

MAINTENANCE MANUAL

YAMADA AIR-OPERATED DIAPHRAGM PUMPS

NDP-5
NDP-15

WARNING



For your own safety, be sure to read these procedures carefully before performing maintenance on this product. After reading this document, be sure to keep it handy for future reference.

This maintenance manual covers what you should know about maintenance of the Yamada NDP-5 series and NDP-15 series Diaphragm Pumps.

This edition is based on the standards for the March 2001 production run. Remember, the specifications are always subject to change; therefore, some of the information in this edition may not apply to new specifications.

Warnings and Cautions

For safe use of this product, be sure to note the following: In this document, warnings and cautions are indicated by symbols. These symbols are for those who will operate this product and for those who will be nearby, for safe operation and for prevention of personal injury and property damage. The following warning and caution symbols have the meanings described below. Be sure to remember their meanings.

WARNING

If you ignore the warning described and operate the product in an improper manner, there is danger of serious bodily injury or death

CAUTION

If you ignore the caution described and operate the product in an improper manner, there is danger of personal injury or property damage.

Furthermore, to indicate the type of danger and damage, the following symbols are also used along with those mentioned above:

WARNING



Before starting maintenance work, cut off the feed air and clean the pump. If air pressure or residue remains in the pump, there is danger of explosion, or possible poisoning resulting in serious injury or death if chemicals adhere to the skin or are accidentally swallowed. (For details on cleaning the pump, refer to chapter 6 of the operating manual.)



When replacing parts, be sure to use the recommended genuine parts or equivalents. Use of other parts may cause a malfunction of the product.

WARNING



When it is instructed that special tools must be used, be sure to use the specified tools. Otherwise, the pump may be damaged.



Refer to 10.1 “Specifications” in the Operating Manual. Also, remember that the pump is heavy, and extreme care must be taken when lifting it.



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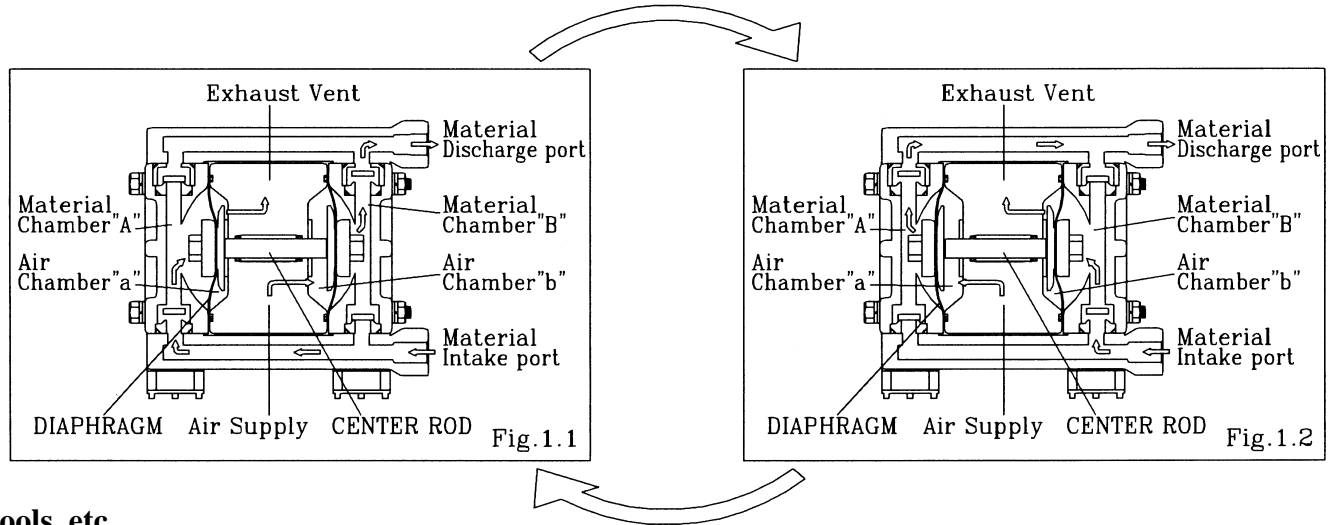
Jump Zone
Click topic to
enter



1. Principles of operation

There are two diaphragms fixed to the center rod, one at each end. When compressed air is supplied to air chamber b (right side, see Fig. 1.1), the center rod moves to the right, the material in material chamber B is pushed out, and at the same time material is sucked into material chamber A.

When the center rod is moved full-stroke to the right, the air switch valve is switched, compressed air is sent to air chamber a (left side, see Fig.1.2), and the center rod moves to the left. The material in material chamber A is pushed out, and at the same time material is sucked into material chamber B. Through repetition of this operation, material is repeatedly taken in and discharged out.



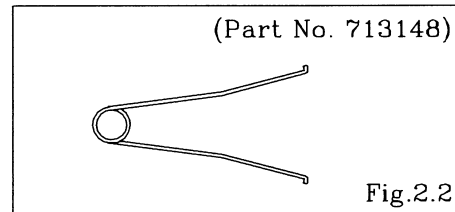
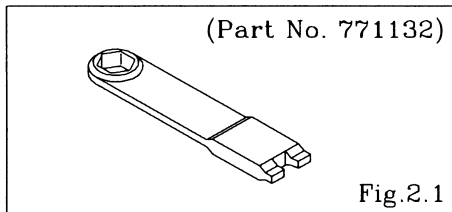
2. Tools, etc.

2.1 General tools

- Socket wrenches 10mm (NDP-15), 13mm (NDP-15)
- Open-end wrenches 10mm (NDP-5), 13mm (NDP-15), 21mm (NDP-15)
- Pliers

2.2 Special tools

- Accessory tool (included) Purpose: Removing the center disk of FP_ and FV_ types
- Sleeve remover (sold separately) Purpose: For removing sleeves



2.3 Misc.

- Assembly oil Turbine oil none addition class 1 (equivalent ISO VG32 grade)
- Nuts M6x1 (NDP-5), M8x1.25 (NDP-15)

3. Ordering Replacement parts

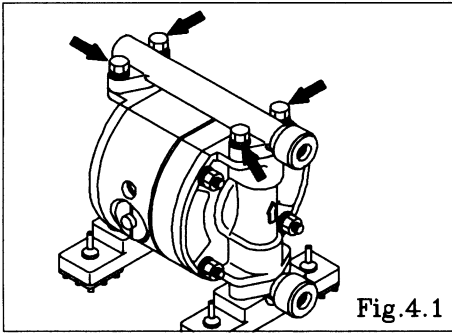
For accurate and speedy shipment of parts, be sure to order the right parts for your model to your distributor. Indicate the part numbers, descriptions and quantities.

4. Balls, Flat valves and Valve Seats

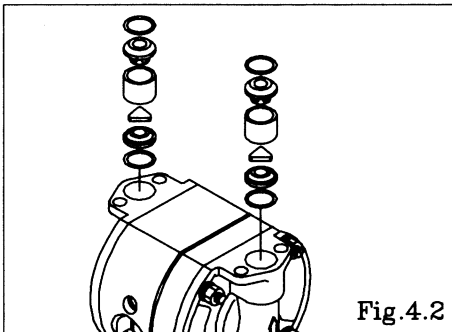
4.1 Removal

FAT, FST, BA_, BS_, BP_ types

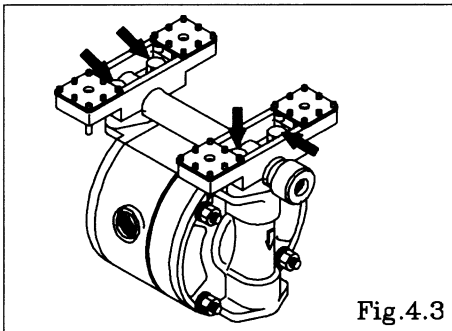
See [8. Exploded View] on after p.12 (fig. 4.1, 4.2, 4.3 and 4.4 show the NDP-5FAT)



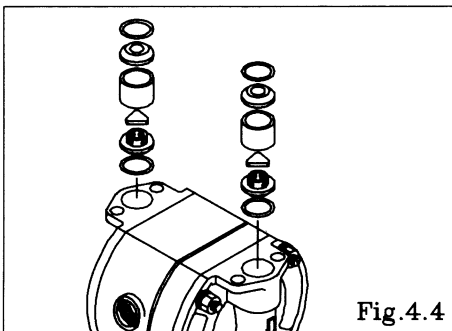
- Remove the 4 retainer bolts from the out manifold, and remove the out manifold. [fig.4.1]



- Remove the O ring, valve stopper, valve guide, flat valve and valve seat (NDP-5) [fig. 4.2]
- Remove the O ring, valve guide, ball and valve seat (NDP-15) [fig. 4.2]



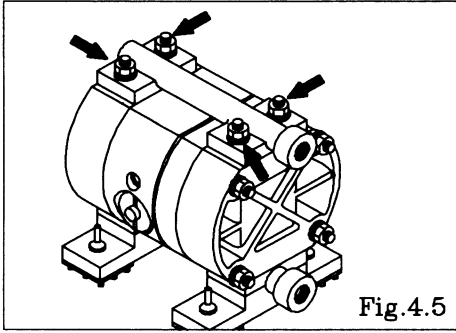
- Turn over the main body assembly, [fig.4.3]
- Remove the 4 retainer bolts from the in manifold, and remove the in manifold. [fig.4.3]



- Remove the O ring, valve seat, flat valve, valve guide and valve stopper (NDP-5) [fig. 4.4]
- Remove the O ring, valve seat, ball and valve guide (NDP-15) [fig. 4.4]

FP_, FV_ types

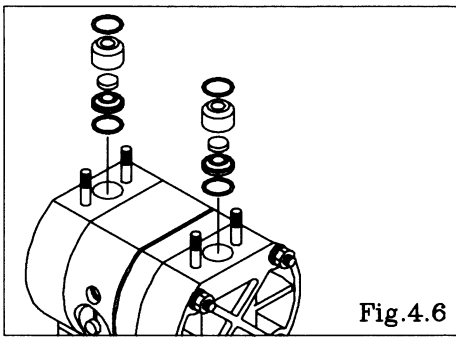
See [8. Exploded View] on after p.12 (fig. 4.5, 4.6, 4.7 and 4.8 show the NDP-5FPT)



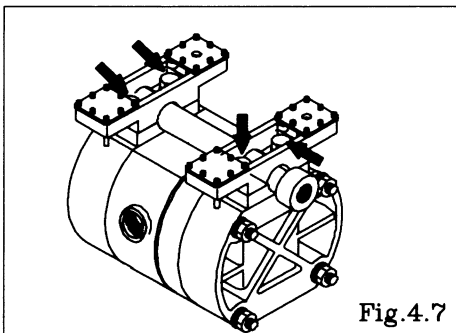
- Remove the 4 retainer bolts from the out manifold, and remove the out manifold. [fig.4.5]

<NOTE>

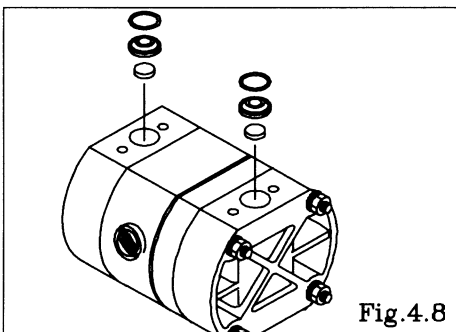
- When the retainer nuts are removed from the tie rods, the in manifold removes. (NDP-5)



- Remove the O ring, valve stopper, flat valve and valve seat [fig. 4.6]



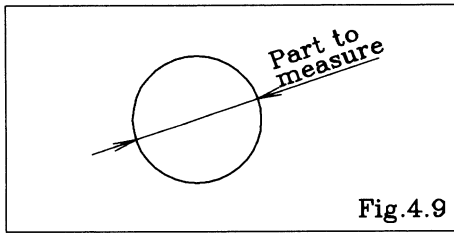
- Turn over the main body assembly, [fig. 4.7]
- Pull out the bolt, and remove the base and in manifold (NDP-5)
- Remove the 4 retainer bolts from the in manifold, and remove the base and in manifold. (NDP-15) [fig.4.7]



- Remove the O ring, valve seat, flat valve, (NDP-5) [fig. 4.8]
- Remove the O ring, valve seat, flat valve and valve guide (NDP-15) [fig. 4.8]

4.2 Inspection

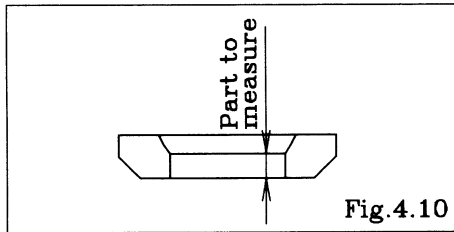
Ball valve type



- Ball [fig. 4.9]
Measure the outside diameter, and if it is outside the usable range, replace the ball.

Usable range of ball

NDP-15	SØ0.787~SØ0.898 in {SØ20.0~SØ22.8mm}
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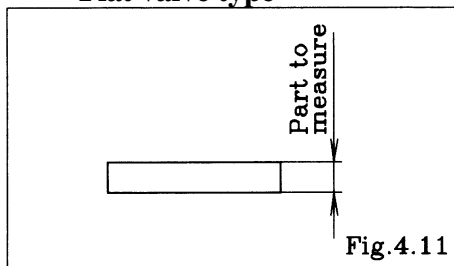


- Valve seat [fig. 4.10]
Measure the dimension shown at left, and if it is outside the usable range, replace the seat.

Usable range of valve seat

NDP-15	0.102~0.256in {2.6~6.5mm}
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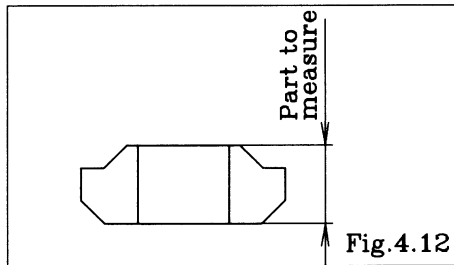
Flat valve type



- Flat valve [fig. 4.11]
Measure the dimension shown at left, and if it is outside the usable range, replace the seat. If the seal ring is worn out or cracked, replace it.

Usable range of Flat valve

NDP-5	0.098~0.122in {2.5~3.1mm}
NDP-15	0.169~0.197in {4.3~5.0mm}



- Valve seat [fig 4.12]
Measure the dimension shown at left, and if it is outside the usable range, replace the seat.

Usable range of Valve seat

NDP-5	0.228~0.280in {5.8~7.1mm}
NDP-15	0.323~0.394in {8.2~10.0mm}

- O'ring (other than PTFE)
If o'rings are worn out or cracked, replace them.

4.3 Installation

For installation, see [8.Exploded View] on after p.12, and install in the reverse order of disassembly.

Note:

- Make sure there is no dust on the seal surface and the seal is not damaged.
- Replace the PTFE o'ring regardless of its condition

Tightening torque for manifold retainer bolts or nuts

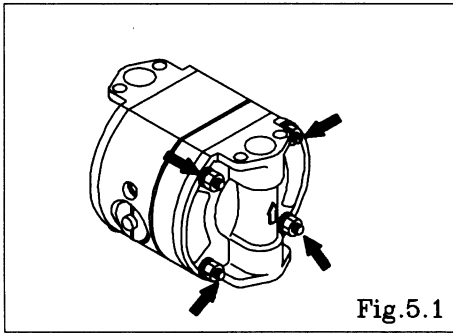
NDP-5	65 lbf in {75 kgf cm}
NDP-15	105 lbf in {120 kgf cm}

5. Diaphragm and Center rod

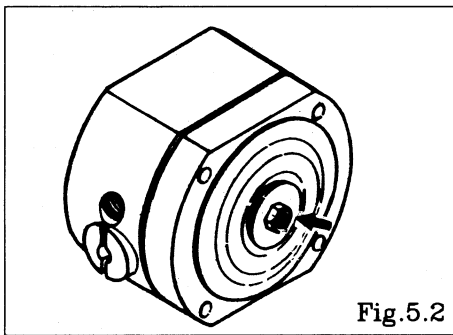
5.1 Removal

FAT, FST, BA_, BS_, BP types

See [8. Exploded View] on after p.12 (fig. 5.1, 5.2 and 5.3 show the NDP-5FAT)



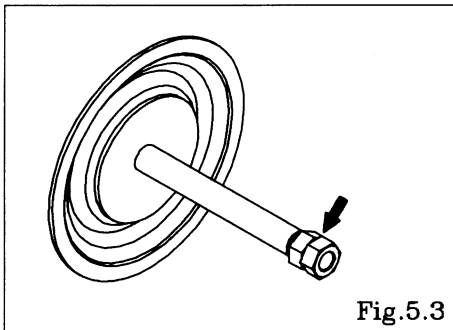
- Remove the ball and flat valve and valve seat (see [4.1 removal FAT, FST, BA_, BS_ types] on p.4).
- Remove the 8 (12 on the NDP-15) retainer bolts from the out chamber, and remove the out chamber. [fig. 5.1]



- Remove the nuts on both sides of the center rod. [fig. 5.2]
- After the nuts on one side have been removed, remove center disk and diaphragm. Remove the Diaphragm, center disk and center rod from the opposite side of the main body.

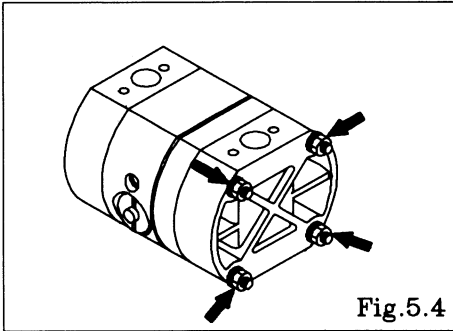
<NOTE>

- When the Diaphragms are removed, the main body is separated in 2 pieces. For easy work, leave the tie rods or bolts fastened temporarily before removing the Diaphragms.
- Remove the nuts on the opposite side using the double nuts [fig. 5.3].
- Remove the coned disk spring, center disk and Diaphragm.

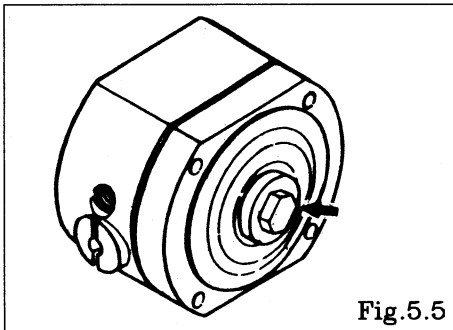


FP_, FV_ types

See [8. Exploded View] on after p.12 (fig. 5.4, 5.5 and 5.6 show the NDP-5FPT)



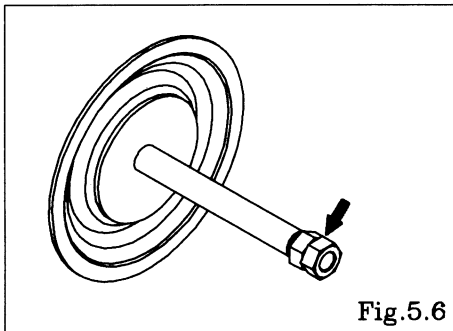
- Remove the flat valve and valve seat (see [4.1 removal BP_, BV_ types] on p.5)
- Remove the 8 (12 on the NDP-15) retainer nuts from the out chamber, and remove the out chamber. [fig. 5.4]



- Remove the center disk from one side using the accessory tool (special tool: part No. 771132). (NDP-5) [fig. 5.5]
- Remove the center disk from one side. (NDP-15) [fig. 5.5]
- After the center disk (outside) has been removed, remove the Diaphragm and the center disk (inside).
- Remove the center disk and center rod from the opposite side of the main body.

<NOTE>

- When the Diaphragm are removed, the main body is separated in 2 pieces. For easy work, leave bolts fastened temporarily before removing the Diaphragm.



- Fix a double nut to one end of the center rod and take the Diaphragm and center disk off the opposite end [fig. 5.6].
 - Diaphragm
If the Diaphragm is worn out damaged, replace it.

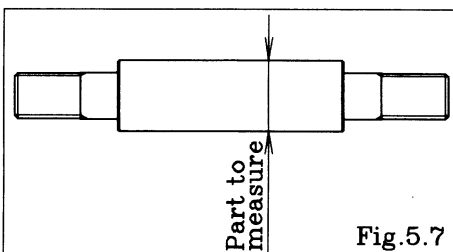
- Diaphragm

If the diaphragm is worn out or damaged, replace it.

Guideline of diaphragm (estimated) life

NDP-5	PTFE	30,000,000 Strokes
NDP-15	CR,NBR, PTFE	10,000,000 Strokes
	TPEE, TPO	15,000,000 Strokes

(When used with clean water at room temperature)



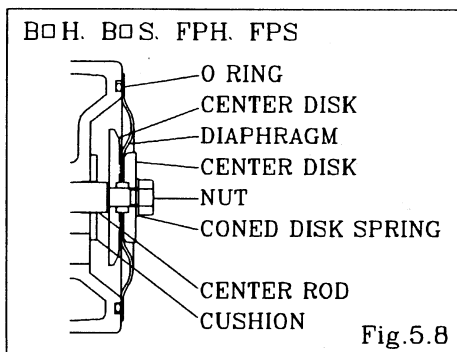
- Center rod [fig. 5.7]
Measure the diameter, and if it is outside the usable range, replace the rod.

NDP-5	Ø0.3917~Ø0.3937in {Ø9.05~Ø10.00mm}
NDP-15	Ø0.5496~Ø0.5512in {Ø13.96~Ø14.00mm}

6. Installation

B_H, B_S, F_H, F_S types

For installation, see [8. Exploded view] on after p.12, and install in the reverse order of disassembly.



- Apply lubricating oil to the center rod, and insert it into the main body.
 - Keep the convex side to the outside
 - Tighten the center disk using the open-end wrenches for the NDP-15FP_, FV_.
- (no coned disk springs and nuts are needed)
- Tighten the out chamber temporarily at first
 - After installation of the out chambers on both sides, place the pump on a flat surface and stand the pump upright for further assembly.

Tightening torque for center rod and out chamber.

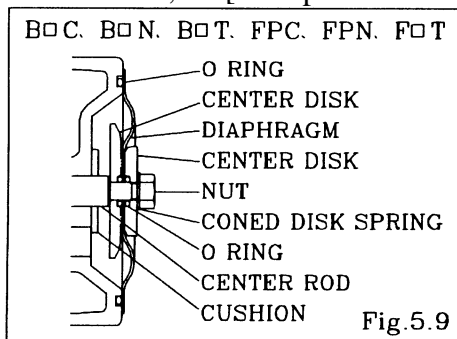
NDP-5	65 lbf in {75 kgf cm}
NDP-15	105 lbf in {120 kgf cm}

<NOTE>

- Make sure there is no dust on the seal surface in order to prevent seal damaged.
- Tighten the bolts that balance should be equal from both sides on diagonal line with even torque.

B_C, B_N, B_T, BP_, FPC, FPN, F_T types

For installation, see [8. Exploded view] on after p.12, and install in the reverse order of disassembly.



- Apply lubricating oil to the center rod, and insert it into the main body.
- Keep the marking “LIQUID” to liquid end for CR, NBR Diaphragms.
- Keep the convex side to the outside for PTFE Diaphragms.
- Install the o’ring (cf. Fig. 5.9).
- Tighten the center disk using the accessory tool (special tool: part No. 771132 for the NDP-5FPT, FVT).
- Tighten the center disk using the open-end wrenches for the NDP-15FP_, FVT.

(no coned disk springs and nuts are needed)

- After installation of the out chambers on both sides, place the pump on a flat surface and stand the pump upright for further assembly.

Tightening torque for center rod and out chamber.

NDP-5	65 lbf in {75 kgf cm}
NDP-15	105 lbf in {120 kgf cm}

<NOTE>

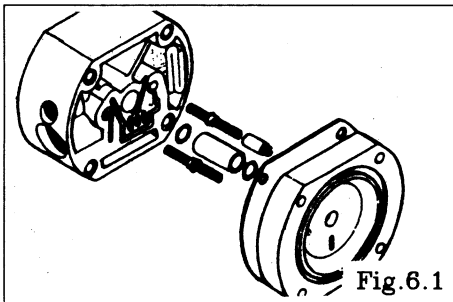
- Make sure there is no dust on the seal surface in order to prevent seal damaged.
- Replaces the PTFE o’ring with new.
- Tighten the bolts that balance should be equal from both sides on diagonal line with even torque.

6. Pilot valve assembly, Guide and Bushing

6.1 Removal

NDP-5

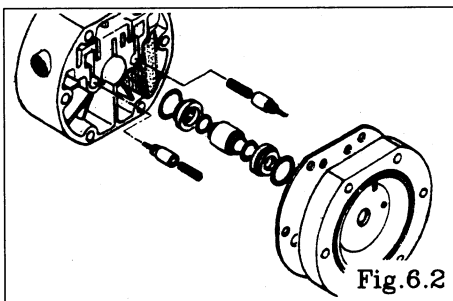
See [8. Exploded View] on after p.12



- Remove the Diaphragm and center rod etc. (see [5.1 removal] on p.7)
- Remove the main body. [Fig. 6.1]
- Draw out the pilot valve assembly. [Fig. 6.1]
- Remove the o’ring and bushing. [Fig. 6.1]

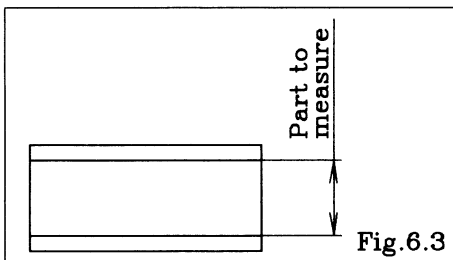
NDP-15

See [8. Exploded view] on after p. 12.



- Remove the Diaphragm and center rod etc. (see [5.1 removal] on p.7)
- Remove body B. [Fig. 6.2]
- Draw out the pilot valve assembly. [Fig. 6.2]
- Remove the o’ring, bushing and guide. [Fig. 6.2]

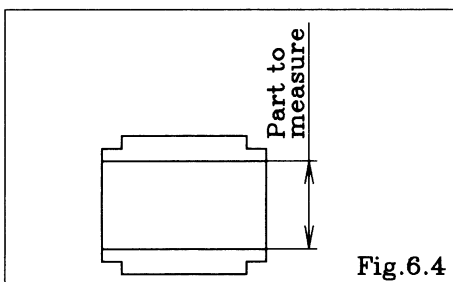
6.2 Inspection



- Bushing (NDP-5) [fig. 6.3]
Measure the inside diameter, and if it is outside the usable range, replace the bushing.

Usable range of bushing

$\text{Ø}0.398 \sim \text{Ø}0.406$ in { $\text{Ø}10.1 \sim \text{Ø}10.3$ mm}



- Guide (NDP-15) [fig. 6.4]
Measure the inside diameter, and if it is outside the usable range, replace the guide.

Usable range of guide

$\text{Ø}0.555 \sim \text{Ø}0.559$ in { $\text{Ø}14.1 \sim \text{Ø}14.2$ mm}

- O’rings
If O’rings are worn out or cracked, replace them.
- Pilot valve assembly
If the pilot valve is worn or cracker, replace it.

6.3 Installation

For installation, see [8. Exploded View] on after p. 12, and install in the reverse order of disassembly.

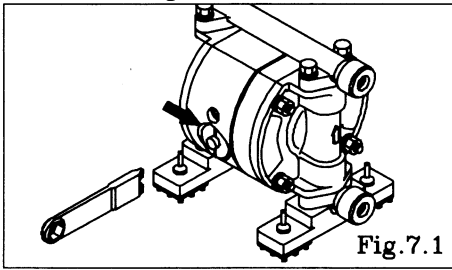
<NOTE>

Make sure there is no dust on the seal surface and it is not damaged

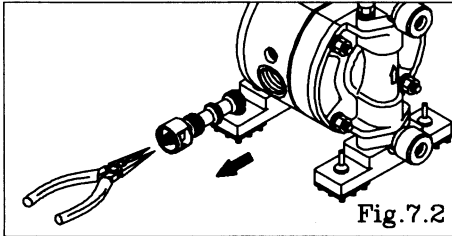
7. C spool assembly and sleeve assembly

7.1 Removal

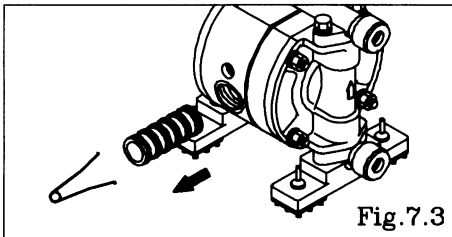
See [8. Exploded View] on after p.12. (Fig. 7.1, 7.2 and 7.3 show the NDP-5FAT.)



- Remove the cap using the accessory tool (special tool: part No. 771132). [Fig. 7.1]

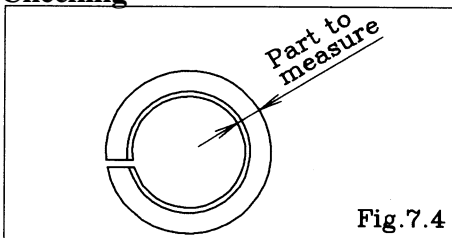


- Draw out the C spool valve assembly using the pliers, and remove the seal ring from the C spool valve assembly. [Fig. 7.2]



- Remove the sleeve using the sleeve remover (special tool: part No. 713148). [Fig. 7.3]

7.2 Checking



C spool assembly

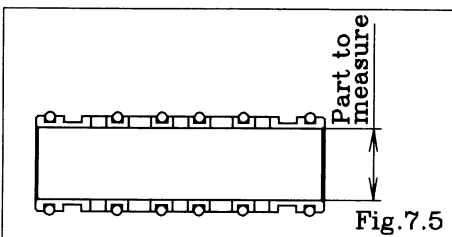
- Seal ring [Fig. 7.4]

Measure the inside thick diameter, and if it is outside the usable range, replace the C spool assembly.

If the seal ring is worn out or cracked, replace.

Usable range of seal ring

NDP-5	Ø0.0551~Ø0.0571in {1.40~1.45mm}
NDP-15	0.0728~0.0748.in {1.85~1.90mm}



- Sleeve Assembly [Fig. 7.5]

Measure the inside diameter, and if it is outside the usable range, replace the sleeve assembly.

Usable range of Sleeve

NDP-5	Ø0.3740~Ø0.37601in {9.50~9.55mm}
NDP-15	Ø0.6221~Ø0.6240.in {Ø15.80~Ø15.85mm}

7.3 Installation

For installation, see [8. Exploded View] on after p. 12, and install in the reverse order of disassembly.

<NOTE>

Make sure there is no dust on the seal surface and it is not damaged

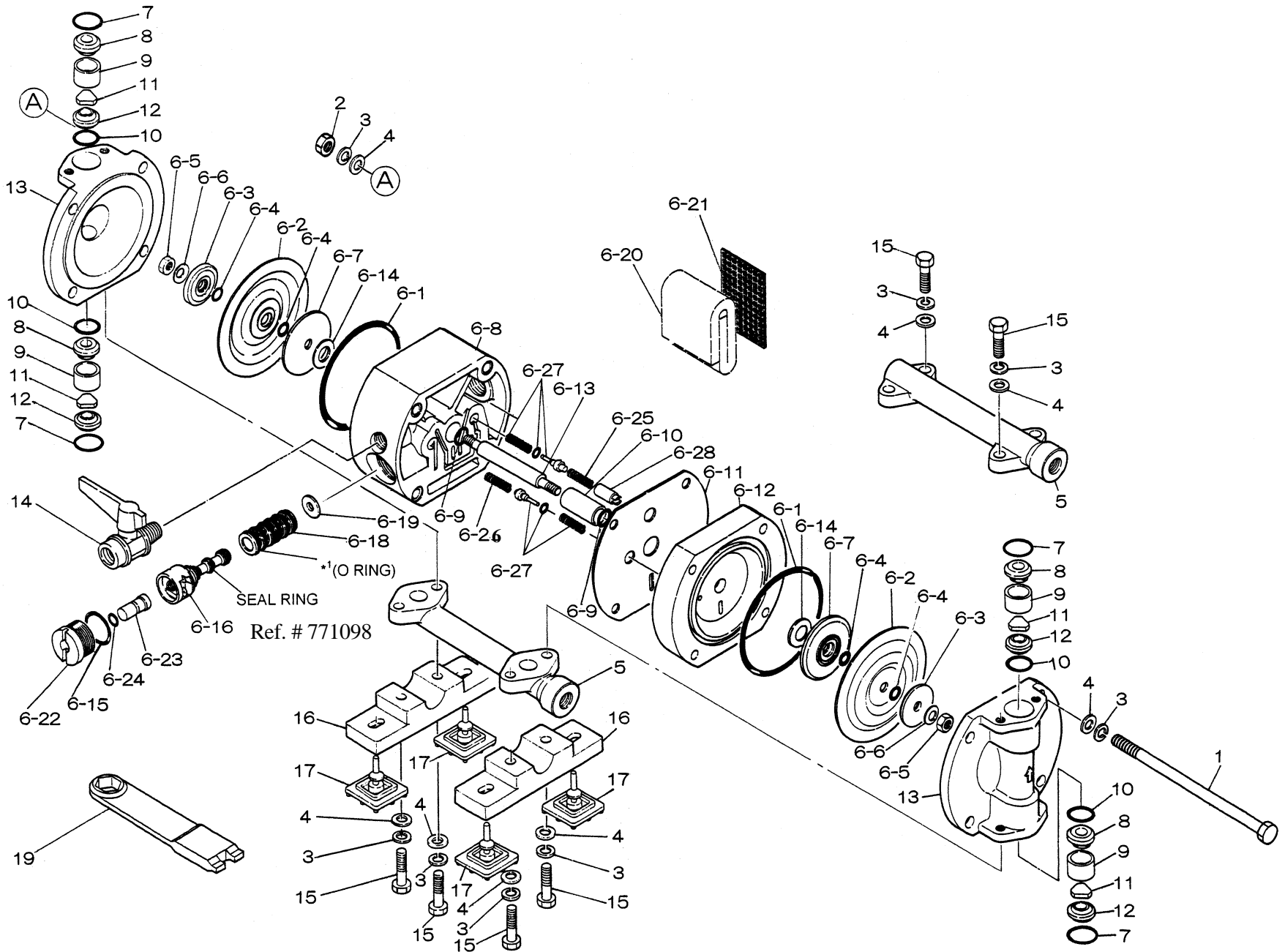
- O'rings
If O'rings are worn out or cracked, replace them.

<NOTE>

- C Spool assembly and Sleeve assembly must be replaced by complete set. Unable to replace individual components.

8.1 Exploded View

NDP-5FAT, FST



Parts List

Index

8.1 Parts List

NDP-5FAT, FST

NO.	FAT	FST	DESCRIPTION	QTY	NOTE
1	682528	682528	BOLT	4	M6x1x92
2	628010	628010	NUT	4	M6x1
3	681855	681855	SPRING LOCK WASHER	16	M6
4	631328	631328	PLAIN WASHER	16	M6
5	709657	831323	MANIFOLD	2	
			MANIFOLD ASSEMBLY	2	
6	802235	802236	BODY ASSEMBLY	1	
7	643015	643015	O’RING	4	P-16 PTFE
8	709364	709364	VALVE STOPPER	4	
9	709635	709635	VALVE GUIDE	4	
10	771133	771133	O’RING	4	
11	771152	771152	FLAT VALVE	4	
12	709637	709637	VALVE SEAT	4	
13	709469	709467	OUT CHAMBER	2	
14	683055	683055	BALL VALVE	1	1/4”
15	621103	621103	BOLT	8	M6x1x25
16	771101	771101	BASE	2	
17	771102	771102	CUSHION	4	
18	790911	790911	NAME PLATE	1	
19	771132	771132	ACCESSORY TOOL	1	

NOTE: NO. 18 (NAME PLATE) IS NOT INDICATED IN EXPLODED VIEW

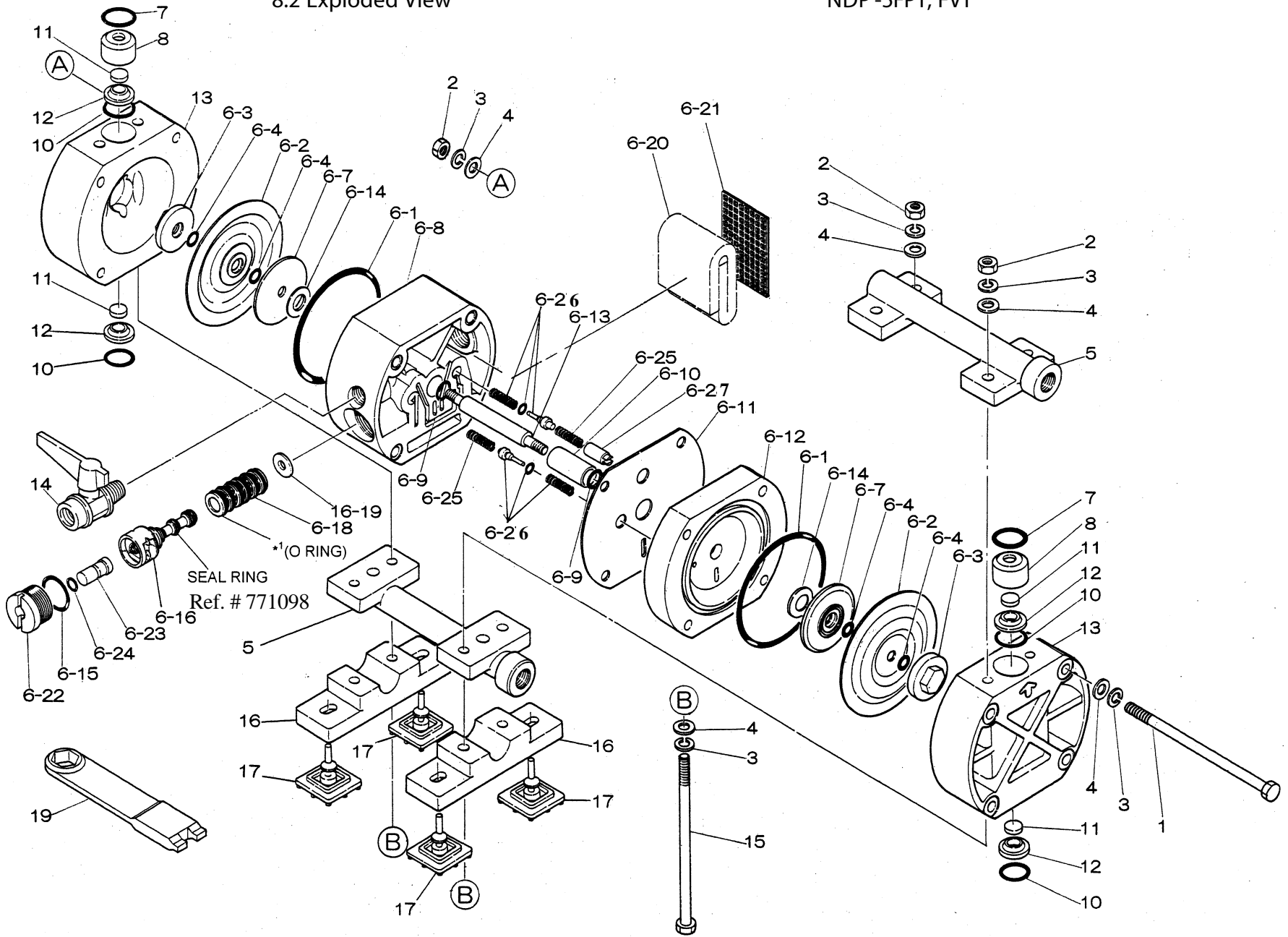
802235, 802236 BODY ASSEMBLY

NO	FAT	FST	DESCRIPTION	QTY	NOTE
6-1	640139	640139	O’RING	2	G-70
6-2	771093	771093	DIAPHRAGM	2	
6-3	709477	709476	CENTER DISK	2	
6-4	643003	643003	O’RING	4	P-6 NBR
6-5	683391	683391	NUT	2	M6x1
6-6	684915	684915	CONED DISK SPRING	2	M6
6-7	709317	709317	CENTER DISK	2	
6-8	780006	780006	BODY A	1	
6-9	640007	640007	O’RING	2	P-10 NBR
6-10	771088	771088	BUSHING	1	
6-11	771980	771980	GASKET	1	
6-12	780001	780001	BODY B	1	
6-13	709316	709316	CENTER ROD	1	
6-14	771239	771239	CUSHION	2	
6-15	640017	640017	O’RING	1	P-20 NBR
6-16	802386	802386	C SPOOL VALVE ASSEMBLY	1	
6-18	803214	803214	SLEEVE ASSEMBLY	1	*1 (771097)
6-19	771096	771096	CUSHION	1	
6-20	771465	771465	SILENCER	1	
6-21	771589	771589	MESH	1	
6-22	771100	771100	CAP	1	
6-23	771099	771099	RESET BUTTON	1	
6-24	640002	640002	O’RING	1	P-5 NBR
6-25	709319	709319	SPRING	2	
6-26	803510	803510	PILOT VALVE ASSEMBLY	2	
6-28	771095	771095	STOPPER	1	

NOTE: *1: PART NUMBER MENTIONED ON O’RING FOR SLEEVE ASSEMBLY ONLY.

8.2 Exploded View

NDP -5FPT, FVT



Parts List

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8.2 Parts List

NDP-5FPT, FVT

NO.	FPT	FVT	DESCRIPTION	QTY	NOTE
1	682748	682748	BOLT	4	M6x1x139.5
2	628010	628010	NUT	8	M6x1
3	681855	681855	SPRING LOCK WASHER	16	M6
4	631328	631328	PLAIN WASHER	16	M6
5	780133	780053	MANIFOLD	2	
6	802594	802797	BODY ASSEMBLY	1	
7	643015	643015	O’RING	2	P-16 PTFE
8	771091	771581	VALVE STOPPER	2	
10	643013	643013	O’RING	4	P-14 PTFE
11	771094	771094	FLAT VALVE	4	
12	771112	771582	VALVE SEAT	4	
13	771092	771583	OUT CHAMBER	2	
14	683055	683055	BALL VALVE	1	1/4”
15	682747	682747	BOLT	4	M6x1x127
16	771101	771648	BASE	2	
17	771102	771102	CUSHION	4	
18	790911	790911	NAME PLATE	1	
19	771132	771132	ACCESSORY TOOL	2	

NOTE: NO. 18 (NAME PLATE) IS NOT INDICATED IN EXPLODED VIEW

802594, 802797 BODY ASSEMBLY

NO	FPT	FVT	DESCRIPTION	QTY	NOTE
6-1	640139	640139	O’RING	2	G-70 NBR
6-2	771093	771093	DIAPHRAGM	2	
6-3	771089	771579	CENTER DISK	2	
6-4	643003	643003	O’RING	4	P-6 PTFE
6-7	709317	709317	CENTER DISK	2	
6-8	780006	780006	BODY A	1	
6-9	640007	640007	O’RING	2	P-10 NBR
6-10	771088	771088	BUSHING	1	
6-11	771980	771980	GASKET	1	
6-12	780001	780001	BODY B	1	
6-13	709316	709316	CENTER ROD	1	
6-14	771239	771239	CUSHION	2	
6-15	640017	640017	O’RING	1	P-20 NBR
6-16	802386	802386	C SPOOL VALVE ASSEMBLY	1	
6-18	803214	803214	SLEEVE ASSEMBLY	1	*1 (771097)
6-19	771096	771096	CUSHION	1	
6-20	771465	771465	SILENCER	1	
6-21	771589	771589	MESH	1	
6-22	771100	771100	CAP	1	
6-23	771099	771099	RESET BUTTON	1	
6-24	640002	640002	O’RING	1	P-5 NBR
6-25	709319	709319	SPRING	2	
6-26	803510	803510	PILOT VALVE ASSEMBLY	2	
6-27	771095	771095	STOPPER	1	

NOTE) NO.24(NAME PLATE) IS NOT INDICATED IN EXPLODED VIEW

8.3 Parts List

NDP-15BA_, BS_

NO.	BA_	BS_	DESCRIPTION	QTY	NOTE
1	683171	683224	BOLT	6	M8x1.25x110
			BOLT	6	M8x1.25x105
2	631329	631329	PLAIN WASHER	20	M8
3	681300	681300	SPRING LOCK WASHER	14	M8
4	628012	628012	NUT	6	M8x1.25
5	TAB. 1	TAB. 1	O’RING	4	
6	771523	711502	VALVE STOPPER	4	
7	TAB. 2	TAB. 2	BALL	4	
8	711227	711382	VALVE SEAT	4	
9	711226	711380	OUT CHAMBER	2	
10	802708	711506	MANIFOLD ASSEMBLY	2	
			MANIFOLD	2	
11	683055	683055	BALL VALVE	1	1/4”
12	790911	790911	NAME PLATE	1	
13	621102	621102	BOLT	4	M6x1x22
14	711405	711405	BASE	2	
15	TAB. 3	TAB. 3	O’RING	4	
16	TAB. 4	TAB. 4	BODY ASSEMBLY	1	
17	682727	621155	BOLT	8	M8x1.25x60
			BOLT	8	M8x1.25x40
18	771123	771123	CUSHION	4	
19	631328	621328	PLAIN WASHER	4	M6
20	681855	681855	SPRING LOCK WASHER	4	M6
21	628010	628010	NUT	4	M6x1
22	771132	771132	ACCESSORY TOOL	1	

NOTE) NO.12(NAME PLATE) IS NOT INDICATED IN EXPLODED VIEW

TAB. 1 O’RING (P-26)

TYPE	BA/BS_	MATERIAL
B_C	640025	NBR
B_N	640025	NBR
B_T	643025	PTFE
B_H	640025	NBR
B_S	684114	EPDM

TAB. 2 BALL

TYPE	BA/BS_	MATERIAL
B_C	771526	CR
B_N	771525	NBR
B_T	771524	PTFE
B_H	771525	NBR
B_S	771979	EPDM

TAB. 3 O’RING (G-25)

TYPE	BA/BS_	MATERIAL
B_C	640130	NBR
B_N	640130	NBR
B_T	643130	PTFE
B_H	640130	NBR
B_S	684113	EPDM

TAB. 4 BODY ASSEMBLY

TYPE	BA_	BS_
B_C	802979	802984
B_N	802980	802985
B_T	802978	802983
B_H	802981	802986
B_S	803506	803507

Body Assy.

Drawing

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8.4 Parts List

NDP-15FP_, BP_, FV_

NO.	FP_	BP_	FV_	DESCRIPTION	QTY	NOTE
1	684310	684310	684310	BOLT	6	M8x1.25x185
2	631329	631329	681329	PLAIN WASHER	18	M8
3	681300	681300	681300	SPRING LOCK WASHER	18	M8
4	628012	628012	628012	NUT	24	M8x1.25
5	TAB. 1	TAB. 1	643027	O'RING	8	P-29
6	771341	771806	771632	VALVE SEAT	4	
7	771340	Tab. 3	771762	FLAT VALVE	4	
				BALL	4	
8	771345	780162	771633	VALVE SEAT	4	
9	780119	780119	780120	OUT CHAMBER	2	
10	780027	780027	780051	MANIFOLD	2	
11	683055	683055	683055	BALL VALVE	1	1/4"
12	790911		790911	NAME PLATE	1	
13	621153	621153	621153	BOLT	4	M8x1.25x35
14	771352	771352	771635	BASE	2	
16	TAB. 2	TAB. 2	TAB. 2	BODY ASSEMBLY	1	
18	770551	770551	770551	CUSHION	4	
19	771132		771132	ACCESSORY TOOL	1	

NOTE) NO.12(NAME PLATE) IS NOT INDICATED IN EXPLODED VIEW

TAB. 1 O'RING (P-29)

TYPE	FP_/BP_	MATERIAL
FPC/BPC	640027	NBR
FPN/BPN	640027	NBR
FPT/BPT	643027	PTFE
FPH/BPH	640027	NBR
FPS/BPS	684115	EPDM

TAB. 2 BODY ASSEMBLY

TYPE	FP_/BP_	BS_
B_C	802976	
B_N	803001	
B_T	802975	802987
B_H	802977	803002
B_S	803508	803564

TAB. 3 BALL

TYPE	FP_/BP_	MATERIAL
BPN	771525	NBR
BPT	771524	PTFE
BPH	771525	NBR
BPS	771979	EPDM

Body Assy.

Drawing

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8.4 Parts List

NDP-15 BODY ASSEMBLY

NO.	BA	BS	FP	BP	FV	DESCRIPTION	QTY	NOTE
	802978	802983	802975	802975	802987 803002 803564			
	802979	802984	802976	802997				
	802980	802985	802977	803001				
	802981	902986	803001	803508				
	803506	803507	803508					
16-1	TAB. 1	TAB. 1	TAB. 3	TAB. 3	TAB. 3	DIAPHRAGM	2	
16-2	640144	640144	640144	640144	640144	O'RING	2	G-95 NBR
16-3	640020	640020	640020	640020	640020	O'RING	2	P-22A NBR
16-4	640013	640013	640013	640013	640013	O'RING	2	P-14 NBR
16-5	771337	771337	771337	771337	771337	GUIDE	1	
16-6	710578	710578	710578	710758	710578	CENTER ROD	1	
16-7	771336	771336	771336	771336	771336	BUSHING	2	
16-8	TAB. 2	TAB. 2	TAB. 4	TAB. 4	TAB. 4	O'RING	4	
16-9	708770	708506	770968	770968	771631	CENTER DISK	2	
16-10	681849	681849				NUT	2	M8x1.25
16-11	681880	681880				CONED DISK SPRING	2	M8
16-12	780029	780029	780029	780029	780029	BODY A	1	
16-13	771347	771347	771347	771347	771347	GASKET	1	
16-14	780030	780030	780030	780030	780030	BODY B	1	
16-15	771342	771342	771342	771342	771342	CUSHION	2	
16-16	771344	771344	771344	771344	771344	CENTER DISK	2	
16-17	771483	771483	771483	771483	771483	CUSHION	1	
16-18	683089	683089	683089	683089	683089	SLEEVE ASSEMBLY	1	*1 (683123)
16-19	802835	802835	802835	802835	802835	C SPOOL VALVE ASS'Y	1	
16-20	771695	771695	771695	771695	771695	CAP	1	
16-21	640022	640022	640022	640022	640022	O'RING	1	P-24 NBR
16-22	771350	771350	771350	771350	771350	RESET BUTTON	1	
16-23	640002	640002	640002	640002	640002	O'RING	1	P-5 NBR
16-24	771589	771589	771589	771589	771589	MESH	2	
16-25	771465	771465	771465	771465	771465	SILENCER	1	
16-26	832141	832141	832141	832141	832141	VALVE GUIDE ASS'Y	2	
16-28	710577	710577	710577	710577	710577	SPRING	2	
16-29	632752	632752	632752	632752	632752	SPRING PIN	2	Ø2x8

TAB. 1 DIAPHRAGM

TYPE	BA/BS	MATERIAL
B_C	770971	CR
B_N	770973	NBR
B_T	770933	PTFE
B_H	771372	TPEE
B_S	771972	TPO

TAB. 2 O'RING (P-8)

TYPE	BA/BS	MATERIAL
B_C	640005	NBR
B_N	640005	NBR
B_T	643005	PTFE
B_H		
B_S		

TAB. 3 DIAPHRAGM

TYPE	FP /BP	FV	MATERIAL
F_C/B_C	770971		NBR
F_N/B_N	770973		NBR
F_T/B_T	770933	770933	PTFE
F_H/B_H	771372	771372	NBR
F_S/B_S	771972	771972	EPDM

TAB. 4 O'RING (P-8)

TYPE	FP /BP	FV	MATERIAL
F_C/B_C	640005		NBR
F_N/B_N	640005		NBR
F_T/B_T	643005	643005	PTFE
F_H/B_H			
F_S/B_S			



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