



Required maintenance
tools and torque values
AODD Pumps and Dampeners



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-5FAT, NDP-5FAG NDP-5FST, NDP-FSG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	10HEX bolt	8	6 Nm	6 Nm
Center rod	10HEX nut	2	6 Nm	-
Out chambers	10HEX bolt/nut	4	6 Nm	6 Nm

NDP-5FPT, NDP-5FPG NDP-5FVT, NDP-5FVG NDP-5FDT, NDP-5FDG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	10HEX nut	8	6 Nm	6 Nm
Center rod	15HEX head disk	2	6 Nm	-
Out chambers	10HEX bolt/nut	4	6 Nm	6 Nm

DP-10BAC, DP-10BAN, DP-10BAE, DP-10BAV, DP-10BAH, DP-10BAS, DP-10BAT, DP-10BAG DP-10BSC, DP-10BSN, DP-10BSE, DP-10BSV, DP-10BSH, DP-10BSS, DP-10BST, DP-10BSG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	6HEX socket bolt	8	12 Nm	12 Nm
Center rod	13HEX nut	2	14 Nm	-
Out chambers	6HEX socket bolt	12	12 Nm	12 Nm
Spool cap	5HEX socket bolt	4	6 Nm	-
Spool case	5HEX socket bolt	2	6 Nm	-

DP-10BATU DP-10BSTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	6HEX socket bolt	8	12 Nm	12 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	6HEX socket bolt	12	12 Nm	12 Nm
Spool cap	5HEX socket bolt	4	6 Nm	-
Spool case	5HEX socket bolt	2	6 Nm	-

DP-10BPC, DP-10BPN, DP-10BPE, DP-10BPV, DP-10BPH, DP-10BPS, DP-10BPT, DP-10BPG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	6HEX nut	8	8 Nm	8 Nm
Center rod	20sq head disk	2	14 Nm	-
Out chambers	6HEX socket bolt	12	12 Nm	12 Nm
Spool cap	5HEX socket bolt	4	6 Nm	-
Spool case	5HEX socket bolt	2	6 Nm	-

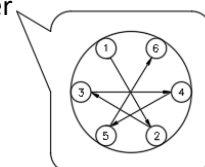
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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DP-10BPTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	6HEX nut	8	8 Nm	8 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	6HEX socket bolt	12	12 Nm	12 Nm
Spool cap	5HEX socket bolt	4	6 Nm	-
Spool case	5HEX socket bolt	2	6 Nm	-

DP-15FPC, DP-15FPN, DP-15FPE, DP-15FPV, DP-15FPH, DP-15FPS, DP-15FPT, DP-15FPG DP-15BPC, DP-15BPN, DP-15BPE, DP-15BPV, DP-15BPH, DP-15BPS, DP-15BPT, DP-15BPG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX nut	8	12 Nm	12Nm
Center rod	20sq head disk	2	14 Nm	-
Out chambers	6HEX socket bolt	12	12 Nm	12Nm
Spool cap	5HEX socket bolt	4	6 Nm	-
Spool case	5HEX socket bolt	2	6 Nm	-

DP-15FPTU DP-15BPTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX nut	8	12 Nm	12Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	6HEX socket bolt	12	12 Nm	12Nm
Spool cap	5HEX socket bolt	4	6 Nm	-
Spool case	5HEX socket bolt	2	6 Nm	-

NDP-15BAC, NDP-15BAN, NDP-15BAE, NDP-15BAV, NDP-15BAH, NDP-15BAS, NDP-15BAT, NDP-15BAG NDP-15BSC, NDP-15BSN, NDP-15BSE, NDP-15BSV, NDP-15BSH, NDP-15BSS, NDP-15BST, NDP-15BSG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX nut	8	12 Nm	12Nm
Center rod	13HEX nut	2	14 Nm	-
Out chambers	13HEX bolt/nut	6	12 Nm	12Nm

NDP-15BATU NDP-15BSTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX nut	8	12 Nm	12Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	13HEX bolt/nut	6	12 Nm	12Nm

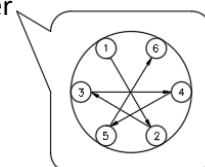
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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NDP-15FPC, NDP-15FPN, NDP-15FPE, NDP-15FPV, NDP-15FPH, NDP-15FPS, NDP-15FPT, NDP-15FPG NDP-15BPC, NDP-15BPN, NDP-15BPE, NDP-15BPV, NDP-15BPH, NDP-15BPS, NDP-15BPT, NDP-15BPG NDP-15FVC, NDP-15FVN, NDP-15FVE, NDP-15FVV, NDP-15FVH, NDP-15FVS, NDP-15FVT, NDP-15FVG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX nut	8	12 Nm	12Nm
Center rod	20sq head disk	2	14 Nm	-
Out chambers	13HEX bolt/nut	6	12 Nm	12Nm

NDP-15FPTU NDP-15BPTU NDP-15FVTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX nut	8	12 Nm	12Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	13HEX bolt/nut	6	12 Nm	12Nm

G15AN00, G15AH00, G15AS00 G15SN00, G15SH00, G15SS00				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	17HEX nut	2	18 Nm	-
Out chambers	13HEX bolt	12	12 Nm	12 Nm
Guide bush	Screw-in connection	2	Hand-tight	-
Spool cap A, B	Special connection	2	Hand-tight	-
Valve body	10HEX/nut	2	1 Nm	-

G15AT00 G15ST00				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	18 Nm	18 Nm
Center rod	17HEX nut	2	18 Nm	-
Out chambers	13HEX bolt	12	12 Nm	12 Nm
Guide bush	Screw-in connection	2	Hand-tight	-
Spool cap A, B	Special connection	2	Hand-tight	-
Valve body	10HEX/nut	2	1 Nm	-

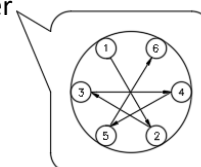
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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G15PN00, G15PH00, G15PS00, G15PT00 G15VN00, G15VH00, G15VS00, G15VT00				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt/nut	8	10 Nm	10 Nm
Center rod	22sq head disk	2	20 Nm	-
Out chambers	13HEX bolt/nut	16	10 Nm	10 Nm
Throat bearings	Phillips-tapping screw	6	1 Nm	-
Spool cap A, B	Special connection	2	Hand-tight	-
Valve body	10HEX/nut	4	1 Nm	-

NDP-20BAC, NDP-20BAN, NDP-20BAE, NDP-20BAV NDP-20BSC, NDP-20BSN, NDP-20BSE, NDP-20BSV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	13HEX bolt	12	10 Nm	10Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-20BAH, NDP-20BAS NDP-20BSH, NDP-20BSS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	17HEX nut	2	40 Nm	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX/nut	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-20BAT, NDP-20BAG, NDP-20BAH/T, NDP-20BAS/T NDP-20BST, NDP-20BSG, NDP-20BSH/T, NDP-20BSS/T				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	20 Nm	20 Nm
Center rod	17HEX nut	2	40 Nm	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX/nut	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

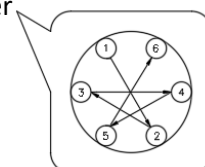
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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NDP-20BATU NDP-20BSTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	20 Nm	20 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX/nut	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-20BPC, NDP-20BPN, NDP-20BPE, NDP-20BPV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	13HEX bolt	12	10 Nm	10 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-20BPH, NDP-20BPS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-20BPT, NDP-20BPG, NDP-20BPH/T , NDP-20BPS/T				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

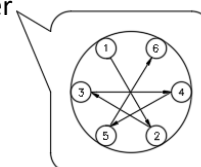
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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NDP-P20BAC, NDP-P20BAN, NDP-P20BAE, NDP-P20BAV NDP-P20BSC, NDP-P20BSN, NDP-P20BSE, NDP-P20BSV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	13HEX bolt	12	10 Nm	10 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P20BAT NDP-P20BST				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	20 Nm	20 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P20BPC, NDP-P20BPN, NDP-P20BPE, NDP-P20BPV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	13HEX bolt	12	10 Nm	10 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P20BPH, NDP-P20BPS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	10 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

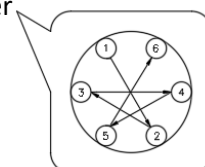
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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NDP-P20BPT, NDP-P20BPG, NDP-P20BPH/T, NDP-P20BPS/T				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P20BPTU,				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	13HEX bolt	12	13 Nm	13 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	10	2 Nm	-
Spool cap A, B	36HEX nut	6	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P20BTT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod 10HEX	4	5 Nm	5 Nm
Center rod	Special disk M10x1.5	2	21 Nm	-
Out chambers	Tie rod 13HEX	6	7 Nm	7 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-25BAC, NDP-25BAN, NDP-25BAE, NDP-25BAV NDP-25BSC, NDP-25BSN, NDP-25BSE, NDP-25BSV NDP-25BFC, NDP-25BFN, NDP-25BFE, NDP-25BFV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	10 Nm	10 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

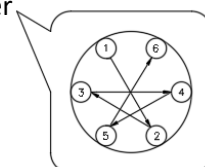
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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NDP-25BAH, NDP-25BAS NDP-25BSH, NDP-25BSS NDP-25BFH, NDP-25BFS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-25BAT, NDP-25BAG, NDP-25BAH/T, NDP-25BAS/T NDP-25BST, NDP-25BSG, NDP-25BSH/T, NDP-25BSS/T NDP-25BFT, NDP-25BFG, NDP-25BFH/T, NDP-25BFS/T				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	35 Nm	35 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-25BATU NDP-25BSTU NDP-25BFTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	35 Nm	35 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-25BPC, NDP-25BPN, NDP-25BPE, NDP-25BPV NDP-25BVC, NDP-25BVN, NDP-25BVE, NDP-25BVV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	17HEX bolt	12	10 Nm	10 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

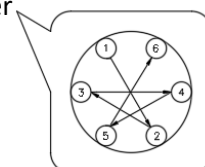
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

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NDP-25BPH, NDP-25BPS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-25BPT, NDP-25BPG, NDP-25BPH/T, NDP-25BPS/T NDP-25BVT, NDP-25BVG, NDP-25BVH, NDP-25BVS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-25BPTU NDP-25BVTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-P25BPC, NDP-P25BPN, NDP-P25BPE, NDP-P25BPV NDP-P25BVC, NDP-P25BVN, NDP-P25BVE, NDP-P25BVV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	17HEX bolt	12	10 Nm	10 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

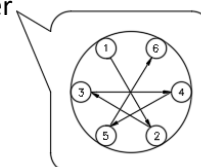
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-P25BPT, NDP-P25BPG, NDP-P25BPH/T, NDP-P25BPS/T NDP-P25BVT, NDP-P25BVG, NDP-P25BVH, NDP-P25BVS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	Special disk	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P25BPTU NDP-P25BVTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	12 Nm	12 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P25BPH, NDP-P25BPS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	13HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P25BAT, NDP-P25BAG, NDP-P25BAH/T, NDP-P25BAS/T NDP-P25BST, NDP-P25BSG, NDP-P25BSH/T, NDP-P25BSS/T				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	35 Nm	35 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

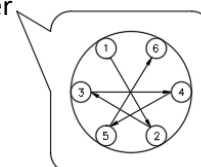
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-P25BAH, NDP-P25BAS NDP-P25BSH, NDP-P25BSS NDP-P25BFH, NDP-P25BFS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P25BATU NDP-P25BSTU NDP-P25BFTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	35 Nm	35 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P25BAC, NDP-P25BAN, NDP-P25BAE, NDP-P25BAV NDP-P25BSC, NDP-P25BSN, NDP-P25BSE, NDP-P25BSV NDP-P25BFC, NDP-P25BFN, NDP-P25BFE, NDP-P25BFV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	10 Nm	10 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-P25BTT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod 13HEX	4	7 Nm	7 Nm
Center rod	Special disk M14x1.5	2	45 Nm	-
Out chambers	Tie rod 17HEX	6	10 Nm	10 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

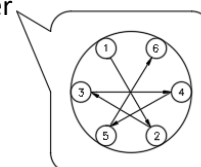
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-P25BTTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod13HEX	4	7 Nm	7 Nm
Center rod	Screw-on Diaphragm	2	45 Nm	-
Out chambers	Tie rod 17HEX	6	10 Nm	10 Nm
Pilot valve assy	Phillips-tapping screw	4	2 Nm	-
Throat bearings	Phillips-tapping screw	6	2 Nm	-
Spool cap A, B	36HEX nut	2	Hand-tight	-
Valve body assy	13HEX bolt	4	7,5 Nm	-

NDP-32BAC, NDP-32BAN, NDP-32BAE, NDP-32BAV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	10 Nm	10 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-32BAH, NDP-32BAS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	6HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

NDP-32BAT, NDP-32BAG, NDP-32BAH/T, NDP-32BAS/T				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	35 Nm	35 Nm
Center rod	22HEX nut	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	5HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

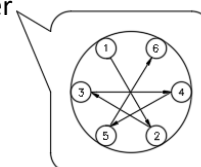
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-32BATU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	35 Nm	35 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	5HEX socket bolt	8	18 Nm	-
Spool cap A, B	10HEX bolt	8	6 Nm	-
Valve body assy	13HEX bolt	6	7,5 Nm	-

G25AN00 G25SN00				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut-disk	2	40 Nm	-
Out chambers	17HEX bolt	12	10 Nm	10 Nm
Air chambers	5HEX socket bolt	8	18 Nm	-
Valve body cap A, B	Special	2	Hand-tight	-
Valve body assy	10HEX nut	4	5 Nm	-

G25AH00, G25AS00				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	10 Nm	10 Nm
Center rod	22HEX nut-disk	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	5HEX socket bolt	8	18 Nm	-
Valve body cap A, B	Special	2	Hand-tight	-
Valve body assy	10HEX nut	4	5 Nm	-

G25AT00				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	8	20 Nm	20 Nm
Center rod	22HEX nut-disk	2	40 Nm	-
Out chambers	17HEX bolt	12	20 Nm	20 Nm
Air chambers	5HEX socket bolt	8	18 Nm	-
Valve body cap A, B	Special	2	Hand-tight	-
Valve body assy	10HEX nut	4	5 Nm	-

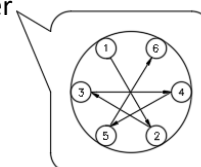
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-40BAC, NDP-40BAN, NDP-40BAE, NDP-40BAV, NDP-40BAH, NDP-40BAS, NDP-40BAT, NDP-40BAG
NDP-40BSC, NDP-40BSN, NDP-40BSE, NDP-40BSV, NDP-40BSH, NDP-40BSS, NDP-40BST, NDP-40BSG
NDP-40BFC, NDP-40BFN, NDP-40BFE, NDP-40BFV, NDP-40BFH, NDP-40BFS, NDP-40BFT, NDP-40BFG

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	25 Nm	25 Nm
Center rod	24HEX nut	2	60 Nm	-
Out chambers	17HEX bolt	16	40 Nm	40 Nm
Air chambers	5HEX socket bolt	12	20 Nm	Nm
Spool cap A, B	6HEX bolt	8	10 Nm	Nm
Valve body assy	13HEX bolt	6	17 Nm	Nm

NDP-40BATU
NDP-40BSTU
NDP-40BFTU

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	25 Nm	25 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	16	40 Nm	40 Nm
Air chambers	5HEX socket bolt	12	20 Nm	Nm
Spool cap A, B	6HEX bolt	8	10 Nm	Nm
Valve body assy	13HEX bolt	6	17 Nm	Nm

NDP-40BPC, NDP-40BPN, NDP-40BPE, NDP-40BPV, NDP-40BPH, NDP-40BPS, NDP-40BPT, NDP-40BPG
NDP-40BVC, NDP-40BVN, NDP-40BVE, NDP-40BVV, NDP-40BVH, NDP-40BVS, NDP-40BVT, NDP-40BVG

***Apply thread locker Loctite 222® or equivalent**

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	24	20 Nm	20 Nm
Center rod	Special disc	2	*50 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

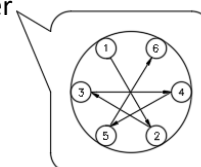
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-40BPTU NDP-40BVTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	24	20 Nm	20 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-50BAC, NDP-50BAN, NDP-50BAE, NDP-50BAV, NDP-50BAH, NDP-50BAS, NDP-50BAT, NDP-50BAG NDP-50BSC, NDP-50BSN, NDP-50BSE, NDP-50BSV, NDP-50BSH, NDP-50BSS, NDP-50BST, NDP-50BSG NDP-50BFC, NDP-50BFN, NDP-50BFE, NDP-50BFV, NDP-50BFH, NDP-50BFS, NDP-50BFT, NDP-50BFG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	8	25 Nm	25 Nm
Center rod	24HEX nut	2	60 Nm	-
Out chambers	17HEX bolt	16	40 Nm	40 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-50BATU NDP-50BSTU NDP-50BFTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	8	25 Nm	25 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	16	40 Nm	40 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

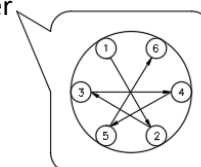
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-50BPC, NDP-50BPN, NDP-50BPE, NDP-50BPV, NDP-50BPH, NDP-50BPS, NDP-50BPT, NDP-50BPG NDP-50BVC, NDP-50BVN, NDP-50BVE, NDP-50BVV, NDP-50BVH, NDP-50BVS, NDP-50BVT, NDP-50BVG				
<i>*Apply thread locker Loctite 222® or equivalent</i>				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	24	25 Nm	20 Nm
Center rod	Special disc	2	*50 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-50FAN				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	8	20 Nm	20 Nm
Center rod	24HEX nut	2	60 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Flap valve assy	10HEX bolt	4	30 Nm	-
Cover valve case	10HEX bolt	16	30 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-50BPTU				
NDP-50BVTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	24	25 Nm	20 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-P50BPC, NDP-P50BPN, NDP-P50BPE, NDP-P50BPV, NDP-P50BPH, NDP-P50BPS, NDP-P50BPT, NDP-P50BPG NDP-P50BVC, NDP-P50BVN, NDP-P50BVE, NDP-P50BVV, NDP-P50BVH, NDP-P50BVS, NDP-P50BVT, NDP-P50BVG				
<i>*Apply thread locker Loctite 222® or equivalent</i>				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	24	25 Nm	20 Nm
Center rod	Special disc	2	*50 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Throat Bearings	Phillips-head screw	8	5 Nm	-
Spool cap A, B	Special cap	2	5 Nm	-

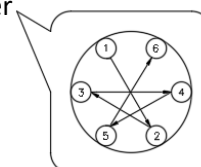
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP, BP, FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1 (equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-P50BAC, NDP-P50BAN, NDP-P50BAE, NDP-P50BAV, NDP-P50BAH, NDP-P50BAS, NDP-P50BAG NDP-P50BSC, NDP-P50BSN, NDP-P50BSE, NDP-P50BSV, NDP-P50BSH, NDP-P50BSS, NDP-P50BSG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	24	25 Nm	25 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Throat Bearings	Phillips-head screw	8	5 Nm	-
Spool cap A, B	Special cap	2	5 Nm	-

NDP-80BAC, NDP-80BAN, NDP-80BAE, NDP-80BAV, NDP-80BAH, NDP-80BAS, NDP-80BAT, NDP-80BAG NDP-80BSC, NDP-80BSN, NDP-80BSE, NDP-80BSV, NDP-80BSH, NDP-80BSS, NDP-80BST, NDP-80BSG NDP-80BFC, NDP-80BFN, NDP-80BFE, NDP-80BFV, NDP-80BFH, NDP-80BFS, NDP-80BFT, NDP-80BFG				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	16	25 Nm	25 Nm
Center rod	24HEX nut	2	60 Nm	-
Out chambers	17HEX bolt	24	40 Nm	40 Nm
Air chambers	5HEX socket bolt	8	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-80BATU NDP-80BSTU NDP-80BFTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	16	25 Nm	25 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	24	40 Nm	40 Nm
Air chambers	5HEX socket bolt	8	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

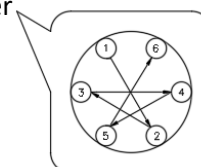
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP, BP, FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1 (equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-80BPC, NDP-80BPN, NDP-80BPE, NDP-80BPV, NDP-80BPH, NDP-80BPS, NDP-80BPT, NDP-80BPG *Apply thread locker Loctite 222® or equivalent				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	24	25 Nm	20 Nm
Center rod	Special disc	2	*50 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-80BPTU				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	19HEX bolt	24	25 Nm	20 Nm
Center rod	Screw-on Diaphragm	2	Hand-tight	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Spool cap A, B	6HEX bolt	8	10 Nm	-
Valve body assy	13HEX bolt	6	17 Nm	-

NDP-H40BAC, NDP-H40BAN, NDP-H40BAE, NDP-H40BAV, NDP-H40BAH, NDP-H40BAS, NDP-H40BAT, NDP-H40BAG. NDP-H40BSC, NDP-H40BSN, NDP-H40BSE, NDP-H40BSV, NDP-H40BSH, NDP-H40BSS, NDP-H40BST, NDP-H40BSG. NDP-H40BFC, NDP-H40BFN, NDP-H40BFE, NDP-H40BFV, NDP-H40BFH, NDP-H40BFS, NDP-H40BFT, NDP-H40BFG. *Apply thread locker Loctite 222® or equivalent				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	25 Nm	25 Nm
Center rod	24HEX nut	2	60 Nm	-
Out chambers	17HEX bolt	16	40 Nm	40 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Guide plate	10HEX bolt	8	*3 Nm	-
Valve Switcher	13HEX bolt	4	10 Nm	-
Valve body assembly	13HEX bolt	4	10 Nm	-

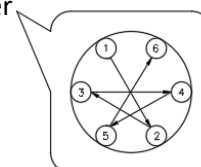
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP, BP, FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1 (equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-H40BPC, NDP-H40BPN, NDP-H40BPE, NDP-H40BPV, NDP-H40BPH, NDP-H40BPS, NDP-H40BPT, NDP-H40BPG. NDP-H40BVC, NDP-H40BVN, NDP-H40BVE, NDP-H40BVV, NDP-H40BVH, NDP-H40BVS, NDP-H40BVT, NDP-H40BVG. *Apply thread locker Loctite 222® or equivalent				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	20 Nm	20 Nm
Center rod	24HEX nut	2	*50 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Guide plate	10HEX bolt	8	*3 Nm	-
Valve Switcher	13HEX bolt	4	10 Nm	-
Valve body assembly	13HEX bolt	4	10 Nm	-

NDP-H50BAC, NDP-H50BAN, NDP-H50BAE, NDP-H50BAV, NDP-H50BAH, NDP-H50BAS, NDP-H50BAT, NDP-H50BAG. NDP-H50BSC, NDP-H50BSN, NDP-H50BSE, NDP-H50BSV, NDP-H50BSH, NDP-H50BSS, NDP-H50BST, NDP-H50BSG. NDP-H50BFC, NDP-H50BFN, NDP-H50BFE, NDP-H50BFV, NDP-H50BFH, NDP-H50BFS, NDP-H50BFT, NDP-H50BFG. *Apply thread locker Loctite 222® or equivalent				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	25 Nm	25 Nm
Center rod	24HEX nut	2	60 Nm	-
Out chambers	17HEX bolt	16	40 Nm	40 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Guide plate	10HEX bolt	8	*3 Nm	-
Valve Switcher	13HEX bolt	4	10 Nm	-
Valve body assembly	13HEX bolt	4	10 Nm	-

NDP-H50BPC, NDP-H50BPN, NDP-H50BPE, NDP-H50BPV, NDP-H50BPH, NDP-H50BPS, NDP-H50BPT, NDP-H50BPG. NDP-H50BVC, NDP-H50BVN, NDP-H50BVE, NDP-H50BVV, NDP-H50BVH, NDP-H50BVS, NDP-H50BVT, NDP-H50BVG. *Apply thread locker Loctite 222® or equivalent				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	25 Nm	20 Nm
Center rod	24HEX nut	2	*50 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Guide plate	10HEX bolt	8	*3 Nm	-
Valve Switcher	13HEX bolt	4	10 Nm	-
Valve body assembly	13HEX bolt	4	10 Nm	-

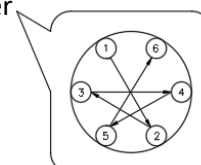
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

NDP-H80BAC, NDP-H80BAN, NDP-H80BAE, NDP-H80BAV, NDP-H80BAH, NDP-H80BAS, NDP-H80BAT, NDP-H80BAG.

NDP-H80BSC, NDP-H80BSN, NDP-H80BSE, NDP-H80BSV, NDP-H80BSH, NDP-H80BSS, NDP-H80BST, NDP-H80BSG.

NDP-H80BFC, NDP-H80BFN, NDP-H80BFE, NDP-H50BFV, NDP-H50BFH, NDP-H80BFS, NDP-H80BFT, NDP-H80BFG. *Apply thread locker Loctite 222® or equivalent

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	25 Nm	25 Nm
Center rod	24HEX nut	2	60 Nm	-
Out chambers	17HEX bolt	16	40 Nm	40 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Guide plate	10HEX bolt	8	*3 Nm	-
Valve Switcher	13HEX bolt	4	10 Nm	-
Valve body assembly	13HEX bolt	4	10 Nm	-

NDP-H80BPC, NDP-H80BPN, NDP-H80BPE, NDP-H80BPV, NDP-H80BPH, NDP-H80BPS, NDP-H80BPT, NDP-H80BPG. *Apply thread locker Loctite 222® or equivalent

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	17HEX bolt	16	25 Nm	20 Nm
Center rod	24HEX nut	2	*50 Nm	-
Out chambers	17HEX bolt	16	35 Nm	35 Nm
Air chambers	5HEX socket bolt	12	20 Nm	-
Guide plate	10HEX bolt	8	*3 Nm	-
Valve Switcher	13HEX bolt	4	10 Nm	-
Valve body assembly	13HEX bolt	4	10 Nm	-

DP-5F

● **Assembly lubricating oil Fomblin®GR AR555 or equivalent**

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod 10HEX	4	5 Nm	4 Nm
Center rod	Special disk M6x1	2	6 Nm	-
Out chambers	Tie rod 10HEX	6	5 Nm	4 Nm

DP-10F

● **Assembly lubricating oil Fomblin®GR AR555 or equivalent**

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod 10HEX	4	5 Nm	4 Nm
Center rod	Special disk M8x1.25	2	16 Nm	-
Out chambers	Tie rod 13HEX	6	7 Nm	6 Nm

DP-20F

● **Assembly lubricating oil Fomblin®GR AR555 or equivalent**

Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod 10HEX	4	5 Nm	4 Nm
Center rod	Special disk M10x1.5	2	21 Nm	-
Out chambers	Tie rod 13HEX	6	7 Nm	6 Nm

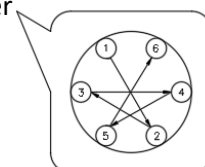
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

DP-25F ● Assembly lubricating oil Fomblin®GR AR555 or equivalent				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod 10HEX	4	7 Nm	6 Nm
Center rod	Special disk M14x1.5	2	45 Nm	-
Valve body	13HEX	4	7 Nm	-
Out chambers	Tie rod 17HEX	6	10 Nm	8 Nm

DP-38F ● Assembly lubricating oil Fomblin®GR AR555 or equivalent				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Manifolds	Tie rod 10HEX	4	15 Nm	13 Nm
Center rod	Special disk M16x1.5	2	45 Nm	-
Valve body	10HEX	4	7 Nm	-
Out chambers	Tie rod 13HEX	6	15 Nm	13 Nm

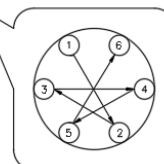
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222® or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



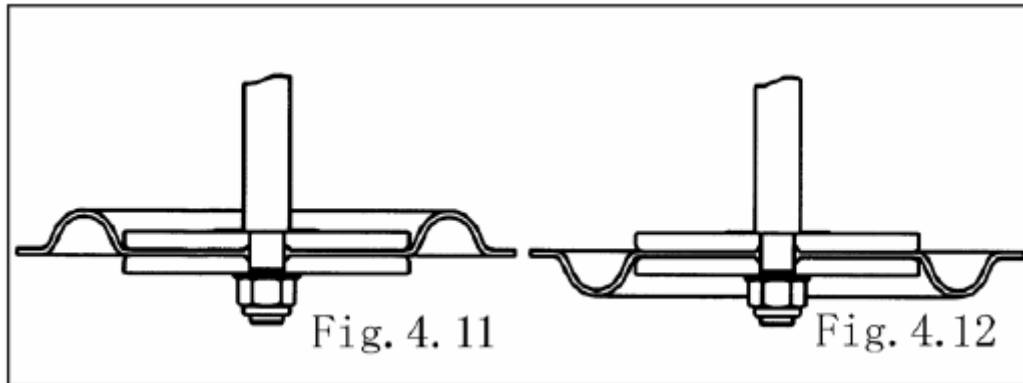
Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

Installation of diaphragms AD dampeners.

Installation of diaphragms AD dampeners deviate from standard diaphragm pump installations.

- AD-10, 25 and AD-40, 50 (□T, □H, □S) of An installation direction of diaphragm. [Fig. 4.11]
- AD-40, 50 (□C, □N, □E, □V) of An installation direction of diaphragm. [Fig. 4.12]
- Install the diaphragm with its convex side upward.



AD-10AC, AD-10AN, AD-10AE, AD-10AV, AD-10AS, AD-10AH, AD-10AT AD-10SC, AD-10SN, AD-10SE, AD-10SV, AD-10SS, AD-10SH, AD-10ST				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	13HEX nut	1	12 Nm	-
Valve	22HEX guide nut	4	5 Nm	-
Out chambers	6HEX socket bolt	6	12 Nm	12 Nm
Flange	6HEX socket bolt	4	8 Nm	8 Nm

AD-10PC, AD-10PN, AD-10PE, AD-10PV, AD-10PS, AD-10PH, AD-10PT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	20sq head disk	1	12 Nm	-
Valve	22HEX guide nut	4	5 Nm	-
Out chambers	6HEX socket bolt	6	12 Nm	12 Nm
Flange	13HEX nut	4	8 Nm	8 Nm

AD-25AC, AD-25AN, AD-25AE, AD-25AV AD-25SC, AD-25SN, AD-25SE, AD-25SV AD-25FC, AD-25FN, AD-25FE, AD-25FV				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	22HEX nut	1	40 Nm	-
Valve	22HEX guide nut	4	7 Nm	-
Out chambers	17HEX bolt	6	20 Nm	10 Nm
Flange	17HEX bolt	4	10 Nm	10 Nm

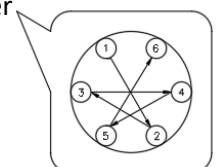
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

AD-25AS, AD-25AH, AD-25AT AD-25SS, AD-25SH, AD-25ST AD-25FS, AD-25FH, AD-25FT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	22HEX nut	1	40 Nm	-
Valve	22HEX guide nut	4	7 Nm	-
Out chambers	17HEX bolt	6	20 Nm	20 Nm
Flange	17HEX bolt	4	10 Nm	10 Nm

AD-25AT AD-25ST AD-25FT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	22HEX nut	1	40 Nm	-
Valve	22HEX guide nut	4	7 Nm	-
Out chambers	17HEX bolt	6	20 Nm	20 Nm
Flange	17HEX bolt	4	35 Nm	35 Nm

AD-25PC, AD-25PN, AD-25PE, AD-25PV, AD-25PS AD-25VC, AD-25VN, AD-25VE, AD-25VV, AD-25VS				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	Special disk	1	40 Nm	-
Valve	22HEX guide nut	4	7 Nm	-
Out chambers	17HEX bolt	6	10 Nm	10 Nm
Flange	Tie rod 17HEX	4	10 Nm	10 Nm

AD-25PH AD-25VH				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	Special disk	1	40 Nm	-
Valve	22HEX guide nut	4	7 Nm	-
Out chambers	17HEX bolt	6	20 Nm	20 Nm
Flange	Tie rod 17HEX	4	10 Nm	10 Nm

AD-25PT AD-25VT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	Special disk	1	40 Nm	-
Valve	22HEX guide nut	4	7 Nm	-
Out chambers	17HEX bolt	6	20 Nm	20 Nm
Flange	Tie rod 17HEX	4	12 Nm	12 Nm

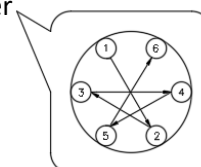
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)

Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)

Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



Tightening Torques of Diaphragm Pumps & Dampeners

For original detailed maintenance instructions: <https://yamada-europe.com/downloads/>

AD-40AC, AD-40AN, AD-40AE, AD-40AV, AD-40AS, AD-40AH, AD-40AT AD-40SC, AD-40SN, AD-40SE, AD-40SV, AD-40SS, AD-40SH, AD-40ST AD-40FC, AD-40FN, AD-40FE, AD-40FV, AD-40FS, AD-40FH, AD-40FT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	24HEX nut	1	60 Nm	-
Valve	22HEX guide nut	4	10 Nm	-
Out chambers	17HEX bolt	8	40 Nm	40 Nm
Flange	17HEX bolt	8	20 Nm	20 Nm

AD-40PC, AD-40PN, AD-40PE, AD-40PV, AD-40PS, AD-40PH, AD-40PT AD-40VC, AD-40VN, AD-40VE, AD-40VV, AD-40VS, AD-40VH, AD-40VT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	Special disk	1	50 Nm	-
Valve	22HEX guide nut	4	10 Nm	-
Out chambers	17HEX bolt	8	35 Nm	35 Nm
Flange	17HEX bolt	8	20 Nm	20 Nm

AD-50AC, AD-50AN, AD-50AE, AD-50AV, AD-50AS, AD-50AH, AD-50AT AD-50SC, AD-50SN, AD-50SE, AD-50SV, AD-50SS, AD-50SH, AD-50ST AD-50FC, AD-50FN, AD-50FE, AD-50FV, AD-50FS, AD-50FH, AD-50FT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	24HEX nut	1	60 Nm	-
Valve	22HEX guide nut	4	10 Nm	-
Out chambers	17HEX bolt	8	40 Nm	40 Nm
Flange	19HEX bolt	6	20 Nm	20 Nm

AD-50PC, AD-50PN, AD-50PE, AD-50PV, AD-50PS, AD-50PH, AD-50PT AD-50VC, AD-50VN, AD-50VE, AD-50VV, AD-50VS, AD-50VH, AD-50VT				
Assembly part	Bolt/Nut	Quantity	Tightening torque	Re-torque
Center rod	Special disk	1	50 Nm	-
Valve	22HEX guide nut	4	10 Nm	-
Out chambers	17HEX bolt	8	35 Nm	35 Nm
Flange	19HEX bolt	8	20 Nm	20 Nm

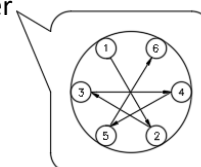
Tighten the bolts gradually in a diagonal sequence with even torque the Out chamber first then the manifold, in this order.

Thread locker: To the thread of center disk pump models (FP,BP,FV, BP) Loctite 222[®] or equivalent (except F series)

Assembly Oil: Turbine oil none addition class 1(equivalent ISO VG32 grade) (except F series)


Assembly Grease: Urea grease grade (NLGI) No.2 (except F series)


Lubricants to tie-rod threads or bolts: Equivalent to LOCTITE ANTI-SEIZE 767. (except F series)



General Tools

Descriptions	Specifications	Applicable pump
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Ratchet Handle		
	6.3mm (1/4") sq	NDP-5, DP-10 DP-5F, DP-5FH, DP-5FE, DP-5FX DP-10F, DP-10FE, DP-10FE/D DP-Fs, DP-FsE DP-F/P, DP-F/C DP-F/N DP-Fi/□/R
	9.5mm (3/8") sq	NDP-15, NDP-20, NDP-25
	12.7mm (1/2") sq	NDP-40, NDP-50, NDP-80 DP-25F, DP-25FE, DP-25FE/D DP-38F, DP-38FE, DP-38FE/D DP-Fi/□/H

Torque Wrench		
	0.3~1.5N·m, 6.3mm (1/4") sq	DP-10FE/D, DP-20FE/D, DP-25FE/D, DP-38FE/D DP-FsE
	0.6~3N·m, 6.3mm (1/4") sq	DP-10FE, DP-20FE, DP-25FE, DP-38FE DP-FsE
	2~12N·m, 6.3mm (1/4") sq	NDP-5, DP-5F, DP-5FH, DP-5FE, DP-5FX DP-Fs, DP-FsE DP-Fi/□/R DP-F/N
	5~25N·m, 6.3mm (1/4") sq	DP-10, DP-10F, DP-20F DP-10FE, DP-10FE/D, DP-20FE, DP-20FE/D DP-Fi/□/R DP-F/P, DP-F/C
	10~50N·m, 9.5mm (3/8") sq	NDP-15, NDP-20, NDP-25
	20~100N·m, 12.7mm (1/2") sq	NDP-40/50/80 DP-25F, DP-25FE, DP-25FE/D DP-38F, DP-38FE, DP-38FE/D DP-Fi/□/H

The use of general tools and special tools are specified in the associated AODD Maintenance Manuals
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General Tools

Descriptions	Specifications	Applicable pump
Socket		
	10HEX, 6.3mm (1/4") sq	NDP-5 DP-5FE, DP-5FX DP-Fs, DP-FsE
	10HEX, 9.5mm (3/8") sq	NDP-20, NDP-25 DP-5F, DP-5FH, DP-10F, DP-20F DP-10FE, DP-10FE/D, DP-20FE, DP-20FE/D DP-F/N
	12HEX, 9.5mm (3/8") sq	NDP-20, NDP-25
	13HEX, 6.3mm (1/4") sq	DP-Fi/□/R
	13HEX, 9.5mm (3/8") sq	DP-10, NDP-15, NDP-20, NDP-25 NDP-40/50/80 DP-10F, DP-20F, DP-25F, DP-38F DP-10FE, DP-20FE, DP-25FE, DP-38FE DP-20FE/D, DP-25FE/D, DP-38FE/D DP-F/P, DP-F/C DP-F/N DP-Fi/□/R
	17HEX, 9.5mm (3/8") sq	NDP-20, NDP-25, NDP-40/50/80 DP-25F, DP-38F DP-25FE, DP-25FE/D, DP-38FE, DP-38FE/D DP-Fs, DPFsE DP-F/P, DP-F/C DP-25F/N
	19HEX, 12.7mm (1/2") sq	NDP-40/50,80, DP-Fi/□/R
	22HEX, 9.5mm (3/8") sq	NDP-20, NDP-25
	24HEX, 9.5mm (3/8") sq	NDP-40/50,80
	35HEX, 12.7mm (1/2") sq	NDP-40/50/80 DP-25F, DP-38F

Socket adapter		
	□9.5mm x □6.3mm	
	□9.5mm x □12.7mm	
	□12.7mm x □9.5mm	







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General Tools

Descriptions	Specifications	Applicable pump
Extention Bar		
	6.3mm (1/4") sq	
	9.5mm (3/8") sq	
	12.7mm (1/2") sq	
	19mm (3/4") sq	
Hex Bit Socket		
	2HEX, 6.3mm (1/4") sq	DP-5FH, DP-5FE, DP-5FX
	3HEX, 6.3mm (1/4") sq	DP-10FE, DP-10FE/D, DP-10FsE
	5HEX, 6.3mm (1/4") sq	DP-20FE, DP-25FE, DP-38FE DP-20FE/D, DP-25FE/D, DP-38FE/D DP-20FsE
	5HEX, 9.5mm (3/8") sq	DP-10, NDP-20, NDP-25, NDP-40/50/80
	6HEX, 6.3mm (1/4") sq	NDP-40/50/80, DP-Fi
Phillips Bit Socket		
	6.3mm (1/4") sq	DP-10FE, DP-20FE, DP-38FE
Open End Wrenche		
	10 x 13mm	NDP-5, NDP-15, NDP-20BP, NDP-25BP/BV DP-F, DP-FH, DP-FX, DP-FE, DP-FE/D DP-Fs, DP-FsE DP-F/N, DP-Fi
	17 x 19mm	NDP-40/50/80 DP-25F, DP-38F, DP-25FE, DP-38FE DP-25FE/D, DP-38FE/D DP-Fs, DP-FsE
	19 x 21mm	NDP-15, DP-10BP, DP-Fi
	22 x 24mm	NDP-20BA/BS/BF, NDP-20BA-D NDP-25BA/BS/BF NDP-40/50/80BA/BS/BF
	24 x 27mm	DP-5FH, DP-5FX, DP-F/N




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General Tools

Descriptions	Specifications	Applicable pump								
<p>Hex Key</p> 	<table border="1"> <tr> <td>2mm</td> <td>DP-5FH, DP-5FE, DP-5FX</td> </tr> <tr> <td>3mm</td> <td>DP-10FE, DP-10FE/D, DP-10FsE</td> </tr> <tr> <td>5mm</td> <td>DP-10, NDP-20, NDP-25, NDP-40/50/80 DP-20FE, DP-25FE, DP-38FE DP-20FE/D, DP-25FE/D, DP-38FE/D DP-20FsE</td> </tr> <tr> <td>6mm</td> <td>NDP-40/50/80, DP-Fi</td> </tr> </table>	2mm	DP-5FH, DP-5FE, DP-5FX	3mm	DP-10FE, DP-10FE/D, DP-10FsE	5mm	DP-10, NDP-20, NDP-25, NDP-40/50/80 DP-20FE, DP-25FE, DP-38FE DP-20FE/D, DP-25FE/D, DP-38FE/D DP-20FsE	6mm	NDP-40/50/80, DP-Fi	
2mm	DP-5FH, DP-5FE, DP-5FX									
3mm	DP-10FE, DP-10FE/D, DP-10FsE									
5mm	DP-10, NDP-20, NDP-25, NDP-40/50/80 DP-20FE, DP-25FE, DP-38FE DP-20FE/D, DP-25FE/D, DP-38FE/D DP-20FsE									
6mm	NDP-40/50/80, DP-Fi									
<p>Tire Lever</p> 	<p>Approx 450mm long</p>	<p>NDP-40/50/80 (*2 pcs required)</p>								
<p>Long Nose Pliers</p> 	<p>Approx. 150mm long</p>	<p>NDP-5 DP-5F, DP-10F, DP-20F DP-Fs, DP-F/P, DP-F/C, DP-Fi</p>								
<p>Snap Ring Pliers</p> 	<p>12mm~13mm I.D.</p>	<p>DP-10 DP-Fs DP-F/P, DP-F/C</p>								
<p>Plastic Hammer</p> 	<p>Approx. 300mm long</p>	<p>NDP-40, NDP-50, NDP-80</p>								
<p>Adjustable Spanner</p> 		<p>DP-5FH, DP-25F, DP-38F DP-FE, DP-FE/D, DP-5FX DP-FsE</p>								

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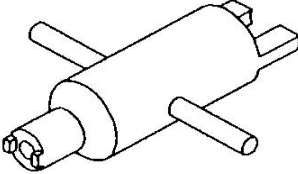
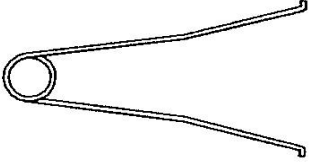
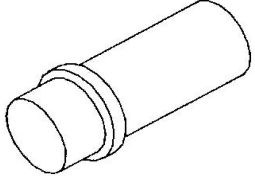
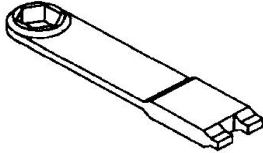
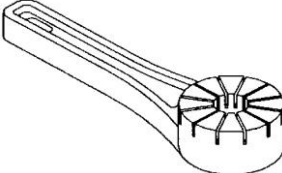
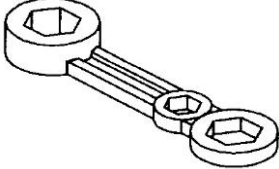
General Tools

Descriptions	Specifications	Applicable pump	Unit Price
Phillips-head Screw Driver 		NDP-P20, NDP-P25 DP-10FE, DP-20FE, DP-38FE	
Flat-head Screw Driver 		DP-F/P, DP-F/C	
Double-Nut for Center Rod 			(*2 pcs required)
	M6 x 1	NDP-5, DP-5F DP-5FE, DP-5FX	
	M8 x 1.25	DP-10, NDP-15 DP-10F, DP-10FE	
	M10 x 1.5	DP-20F, DP-20FE	
	M12 x 1.75	DP-10Fs	
	M14 x 1.5	NDP-20, NDP-25 DP-25F, DP-25FE DP-20Fs	
	M16 x 1.5 (706128)	NDP-40, NDP-50, NDP-80 DP-38F, DP-38FE	
Tool Box 	Metal Construction		

The use of general tools and special tools are specified in the associated AODD Maintenance Manuals

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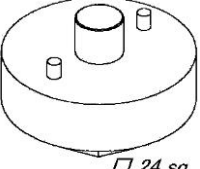
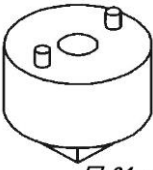
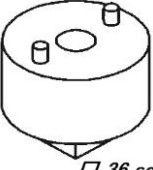
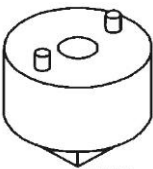
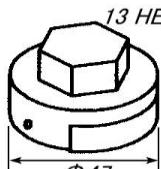
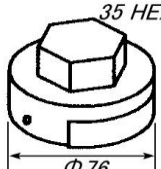
Special Tools

Descriptions	Applicable pump
<p>712606 Pilot Valve Wrench</p> 	<p>DP-10F, DP-20F DP-25F, DP-38F DP-Fs DP-F/P, DP-F/C</p>
<p>713148 Sleeve Remover</p> 	<p>NDP-5, NDP-15 NDP-20, NDP-25 DP-F, DP-FH, DP-Fs DP-F/P, DP-F/C, DP-Fi</p>
<p>713180 Sleeve Remover</p> 	<p>NDP-40/50/80</p>
<p>771132 PP Wrench (*Come with pump except DP-Fi)</p> 	<p>(*2 pcs required)</p> <p>NDP-5, NDP-15 DP-5F, DP-5FH, DP-5FE DP-Fi (*Optional)</p>
<p>771244 PP Wrench (*Come with pump)</p> 	<p>(*2 pcs required)</p> <p>NDP-20BP, NDP-25BP/BV</p>
<p>771868 PP Wrench</p> 	<p>(*2 pcs required)</p> <p>NDP-40BP/BV, NDP-50BP/BV, NDP-80BP DP-10F, DP-20F, DP-25F, DP-38F DP-10FE, DP-20FE, DP-25FE, DP-38FE</p>

The use of general tools and special tools are specified in the associated AODD Maintenance Manuals

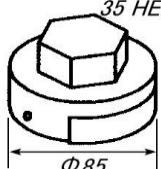
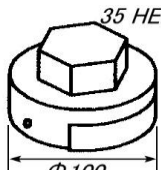
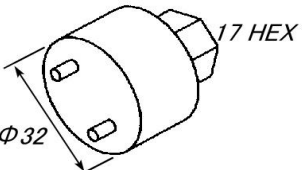
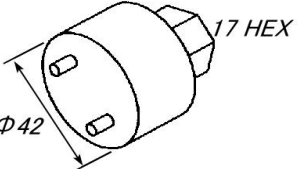
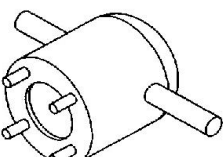
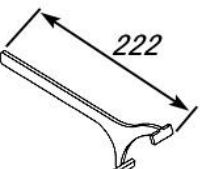
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Special Tools

Descriptions	Applicable pump
<p>803989 Guide Remover</p>  <p>□ 24 sq</p>	<p>DP-20F/N</p>
<p>804014 Guide Remover</p>  <p>□ 24 sq</p>	<p>DP-10F/N</p>
<p>804129 Guide Remover</p>  <p>□ 36 sq</p>	<p>DP-25FE DP-25FE/D, DP-38FE/D DP-25F/N</p>
<p>804131 Guide Remover</p>  <p>□ 24 sq</p>	<p>DP-10FE/D, DP-20FE/D DP-FsE</p>
<p>804307 Torque Wrench Adapter</p>  <p>13 HEX Φ47</p>	<p>DP-5F, DP-5FE</p>
<p>804308 Torque Wrench Adapter</p>  <p>35 HEX Φ76</p>	<p>DP-10F, DP-10FE</p>

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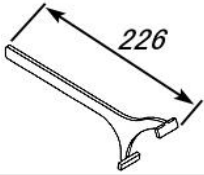
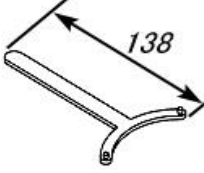
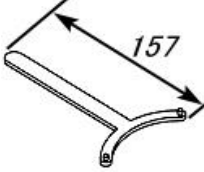
Special Tools

Descriptions	Applicable pump
<p>804309 Torque Wrench Adapter</p> 	<p>DP-20F, DP-20FE</p>
<p>804310 Torque Wrench Adapter</p> 	<p>DP-25F, DP-38F DP-25FE, DP-38FE</p>
<p>832516 Valve Cap Remover (*Come with pump)</p> 	<p>DP-10Fi</p>
<p>832517 Valve Cap Remover (*Come with pump)</p> 	<p>DP-20Fi</p>
<p>832518 Guide Holder Remover</p> 	<p>DP-Fi</p>
<p>832802 Ring Wrench</p> 	<p>DP-10Fs DP-10FsE DP-10Fi/□/H</p>

The use of general tools and special tools are specified in the associated AODD Maintenance Manuals

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Special Tools

Descriptions	Applicable pump
<p>832803 Ring Wrench</p> 	<p>DP-20Fs DP-20FsE DP-20Fi/□/H</p>
<p>832804 Support Ring Wrench</p> 	<p>DP-10Fi/□/H</p>
<p>832805 Support Ring Wrench</p> 	<p>DP-20Fi/□/H</p>

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