

ASV60 Service Manual

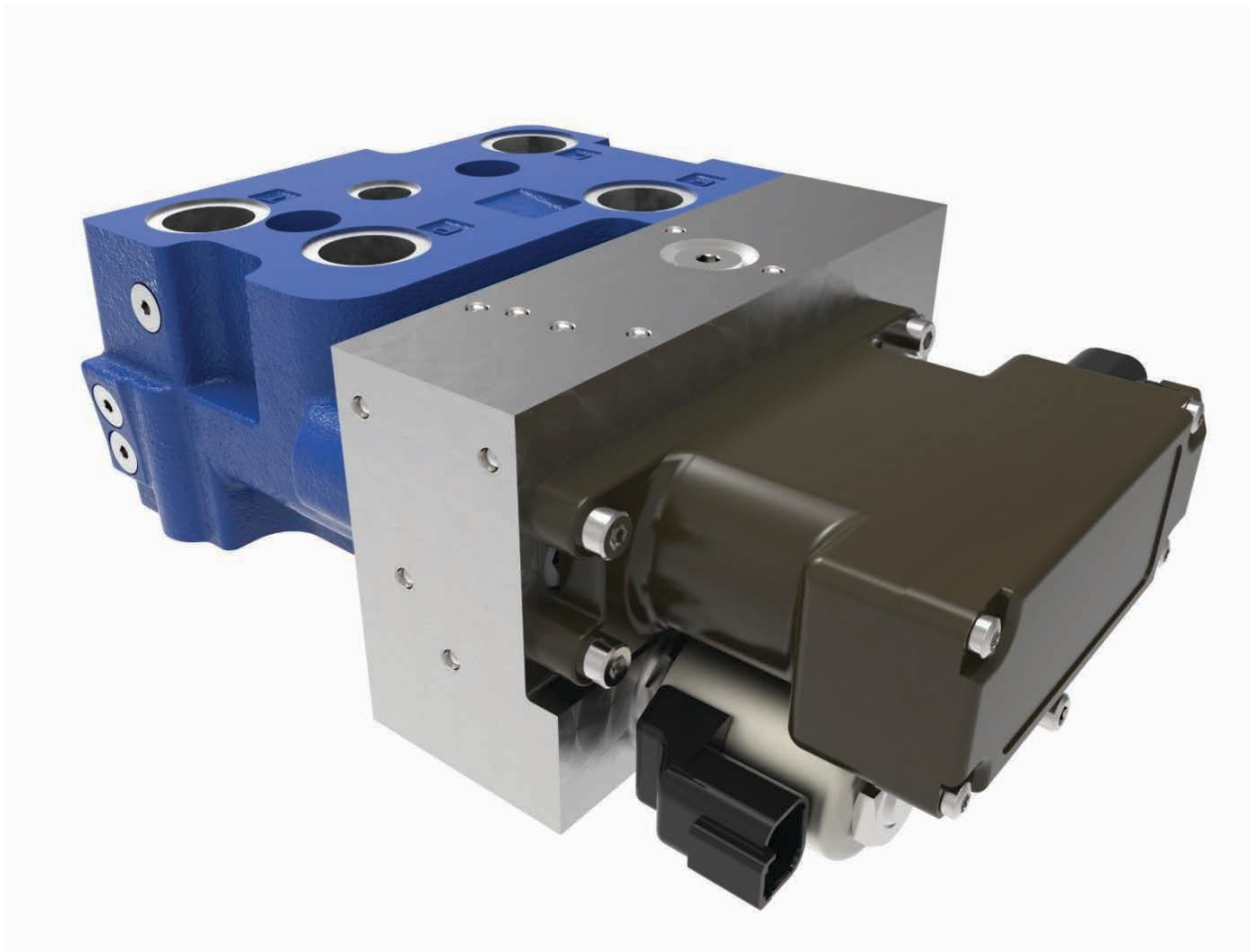


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Introduction

Document scope

This document provides information for servicing ASV60 valves.

- Serviceable parts and spare part list
- Assembly torque information

Safety considerations

 Before commencing, ensure that the individual performing the service has proper training and tools for servicing a ASV60 valve.

If the valve is mounted below the tank, service oil may leak when any valve is removed.

Additional resources: ASV60 User Manual

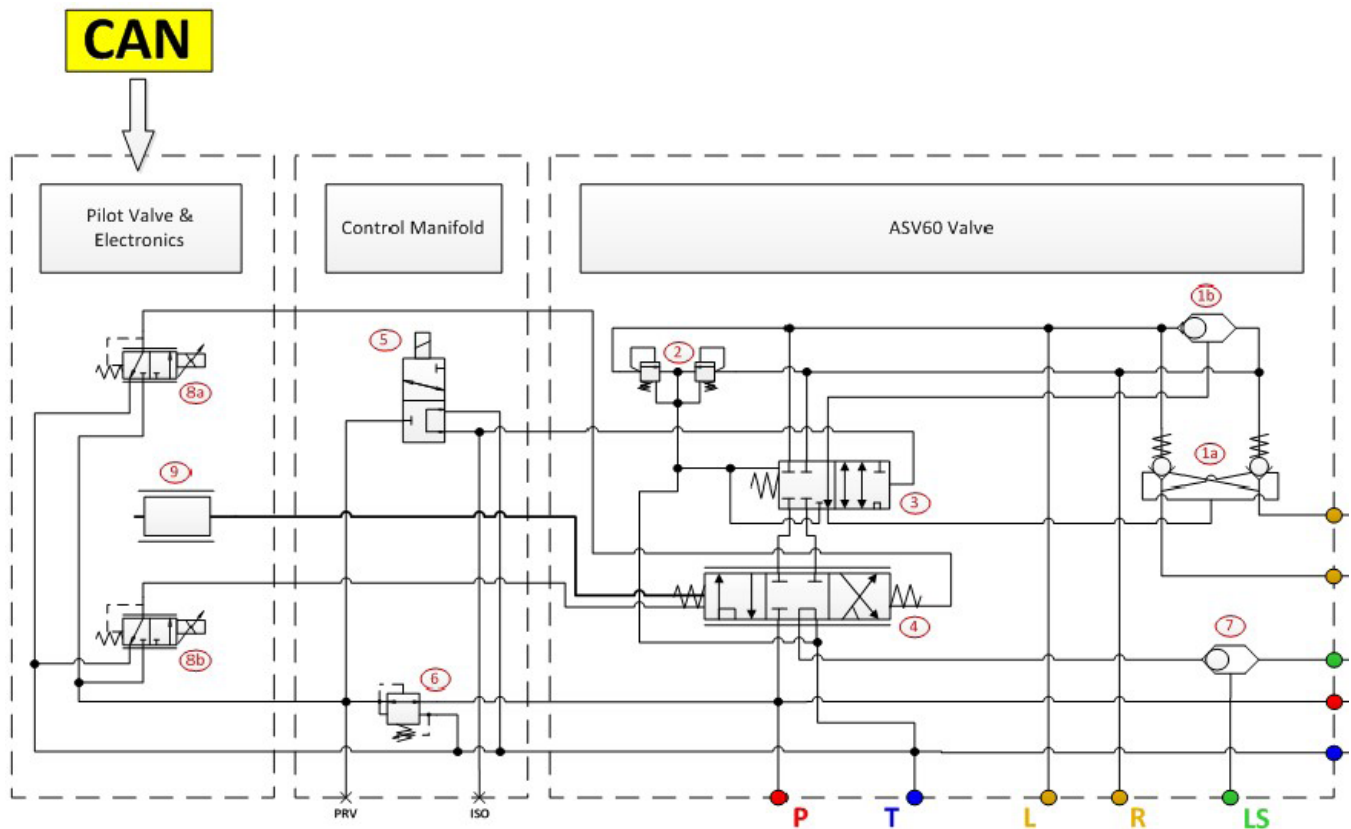
ASV60 advanced steering valve

Principal of operation:

The ASV60 is a two-stage proportional valve. The main valve is a closed-center, load sense which is designed to supply proportional flow to the steering application with high accuracy and ~zero hysteresis. An isolation spool is used which "isolates" the main-stage spool from the work ports. It is normally closed and piloted (to open) by an on/off solenoid valve. During normal operation, the isolation valve must remain actuated to ensure flow can be delivered to and from the work ports. By removing power to the "mode select valve" the isolation valve can be closed at any time

allowing for the isolation of the main-stage spool from the steering cylinder(s).

ASV60 will communicate with any CAN-enabled controller. The standard interface with the vehicle controller is CAN J1939. The inclusion of CANbus communication and an onboard spool position sensor yields high precision flow control.



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|---|--|
| 1. Load reaction switching valve (Optional) | 6. Pressure reducing valve (Pilots) |
| 2. Cylinder port relief valves | 7. Load sense shuttle valve |
| 3. Isolation valve | 8. Proportional pressure reducing valves |
| 4. Main stage valve | 9. Redundant LVDT spool sensor |
| 5. Mode select valve (Externally powered) | |

ASV60 Technical specifications:

Pressures

Rated inlet (P Port)	210 Bar (3045psi)
Max work ports (L & R Ports)	250 Bar (3625 psi)
Max tank (T Port)	21 Bar (305 psi)

Flow @ 14bar control pressure

ASV60X1	30 lpm (7.9 gpm)
ASV60X2	45 lpm (11.9 gpm)
ASV60X3	60 lpm (15.9 gpm)

Port types

P, L, R, T	3/4" - 16 UNF (SAE-08), G 1/2, M18
LS	7/16" -20 UNF (SAE-04), G 1/4, M12

Temperature*

Standard oil (operating)*	-30 to 90°C (14 to 194°F)
Ambient (operating)	-30 to 95°C (-22 to 203°F)
Ambient short term (operating)	-30 to 105°C (-22 to 221°F)

* It is recommended that the ASV60 valve is not be subjected to a thermal difference of greater than 50°F (28°C).

Viscosity

Recommended	12-85 cSt
Minimum	7 cSt
Maximum	812 cSt

Filtration

ISO 4406	18/16/13
Pilot valve filter screen	125µm

Electromagnetic protection

EC Directive	EMC Directive 2014/30/EC
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Electrical environmental**

Ingress protection	ISO 20653: IP6k6/IPX9K
Thermal cycling	-30°C to 95°C (-22 to 203° F) for 1200 cycles
Mechanical shock	Half-sine pulse: 40 G / 6 ms (IEC 60068-2-27 Ea)

** Additional Electrical Environmental tests were performed. Contact Eaton for additional details, if desired.

Random vibration***

Standard	IEC 60068-2-64:2008
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Actuation command options

Pilot valve flow command	CAN / PWM
Isolation valve command	PWM

Control modes

Open loop command	+/- 100% current
Closed loop command	+/- 100% flow

Electrical

Input voltage	12VDC (9-16 VDC) 24VDC (18-32 VDC)
Power/Current consumption	Pilot Valve – 25 W Max Mode select valve Solenoid – 15.8 W Max
CAN Interface	J1939, 2.0B

Electrical interface connectors

Pilot valve connector	Deutsch connector: DT14-6P
Solenoid valve connector	Deutsch connector: DT04-2P

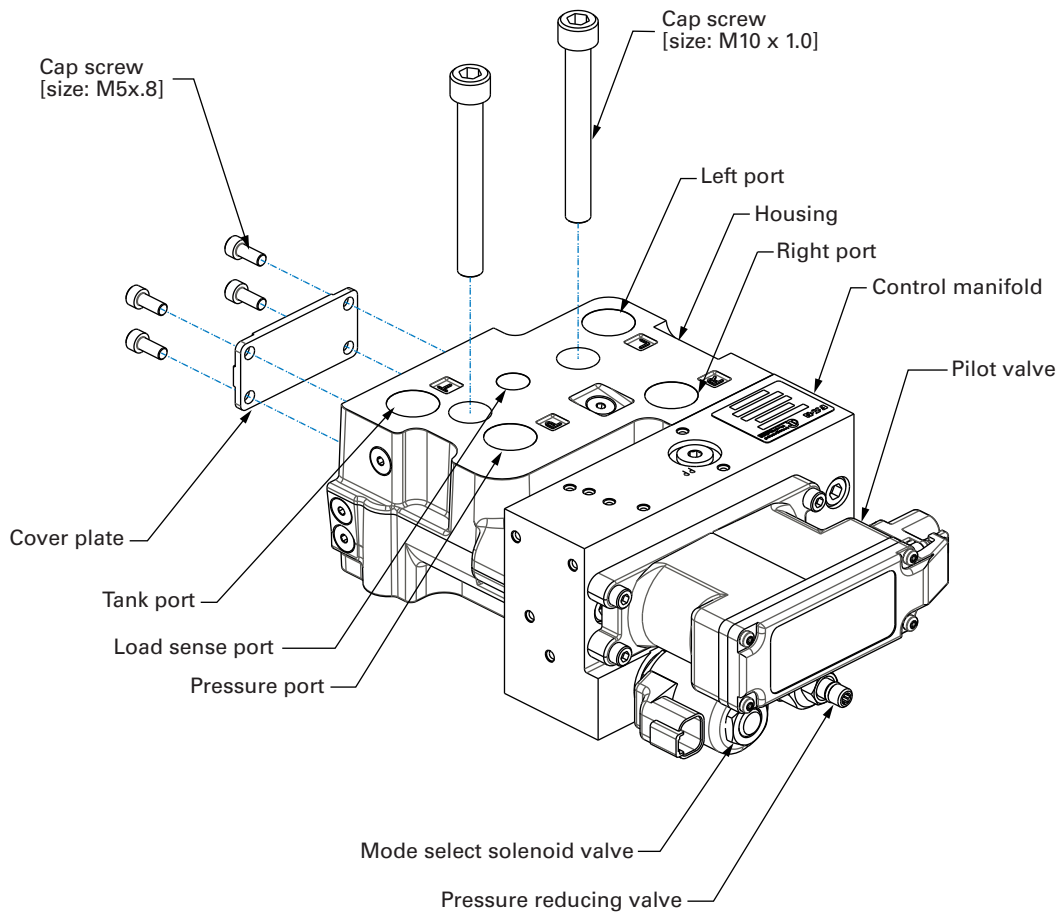
Dynamic performance

Typical step response	Max: 200 msec (Neutral to 90% of main spool position)
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Weight

Standard version (ASV60 only)	8 kg (17.6 lb)
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ASV60 Valve assembly and component details



Port options:

Main ports	SAE	Metric	BSP
Ports: Pressure, Tank, Left & Right	3/4-16 UNF O-RING PORTS (SAE-8)	M18x1.5 -6H METRIC O-RING PORTS	G1/2 STRAIGHT THREAD PORTS
LS Port:	7/16-20 UNF LOAD SENSING O-RING PORT (SAE -4)	M12 X 1.5-6H LOAD SENSING METRIC O-RING PORT	G 1/4 (BSP) LOAD SENSING STRAIGHT THREAD PORT

Spare parts list

Spare parts

- Seal kit
 - ASV60 Valve & cover plate Interface.....9901403-000
 - SCU or Back-up manifold Interface.....9901404-000
- Mounting cap screw
 - Size: M10 x 1.0.....14621-004
 - Size: M5 x .8.....473723

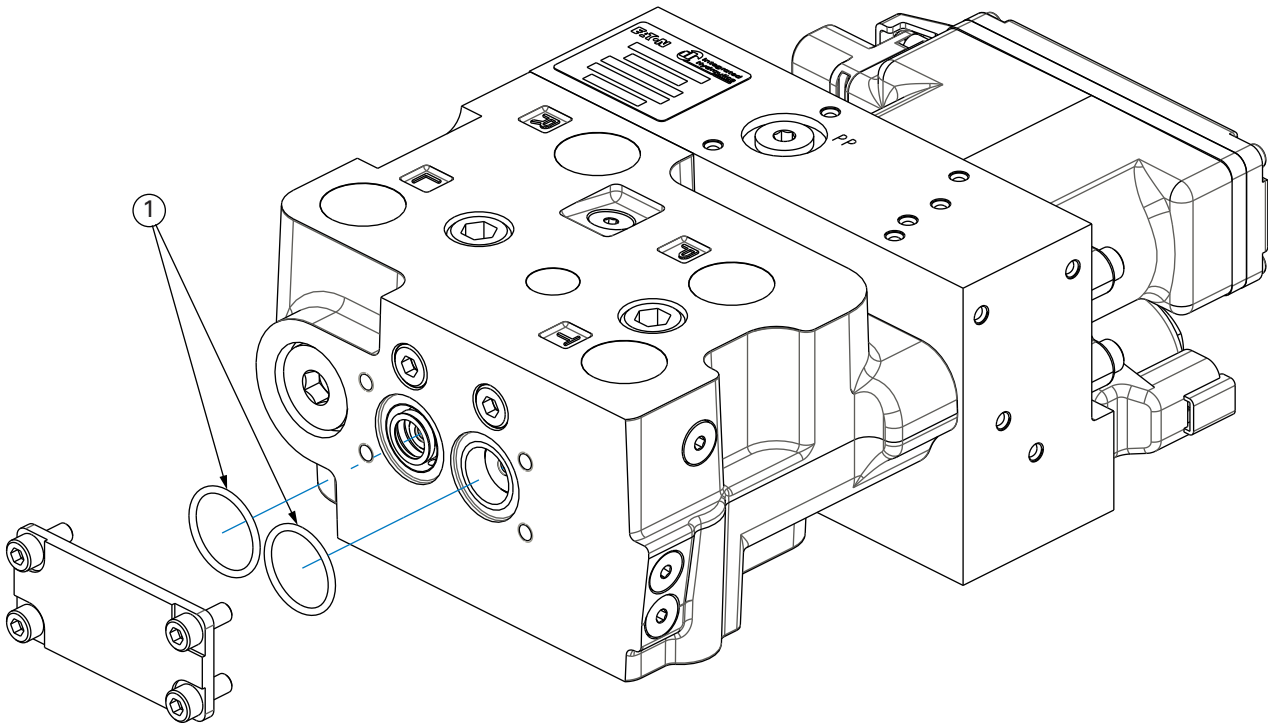
Note: Valve require air bleeding (actuate the main spool left and right at 0.02 to 0.05 Hz for 5 minutes or until no air remains in the system) after replacement of any seals.

Seal kits

ASV60 Valve & cover plate interface Seal kit

ASV60 Valve & cover plate – seal kit – 9901403-000

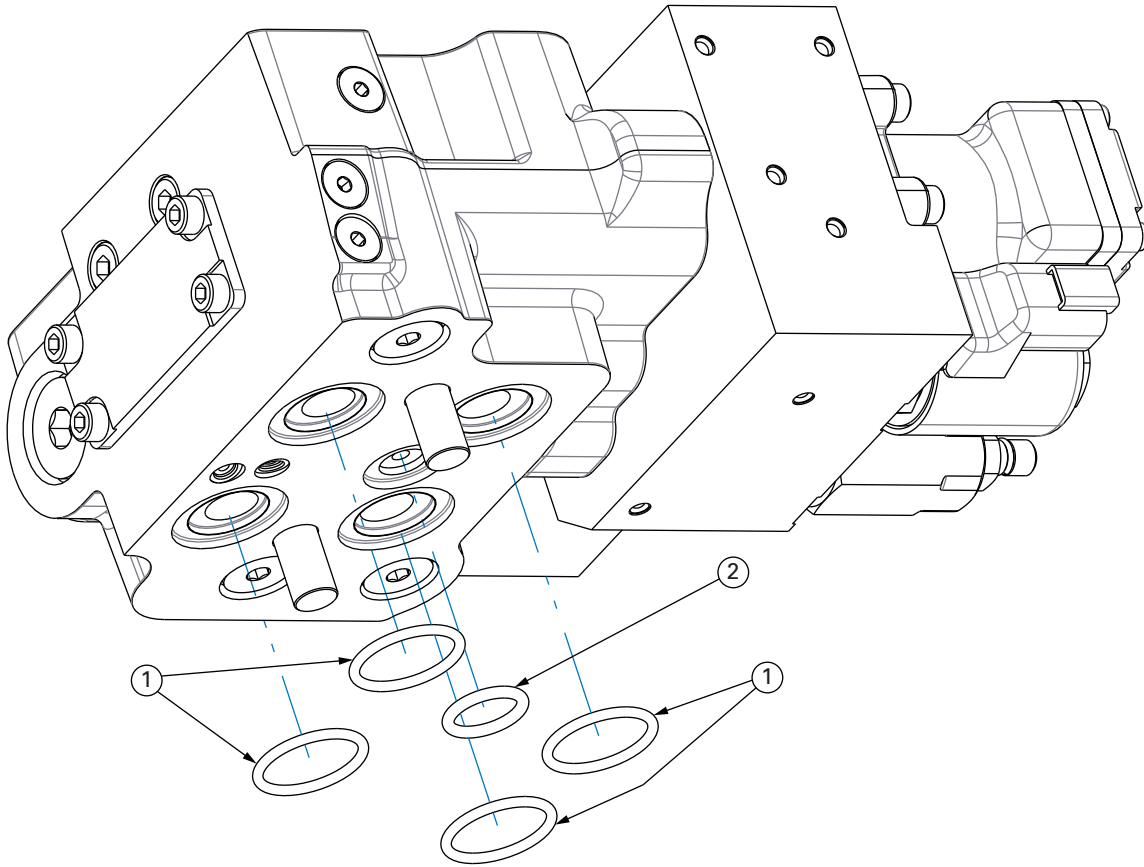
Item number	Part number	Material/ Size	Durometer	Quantity
1	16015-7	Nitrile (Buna N) / -019	70	2



SCU or Manifold interface - seal kit

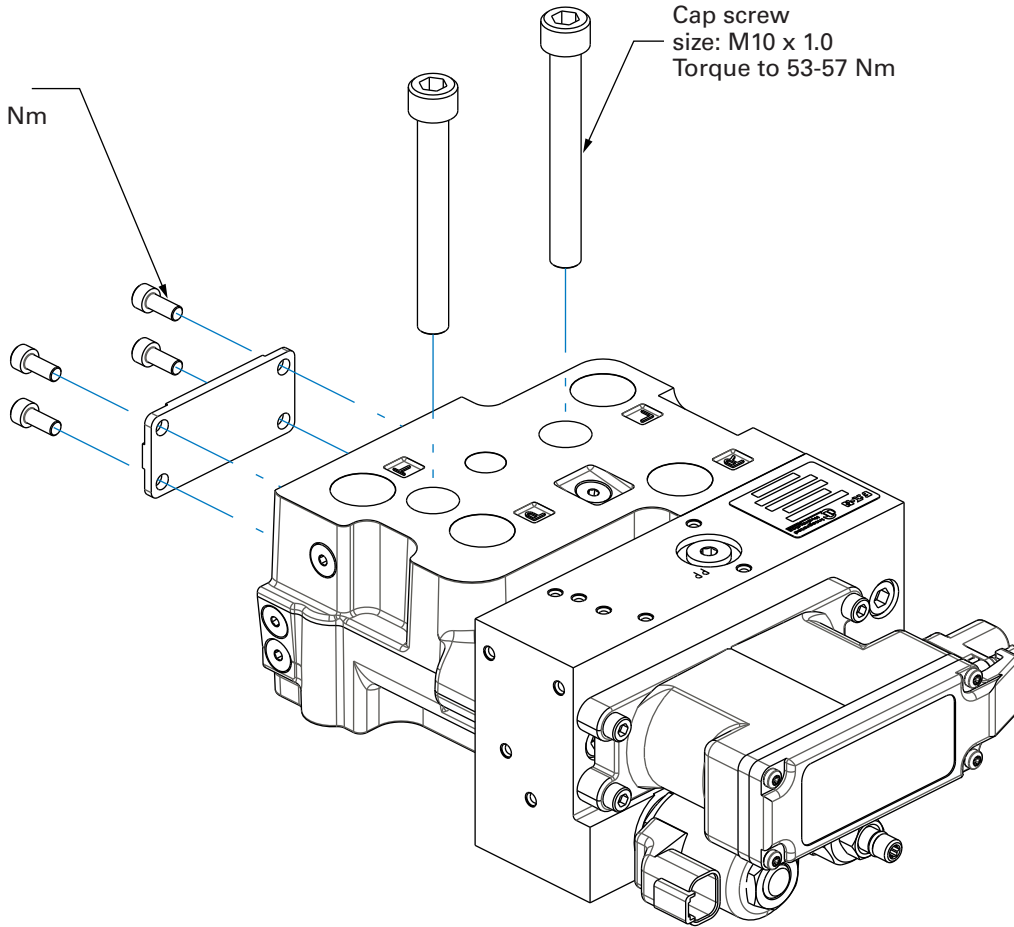
SCU Or manifold interface – seal kit – 9901404-000

Item number	Part number	Material/ Size	Durometer	Quantity
1	16015-18-90	Nitrile (Buna N) / -118	90	4
2	16003-11-90	Nitrile (Buna N) / -113	90	1



Assembly torque specification

Cap screw
size: M5 X .8
Torque to 8-11 Nm



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