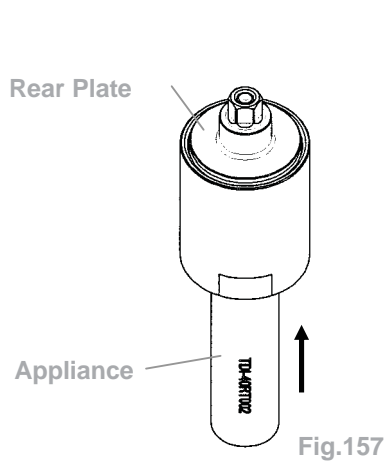


Fig.157

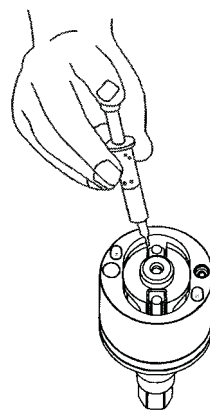


Fig.158

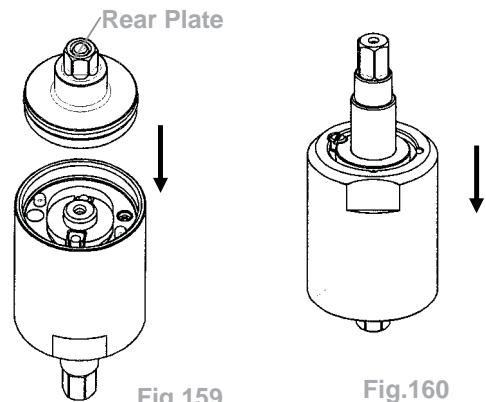


Fig.159

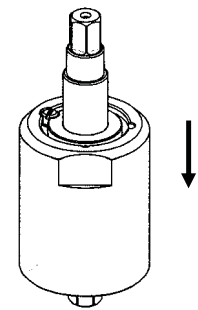


Fig.160

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 23 and 24 in reference to the proper appliance and tightness. (Note: Loctite® needed when tightening the lock nut of the pulse cylinder)

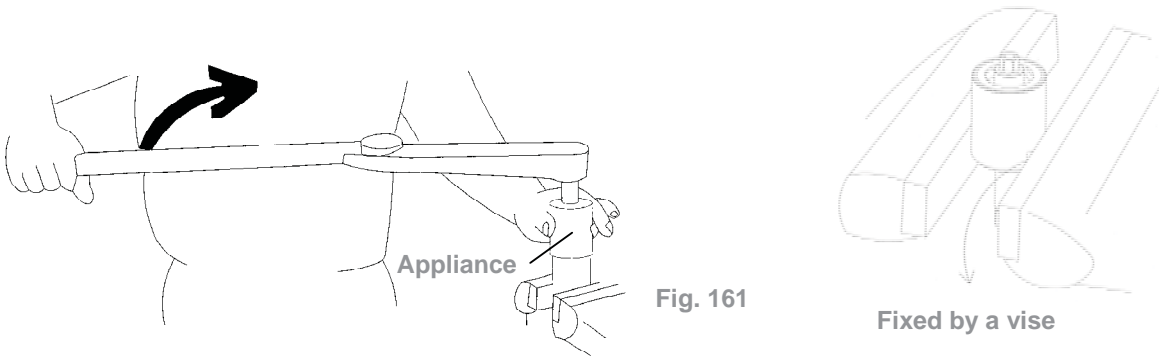


Fig. 161

Fixed by a vise

Appliance No.	Apply to
63-TDI-40RT001	FLEX-40S, FLEX-50S, FLEX-60S, FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX
63-TDI-70RT001	FLEX-70S

Chart 23

Model No.	Tighten torque	Model No.	Tighten torque
FLEX-40S	80 N.M	FLEX-30SX	80 N.M
FLEX-50S	80 N.M	FLEX-40SX	80 N.M
FLEX-60S	80 N.M	FLEX-50SX	80 N.M
FLEX-70S	100 N.M	FLEX-60SX	80 N.M

Chart 24

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

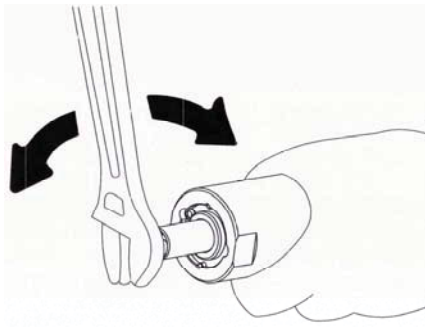


Fig. 162

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.

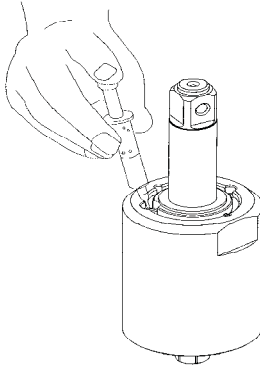
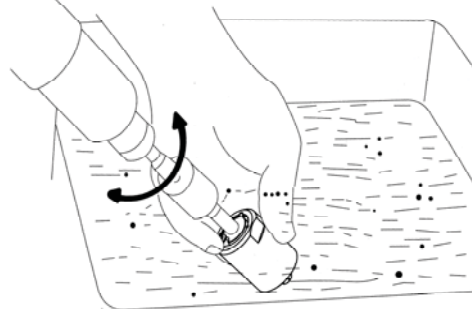


Fig. 163

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.



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

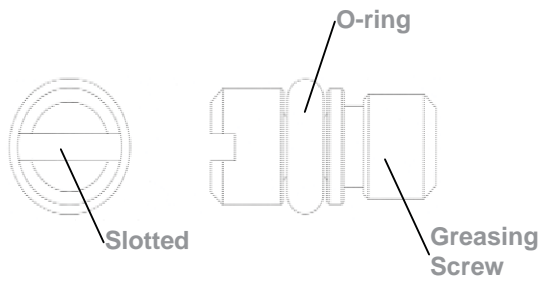
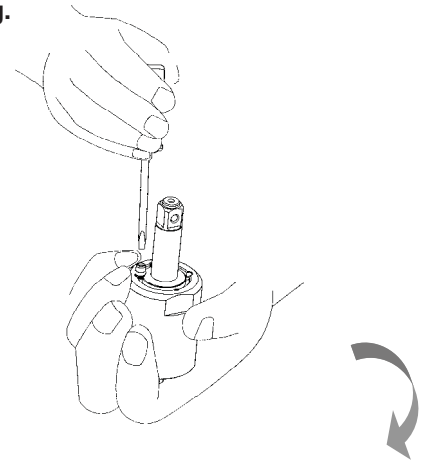


Fig. 165



5.4 Use an air spray gun to blow off the oil on the cylinder see, Fig. 166.

Fig. 166



5.5 Loosen the greasing screw again and use a syringe to draw out a little amount of oil (see Chart 25) .
 Finally, tighten the greasing screw back to the pulse cylinder unit, Fig. 167.

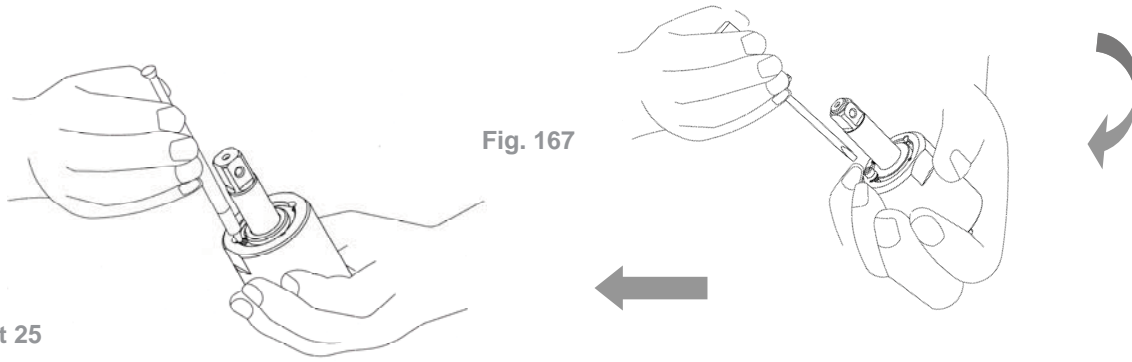


Chart 25

Model No.	Amount of oil draw	Model No.	Amount of oil draw
FLEX-40S	0.25 CC	FLEX-30SX	0.2 CC
FLEX-50S	0.4 CC	FLEX-40SX	0.25 CC
FLEX-60S	0.5 CC	FLEX-50SX	0.4 CC
FLEX-70S	0.6 CC	FLEX-60SX	0.5 CC

6.0 **Torque Testing**

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

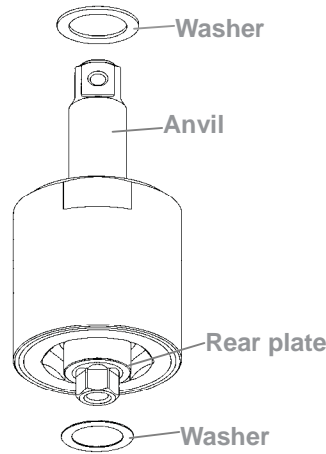


Fig. 168

6.2 Tighten the clutch housing by hands.

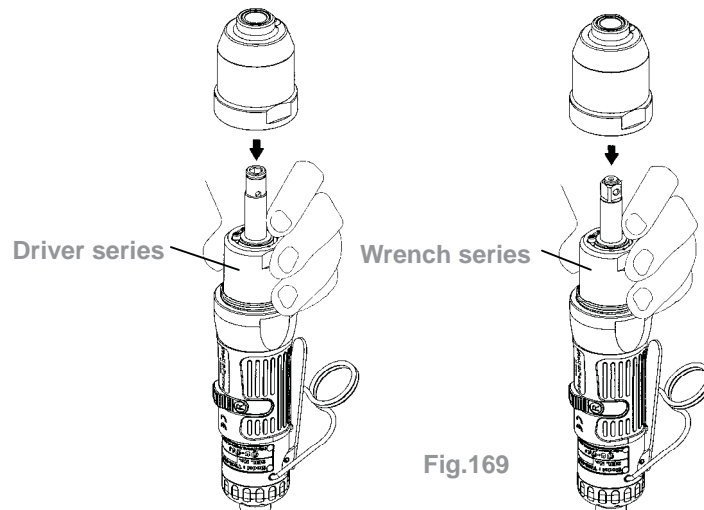


Fig.169

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

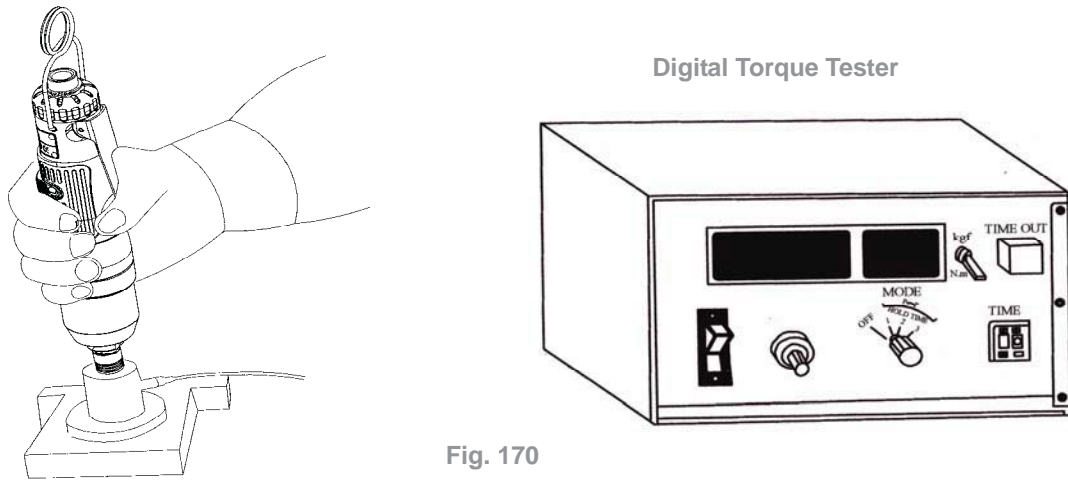


Fig. 170

Model No.	Air inlet pressure 85 PSI
	N.M (at least)
FLEX-40S	15.5
FLEX-50S	25
FLEX-60S	35
FLEX-70S	48
FLEX-30SX	12.5
FLEX-40SX	14
FLEX-50SX	22
FLEX-60SX	28

Chart 26

6.4 If the test result is NG (see Chart 26 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.

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

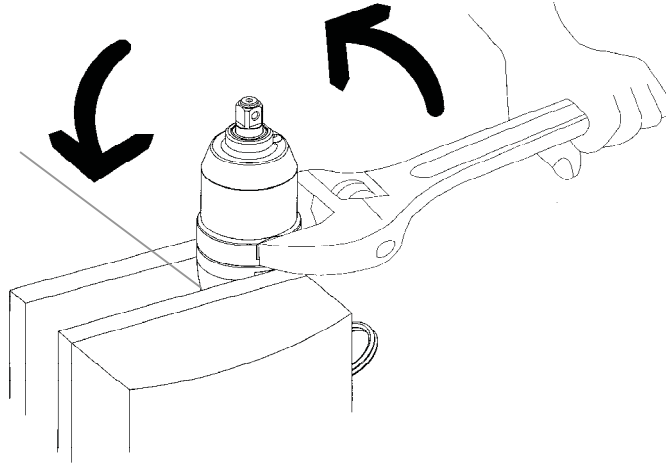


Fig. 171

8.0 Anvil Unit Assembly: (for FLEX-30SX, FLEX-40SX, FLEX-50SX, and FLEX-60SX)

8.1 Place the steel ball, the quick change holder, the spring, and the hold spacer orderly as Fig. 172 showed.

8.2 Put the anvil collar on the Appliance # 63-TDI-40RT006, Fig. 173.

8.3 Place the 63-TDI-40RT006 on the hex-hole of the anvil, then put the Appliance # 63-TDI-40RT005 on the 63-TDI-40RT006 and taps it making sure the anvil collar sleeves into the anvil on proper position. See Fig.173.

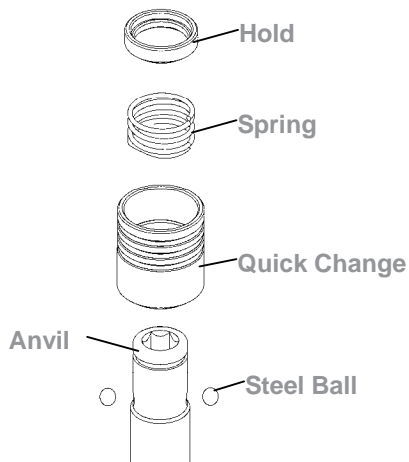


Fig. 172

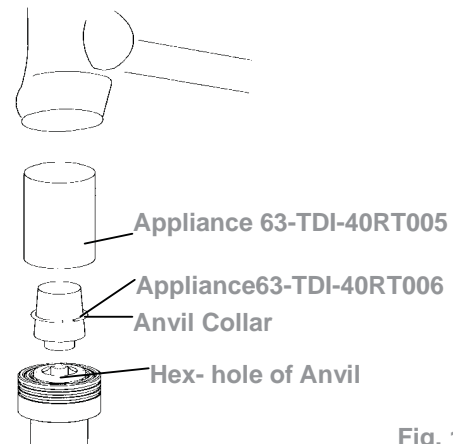
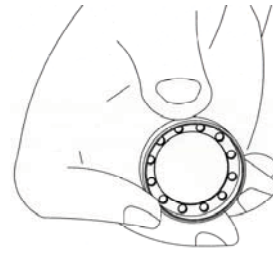
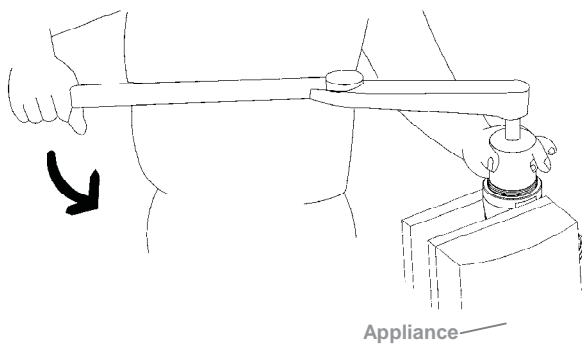


Fig. 173

- **HOUSING AND MOTOR SET DISASSEMBLY:**

1.0 **Cylinder Unit Disassembly:**

1.1 Fix the tool by a vise. Use the appliance (see Chart 27) to take the lock nut out of cylinder by turning clockwise.



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

Lock nut of Cylinder

Fig. 174

Appliance No.	Apply to
63-TDI-40RT004	FLEX-40S, FLEX-50S, FLEX-60S, FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX
63-TDI-70SRT001	FLEX-70S

Chart 27

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

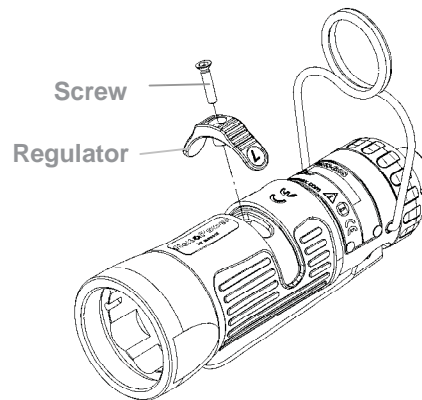
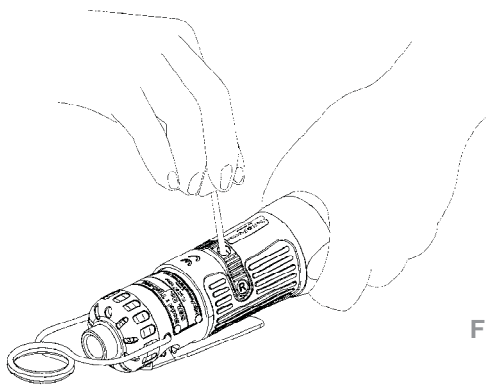


Fig. 175

- 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.

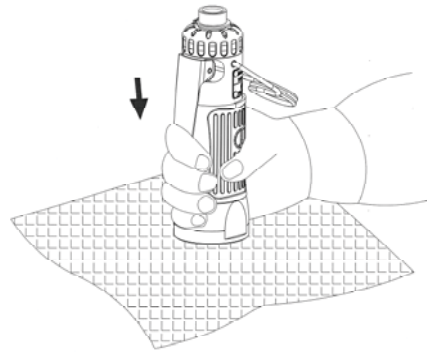


Fig. 176

1.4 Parts of Motor Set:

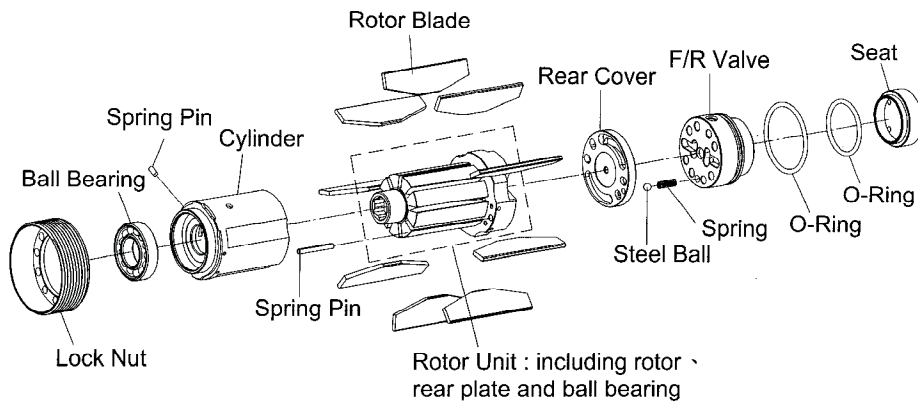


Fig. 177

⚠ 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.

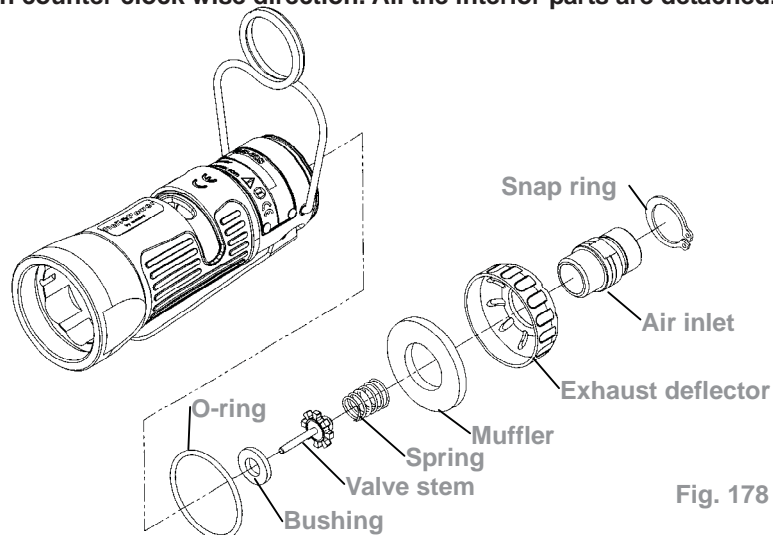


Fig. 178

2.0 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.

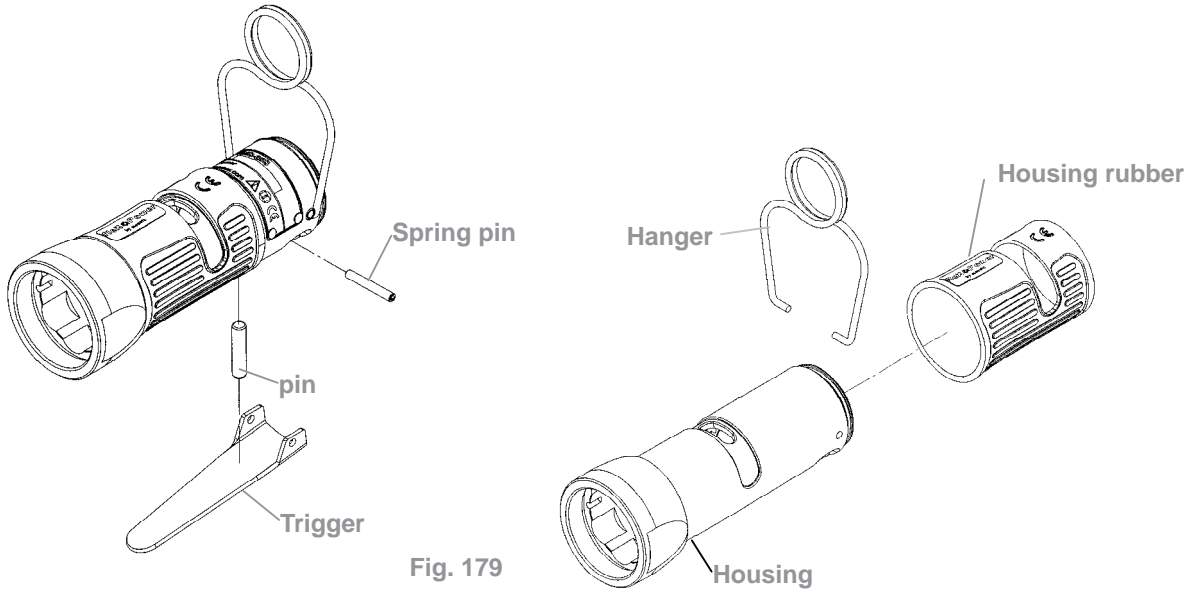


Fig. 179

Fig. 180

● 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.

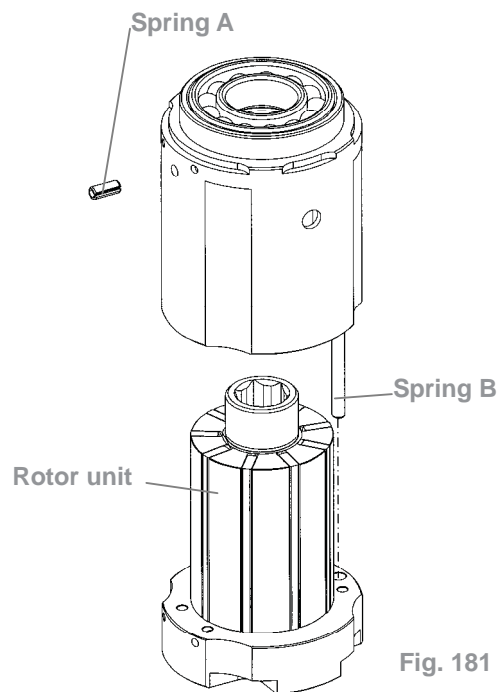


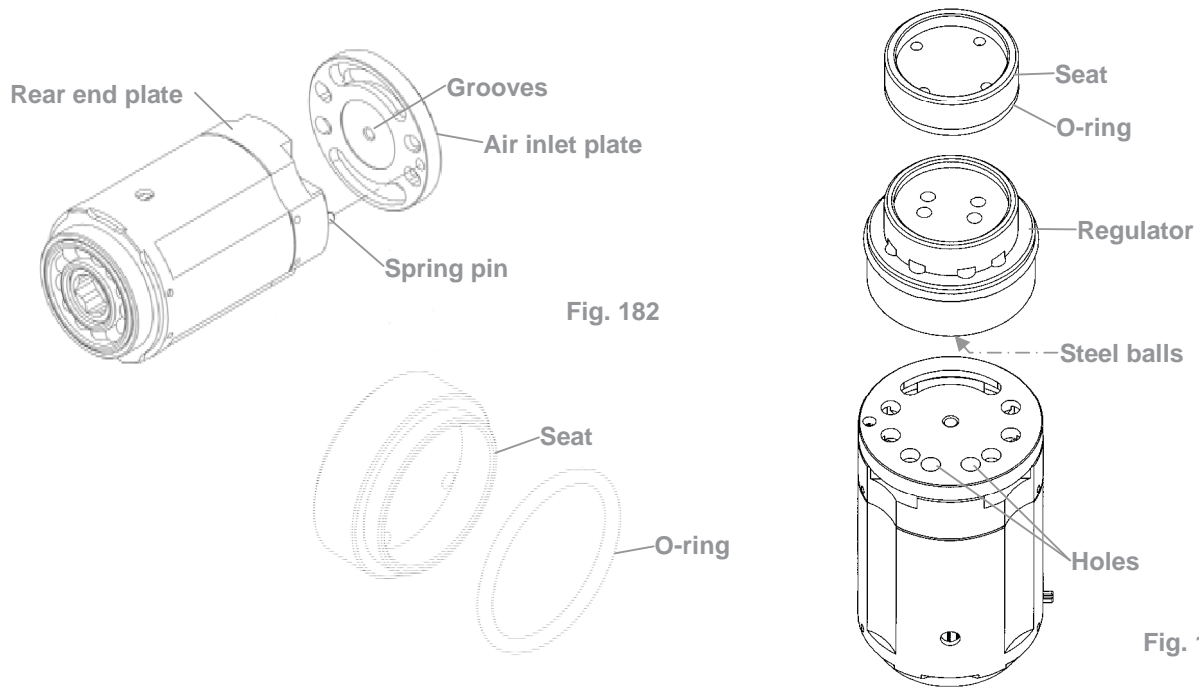
Fig. 181

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. 182.

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.

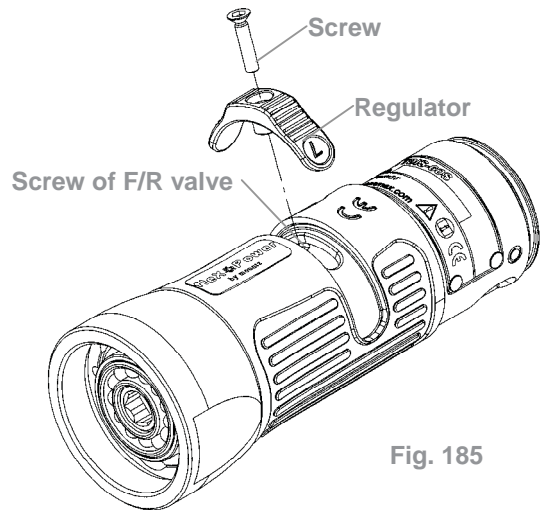
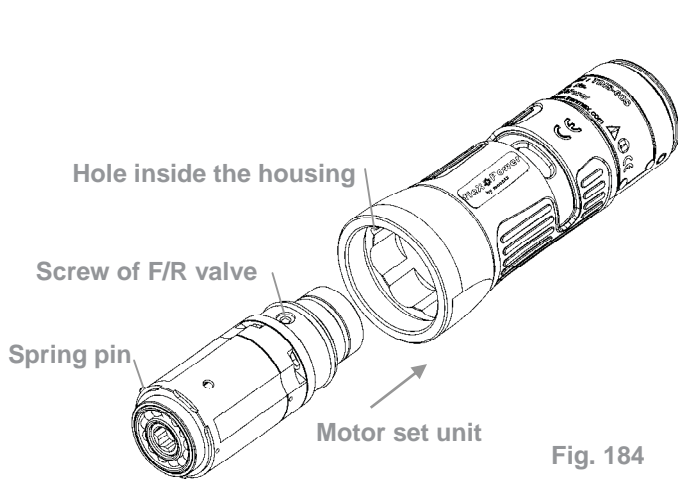


2.0 Housing, Motor set unit and Lock Nut of Cylinder Assembly:

2.1 Put the housing rubber on 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 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.



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 28 and 29 in reference to appliance use and tighten torque.

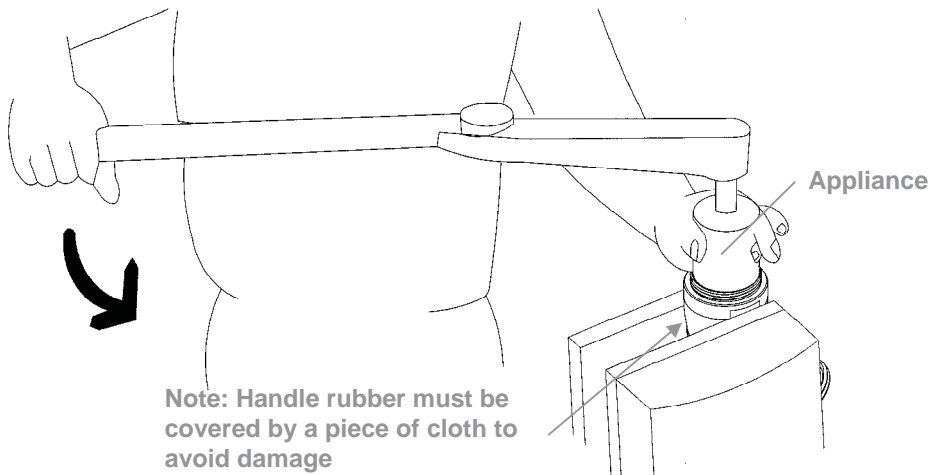


Fig. 186

Chart 28

Appliance No.	Apply to
63-TDI-40RT004	FLEX-40S, FLEX-50S, FLEX-60S, FLEX-30SX, FLEX-40SX, FLEX-50SX, FLEX-60SX
63-TDI-70SRT001	FLEX-70S

Chart 29

Model No.	Tighten torque
FLEX-40S	40 N.M
FLEX-50S	40 N.M
FLEX-60S	40 N.M
FLEX-70S	60 N.M
FLEX-30SX	40 N.M
FLEX-40SX	40 N.M
FLEX-50SX	40 N.M
FLEX-60SX	40 N.M

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)

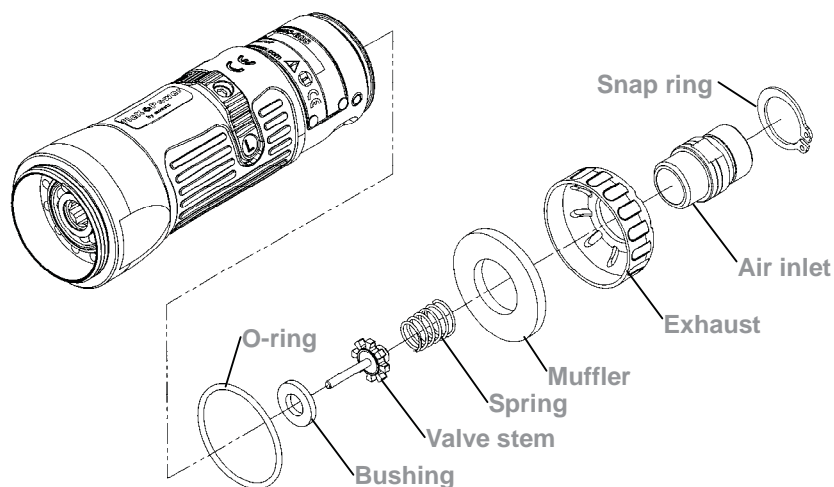


Fig. 187

4.0 **Housing and Trigger Set Assembly:**

Install the parts of the trigger set orderly (see Fig. 188 drawing for reference). Then, Insert the spring pins to fix all the parts. And, install the hanger to complete the assembly.

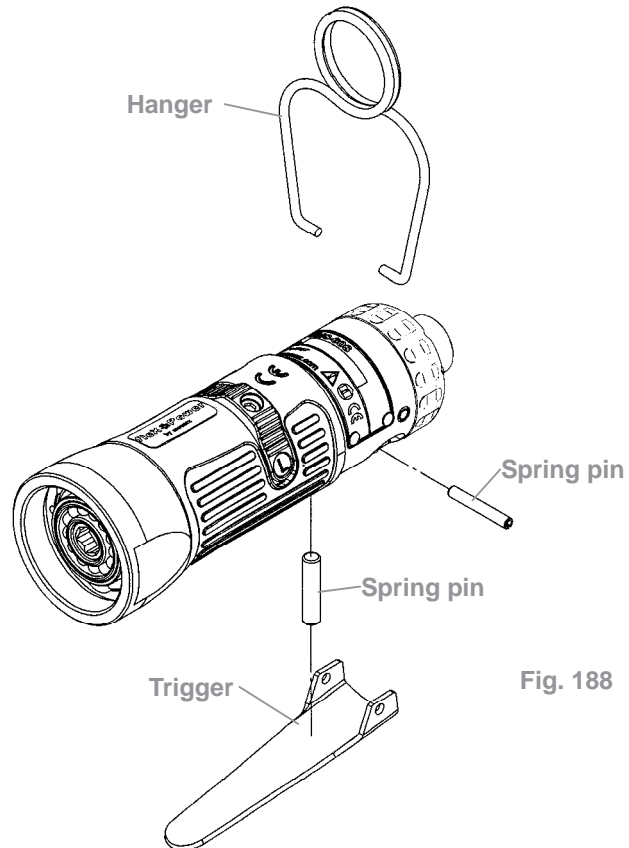


Fig. 188



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

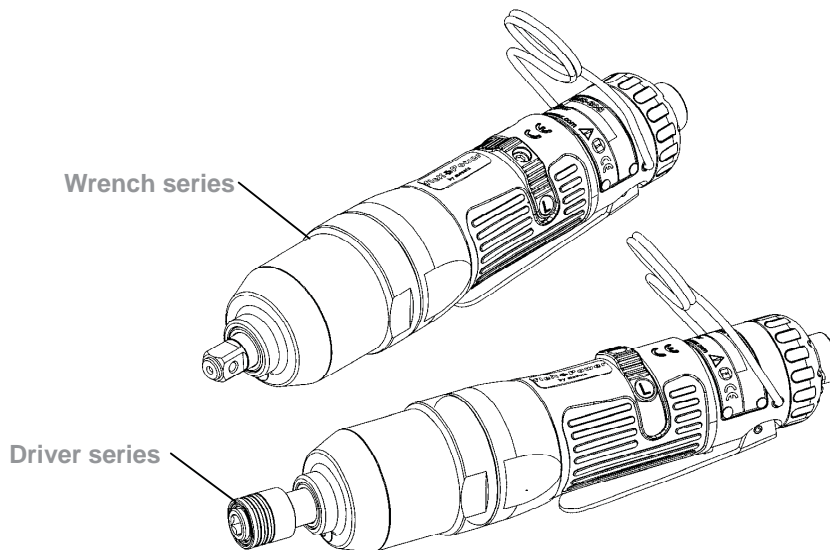


Fig. 189

DISASSEMBLY/ ASSEMBLY FOR PULSE WRENCHES

FLEXS-40S, FLEXS-50S, FLEXS-60S, FLEXS-70S, FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX

● PULSE MECHANISM DISASSEMBLY

1.0 Quick Change Holder disassembly: (for Model No. FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX)

Press down the hold spacer, and find the anvil collar. Use the a needle like stuff to get the anvil collar out, then take the quick change holder, the hold spacer, the spring, and the steel ball apart.

 The steel ball may drop off when taking out the Quick Change Holder

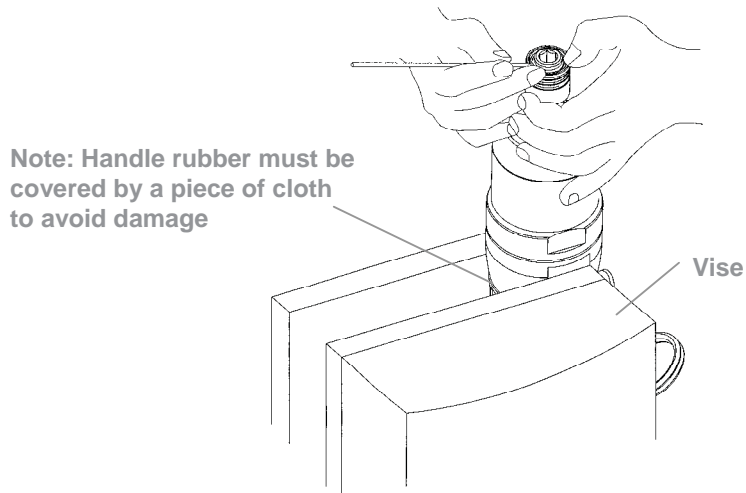


Fig. 190

2.0 Pulse Unit Housing Disassembly:

Fix the tool by a vise, use an adjustChart 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 191.

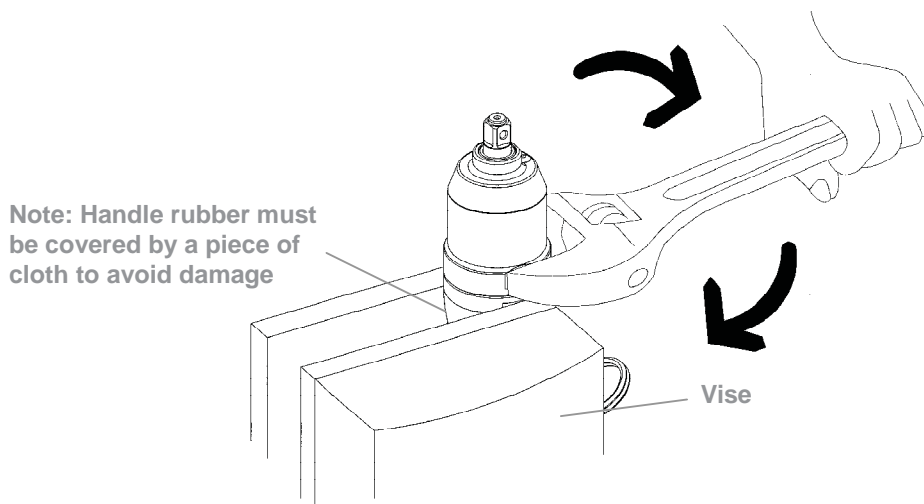


Fig. 191

3.0 Pulse Unit Disassembly:

3.1 Fix the pulse unit by a vise. Use the appliance (see Chart 30) to loosen the lock nut on the pulse unit, Fig. 192.

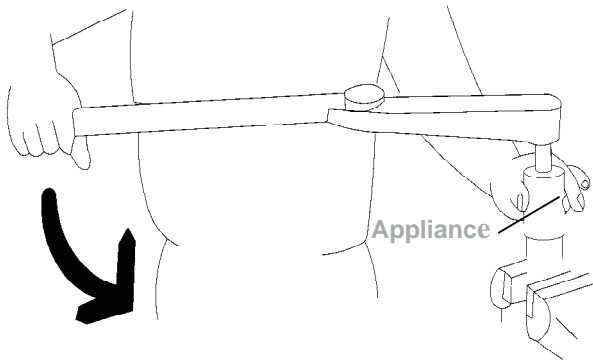


Fig. 192

Appliance No.	Apply to
63-TDI-40RT001	FLEXS-40S, FLEXS-50S, FLEXS-60S, FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX
63-TDI-70RT001	FLEXS-70S

Chart 30

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

3.2 Put the Appliance, see Chart 31, on the anvil and tap on it slightly to detach the interior parts from the pulse unit, Fig. 193.

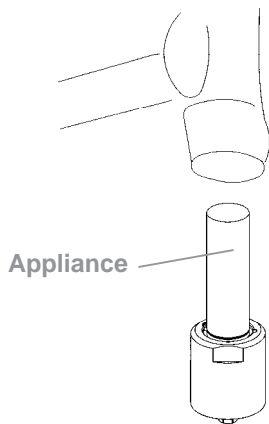


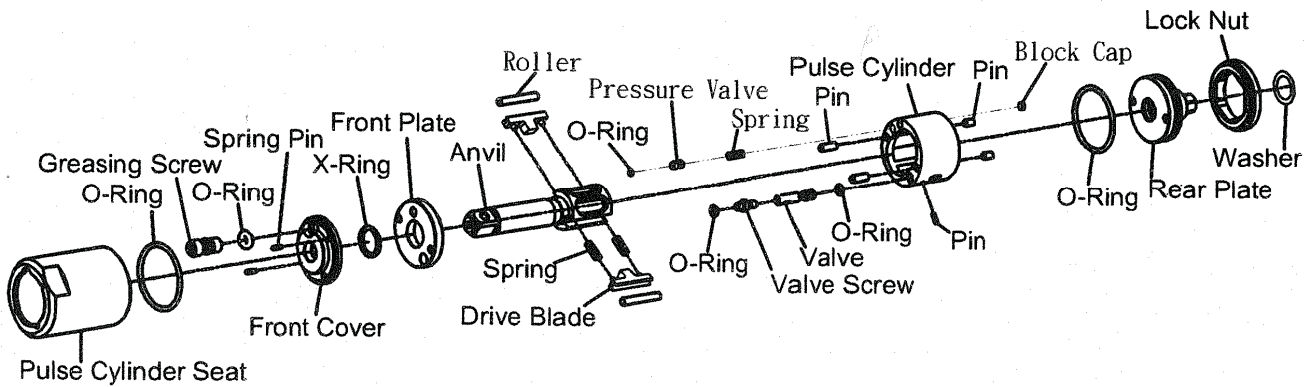
Fig. 193

Appliance No.	Apply to
63-TDI-40RT002	FLEXS-40S, FLEXS-50S, FLEXS-60S, FLEXS-70S, FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX

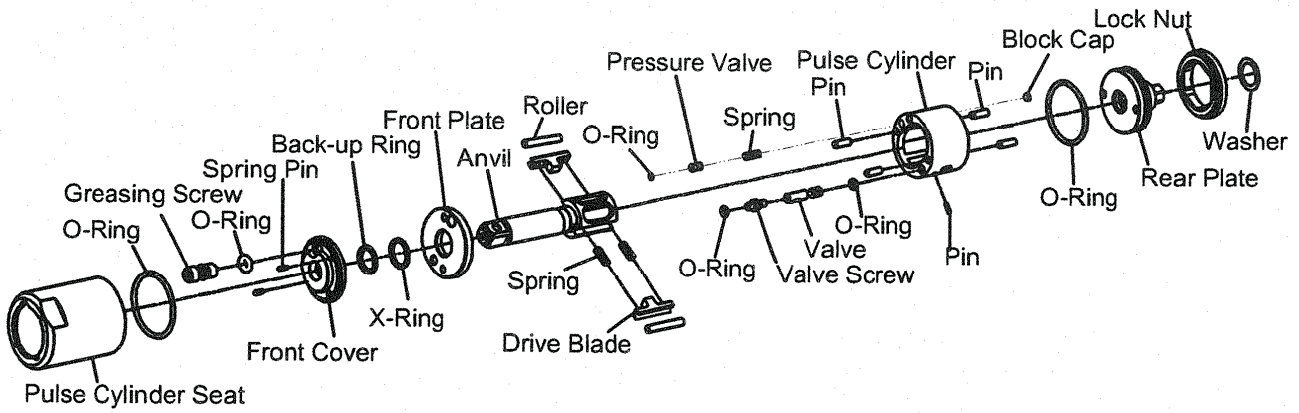
Chart 31

3.3 Parts of Pulse Cylinder Unit:

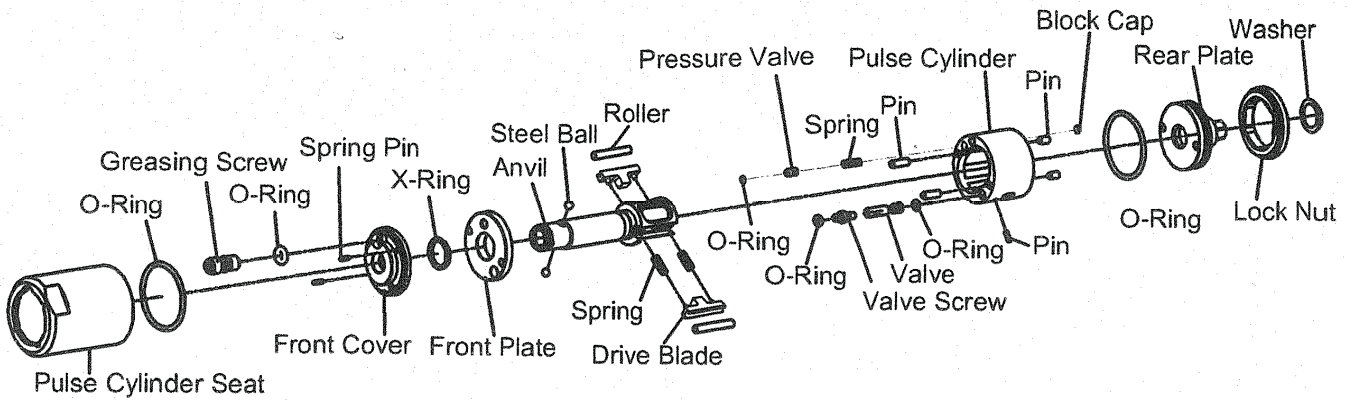
a. FLEXS-40S, FLEXS-50S, FLEXS-60S



b. FLEXS-70S



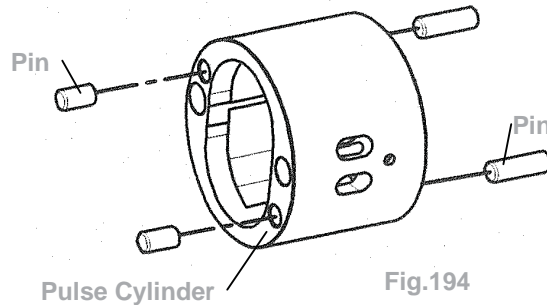
c. FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX



● **PULSE UNIT ASSEMBLY:**

1.0 **Pulse Cylinder Unit Assembly:**

1.1 Install the pins on both sides of the pulse cylinder. (Fig. 194)

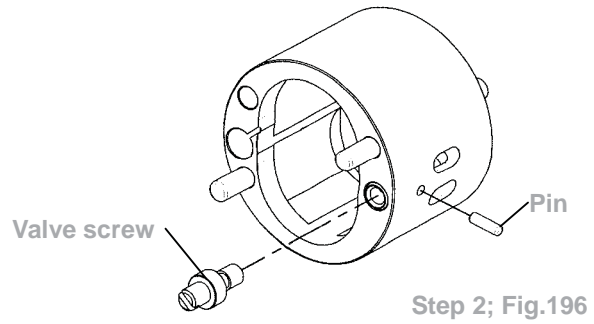
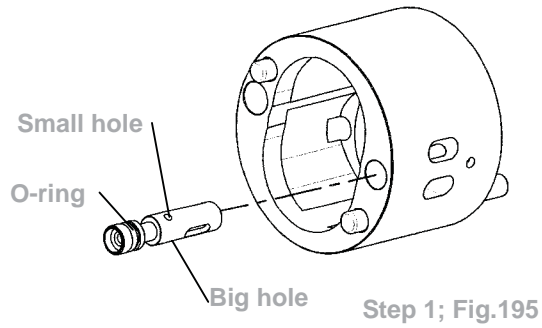


1.2 Sleeve the O-ring to the valve and install the valve into the big hole on the pulse cylinder. (Step 1; Fig.195)

1.3 Insert the pin into the hole on the side of the pulse cylinder. (Step 2; Fig.196)

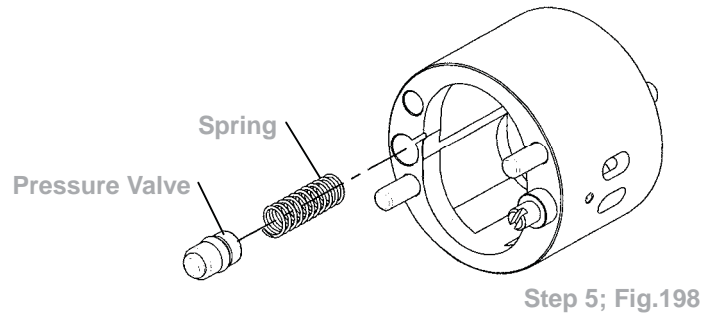
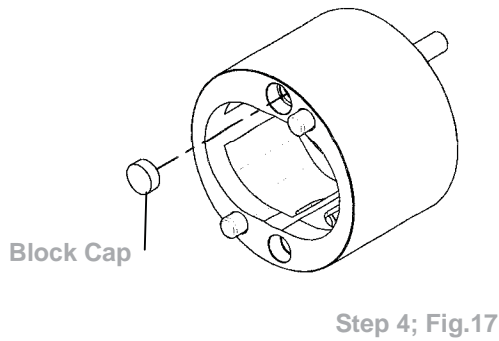
1.4 Screw the valve screw to the pressure valve. (Step 3; Fig.196)

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



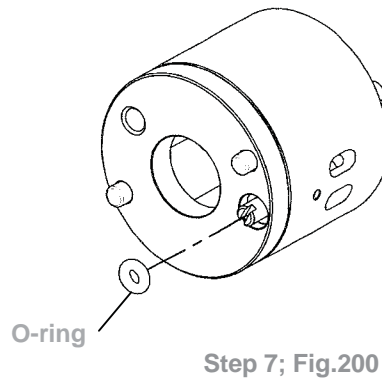
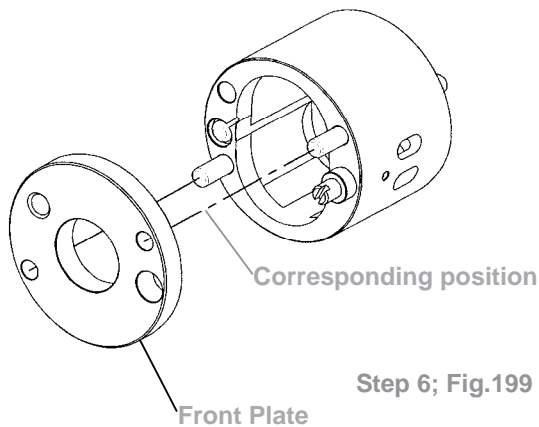
1.5 Plug the block cap into the hole and make sure it is parallel to the surface of the pulse cylinder. (Step 4; Fig. 197)

1.6 Put the spring into the hole then install the pressure valve that with the 0-ring sleeved. (Step 5; Fig. 198)



1.7 Install the front plate and make sure the corresponding position with the pins. (Step 6; Fig. 199)

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.200)



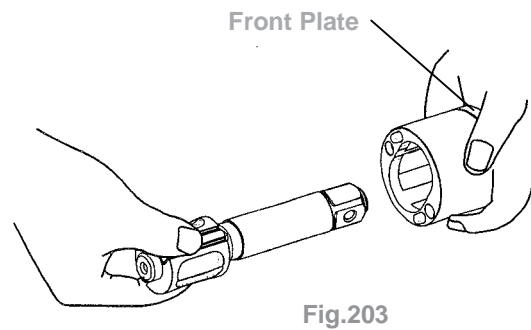
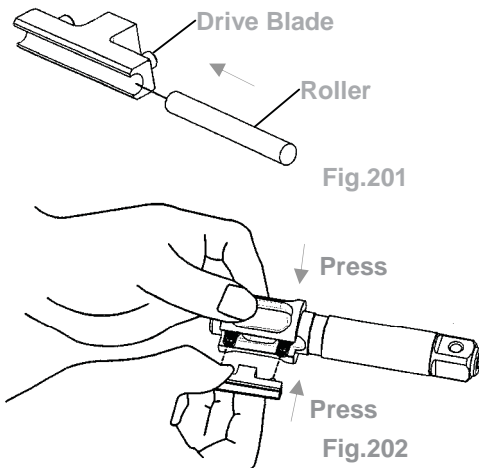
3.0 Anvil Unit Assembly

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.203 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-40S, FLEXS-50S, FLEXS-60S, FLEXS-40SX, FLEX-50SX, FLEXS-60SX,
63-I70AST-001K	FLEXS-70S

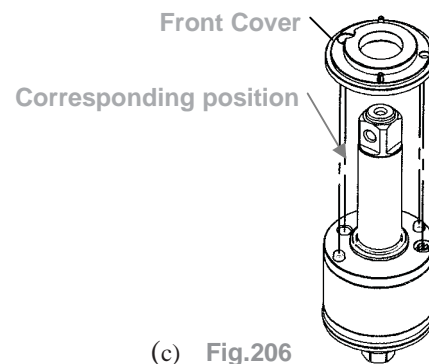
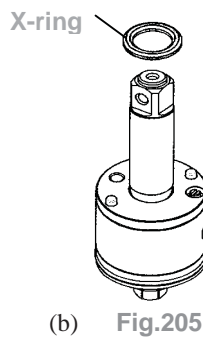
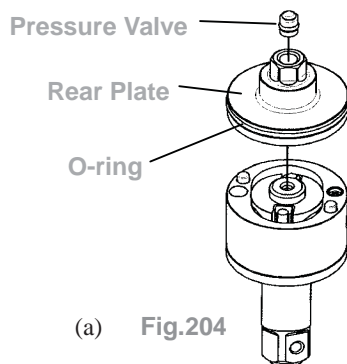


3.0 Front Cover and Rear Plate of Pulse Cylinder Assembly (for the models: FLEXS-40S, FLEXS-50S, FLEXS-60S, FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX)

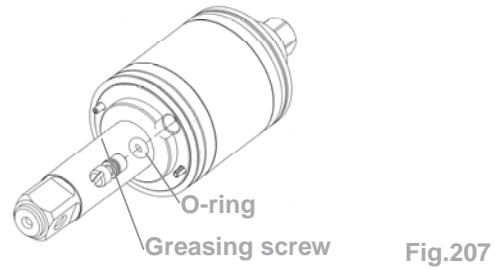
3.1 (a) Install the rear plate that with the O-ring sleeved (Fig. 204). Make sure the positions of the pin and hole are exactly matched. Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.

(b) Put the X-ring on the anvil with the oil applied. (Fig. 205)

(c) Install the front cover to the pulse cylinder by the corresponding positions. (Fig. 206)



- 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.

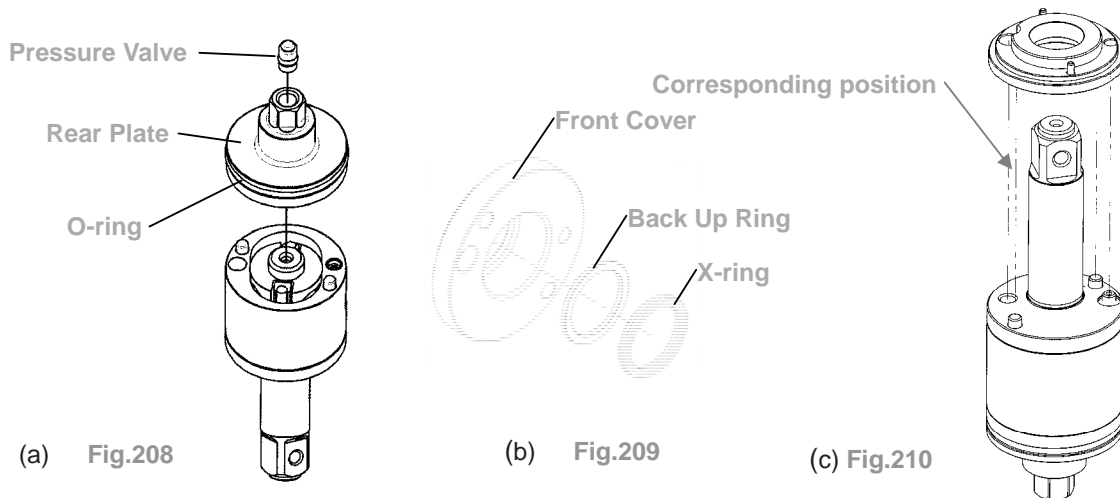


→ For the model: FLEXS-70S

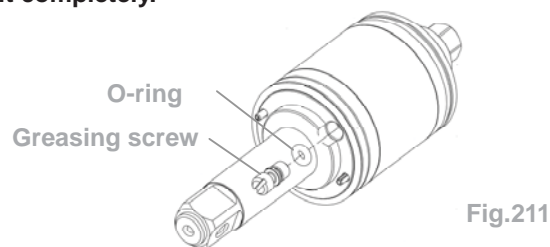
- 3.1 (a) Install the rear plate that with the O-ring sleeved (Fig. 208). Make sure the positions of the pin and hole are exactly matched. Then, plug the pressure valve with the convex facing outside in the hole on the rear plate.

(b) Put the back up ring and the X-ring into the front cover. (Fig. 209)

(c) Install the front cover to the pulse cylinder by the corresponding positions. (Fig. 210)



- 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. 212, Fig. 213).

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

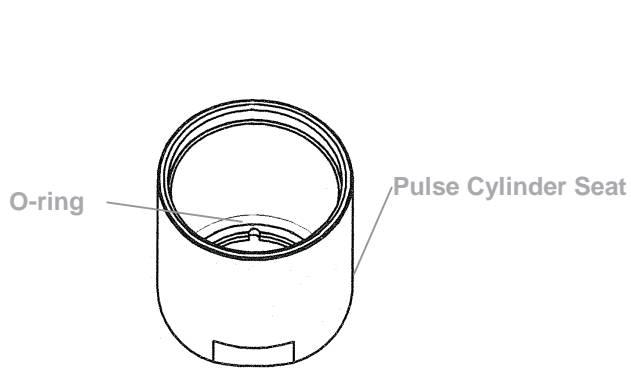


Fig. 212

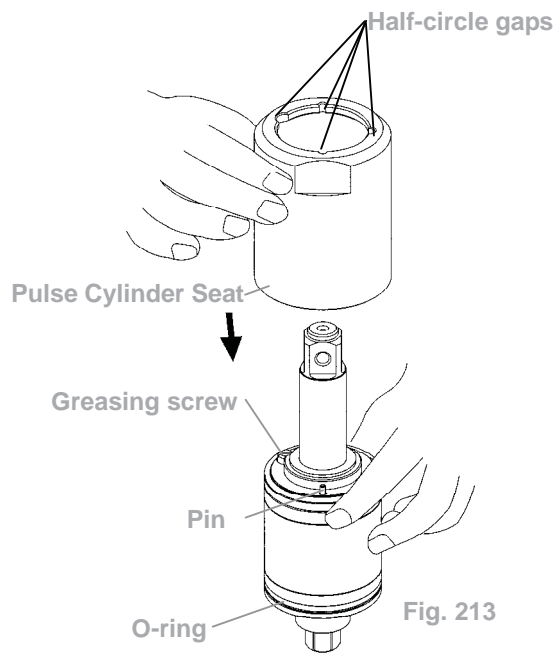


Fig. 213

- 4.2 Use the appliance to push out the rear plate from the pulse cylinder seat. See Chart 2 in reference to the proper appliance selection. (Fig. 214)
- 4.3 Fill up the interior pulse cylinder with the pulse oil about 90% full by a syringe. Put the steel ball and the valve spring into the hole on the pulse cylinder in order. (Fig. 215)
- 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.

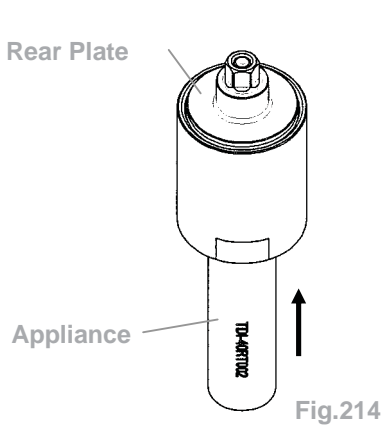


Fig.214

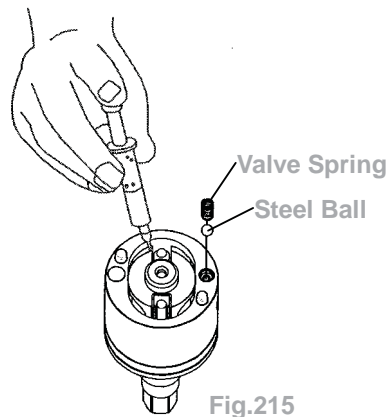


Fig.215

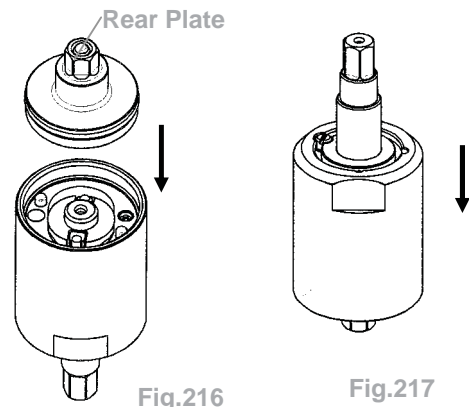


Fig.216

Fig.217

- 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 32 and 33 in reference to the proper appliance and tightness. (Note: Loctite® needed when tightening the lock nut of the pulse cylinder)

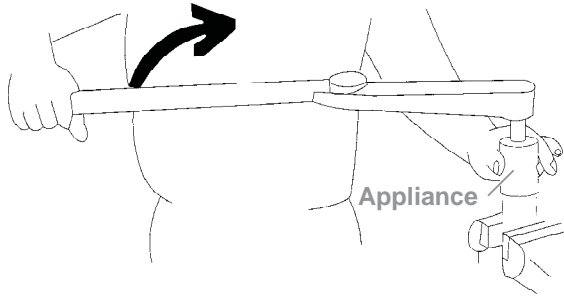


Chart 32

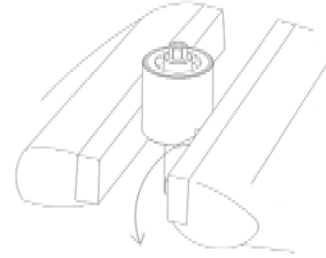


Fig. 218

Fixed by a vise

Appliance No.	Apply to
63-TDI-40RT001	FLEXS-40S, FLEXS-50S, FLEXS-60S, FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX
63-TDI-70RT001	FLEXS-70S

Chart 33

Model No.	Tighten torque	Model No.	Tighten torque
FLEXS-40S	80 N.M	FLEXS-30SX	80 N.M
FLEXS-50S	80 N.M	FLEXS-40SX	80 N.M
FLEXS-60S	80 N.M	FLEXS-50SX	80 N.M
FLEXS-70S	100 N.M	FLEXS-60SX	80 N.M

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

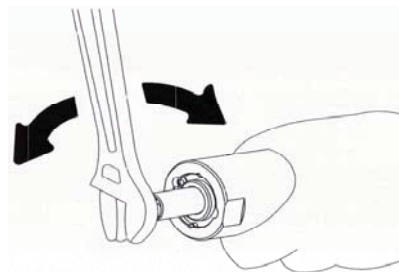


Fig. 219

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.

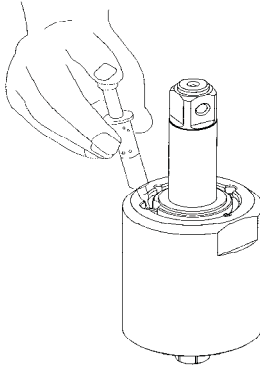


Fig. 220

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.

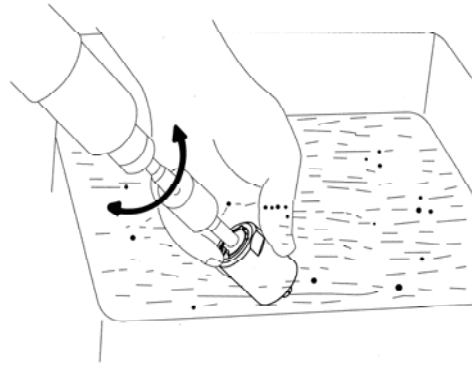


Fig. 221

5.3 Use the screwdriver to tighten the greasing screw, Fig. 222.

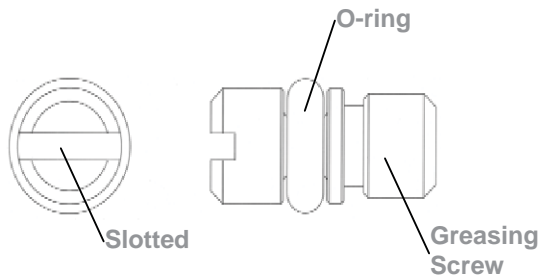
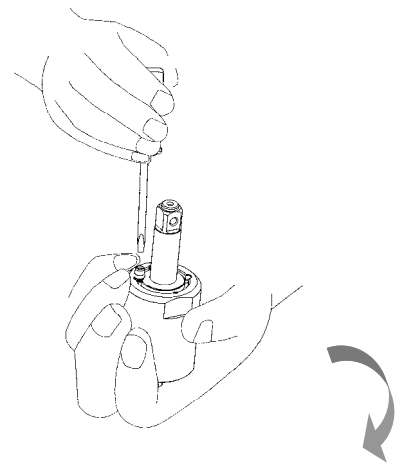


Fig. 222



5.4 Use an air spray gun to blow off the oil on the cylinder seat, Fig. 223.



Fig. 223

5.5 Loosen the greasing screw again and use a syringe to draw out a little amount of oil (see Chart 34) . Finally, tighten the greasing screw back to the pulse cylinder unit, Fig. 224.

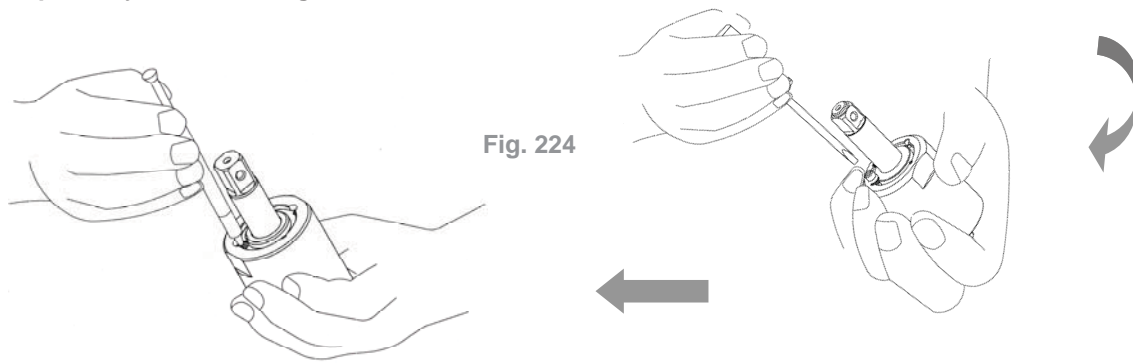


Fig. 224

Model No.	Amount of oil draw	Model No.	Amount of oil draw
FLEXS-40S	0.2 CC	FLEXS-30SX	0.15 CC
FLEXS-50S	0.3 CC	FLEXS-40SX	0.2 CC
FLEXS-60S	0.4 CC	FLEXS-50SX	0.3 CC
FLEXS-70S	0.4 CC	FLEXS-60SX	0.4 CC

Chart 34

6.0 Torque Testing

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

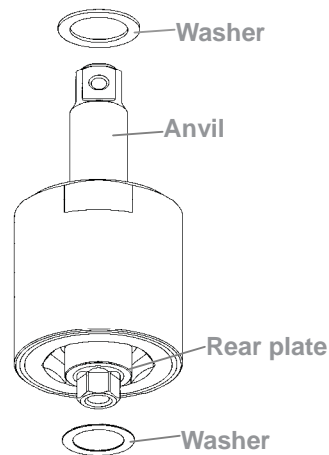


Fig. 225

6.2 Tighten the clutch housing by hands.

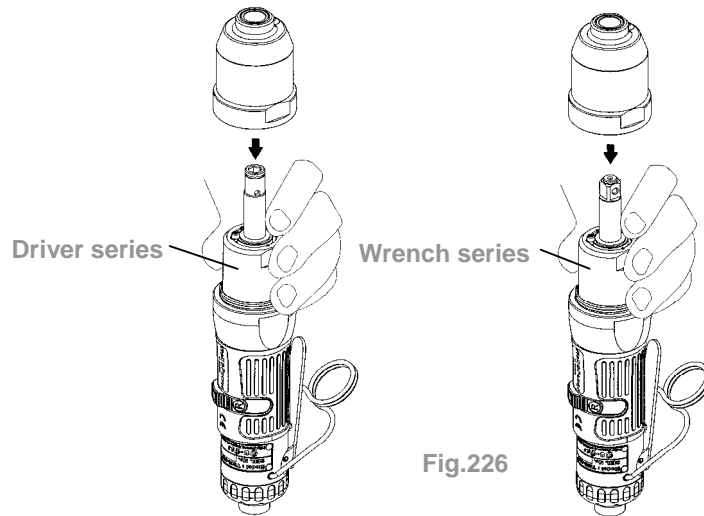


Fig.226

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

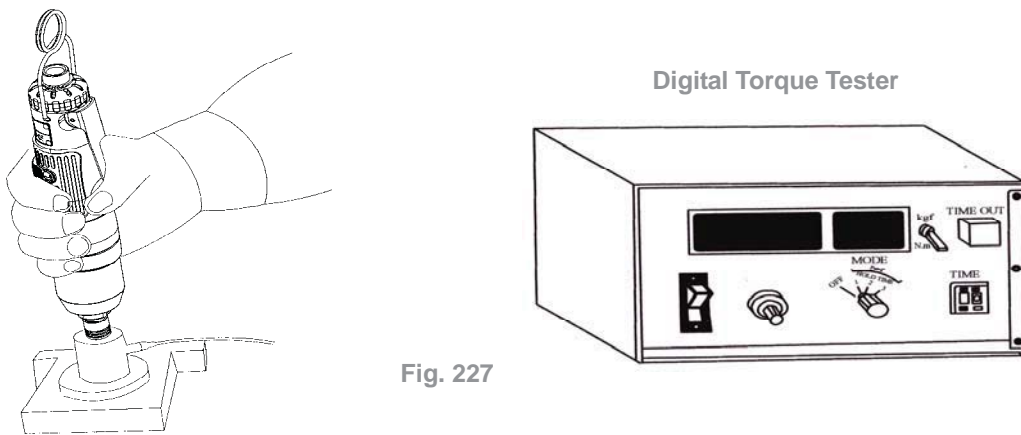


Fig. 227

Model No.	Air inlet pressure 85 PSI
	N.M (at least)
FLEXS-40S	15.5
FLEXS-50S	25
FLEXS-60S	35
FLEXS-70S	48
FLEXS-30SX	12.5
FLEXS-40SX	14
FLEXS-50SX	22
FLEXS-60SX	28

Chart 35

6.4 If the test result is NG (see Chart 35 in reference to the torque standard), **MUST** draw out add a little mount of oil and do the following steps:

or

- 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.



Fig. 228

8.0 **Anvil Unit Assembly:** (for models: FLEXS-30SX, FLEXS-40SX, FLEXS-50SX , and FLEXS-60SX)

8.1 Place the steel ball, the quick change holder, the spring, and the hold spacer orderly as Fig. 229 showed.

8.2 (a) SPut the anvil collar on the Appliance # 63-TDI-40RT006. See Fig. 230.

8.3 (b) Place the 63-TDI-40RT006 on the hex-hole of the anvil, then put the Appliance # 63-TDI-40RT005 on the 63-TDI-40RT006 and tap it making sure the anvil collar sleeves into the anvil on proper position, Fig. 230.

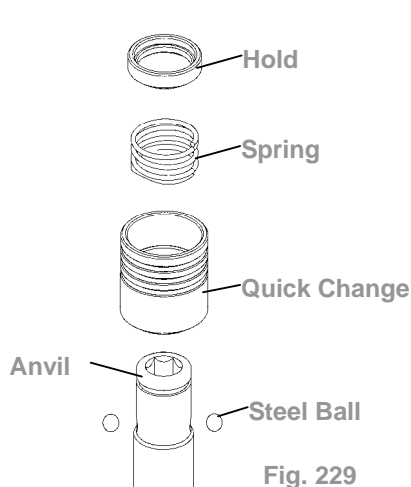


Fig. 229

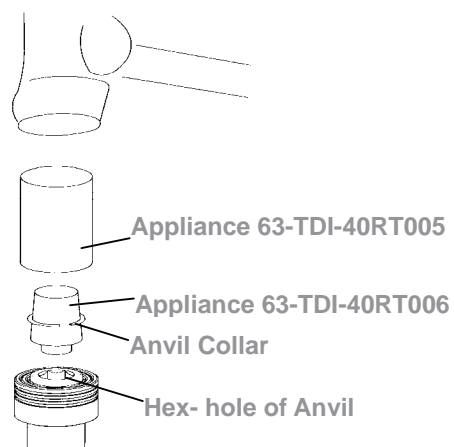
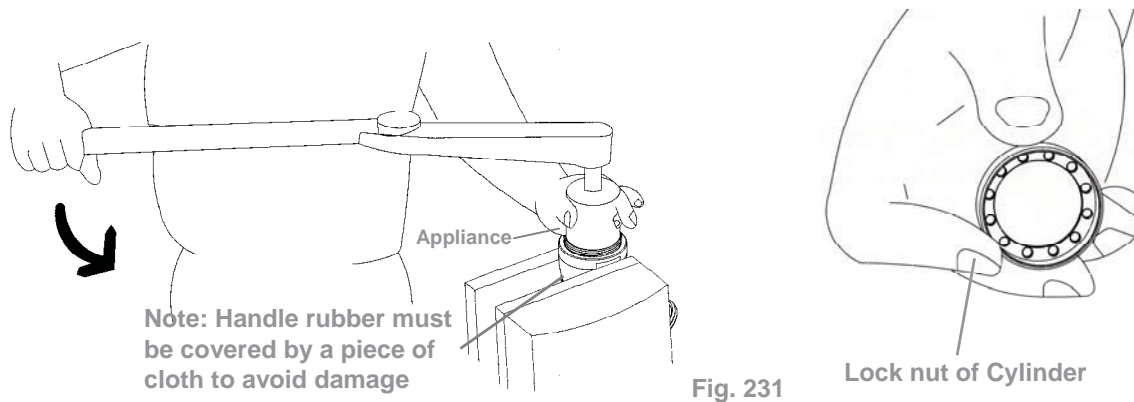


Fig.230

● **HOUSING AND MOTOR SET DISASSEMBLY:**

1.0 **Cylinder Unit Disassembly:**

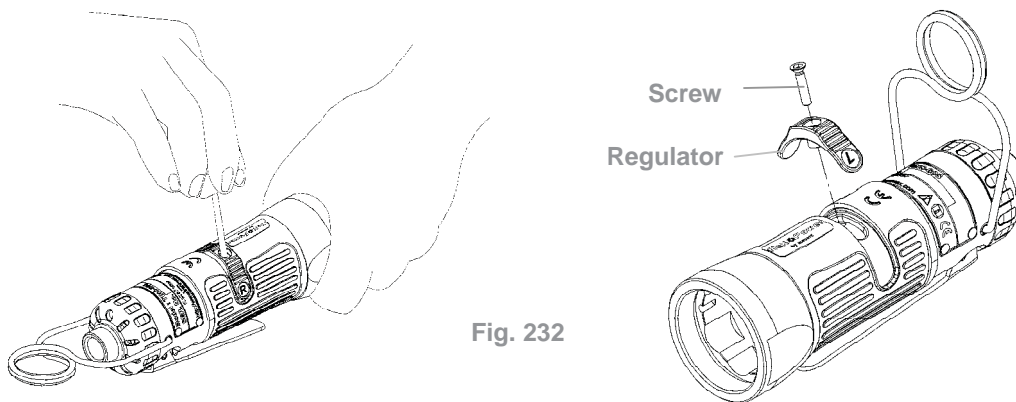
1.1 Fix the tool by a vise. Use the appliance (see Chart36) to take the lock nut out of cylinder by turning clockwise.



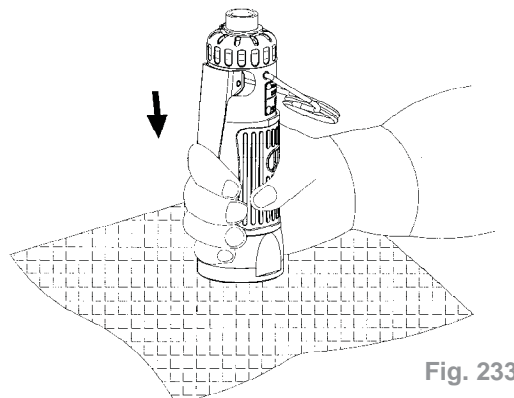
Appliance No.	Apply to
63-TDI-40RT004	FLEXS-40S, FLEXS-50S, FLEXS-60S, FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX
63-TDI-70SRT001	FLEXS-70S

Chart 36

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



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.



1.4 Parts of Motor Set:

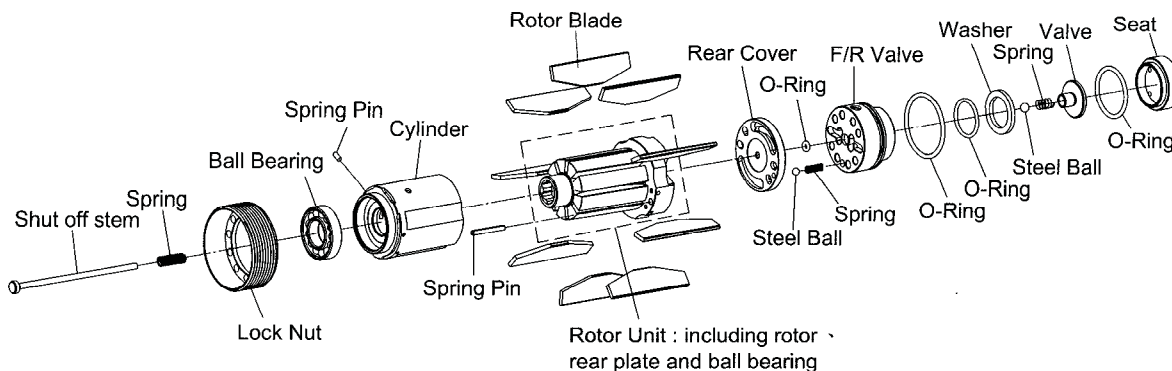


Fig. 234

⚠ 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.

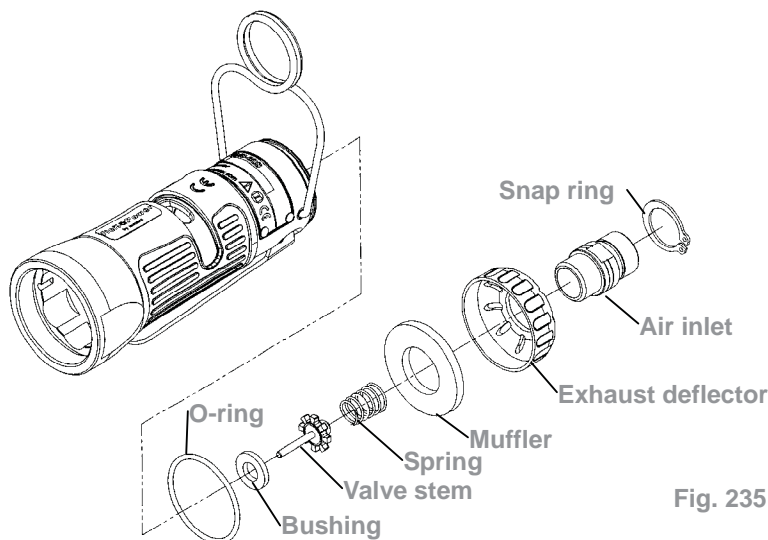
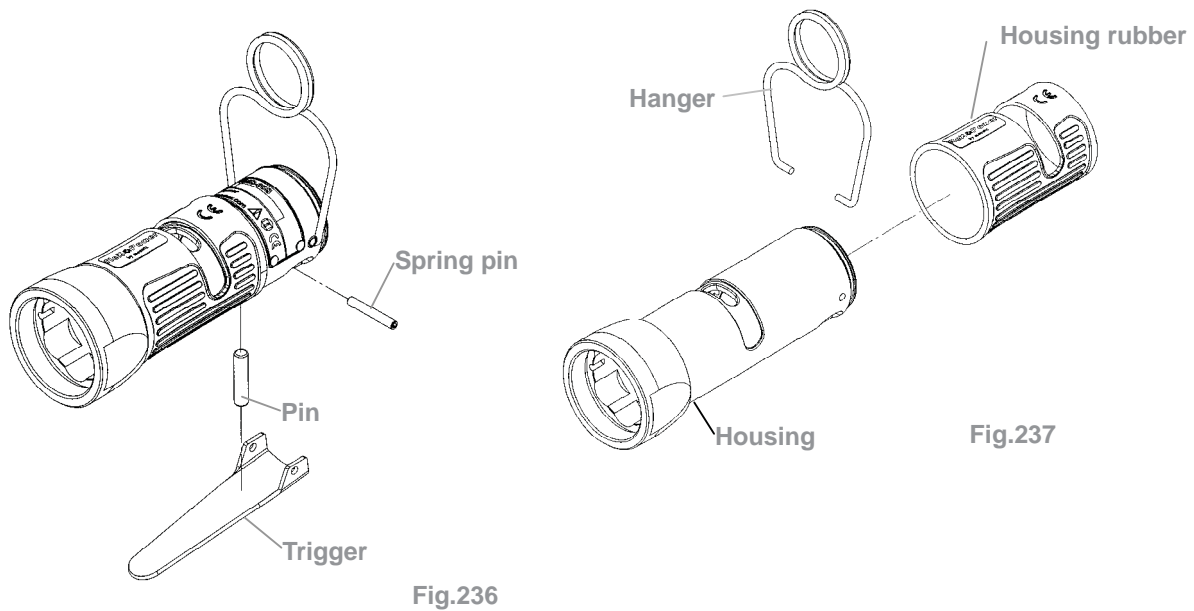


Fig. 235

3.0 Trigger Set Disassembly:

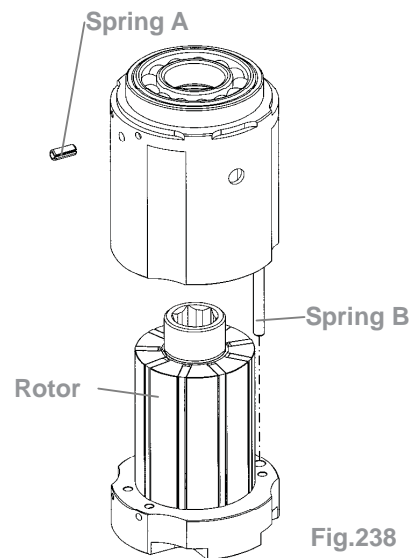
Remove the spring pin from the trigger to detach the interior parts. And then, remove the housing rubber and the hanger to complete the disassembly.



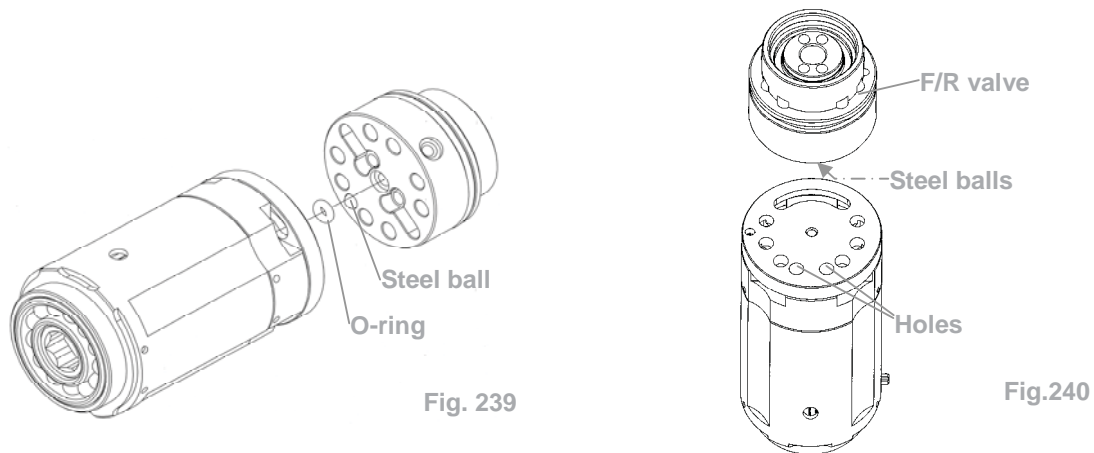
● **HOUSING AND MOTOR SET ASSEMBLY:**

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.

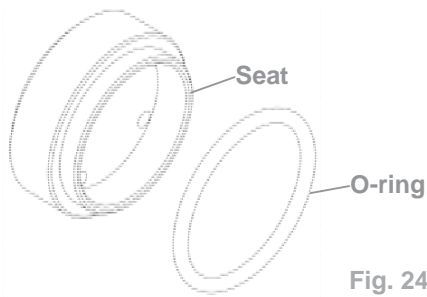


Fig. 241

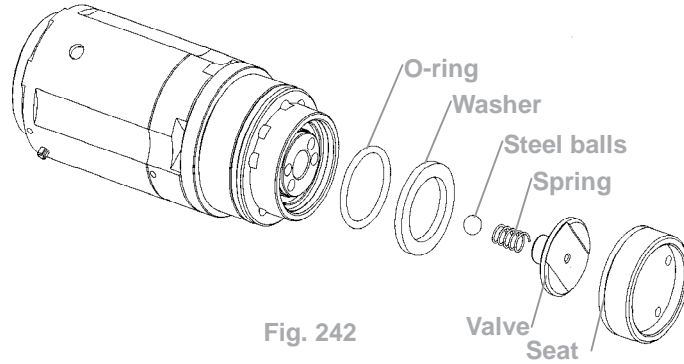


Fig. 242

⚠ 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.

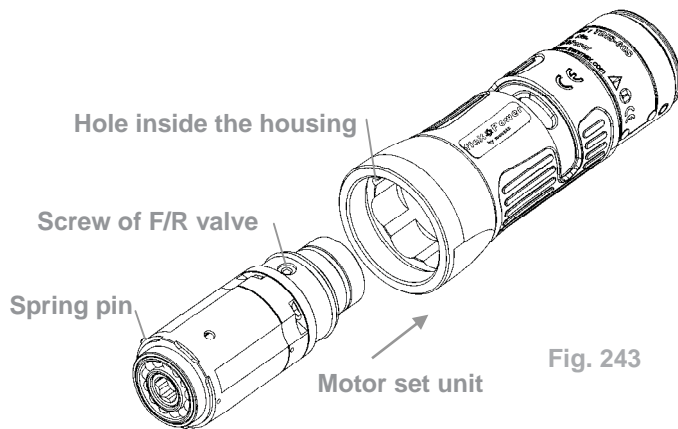


Fig. 243

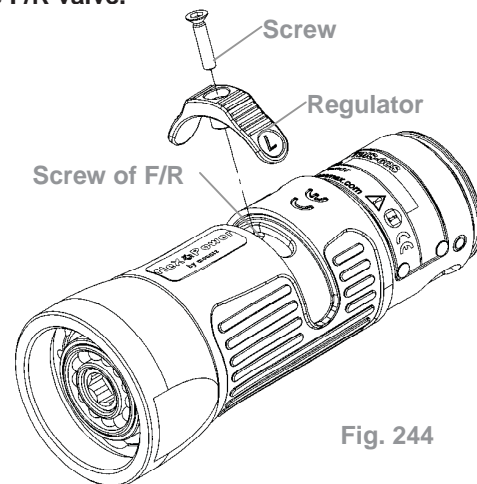


Fig. 244

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 37 and 38 in reference to appliance use and tighten torque.

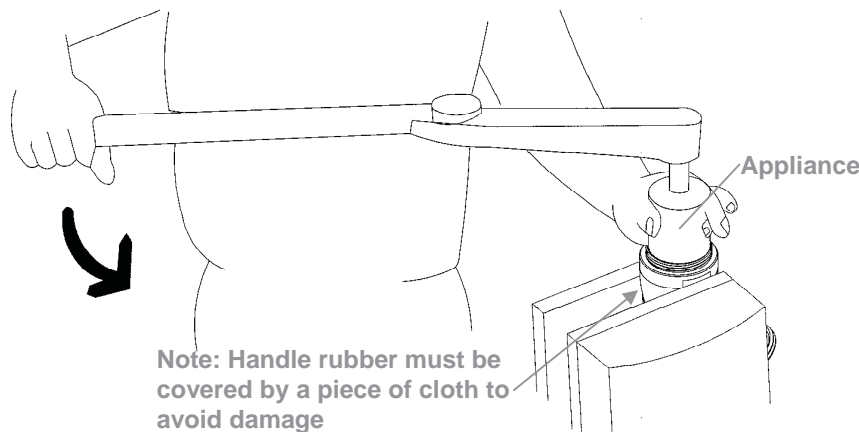


Fig. 245

Appliance No.	Apply to
63-TDI-40RT004	FLEXS-40S, FLEXS-50S, FLEXS-60S, FLEXS-30SX, FLEXS-40SX, FLEXS-50SX, FLEXS-60SX
63-TDI-70RT001	FLEXS-70S

Chart 37

Model No.	Tighten torque
FLEXS-40S	40 N.M
FLEXS-50S	40 N.M
FLEXS-60S	40 N.M
FLEXS-70S	60 N.M
FLEXS-30SX	40 N.M
FLEXS-40SX	40 N.M
FLEXS-50SX	40 N.M
FLEXS-60SX	40 N.M

Chart 38

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)

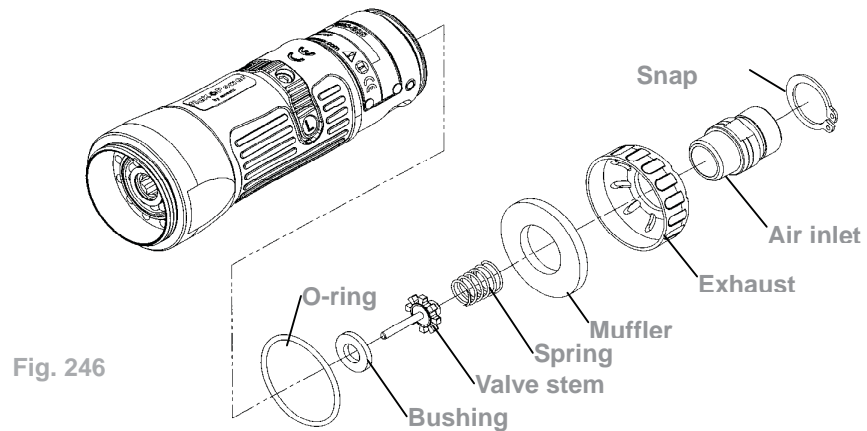


Fig. 246

4.0 Housing and Trigger Set Assembly:

Install the parts of the trigger set orderly (see Fig. 247 drawing for reference). Then, Insert the spring pins to fix all the parts.

And, install the hanger to complete the assembly.

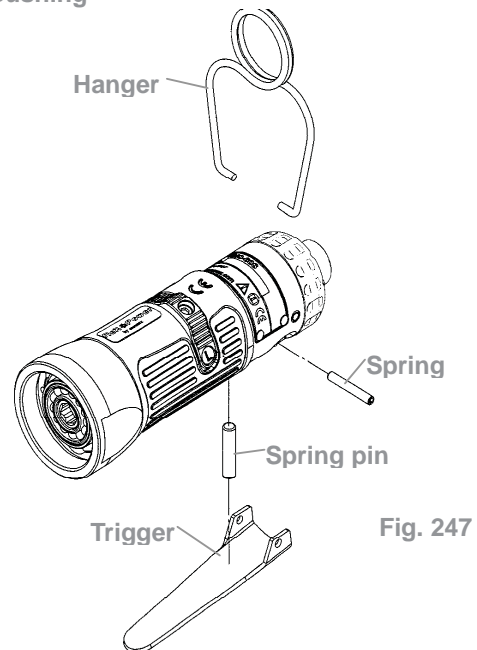


Fig. 247

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

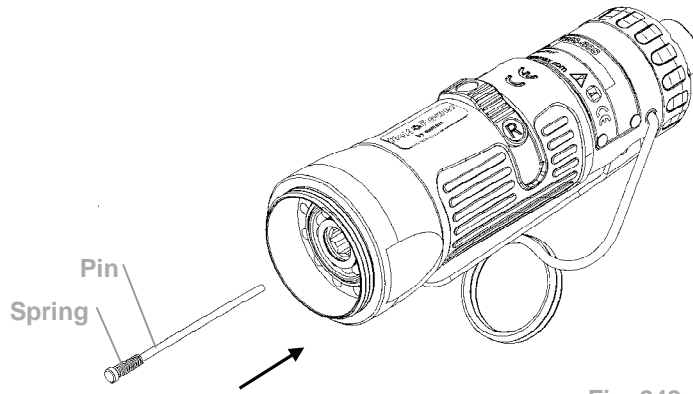


Fig. 248



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

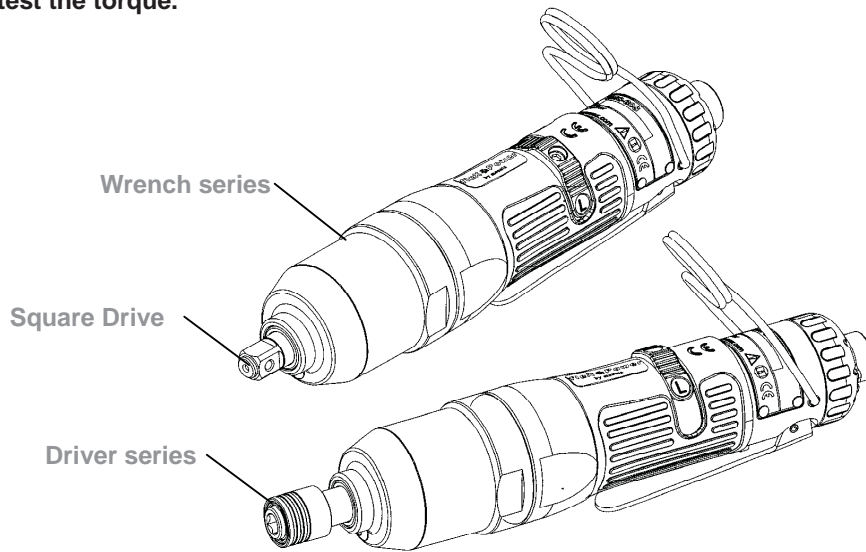


Fig. 249

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 Centers

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 is 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 in 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 worn out or bad condition.
Low RPM's	Low air pressure or fluctuates	Adjust desired air pressure when the tool is running freely.
	Dry blades in the air motor	Lubricate the air motor and recommended to add two or three drops per week.

Service Centers

Headquater & Western Service Center

1080N 11th Street

San Jose, CA 95112

P. 408.292.2214

F. 408.292.2733

Contact: James.Basset@mountztorque.com

Eastern Distribution & Service Center

19051 Underwood Rd.

Foley, AL 36535

P. 251.943.4125

F. 251.943.4979

Contact: meredith.martin@mountztorque.com

Mexico Service Center

Mountz Mexico S.A. de C.V.

Av. Cristobal Colon # 15434

Col. Paseos de Chihuahua

Chihuahua, Chih. 31125

P. 614.481.0023

F. 614.481.0053

Contact: roberto.vargas@mountztorque.com