

# **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.

These maintenance manuals cover 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 July 2006 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 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:



This symbol indicates a DON'T, and will be accompanied by an explanation on something you must not do.



This symbol indicates a DO, and will be accompanied by instructions on something you must do in a certain situation.

## **WARNING**



- Before starting maintenance work, cut off the feed air and clean the pump. If air pressure or residue remain 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.

## **CAUTION**



- 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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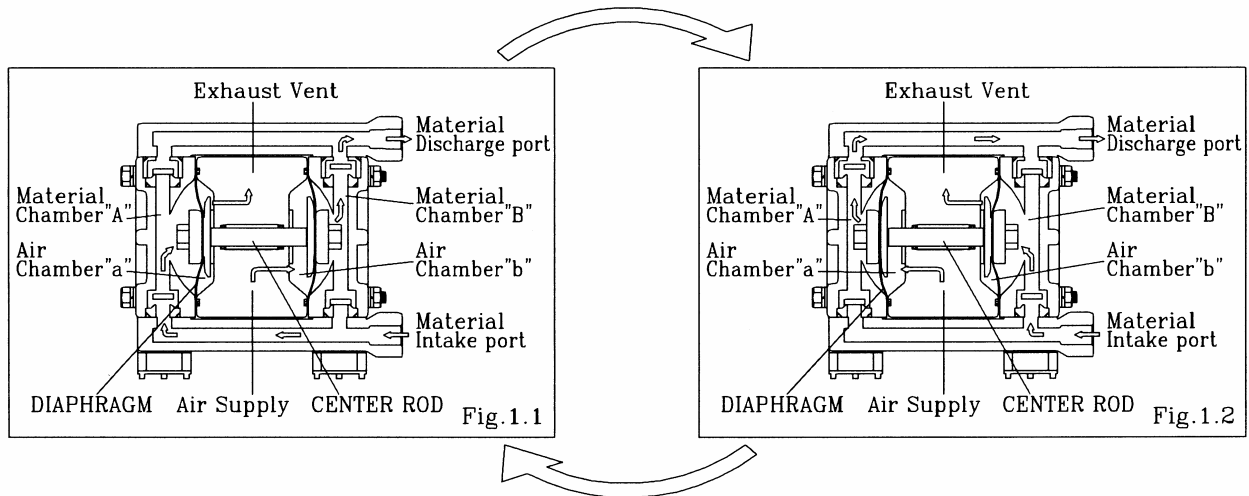
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## 1.Principles of operation

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.



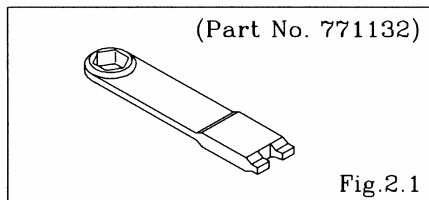
## 2.Tools, etc.

### 2.1 General tools

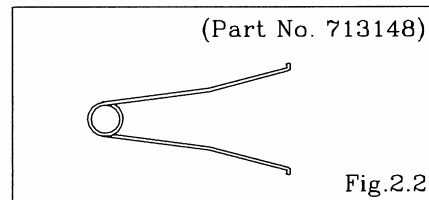
- Socket wrenches 10mm (NDP-5), 13mm (NDP-15)
- Open-end wrenches 10mm (NDP-5), 13mm (NDP-15), 21mm (NDP-15)
- Plyer

### 2.2 Special tools

- Accessory tool (included)  
Purpose: Removing the center disk of  
FP□ and FV□ and FDT 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 M6×1 (NDP-5), M8×1.25 (NDP-15)
- Grease Urea grease grade (NLGI) No.2

## 3.Ordering Replacement parts

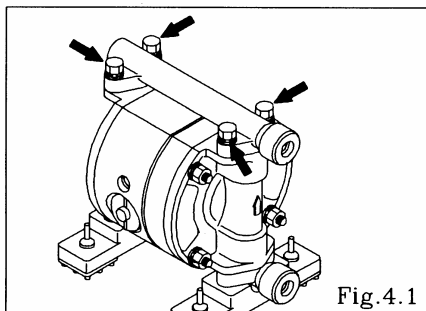
For accurate and speedy shipment of parts, be sure to order the right parts for your model to distributor. Indicate the part numbers, descriptions, and quantities.

## 4.Balls, Flat valves and Valve seats

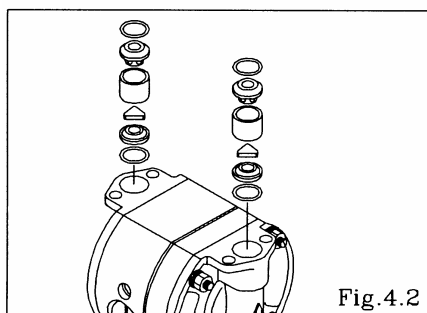
### 4.1 Removal

#### ■FAT, FST, BA□, BS□,BP□ types

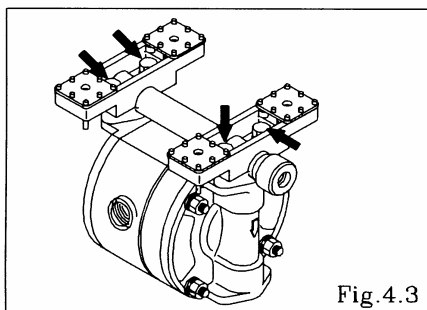
See [9.Exploded View] on after p.11. (Fig. 4.1, 4.2, 4.3 and 4.4 show the NDP-5 FAT.)



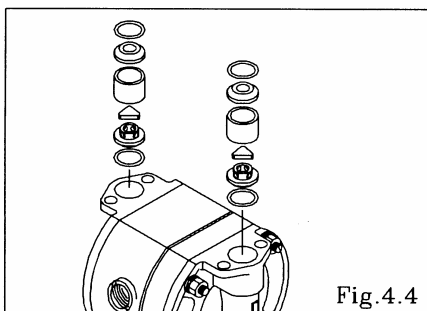
- Remove the 4 retainer bolts from the out manifold, and remove the out manifold. [Fig.4.1]



- 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 base and 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□, FDT types

See [9.Exploded View] on after p.11. (Fig. 4.5, 4.6, 4.7 and 4.8 show the NDP-5 FPT.)

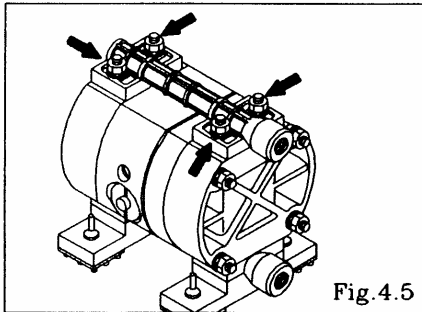


Fig.4.5

- Remove the 4 retainer nuts from the out manifold, and remove the out manifold. [Fig.4.5]

### <NOTE>

- When the retainer nuts both side of the tie rod remove, the in manifold removes. (NDP-5)

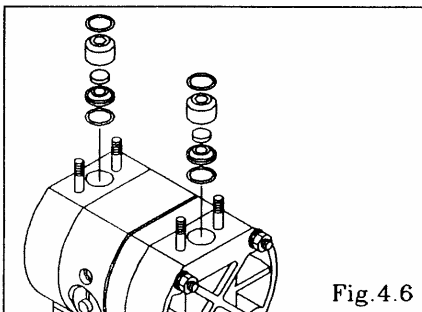


Fig.4.6

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

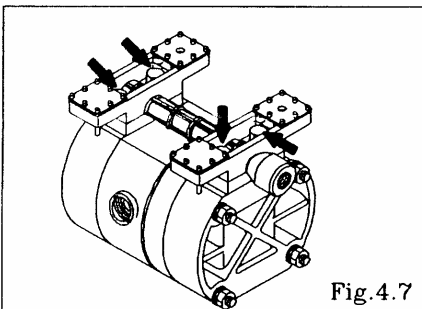


Fig.4.7

- 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]

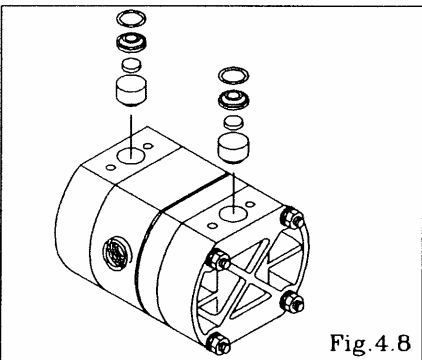
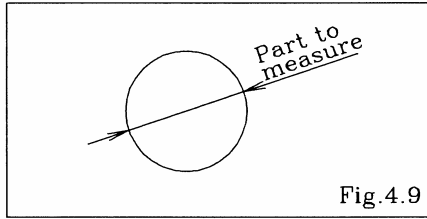


Fig.4.8

- Remove the O ring, valve seat, flat valve and valve guide. [Fig.4.8]

## 4.2 Inspection

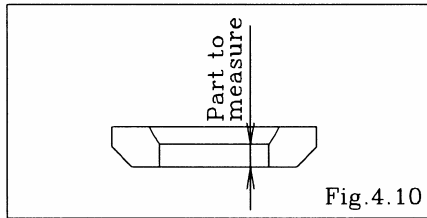
### ■ Ball valve type



#### ▪ Ball [Fig.4.9]

Measure the outside diameter, and if it is outside the usable range, replace the ball.

NDP-15	Sø0.787 ~ Sø0.898 in {Sø20.0 ~ Sø22.8 mm}
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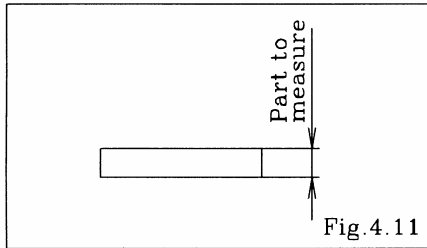


#### ▪ Valve seat [Fig.4.10]

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 ~ 0.256 in {2.6 ~ 6.5 mm}

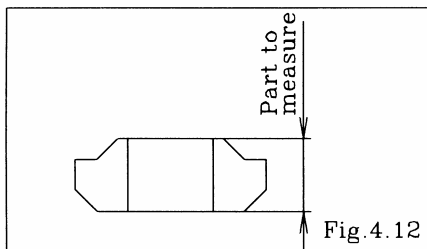
### ■ Flat valve type



#### ▪ 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 ~ 0.122 in {2.5 ~ 3.1 mm}
NDP-15	0.169 ~ 0.197 in {4.3 ~ 5.0 mm}



#### ▪ 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 ~ 0.280 in {5.8 ~ 7.1 mm}
NDP-15	0.323 ~ 0.394 in {8.2 ~ 10.0 mm}

#### ▪ O ring (other than PTFE)

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

## 4.3 Installation

For installation, see [9. Exploded View] on after p.11, and install in the reverse order of disassembly.

Tightening torque for manifold retainer bolts or nuts	
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 and the seal is not damaged.
- Replace the PTFE O ring regardless of its condition.

## 5.Diaphragm and Center rod

### 5.1 Removal

#### ■FAT, FST, BA□, BS□,BP□ types

See [9. Exploded View] on after p.11. (Fig. 5.1, 5.2 and 5.3 show the NDP-5 FAT.)

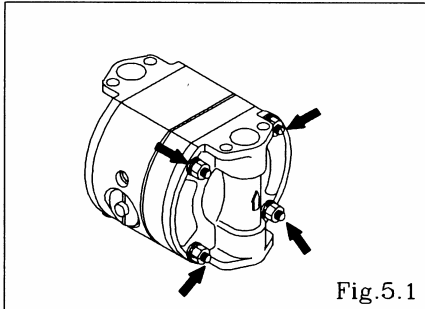


Fig.5.1

- Remove the ball or flat valve and valve seat (see [ 4.1 Removal FAT, FST, BA□, BS□, BP□ types] on p.2).
- Remove the 8 (12 on the NDP-15) retainer bolts from the out chamber, and remove the out chamber. [Fig.5.1]

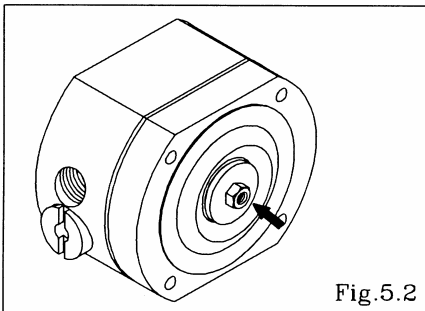


Fig.5.2

- Remove the nuts on both sides of the center rod. [Fig.5.2]
- After the nuts on one side have been removed, remove the 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 2 pieces. For easy work, leave the tie rods or bolts fastened temporarily before remove the diaphragms.

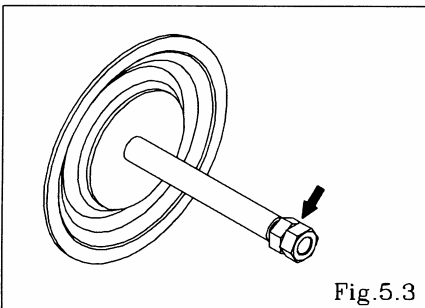


Fig.5.3

- 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□, FDT types

See [9. Exploded View] on after p.11. (Fig. 5.4, 5.5 and 5.6 show the NDP-5 FPT.)

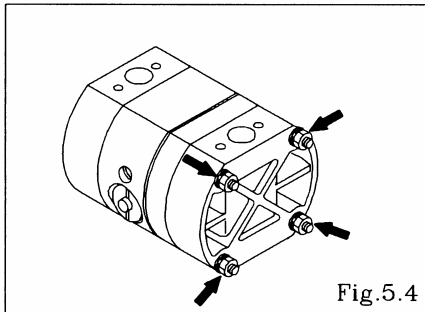


Fig.5.4

- Remove the flat valve and valve seat  
(see [ 4.1 Removal FP□, FV□, FDT types] on p. 3).
- Remove the 8 (12 on the NDP-15) retainer nuts from the out chamber, and remove the out chamber. [Fig.5.4]

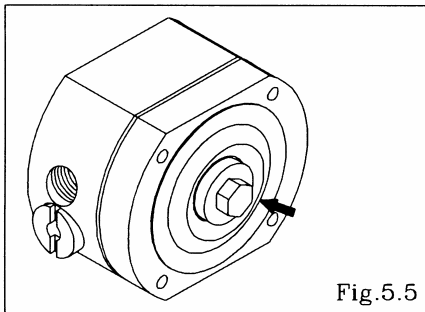


Fig.5.5

- 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 diaphragms are removed, the main body is separated 2 pieces. For easy work, leave bolts fastened temporarily before remove the diaphragms.

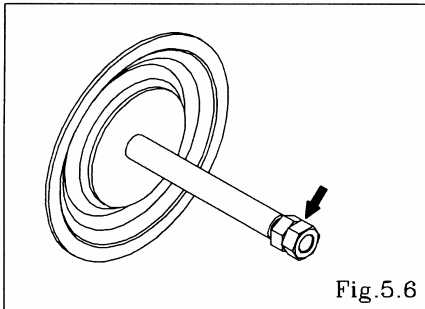


Fig.5.6

- 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]
- Be careful not to scratch or score the center rod.

## 5.2 Inspection

- Diaphragm  
If the diaphragm is worn out or damaged, replace it.  
New replace just one diaphragm.

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

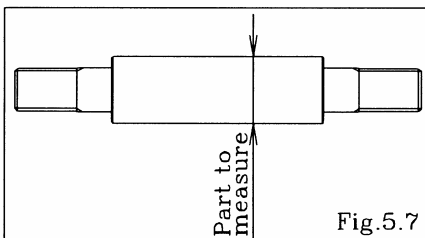


Fig.5.7

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

### Usable range of center rod

NDP-5	ø0.3917 ~ø0.3937 in {ø9.95 ~ø10.00 mm}
NDP-15	ø0.5496 ~ø0.5512 in {ø13.96 ~ø14.00 mm}

### 5.3 Installation

#### ■B□H, B□S, F□H, F□S types

For installation, see [9. Exploded View] on after p.11, and install in the reverse order of disassembly.

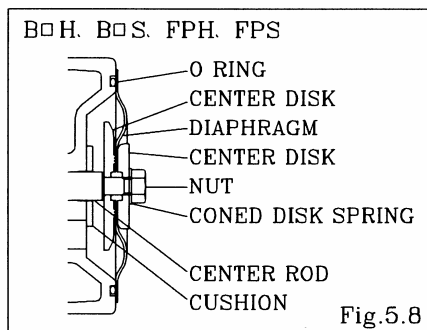


Fig.5.8

- Apply grease 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	122 lbf·in { 140 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 side on diagonal line with even torque.

#### ■B□C, B□N, B□T, BP□, FPC, FPN, F□T types

For installation, see [9. Exploded View] on after p. 11, and install in the reverse order of disassembly.

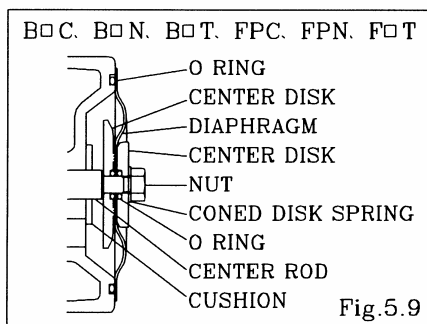


Fig.5.9

- Apply grease 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 diaphragm.
- 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, BP□.  
(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	122 lbf·in { 140 kgf·cm }

#### <NOTE>

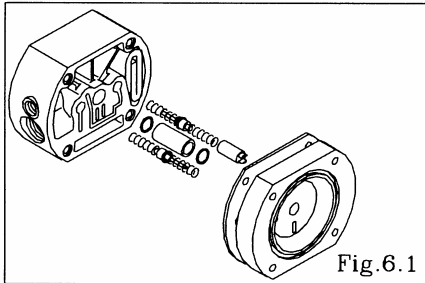
- Make sure there is no dust on the seal surface in order to prevent seal damaged.
- Replace the PTFE O ring by new one.
- Tighten the bolts that balance should be equal from both side on diagonal line with even torque.

## 6. Pilot valve assembly, Guide and Bushing

### 6.1 Removal

#### ■ NDP-5

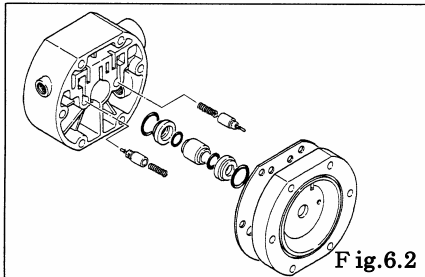
See [9. Exploded View] on after p.11.



- Remove the diaphragm and center rod etc.(see [5.1 Removal] on p.5)
- Remove the main body. [Fig.6.1]
- Draw out the pilot valve assembly. [Fig.6.1]
- Remove the Packing and bushing. [Fig.6.1]

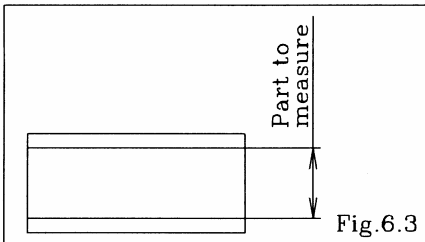
#### ■ NDP-15

See [9. Exploded View] on after p.11.



- Remove the diaphragm and center rod etc.(see [5.1 Removal] on p.5)
- Remove the body B. [Fig.6.2]
- Draw out the pilot valve assembly. [Fig.6.2]
- Remove the Packing, bushing and guide. [Fig.6.2]

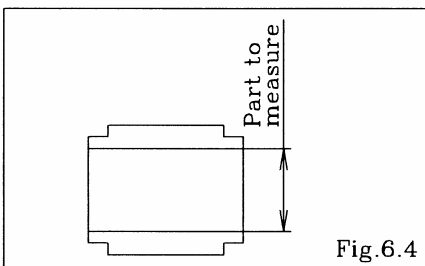
### 6.2 Inspection



- 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

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



- 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

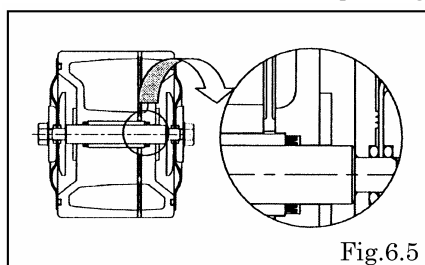
$\phi 0.555 \sim \phi 0.559$  in  $\{\phi 14.1 \sim \phi 14.2 \text{ mm}\}$

- O rings, Packing  
If the O ring is worn out or cracked, replace it.
- Pilot valve assembly  
If the pilot valve is worn out or cracked, replace it.

### 6.3 Installation

For installation, see [9. Exploded View] on after p.11, and install in the reverse order of disassembly.

The correct direction of the V packing



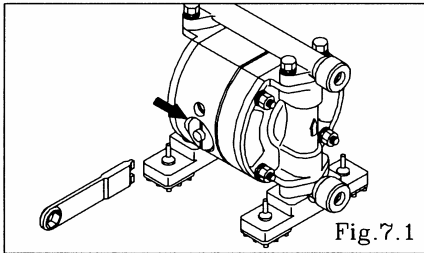
<NOTE>

- Make sure there is no dust on the seal surface and the seal is not damaged.
- Apply grease to packing.
- The open side of the V faces toward the diaphragm (air chamber).

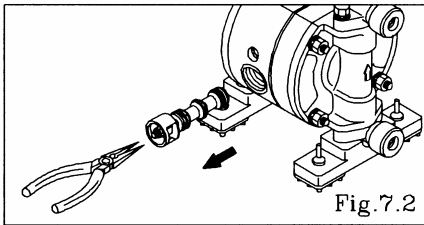
## 7. C spool assembly and Sleeve assembly

### 7.1 Removal

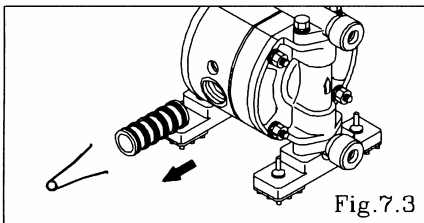
See [9.Exploded View] on after p.11. (Fig. 7.1, 7.2 and 7.3 show the NDP-5 FAT.)



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

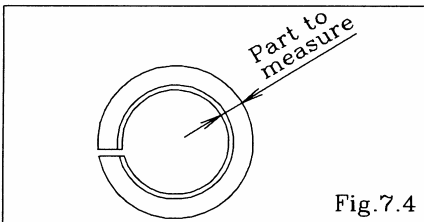


- Draw out the C spool valve assembly using the plyer, and remove the seal ring from the C spool valve assembly. [Fig.7.2]



- Remove the sleeve using the sleeve remover (special tool: Part number 713148). [Fig.7.3]

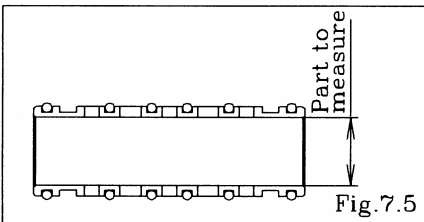
### 7.2 Inspection



- 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 c spool assembly.

NDP-5	0.0551 ~ 0.0571 in {1.40 ~ 1.45 mm}
NDP-15	0.0728 ~ 0.0748 in {1.85 ~ 1.90 mm}



- 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 ~ ø0.3760 in {ø9.50 ~ ø9.55 mm}
NDP-15	ø0.6221 ~ ø0.6240 in {ø15.80 ~ ø15.85 mm}

- O rings

If the O ring is worn out or cracked, replace it.

<NOTE>

- C Spool Assembly and Sleeve Assembly must be replaced complete set. Unable to replace individual component.

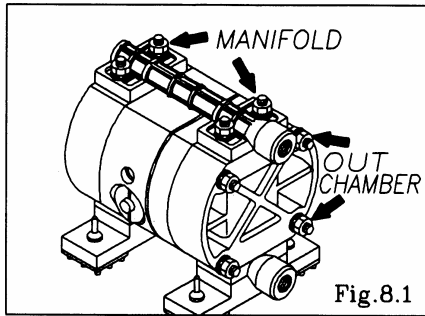
### 7.3 Installation

For installation, see [9. Exploded View] on after p.11, and install in the reverse order of disassembly.

<NOTE>

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

## 8. Retightening of Tie rods



- The torque should be applied on the occasion of
  - (1) Right before the pump to use.
  - (2) There are any leaks of material on daily inspecting a pump.

		Retainer bolts from the out chamber	Retainer bolts from the manifold
NDP-5	FPT, FVT, FDT	7.5 N•m	7.5 N•m
NDP-15	FP□, FVT, FDT	12N•m	12 N•m

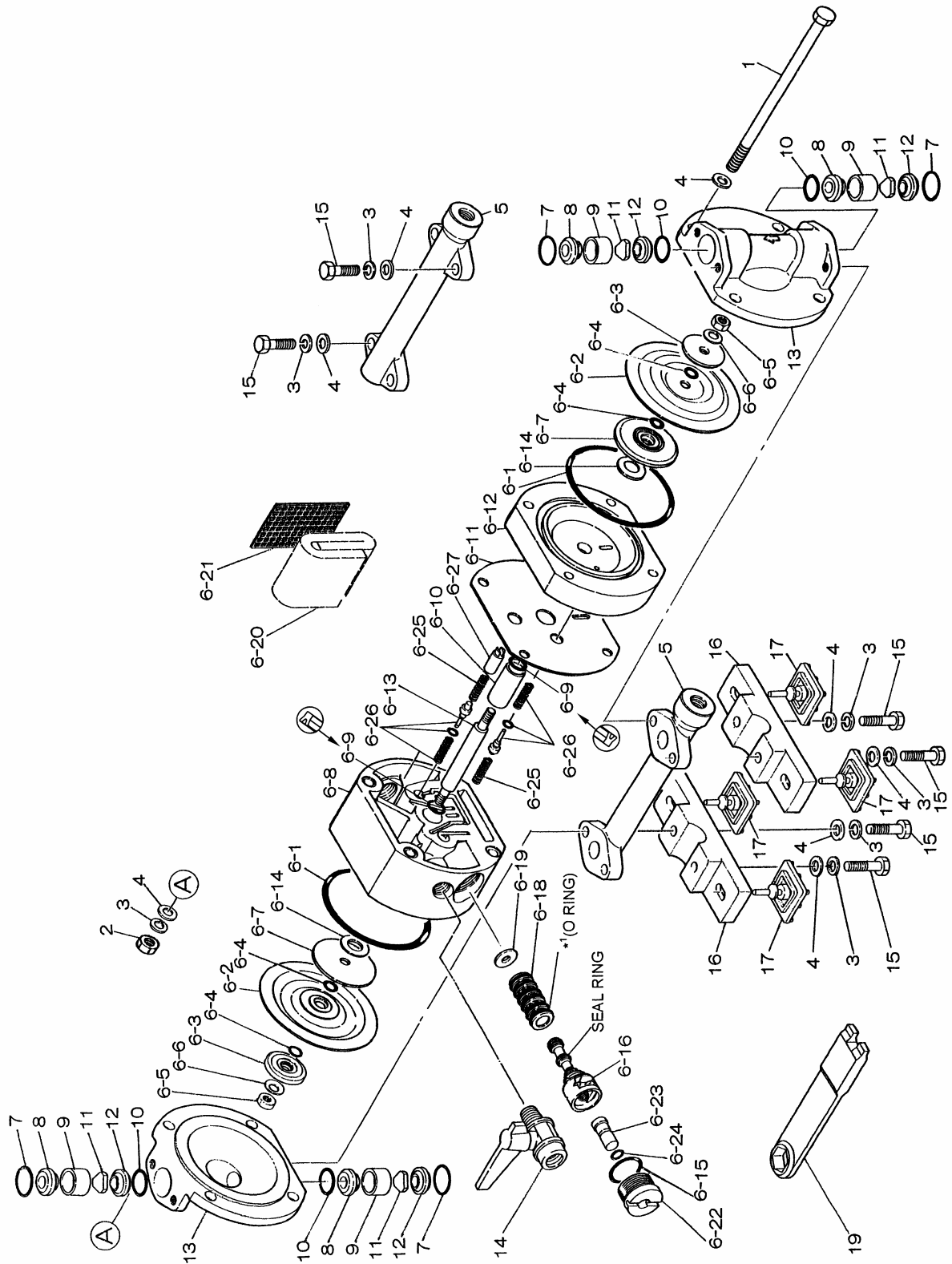
### <NOTE>

- Tighten the bolts that balance should be equal from both side on diagonal line with even torque.
- Retighten the Out chamber and then the manifold in this order. [Fig.8.1]

## 9. Exploded View and Parts List

### 9.1 Exploded View

■ NDP- 5FAT, FST



## 9.1 Parts List

### ■ NDP- 5FAT, FST

NO.	FAT	FST	DESCRIPTION	Q'TY	NOTE
1	682528	682528	BOLT	4	M6x1x90
2	628010	628010	NUT	4	M6x1
3	681855	681855	SPRING LOCK WASHER	12	M6
4	631328	631328	PLAIN WASHER	16	M6
5	709657		MANIFOLD	2	
		831323	MANIFOLD ASSEMBLY	2	
6	802235	802236	BODY ASSEMBLY	1	
7	643015	643015	O RING	4	P16 PTFE
8	709634	709634	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	Q'TY	NOTE
6-1	640139	640139	O RING	2	G70 NBR
6-2	771093	771093	DIAPHRAGM	2	
6-3	709477	709476	CENTER DISK	2	
6-4	643003	643003	O RING	4	P6 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	685752	685752	PACKING	2	
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	P20 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	P5 NBR
6-25	709319	709319	SPRING	2	
6-27	803510	803510	PILOT VALVE ASSEMBLY	2	
6-28	771095	771095	STOPPER	1	

NOTE)\*1: PARTS NUMBER MENTIONED ON O RING FOR SLEEVE ASSEMBLY ONLY.

■ NDP- 5FPT, FVT, FDT





## 9.2 Parts List

### ■ NDP- 5FPT, FVT, FDT

NO.	FPT	FVT	FDT	DESCRIPTION	Q'TY	NOTE
1	682748	682748	682748	BOLT	4	M6x1x140
2	628010	628010	628010	NUT	8	M6x1
3	681855	681855	681855	SPRING LOCK WASHER	8	M6
4	631328	631328	631328	PLAIN WASHER	16	M6
5	780133	780053	780201	MANIFOLD	2	
6	802594	802797	804393	BODY ASSEMBLY	1	
7	643015	643015	643015	O RING	6	P16 PTFE
8	772655	771581	772712	VALVE STOPPER	4	
11	771094	771094	771094	FLAT VALVE	4	
12	772738	772735	772736	VALVE SEAT	4	
13	780231	780232	780233	OUT CHAMBER	2	
14	683055	683055	683055	BALL VALVE	1	1/4"
15	682747	682747	682747	BOLT	4	M6x1x125
16	771101	771648	772715	BASE	2	
17	771102	771102	771102	CUSHION	4	
18	790911	790911	790911	NAME PLATE	1	
19	771132	771132	771132	ACCESSORY TOOL	2	

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

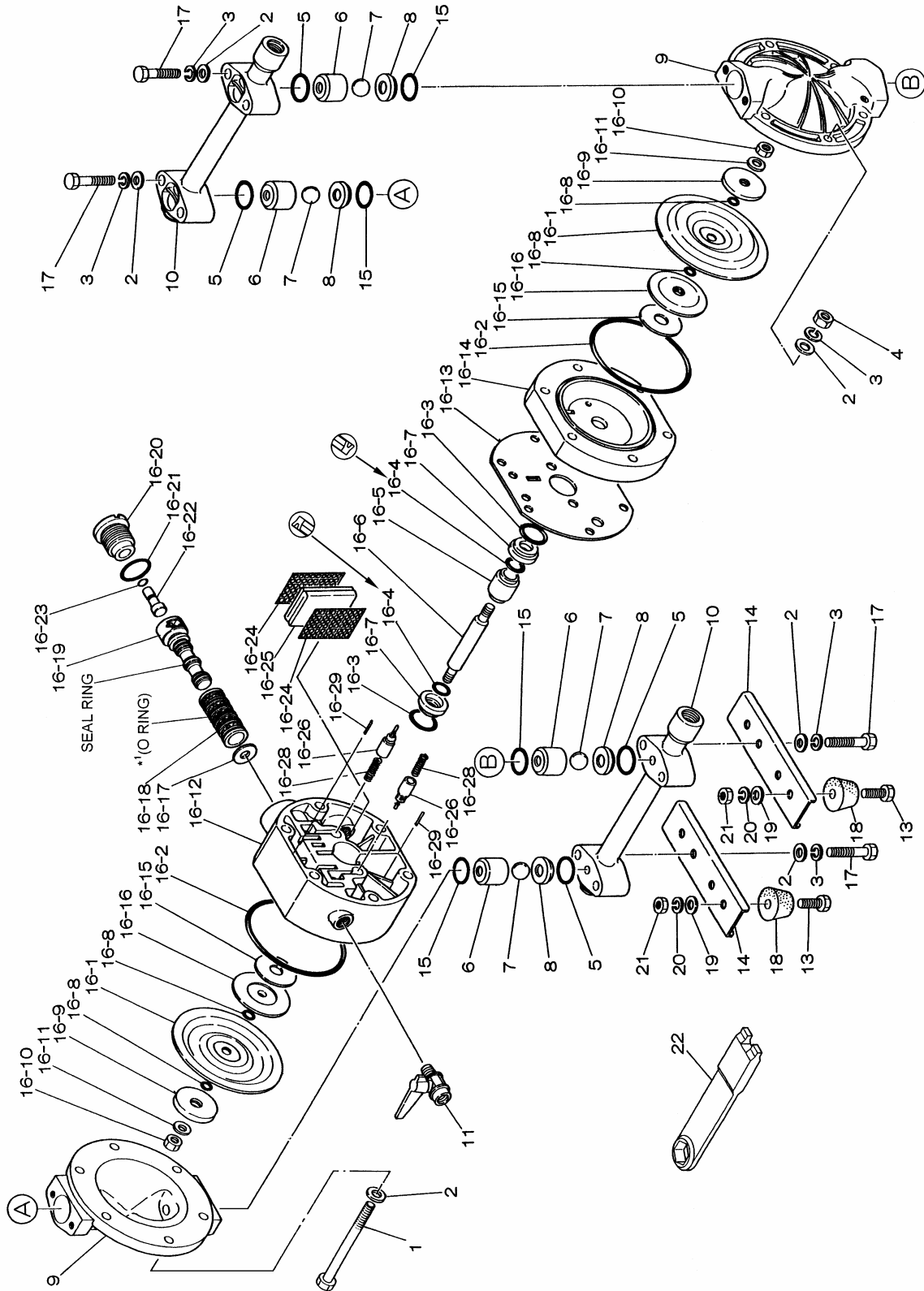
#### 802594,802797,804393 BODY ASSEMBLY

NO.	FPT	FVT	FDT	DESCRIPTION	Q'TY	NOTE
6-1	640139	640139	643019	O RING	2	G70 NBR
6-2	771093	771093	771093	DIAPHRAGM	2	
6-3	771089	771579	772721	CENTER DISK	2	
6-4	643003	643003	643003	O RING	4	P6 PTFE
6-7	709317	709317	709317	CENTER DISK	2	
6-8	780006	780006	780006	BODY A	1	
6-9	685752	685752	685752	PACKING	2	
6-10	771088	771088	771088	BUSHING	1	
6-11	771980	771980	771980	GASKET	1	
6-12	780001	780001	780001	BODY B	1	
6-13	709316	709316	709316	CENTER ROD	1	
6-14	771239	771239	771239	CUSHION	2	
6-15	640017	640017	640017	O RING	1	P20 NBR
6-16	802386	802386	802386	C SPOOL VALVE ASSEMBLY	1	
6-18	803214	803214	803214	SLEEVE ASSEMBLY	1	*1(771097)
6-19	771096	771096	771096	CUSHION	1	
6-20	771465	771465	771465	SILENCER	1	
6-21	771589	771589	771589	MESH	1	
6-22	771100	771100	771100	CAP	1	
6-23	771099	771099	771099	RESET BUTTON	1	
6-24	640002	640002	640002	O RING	1	P5 NBR
6-25	709319	709319	709319	SPRING	2	
6-27	803510	803510	803510	PILOT VALVE ASSEMBLY	2	
6-28	771095	771095	771095	STOPPER	1	

NOTE)\*1: PARTS NUMBER MENTIONED ON O RING FOR SLEEVE ASSEMBLY ONLY.

### 9.3 Exploded View

■ NDP-15BA□, BS□



### 9.3 Parts List

■ NDP- 15BA□, BS□

NO.	BA□	BS□	DESCRIPTION	Q'TY	NOTE
1	683171		BOLT	6	M8x1.25x110
		683224	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		MANIFOLD ASSEMBLY	2	
		711506	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		BOLT	8	M8x1.25x60
		621155	BOLT	8	M8x1.25x40
18	771123	771123	CUSHION	4	
19	631328	631328	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(P26)

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(G25)

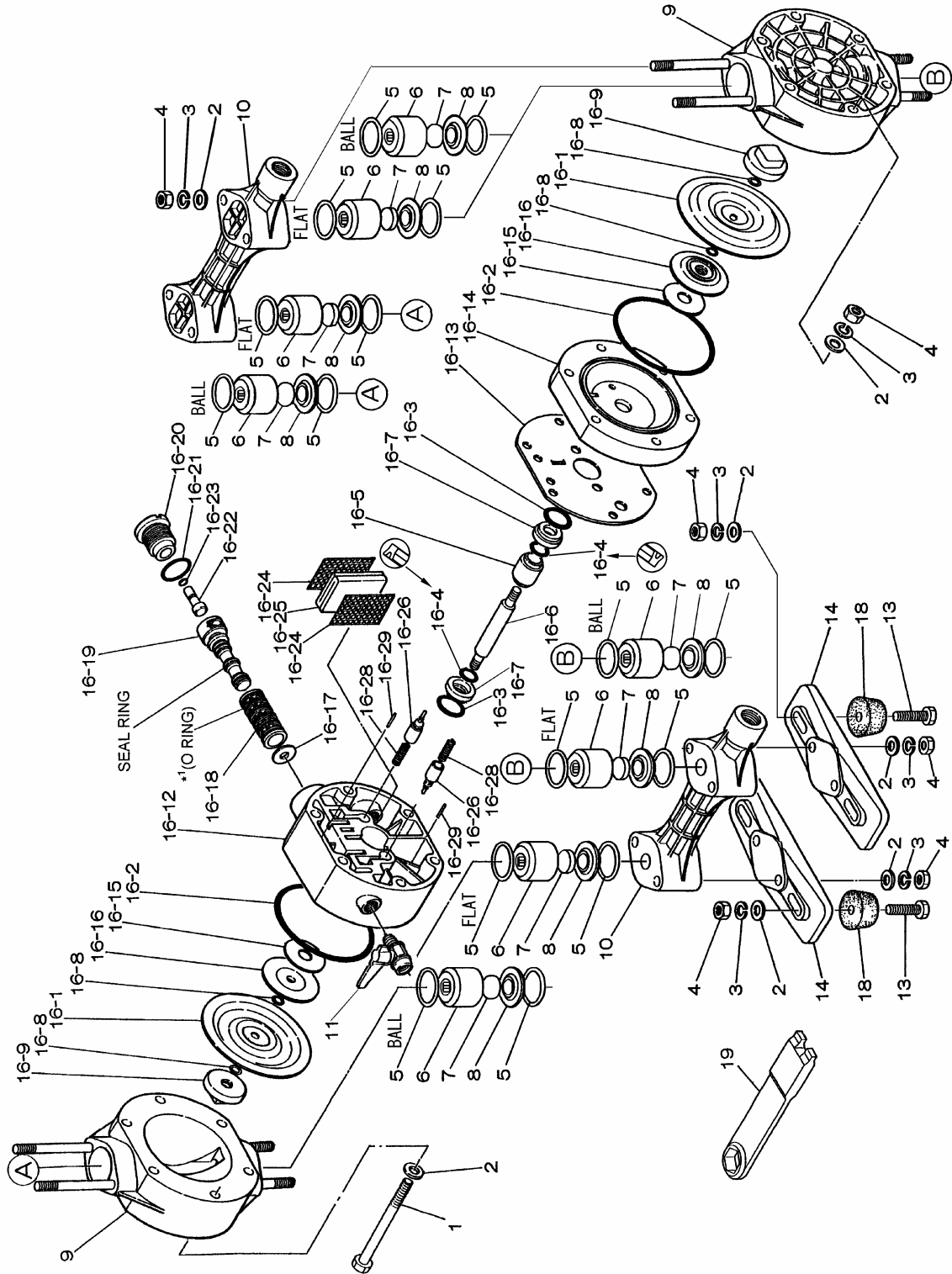
TYPE	BA/BS□	MATERIAL
B□C	640130	NBR
B□N	640130	NBR
B□T	643130	PTFE
B□H	640130	NBR
B□S	684113	EPDM

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

## 9.4 Exploded View

■ NDP-15FP□, BP□, FV□, FDT



#### 9.4 Parts List

■ NDP- 15FP□, BP□, FV□, FDT

NO.	FP□	BP□	FV□	FDT	DESCRIPTION	Q'TY	NOTE
1	684310	684310	684310	684310	BOLT	6	M8x1.25x185
2	631329	631329	681329	631329	PLAIN WASHER	18	M8
3	681300	681300	681300	681300	SPRING LOCK WASHER	18	M8
4	628012	628012	628012	628012	NUT	24	M8x1.25
5	Tab.1	Tab.1	643027	643027	O RING	8	P29
6	771341	771806	771632	772718	VALVE STOPPER	4	
7	771340		771762	771340	FLAT VALVE	4	
		Tab.3			BALL	4	
8	771345	780162	771633	772719	VALVE SEAT	4	
9	780119	780119	780120	780199	OUT CHAMBER	2	
10	780027	780027	780051	780202	MANIFOLD	2	
11	683055	683055	683055	683055	BALL VALVE	1	1/4"
12	790911		790911	790911	NAME PLATE	1	
13	621153	621153	621153	621153	BOLT	4	M8x1.25x35
14	771352	771352	771635	772720	BASE	2	
16	Tab.2	Tab.2	Tab.2	804394	BODY ASSEMBLY	1	
18	770551	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(P29)

TYPE	FP□/BP□	MATERIAL
FPC	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□	FV□
F□C	802976	
F□N/B□N	803001	
F□T/B□T	802975	802987
F□H/B□H	802977	803002
F□S/B□S	803508	803564

Tab.3 BALL

TYPE	BP□	MATERIAL
BPN	771525	NBR
BPT	771524	PTFE
BPH	771525	NBR
BPS	771979	EPDM

## 9.5 Parts List

## NDP- 15 BODY ASSEMBLY

### BODY ASSEMBLY

NO.	BA□	BS□	FP□	BP□	FV□	FDT	DESCRIPTION	Q'TY	NOTE
	802978	802983	802975	802975					
	802979	802984	802976	802997	802987				
	802980	802985	802977	803001	803002				
	802981	802986	803001	803508	803564				
	803506	803507	803508			804394			
16-1	Tab.1	Tab.1	Tab.3	Tab.3	Tab.3	770933	DIAPHRAGM	2	
16-2	640144	640144	640144	640144	640144	640144	O RING	2	G95 NBR
16-3	640020	640020	640020	640020	640020	640020	O RING	2	P22A NBR
16-4	684284	684284	684284	684284	684284	684284	PACKING	2	
16-5	771337	771337	771337	771337	771337	771337	GUIDE	1	
16-6	710578	710578	710578	710758	710578	710578	CENTER ROD	1	
16-7	771336	771336	771336	771336	771336	771336	BUSHING	2	
16-8	Tab.2	Tab.2	Tab.4	Tab.4	Tab.4	643005	O RING	4	
16-9	708770	708506	770968	770968	771631	772722	CENTER DISK	2	
16-10	681849	681849					NUT	2	M8x1.25
16-11	684916	684916					CONED DISK SPRING	2	M8
16-12	780029	780029	780029	780029	780029	780029	BODY A	1	
16-13	771347	771347	771347	771347	771347	771347	GASKET	1	
16-14	780030	780030	780030	780030	780030	780030	BODY B	1	
16-15	771342	771342	771342	771342	771342	771342	CUSHION	2	
16-16	771344	771344	771344	771344	771344	771344	CENTER DISK	2	
16-17	771483	771483	771483	771483	771483	771483	CUSHION	1	
16-18	804249	804249	804249	804249	804249	804249	SLEEVE ASSEMBLY	1	*1(683123)
16-19	802835	802835	802835	802835	802835	802835	C SPOOL VALVE ASSEMBLY	1	
16-20	771695	771695	771695	771695	771695	771695	CAP	1	
16-21	640022	640022	640022	640022	640022	640022	O RING	1	P24 NBR
16-22	771350	771350	771350	771350	771350	771350	RESET BUTTON	1	
16-23	640002	640002	640002	640002	640002	640002	O RING	1	P5 NBR
16-24	771589	771589	771589	771589	771589	771589	MESH	2	
16-25	771465	771465	771465	771465	771465	771465	SILENCER	1	
16-26	832141	832141	832141	832141	832141	832141	VALVE GUIDE ASSEMBLY	2	
16-28	710577	710577	710577	710577	710577	710577	SPRING	2	
16-29	632752	632752	632752	632752	632752	632752	SPRING PIN	2	φ 2x8

NOTE)\*1: PARTS NUMBER MENTIONED ON O RING FOR SLEEVE ASSEMBLY ONLY.

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(P8)

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		CR
F□N/B□N	770973		NBR
F□T/B□T	770933	770933	PTFE
F□H/B□H	771372	771372	TPEE
F□S/B□S	771972	771972	TPO

Tab.4 O RING(P8)

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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200606 NDP009M
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