

TORQUE VALUES



GUIDE

DIAPHRAGM MATERIAL	NOMENCLATURE	SPECIAL TORQUE NOTES
Buna N	N	
Neoprene	C	
Santoprene	S	
EPDM	E	
PTFE	T	
Hytrel	H	
Viton	V	
Ultimate *	U/W	* Tighten by hand until it stops rotating
Gore	G	

NDP-5 SERIES

1/4"

METAL & PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts/Nuts	-	-	-	-	-	-	65 in-lbf	-	-
Center Rod	-	-	-	-	-	-	65 in-lbf	-	-
Out Chamber Bolts	-	-	-	-	-	-	65 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	-	-	-	-	-	65 in-lbf		
Manifolds	-	-	-	-	-	-	65 in-lbf		

Tools Required:

- Socket Wrench 10 mm
 - Open-end Wrench 10 mm
 - Pliers
- Special Tools (sold separately):
- Cap & Disk Remover # 771132
 - Sleeve Remover # 713148

NDP-15 SERIES

1/2"

METAL & PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts/Nuts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf
Center Rod	122 in-lbf	-	122 in-lbf	122 in-lbf	122 in-lbf	-	122 in-lbf	*	122 in-lbf
Out Chamber Bolts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf
Manifolds	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf

Tools Required:

- Socket Wrench 13 mm
 - Open-end Wrench 13, 21 mm
 - Pliers
- Special Tools (sold separately):
- Cap & Disk Remover # 771132
 - Sleeve Remover # 713148

NDP-20 SERIES

3/4"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Air Chamber Bolts	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf
Cap A & B	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Manifolds	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Nuts	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Air Chamber Bolts	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf
Cap A & B	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Manifolds	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf

Tools Required:

- Socket Wrench 10, 12, 13, 17, 22 mm
 - Hexagonal Box Wrench 5 mm
 - Open-end Wrench 13, 21 mm
- Special Tools:
- Center Disk Remover (BP_, BV_) # 771244 - included
 - Sleeve Remover # 713148 - sold separately

TORQUE VALUES



NDP-20 (PP, PN) SERIES 3/4"

METAL (PP) PUMPS									
DIAPHRAGM MATERIAL									
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Retainer Screws	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Manifolds	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
PLASTIC (PP) PUMPS									
DIAPHRAGM MATERIAL									
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Nuts	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Retainer Screws	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	8 ft-lbf	10 ft-lbf	10 ft-lbf	10 ft-lbf
Manifolds	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
PLASTIC (PN) PUMPS									
DIAPHRAGM MATERIAL									
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Nuts	-	8 ft-lbf	9 ft-lbf	-	9 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
Center Rod	-	29 ft-lbf	29 ft-lbf	-	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	-	8 ft-lbf	15 ft-lbf	-	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Retainer Screws	-	1.4 ft-lbf	1.4 ft-lbf	-	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf
Valve Body Bolts	-	5.5 ft-lbf	5.5 ft-lbf	-	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	8 ft-lbf	15 ft-lbf	-	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Manifolds	-	8 ft-lbf	8 ft-lbf	-	9 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf

- Tools Required:
- Socket Wrench 10, 12, 13, 17, 22 mm
 - Hexagonal Box Wrench 5 mm
 - Open-end Wrench 13, 21 mm
 - Adjustable Angle Wrench
 - Phillips Head Screw Driver
- Special Tools:
- Center Disk Remover (BP_, BV_) # 771244 - included
 - Sleeve Remover # 713148 - sold separately

NDP-25 SERIES 1"

METAL PUMPS									
DIAPHRAGM MATERIAL									
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Air Chamber Bolts	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf
Cap A & B	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Manifolds	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
PLASTIC PUMPS									
DIAPHRAGM MATERIAL									
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Nuts (PP)	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
Manifold Retainer Nuts (KY)	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Air Chamber Bolts	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf
Cap A & B	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Manifold Bolts (PP)	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
Manifold Bolts (KY)	8 ft-lbf	9 ft-lbf	9 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf

- Tools Required:
- Socket Wrench 10, 12, 13, 17, 22 mm
 - Hexagonal Box Wrench 5 mm
 - Open-end Wrench 13, 21 mm
- Special Tools:
- Center Disk Remover (BP_, BV_) # 771244 - included
 - Sleeve Remover # 713148 - sold separately

PP = Polypropylene
KY = Kynar

TORQUE VALUES



NDP-25 (PP, PN) SERIES 1"

METAL (PP) PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	8 ft-lbf	8 ft-lbf	25 ft-lbf	8 ft-lbf	25 ft-lbf	8 ft-lbf	25 ft-lbf	25 ft-lbf	25 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Retainer Screws	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Manifolds	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
PLASTIC (PP) PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Nuts	8 ft-lbf	8 ft-lbf	25 ft-lbf	8 ft-lbf	25 ft-lbf	8 ft-lbf	25 ft-lbf	25 ft-lbf	25 ft-lbf
Center Rod	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Retainer Screws	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf
Valve Body Bolts	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	8 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Manifolds	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
PLASTIC (PN) PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Nuts	-	8 ft-lbf	9 ft-lbf	-	9 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf
Center Rod	-	29 ft-lbf	29 ft-lbf	-	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	-	8 ft-lbf	15 ft-lbf	-	8 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Retainer Screws	-	1.4 ft-lbf	1.4 ft-lbf	-	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf	1.4 ft-lbf
Valve Body Bolts	-	5.5 ft-lbf	5.5 ft-lbf	-	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	8 ft-lbf	15 ft-lbf	-	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Manifolds	-	8 ft-lbf	9 ft-lbf	-	9 ft-lbf	8 ft-lbf	9 ft-lbf	9 ft-lbf	9 ft-lbf

- Tools Required:
- Socket Wrench 10, 12, 13, 17, 22 mm
 - Hexagonal Box Wrench 5 mm
 - Open-end Wrench 12, 13, 22 mm
 - Adjustable Angle Wrench
 - Phillips Head Screw Driver
- Special Tools:
- Center Disk Remover (BP_, BV_) # 771244 - included
 - Sleeve Remover # 713148 - sold separately

PP = Polypropylene
KY = Kynar

NDP-32 SERIES 1-1/2"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	-	-	-	8 ft-lbf	8 ft-lbf	8 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Center Rod	-	-	-	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	*	29 ft-lbf
Out Chamber Bolts	-	-	-	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Air Chamber Retainer Bolts				13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf	13 ft-lbf
Cap A & Cap B	-	-	-	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf	4.5 ft-lbf
Valve Body Bolts	-	-	-	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf	5.5 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	-	-	8 ft-lbf	15 ft-lbf	8 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Manifold Bolts	-	-	-	8 ft-lbf	8 ft-lbf	8 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf

- Tools Required:
- Socket Wrench 10, 12, 13, 17 & 22 mm
 - Hexagonal Box Wrench 5mm
 - Open-end Wrench 22 mm
- Special Tools (sold separately):
- Sleeve Remover # 713148

TORQUE VALUES



NDP-40 SERIES

1-1/2"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
Center Rod	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	*	43 ft-lbf
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf
Air Chamber Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Cap A & B	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf
Valve Body Bolts	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf
Manifolds	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Center Rod	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	*	36 ft-lbf
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Manifold Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf

- Tools Required:
- Socket Wrench 13, 17, 19 mm (except NDP-40 BP_, BV_)
 - Hexagonal Box Wrench 5, 6 mm
 - Small Crowbars
 - Open-end Wrench
17 mm (NDP-40 BP_, BV_)
19 mm (BA_, BS_, BF_)
24 mm (BA_, BS_, BF_)
 - Plastic Hammer
- Special Tools (sold separately):
- Center Disk Remover (BP_, BV_) # 771868
 - Sleeve Remover # 713180

NDP-50 SERIES

2"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
Center Rod	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	*	43 ft-lbf
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf
Air Chamber Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Cap A & B	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf
Valve Body Bolts	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf
Manifolds	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
Center Rod	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	*	36 ft-lbf
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Manifold Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
PLASTIC (-PP) PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
Center Rod	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	*	36 ft-lbf
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Air Chamber Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Tapping Screws	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf
Cap A & B	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf	4 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Manifold Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf

- Tools Required:
- Socket Wrench 13, 17, 19 mm
 - Hexagonal Box Wrench 5, 6 mm
 - Small Crowbars
 - Open-end Wrench
19 mm (BA_, BS_, BF_, BP_-PP, BV_-PP)
24 mm (BA_, BS_, BF_, BP_-PP, BV_-PP)
 - Plastic Hammer
 - Phillips Head Screw Driver (BP_-PP, BV_-PP)
 - Adjustable Angle Wrench (BP_-PP, BV_-PP)
 - Needle Nose Pliers (BP_-PP, BV_-PP)
- Special Tools (sold separately):
- Center Disk Remover (BP_, BV_, BP_-PP, BV_-PP) # 771868
 - Sleeve Remover # 713180

TORQUE VALUES



NDP-80 SERIES

3"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
Center Rod	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	*	43 ft-lbf
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf
Air Chamber Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf
Cap A & B	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf
Valve Body Bolts	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf
Manifolds	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf
Center Rod	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	*	36 ft-lbf
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf
Manifold Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf

- Tools Required:
- Socket Wrench 13, 17, 19 mm
 - Hexagonal Box Wrench 5, 6 mm
 - Small Crowbars
 - Open-end Wrench 9 mm (BA_, BS_, BF_) 24 mm (BA_, BS_, BF_) 30 mm (B_U)
 - Plastic Hammer
- Special Tools (sold separately):
- Center Disk Remover (BP_, BV_) # 771868
 - Sleeve Remover # 713180

NDP-500 SERIES

3"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-
Center Rod	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	*	-
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-
Air Chamber Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-
Cap A & B	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	8 ft-lbf	-
Valve Body Bolts	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	12 ft-lbf	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-
Manifolds	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-

- Tools Required:
- Socket Wrench 13, 17, 19, 24 mm
 - Hexagonal Box Wrench 5, 6 mm
 - Small crowbars
 - Open-end Wrench 19, 24 mm
 - Plastic Hammer
 - Plyer
- Special Tools (sold separately):
- Sleeve Remover # 713180

TORQUE VALUES



G15 SERIES

1/2"



METAL PUMPS		DIAPHRAGM MATERIAL							
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-
Center Rod	-	-	160 in-lbf	160 in-lbf	160 in-lbf	-	160 in-lbf	-	-
Out Chamber Bolts	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-
Manifolds	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-
PLASTIC PUMPS		DIAPHRAGM MATERIAL							
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	-	-	89 in-lbf	89 in-lbf	89 in-lbf	-	89 in-lbf	-	-
Center Rod	-	-	177 in-lbf	177 in-lbf	177 in-lbf	-	177 in-lbf	-	-
Out Chamber Bolts	-	-	89 in-lbf	89 in-lbf	89 in-lbf	-	89 in-lbf	-	-
Tapping Screws	-	-	9 in-lbf	9 in-lbf	9 in-lbf	-	9 in-lbf	-	-
Valve Body Assembly Nuts	-	-	9 in-lbf	9 in-lbf	9 in-lbf	-	9 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	-	89 in-lbf	89 in-lbf	89 in-lbf	-	89 in-lbf	-	-
Manifolds	-	-	89 in-lbf	89 in-lbf	89 in-lbf	-	89 in-lbf	-	-

Tools Required:

- Socket Wrench 10 mm, 12 mm (P, V), 13, 17 mm (A, S)
 - Open-end Wrench 10, 13, 17 mm (A, S), 12, 22 mm (P, V)
 - Hexagonal Box Wrench 5 mm
 - Phillips Head Screw Driver (P, V)
 - Pliers (P, V)
- Special Tools (sold separately):
- Cap Remover (A, S) # 717114
 - Sleeve Remover # 713148

G25 SERIES

1"



METAL PUMPS		DIAPHRAGM MATERIAL							
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	-	-	89 in-lbf	89 in-lbf	89 in-lbf	-	177 in-lbf	-	-
Center Rod	-	-	354 in-lbf	354 in-lbf	354 in-lbf	-	354 in-lbf	-	-
Out Chamber Bolts	-	-	177 in-lbf	89 in-lbf	177 in-lbf	-	177 in-lbf	-	-
Air Chamber Bolts	-	-	13 ft-lbf	13 ft-lbf	13 ft-lbf	-	13 ft-lbf	-	-
Valve Body Assembly Nuts	-	-	44 in-lbf	44 in-lbf	44 in-lbf	-	44 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	-	177 in-lbf	89 in-lbf	177 in-lbf	-	177 in-lbf	-	-
Manifolds	-	-	89 in-lbf	89 in-lbf	89 in-lbf	-	177 in-lbf	-	-

Tools Required:

- Socket Wrench 10, 17 mm
 - Open-end Wrench 10, 17, 22 mm
 - Hexagonal Box Wrench 5 mm
- Special Tools (sold separately):
- Cap Remover (A, S) # 717114
 - Sleeve Remover # 713148

G50 SERIES

2"



METAL PUMPS		DIAPHRAGM MATERIAL							
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	-	-	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	15 ft-lbf	-	-
Center Rod	-	-	43 ft-lbf	43 ft-lbf	43 ft-lbf	-	43 ft-lbf	-	-
Out Chamber Bolts	-	-	22 ft-lbf	22 ft-lbf	22 ft-lbf	-	30 ft-lbf	-	-
Air Chamber Bolts	-	-	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	15 ft-lbf	-	-
Valve Body Assembly Nuts	-	-	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	15 ft-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	-	-	22 ft-lbf	22 ft-lbf	22 ft-lbf	-	30 ft-lbf	-	-
Manifolds	-	-	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	15 ft-lbf	-	-

Tools Required:

- Socket Wrench 17, 24 mm
 - Open-end Wrench 17, 24 mm
 - Hexagonal Box Wrench 5 mm
 - Small Crowbars 2 (excluding "T" type)
 - Plastic Hammer
- Special Tools (sold separately):
- Sleeve Remover # 713148

TORQUE VALUES



DP-10 SERIES 3/8"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts/Nuts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	-
Center Rod	122 in-lbf	-	122 in-lbf	122 in-lbf	122 in-lbf	-	122 in-lbf	*	-
Out Chamber Bolts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	-
Cap	55 in-lbf	-	55 in-lbf	55 in-lbf	55 in-lbf	-	55 in-lbf	55 in-lbf	-
Spool Valve Case	55 in-lbf	-	55 in-lbf	55 in-lbf	55 in-lbf	-	55 in-lbf	55 in-lbf	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	-
Manifolds	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	-
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts/Nuts	70 in-lbf	-	70 in-lbf	70 in-lbf	70 in-lbf	55 in-lbf	70 in-lbf	70 in-lbf	55 in-lbf
Center Rod	122 in-lbf	-	122 in-lbf	122 in-lbf	122 in-lbf	-	122 in-lbf	*	55 in-lbf
Out Chamber Bolts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	55 in-lbf
Cap	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf
Spool Valve Case	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf	55 in-lbf
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	105 in-lbf	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	105 in-lbf	55 in-lbf
Manifolds	70 in-lbf	-	70 in-lbf	70 in-lbf	70 in-lbf	-	70 in-lbf	70 in-lbf	55 in-lbf

- Tools Required:
- Socket Wrench 13 mm
 - Hexagonal Box Wrench 5, 6 mm
 - Open-end Wrench 21 mm (BP_)
 - Snap Ring Pliers

DP-15 SERIES 1/2"

METAL & PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-
Center Rod	-	-	122 in-lbf	122 in-lbf	122 in-lbf	-	122 in-lbf	-	-
Out Chamber Bolts	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-
Cap	-	-	55 in-lbf	55 in-lbf	55 in-lbf	-	55 in-lbf	-	-
Spool Valve Case	-	-	55 in-lbf	55 in-lbf	55 in-lbf	-	55 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Horizontal Tie Rods	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-
Vertical Tie Rods	-	-	105 in-lbf	105 in-lbf	105 in-lbf	-	105 in-lbf	-	-

- Tools Required:
- Socket Wrench 13 mm
 - Open-end Wrench 13, 21 mm
 - Pliers
- Special Tools (sold separately):
- Cap & Disk Remover # 771132
 - Sleeve Remover # 713148

(X)DP-40 (HD) SERIES 1-1/2"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
Center Rod	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	-	-
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-	-
Air Chamber Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-	-
Manifolds	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-
Center Rod	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	-	-
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	-	-
Air Chamber Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	-	-
Manifold Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-

- Tools Required:
- Socket Wrench 13, 17 mm, 24 mm (BA_, BS_, BF_)
 - Hexagonal Box Wrench 5, 6 mm
 - Small Crowbars 2 (B_C, B_N, B_E, B_V)
 - Open-end Wrench 17 mm (DP-40 BP_/_HD)
 - 19 mm (BA_, BS_, BF_)
 - 24 mm (BA_, BS_, BF_)
 - Phillips Head Screw Driver
- Special Tools (sold separately):
- Center Disk Remover (BP_, BV_) # 771868
 - Throat Bearing Remover # 804129

TORQUE VALUES



(X)DP-50 (HD) SERIES 2"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
Center Rod	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	-	-
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-	-
Air Chamber Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-	-
Manifolds	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
Center Rod	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	-	-
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	-	-
Air Chamber Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	-	-
Manifold Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-

- Tools Required:
- Socket Wrench
13, 17, 19, 24 mm (BA_, BS_, BF_)
 - Hexagonal Box Wrench 5, 6 mm
 - Small Crowbars 2 (B_C, B_N, B_E, B_U)
 - Open-end Wrench
19 mm (BA_, BS_, BF_)
24 mm (BA_, BS_, BF_)
 - Phillips Head Screw Driver
- Special Tools (sold separately):
- Center Disk Remover (BP_, BV_) # 771868
 - Throat Bearing Remover # 804129

(X)DP-80 (HD) SERIES 3"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
Center Rod	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	43 ft-lbf	-	-
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-	-
Air Chamber Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	29 ft-lbf	-	-
Manifolds	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
PLASTIC PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Manifold Retainer Bolts	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	18 ft-lbf	-	-
Center Rod	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	36 ft-lbf	-	-
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	-	-
Air Chamber Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Out Chamber Bolts	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	26 ft-lbf	-	-
Manifold Bolts	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	15 ft-lbf	-	-

- Tools Required:
- Socket Wrench
13, 17 mm, 24 mm (BA_, BS_, BF_)
 - Hexagonal Box Wrench 5, 6 mm
 - Small Crowbars 2 (B_C, B_N, B_E, B_U)
 - Open-end Wrench
17 mm (DP-40 BP_-HD)
19 mm (BA_, BS_, BF_)
24 mm (BA_, BS_, BF_)
 - Phillips Head Screw Driver
- Special Tools (sold separately):
- Center Disk Remover (BP_, BV_) # 771868
 - Throat Bearing Remover # 804129

NDP-50 FLAPPER SERIES 2"

METAL PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Valve Assembly Bolts	-	-	-	22 ft-lbf	22 ft-lbf	-	-	-	-
Cover Assembly Bolts	-	-	-	22 ft-lbf	22 ft-lbf	-	-	-	-
Center Rod	-	-	-	43 ft-lbf	43 ft-lbf	-	-	-	-
Out Chamber Bolts	-	-	-	26 ft-lbf	26 ft-lbf	-	-	-	-
Valve Case In/Out	-	-	-	22 ft-lbf	22 ft-lbf	-	-	-	-
Air Chamber Retainer Bolts	-	-	-	15 ft-lbf	15 ft-lbf	-	-	-	-
Cap A & B	-	-	-	8 ft-lbf	8 ft-lbf	-	-	-	-
Valve Body Bolts	-	-	-	12 ft-lbf	12 ft-lbf	-	-	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Valve Case In/Out	-	-	-	22 ft-lbf	22 ft-lbf	-	-	-	-
Manifold Bolts	-	-	-	15 ft-lbf	15 ft-lbf	-	-	-	-

- Tools Required:
- Socket Wrench 10, 13, 17, 19, 24 mm
 - Hexagonal Box Wrench 5, 6, 8 mm
 - Small Crowbars 2
 - Open-end Wrench 10, 17, 19, 24 mm
 - Plastic Hammer
- Special Tools (sold separately):
- Sleeve Remover # 713180



TORQUE VALUES



DP-5F SERIES

1/2"

PTFE PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Vertical Tie Rods	-	-	-	-	-	-	45 in-lbf	-	-
Center Rod	-	-	-	-	-	-	55 in-lbf	-	-
Horizontal Tie Rods	-	-	-	-	-	-	45 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Horizontal Tie Rods	-	-	-	-	-	-	35 in-lbf	-	-
Vertical Tie Rods	-	-	-	-	-	-	35 in-lbf	-	-

- Tools Required:
- Socket Wrench 10 mm
 - Open-end Wrench 10 mm
 - Pliers
- Special Tools (sold separately):
- Sleeve Remover # 713148
 - Cap & Disk Remover # 771182
 - Torque Wrench # 804307

DP-10F SERIES

3/8"

PTFE PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Vertical Tie Rods	-	-	-	-	-	-	45 in-lbf	-	-
Center Rod	-	-	-	-	-	-	140 in-lbf	-	-
Horizontal Tie Rods	-	-	-	-	-	-	60 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Horizontal Tie Rods	-	-	-	-	-	-	55 in-lbf	-	-
Vertical Tie Rods	-	-	-	-	-	-	35 in-lbf	-	-

- Tools Required:
- Socket Wrench 10, 13 mm
 - Open-end Wrench 10, 13 mm
 - Pliers
- Special Tools (sold separately):
- Pilot Valve & Cap Remover # 712606
 - Sleeve Remover # 713148
 - Center Disk Remover # 771868
 - Torque Wrench # 804308

DP-20F SERIES

3/4"

PTFE PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Vertical Tie Rods	-	-	-	-	-	-	45 in-lbf	-	-
Center Rod	-	-	-	-	-	-	180 in-lbf	-	-
Horizontal Tie Rods	-	-	-	-	-	-	60 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Horizontal Tie Rods	-	-	-	-	-	-	55 in-lbf	-	-
Vertical Tie Rods	-	-	-	-	-	-	35 in-lbf	-	-

- Tools Required:
- Socket Wrench 10, 13 mm
 - Open-end Wrench 10, 13 mm
 - Pliers
- Special Tools (sold separately):
- Pilot Valve & Cap Remover # 712606
 - Sleeve Remover # 713148
 - Center Disk Remover # 771868
 - Torque Wrench # 804309

DP-25F SERIES

1"

PTFE PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Vertical Tie Rods	-	-	-	-	-	-	60 in-lbf	-	-
Center Rod	-	-	-	-	-	-	400 in-lbf	-	-
Horizontal Tie Rods	-	-	-	-	-	-	80 in-lbf	-	-
Valve Body Bolts	-	-	-	-	-	-	60 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Horizontal Tie Rods	-	-	-	-	-	-	70 in-lbf	-	-
Vertical Tie Rods	-	-	-	-	-	-	55 in-lbf	-	-

- Tools Required:
- Socket Wrench 13, 17 mm
 - Open-end Wrench 13, 17 mm
 - Adjustable Angle Wrench
- Special Tools (sold separately):
- Pilot Valve & Cap Remover # 712606
 - Sleeve Remover # 713148
 - Center Disk Remover # 771868
 - Torque Wrench # 804310

DP-38F SERIES

1"

PTFE PUMPS	DIAPHRAGM MATERIAL								
Installation:	C	E	H	N	S	V	T	U	G
Vertical Tie Rods	-	-	-	-	-	-	135 in-lbf	-	-
Center Rod	-	-	-	-	-	-	400 in-lbf	-	-
Horizontal Tie Rods	-	-	-	-	-	-	135 in-lbf	-	-
Valve Body Bolts	-	-	-	-	-	-	60 in-lbf	-	-
Retightening:	C	E	H	N	S	V	T	U	G
Horizontal Tie Rods	-	-	-	-	-	-	115 in-lbf	-	-
Vertical Tie Rods	-	-	-	-	-	-	115 in-lbf	-	-

- Tools Required:
- Socket Wrench 13, 17 mm
 - Open-end Wrench 13, 17 mm
 - Adjustable Angle Wrench
- Special Tools (sold separately):
- Pilot Valve & Cap Remover # 712606
 - Sleeve Remover # 713148
 - Center Disk Remover # 771868
 - Torque Wrench # 804310

NOTE: Torque Values are also located in the maintenance manual @ <https://www.yamadapump.com/maintenance-manuals/>.