CARDEV®

SDUH350UW-S

Subsea By-pass Oil Filter

User Guide

Installation Guidelines for Hydraulic Systems

Introduction

As every installation is slightly different, it is not possible to provide definitive step-by-step installation instructions. Please find below some notes on installation principles. If you have any doubt over the installation of your CARDEV by-pass filter, please seek technical advice from your authorised CARDEV distributor before commencing installation.

Installation Example 1

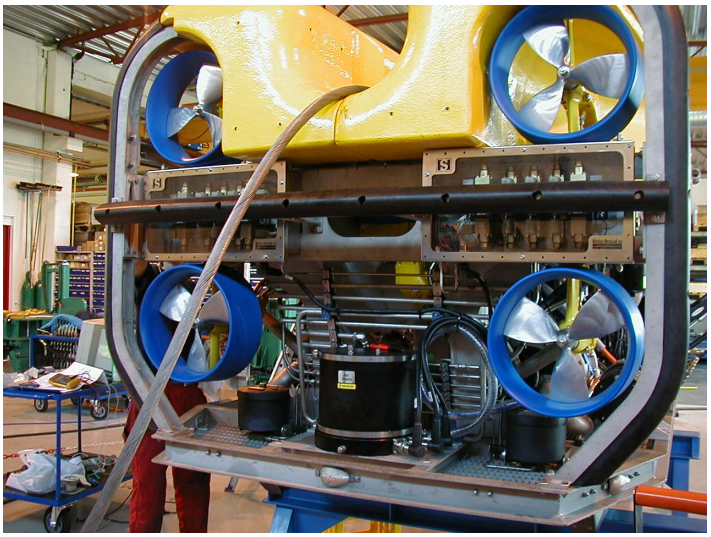
Installation Example 2

Positioning the Unit

(see illustration example on page 5).

The bracket provided can be used in multiple positions to suit the area of installation. The following must be considered when choosing a place to mount the filter:

- The filter housing should be mounted vertically.
- The filter housing should be mounted as close as possible to the return point (ideally this is the hydraulic tank or the crank case in motor installations.) This will minimise back pressure – especially useful on cold starts.
- Space must be allowed above the filter housing to enable change of the filter element.
- Do NOT mount the filter on an area prone to vibration, such as the engine / gearbox.
- Ideally the filter will be fitted to the chassis or frame of the machine, or on the hydraulic tank.
- Ensure the filter housing does not impede operation of the machine in any way (moving parts, inspection covers etc
- CARDEV by-pass filter is ONLY to be installed as a by-pass filter.



Installation Example 3

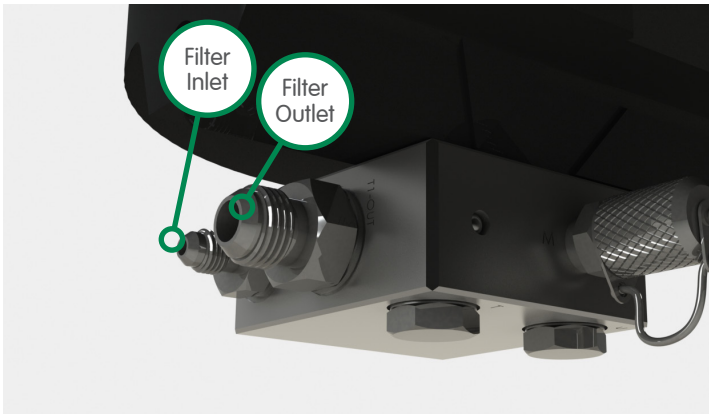
Oil feed to filter

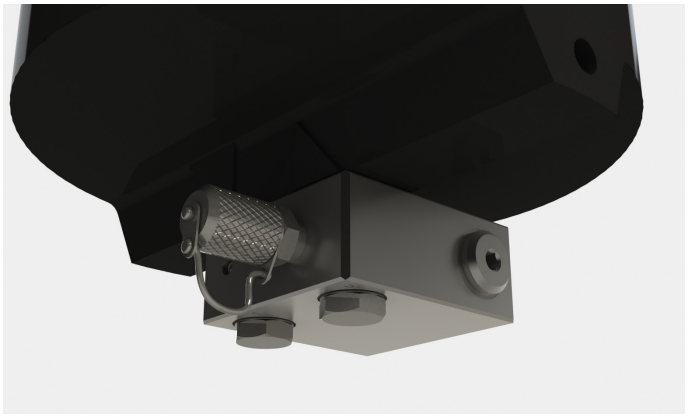
The oil feed needs to be between 5 and 350 bar and it should be a continuous pressure. The ideal circuits are servo / control or oil cooler.

Fitting a shut off valve in the feed line to the filter is good practice to avoid oil spillage during filter-cartridge change. Especially, if the filter housing is mounted below system-tank-level.

The feed line should not be greater in size than ¼" / 6mm (Internal diameter).

Hydraulic hoses/pipes and fittings should be appropriately rated for the installation.





Return line from filter

When possible the return line should go pressureless direct to the oil tank. If an existing return line has to be used, avoid any that can be subject to pressure spikes or restrictions on cold start.

If the oil tank is pressurised, fitting a non-return valve in the line avoids the need to depressurise the tank for filter element changes.

The return line should be as short as possible, avoiding 90 degree fittings and any other possible sources of back pressure.
The internal diameter of the return line should be a minimum of 3/8" / 10 mm, in any case the return line should be wider than the feed line!

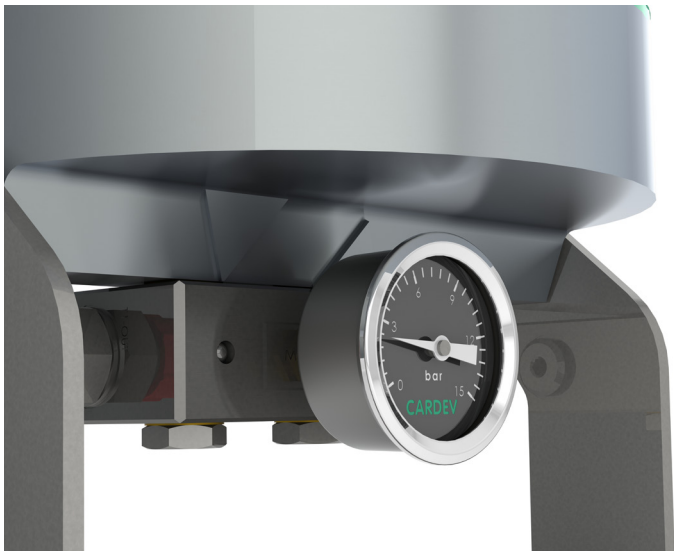
Especially on Subsea ROVs, some customers connect a remote pressure gauge to the sample port on the valve block generally in a location so that a camera can observe operating pressures.

Testing

Ensure all connections are made and secure. Start the engine/ system and check for oil leaks.

If a pressure gauge is fitted take note of the pressure; on start-up or after filter cartridge change it is normal for pressure to rise to 5-6 Bar. After a short period of operation, as temperature increases and oil viscosity reduces, the pressure should drop down to the normal operating pressure for the installation – typically this will be 2.5-3.5 Bar.

If the unit is fitted with a test point in place of the gauge fit an appropriately rated test gauge to the point (0 -14 bar is ideal).



Fault finding

No pressure on the gauge

- Make sure shut off valve in the feed line is open (if fitted).
- Check that the oil feed point chosen has pressure.

If the feed line has pressure to the control valve, check that the orifice in the flow cartridge is not blocked, this can happen if dirt has entered the feed line during installation.

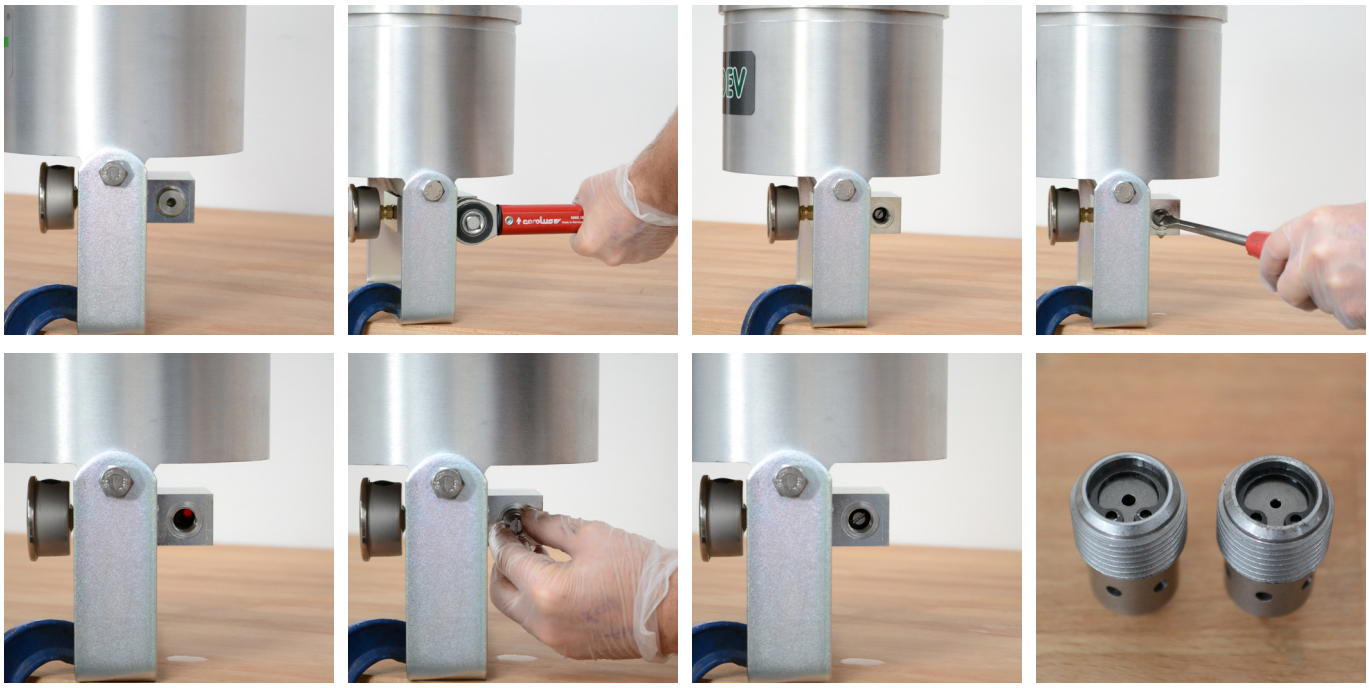
(see procedure below for checking flow control valve)

Unit over pressures

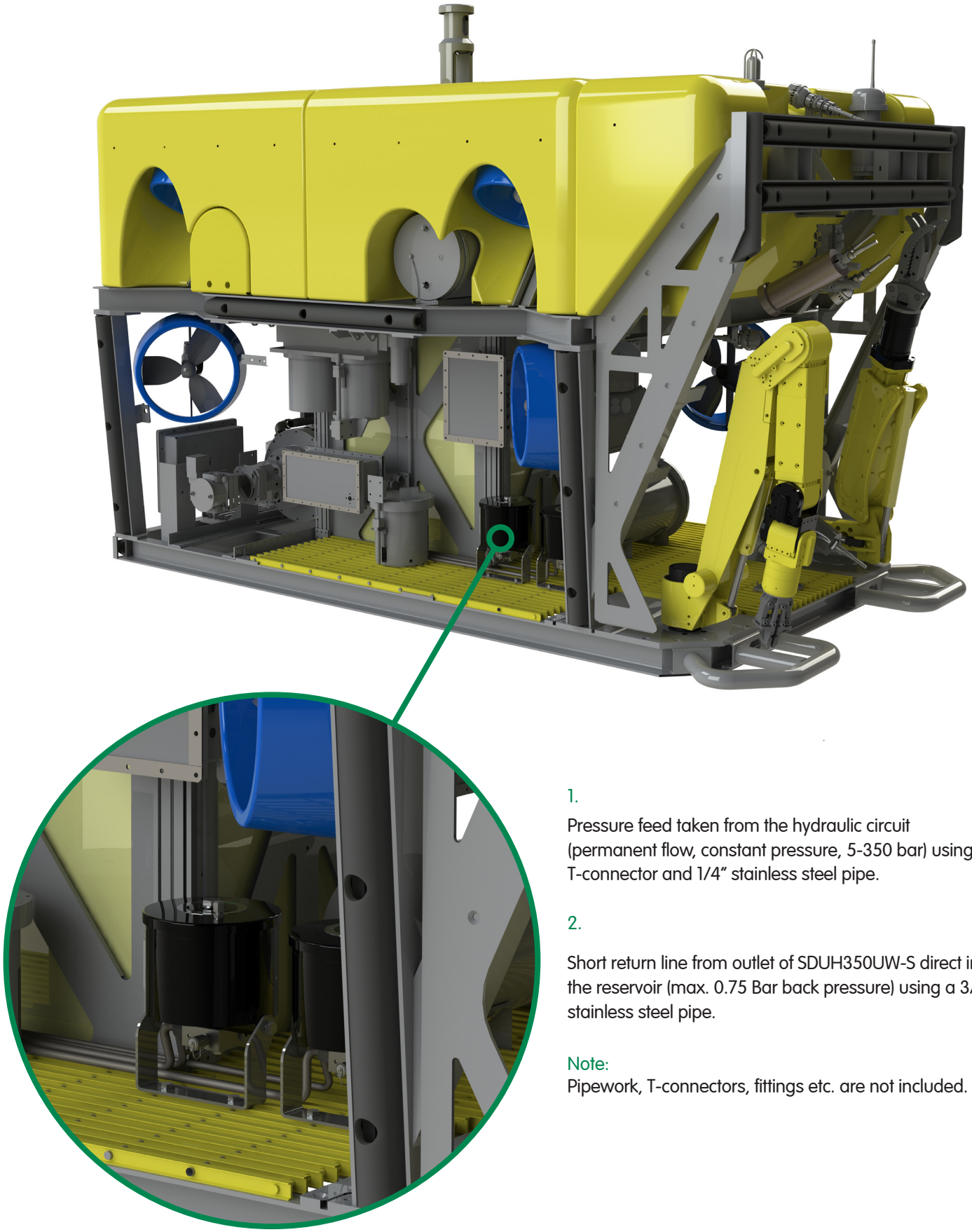
- The pressure in the filter housing (shown on the gauge if fitted or via the sample point and an external gauge) should never exceed 8 Bar. If the pressure goes above this, STOP the machine immediately to avoid damaging the unit.
- Check the return line for obstruction and correct fitment.
- If a non return valve is fitted check the valve for operation and orientation.

How to check flow control valve

- Open the round cover on the right hand side of the valve block with a 8mm Allen-key.
- Unscrew the flow control valve. Check for any visible contamination, clean the nozzle with e.g. petrol / pressurized air or change the valve.
- Close the cover again and check for tightness and oil leakage.



Installation Example



1.

Pressure feed taken from the hydraulic circuit (permanent flow, constant pressure, 5-350 bar) using a T-connector and 1/4" stainless steel pipe.

2.

Short return line from outlet of SDUH350UW-S direct into the reservoir (max. 0.75 Bar back pressure) using a 3/8" stainless steel pipe.

Note:
Pipework, T-connectors, fittings etc. are not included.

IMPORTANT NOTICE

Installation should only be undertaken by competent engineers.
Appropriate Personal Protective Equipment (PPE) must be worn at all times.

Filter Element Change Procedure

- Switch off machinery / system / closes stop cock valve at the inlet (If installed).
- CAUTION –
  Burn Hazard! Oil, filter housing and element can be very hot.
- Remove lid by unscrewing lid nut.
- Remove filter element using filter removing straps.
- Slightly lift and twist the element as indicated in pictures.
- Let the remaining oil train into the filter housing.
- Replace the SDFC filter cartridge with a new one.
- Replace the gasket, which comes with the filter element.
- Check bonded seal (SEAL-BND-1-2-1).
- Replace lid and screw the lid nut hand-tight .
- Torque down with max. 50 Nm.
- Open the stop cock valve.
- Start machine / system and check for oil leaks.
- Check oil level gauge, if necessary top up with clean fresh oil

See page 4 for testing procedure

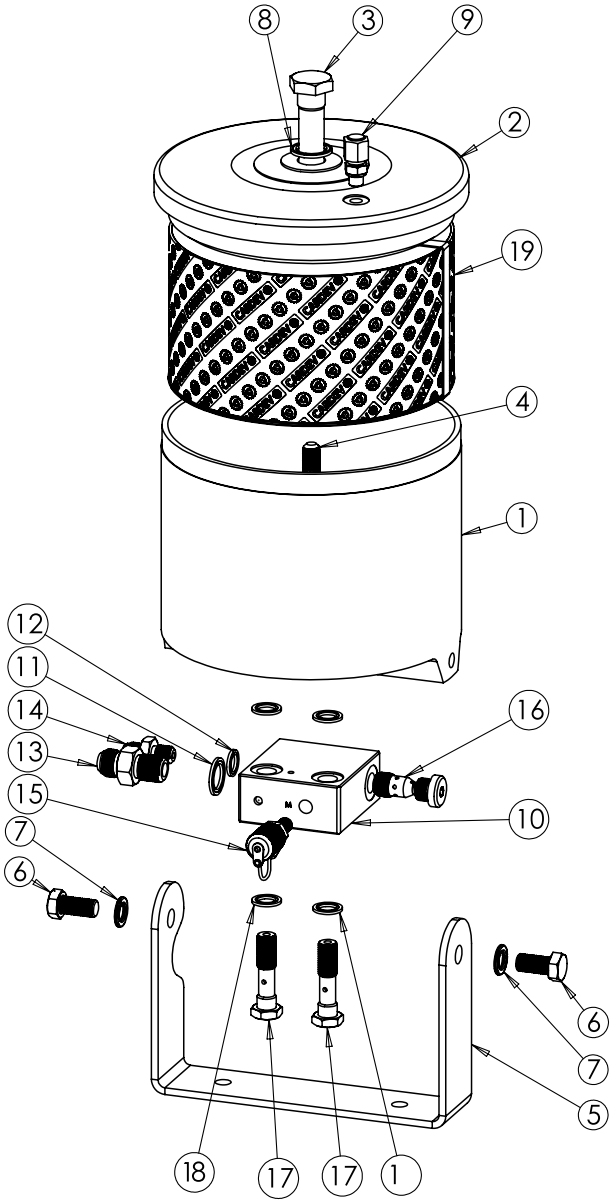
Recommended Filter Element Change Interval

- For subsea applications (e.g. ROV, TMS, IHPU) it is recommended to check moisture levels of the hydraulic oil after each dive using a particle detector with integrated moisture sensor or a permanently installed inline subsea moisture sensor. As soon as moisture levels increase the filter element should be changed.

IMPORTANT NOTICE

Do not remove the outer sleeve and observe the correct direction (see picture 3)

Exploded Parts Diagram



Item No	Part Number	Qty
1	FLT-HSG-SDU-F1272-ANO	1
2	FLT-CVR-SDU-F1273-ANO	1
3	NUT-BLND-M12-F1246	1
4	STD-M12-120	1
5	BKT-MTG-SDU-F1539-SS-1	1
6	SCW-HEX-M12 x 25-SS	2
7	WHR-SPSQM12SS	2
8	SEAL-BND-1/2-1	1
9	VLV-VNT-1/8NPTSS	1
10	VLV-BLK-SS-2	1

Item No	Part Number	Qty
11	SEA-BND-M18-1	1
12	SEA-BND-M12-1	1
13	ADP-3/4JM18-4-SS	1
14	ADP-7/16JM12-4-SS	1
15	ADP-TP-1/8MSS	1
16	VLV-FC-3/8-2L	1
17	BLT-BA-1/4-SS	2
18	SEA-BND-1/4-1	4
19	FLT-ELE-SDFC-C	1

IMPORTANT NOTICE

Part 10 is supplied as an assembly consisting of parts: 11, 12, 13, 14, 15, 16, 17 and 18.

Recommended Installation	Flow rate through filter (l/h) **	Dimensions (mm)			Connections		Weight (kg)	Filter Type	Retention Capacity (per filter)	
		H	W	L	Inlet	Outlet			Dirt (kg)	Water (l)
BY-PASS ONLY. Max. 350 bar inlet and 0.75 bar back pressure. Systems up to 400 litres	120	308	237	217	7/16-UNF - 20TPI JIC (Male) -4 JIC	3/4-UNF - 16TPI JIC (Male) -8 JIC	9.4 (approx. 3.1kg in water)	SDFC	≤ 2.5	≤ 0.78
					Valve block inlet port M12 x 1.5 (f)	Valve block outlet port M18 x 1.5 (f)				

**flow rates based on ISO 46 oil @ 40°C

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