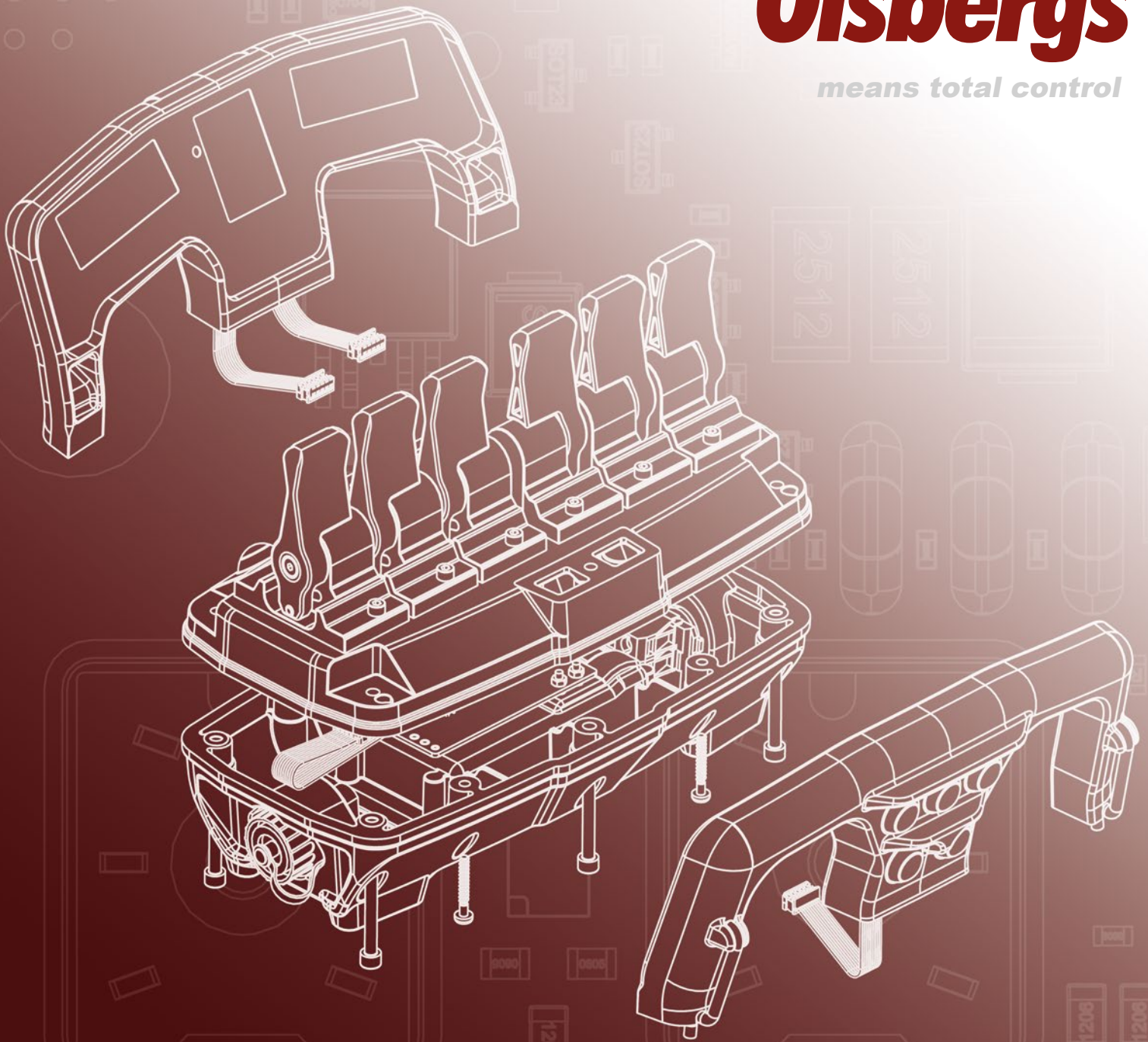


Olsbergs

means total control



Olsbergs Control Systems Electronics



Products and spare parts



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Subject to change in case of printing errors.

Radio and hand controller in the MultiDrive 2 system

Olsbergs radio remote control system has been developed to provide operators with continual feedback via displays. The hand controller's standard menu selection system utilises the displays to provide the operator with real time information about the chosen menu, battery status, reception conditions etc.

The hand controller contains a two-way communication radio enabling information to be sent to and from the controller. The radio decoder contains a corresponding unit to handle traffic at the other end.

The hand controller utilises bluetooth radio and operates in the 2.4GHz band, which is a free band that has been approved practically worldwide. This means that no license is needed and the radio can be used in principle everywhere including over national boundaries.

The side displays show the symbol for the function each lever activates in the chosen menu. When the operator changes menu, the symbols change to the functions that become active.

The centre display provides information about which menu has been chosen, as well as indicating the radio reception conditions, battery status, fault information, micro, manual extension and so on.



SAFETY PHILOSOPHY

The control system fulfils stringent safety requirements in terms of reliability and operational safety.

The products are designed and CE-marked in accordance with machinery directive 2006/42/EG, category 4 for emergency stopping of movements and category 3 for protection against unintended movement when all levers are in neutral position.

Display and D3 Joystick in the MultiDrive 2 system

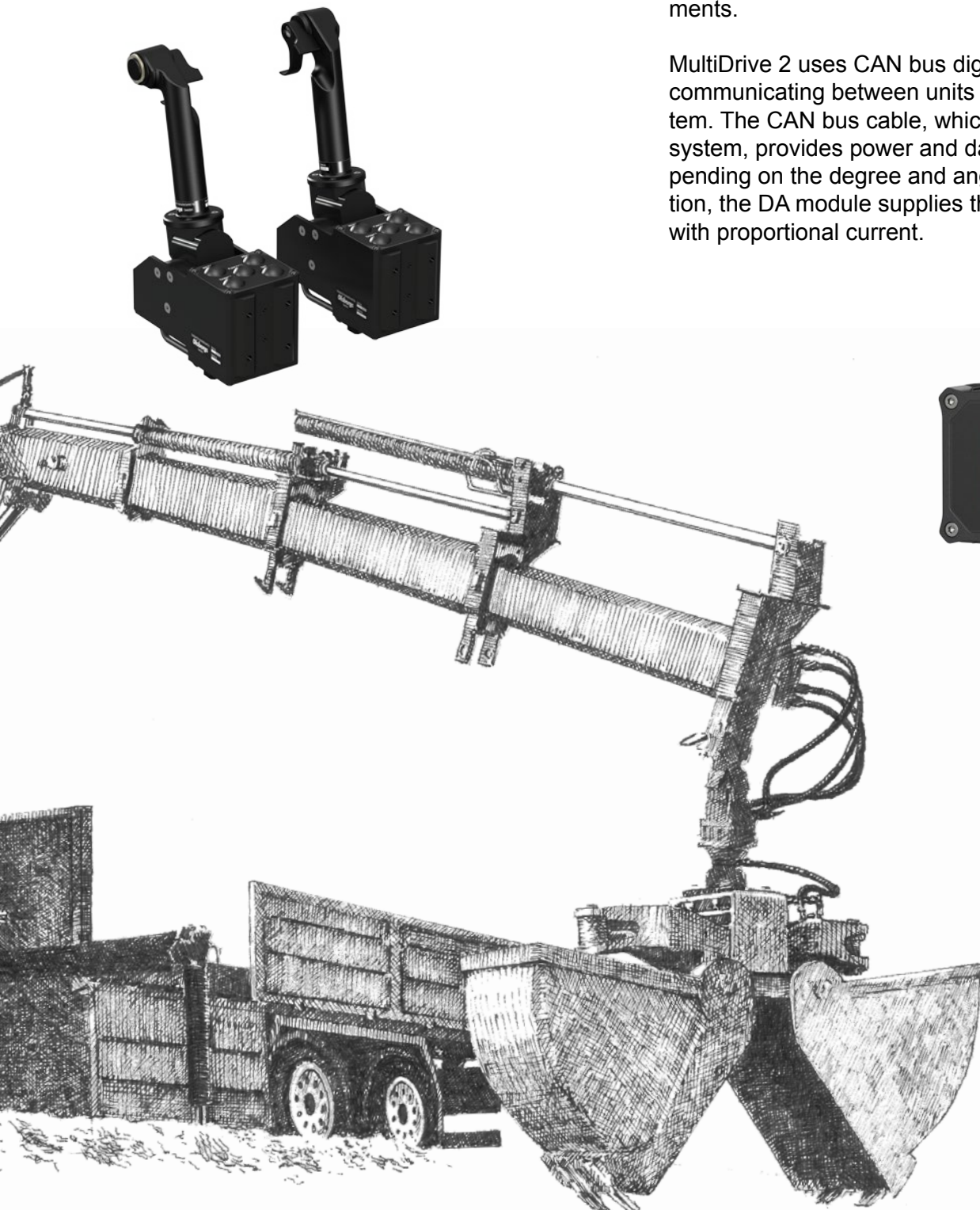
Productivity and driver convenience are at the heart of the Olsberg MultiDrive 2 control system. The system responds to driver inputs with speed and precision. Sometimes there's a need to creep slowly forward before quickly switching, under controlled conditions, to full speed.

With its three way proportional joysticks, an ergonomic design and a special feel combined with Olsberg's new generation Q300 and Q200 load-sensing valves, the company has created a system to satisfy even the most demanding driver.

By using buttons located on the three way joysticks and clear, graphic symbols on the system display, up to five individual driver profiles can be easily set up to create optimal conditions for each one to work efficiently in.

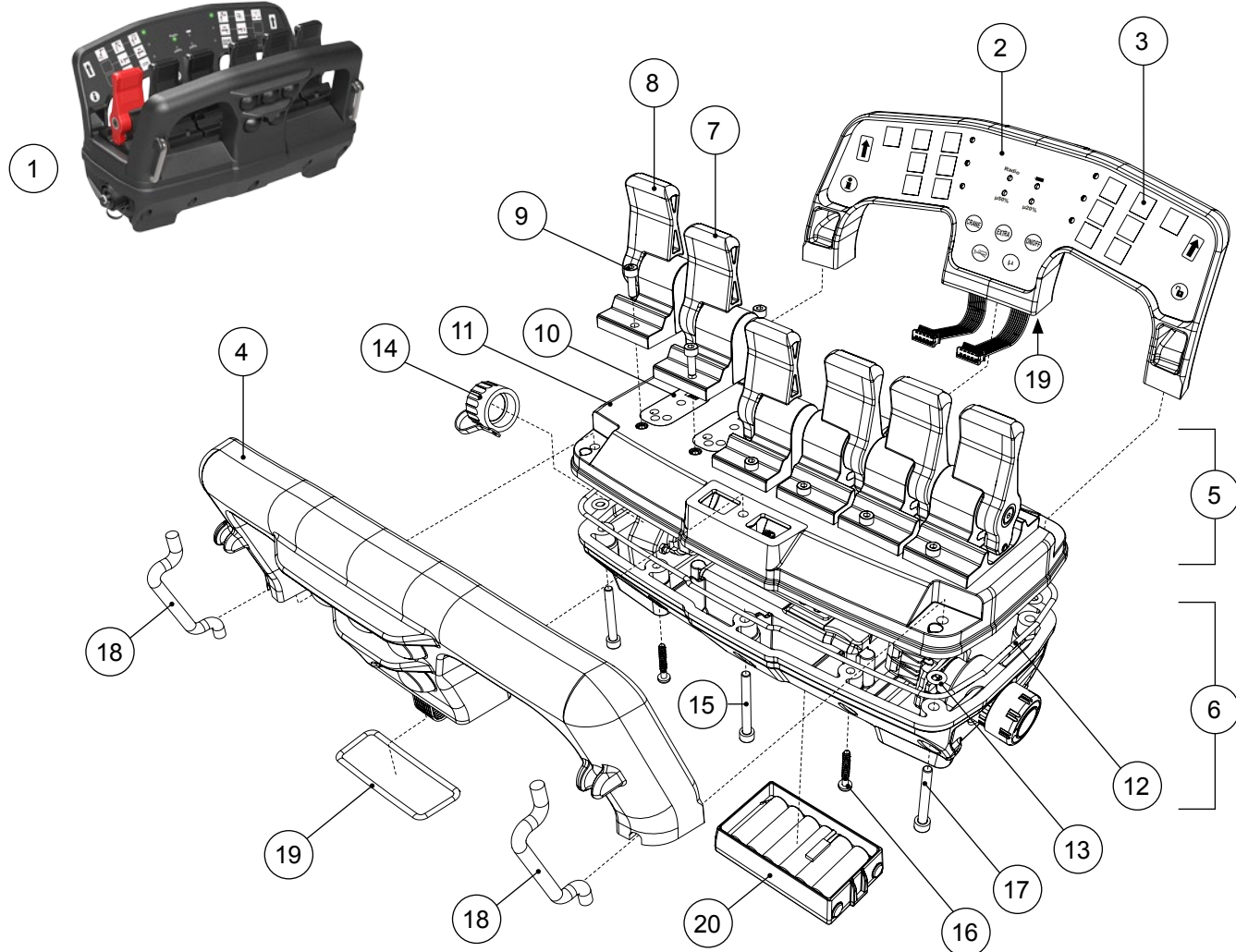
Drivers set their own preferences regarding maximum speed and damping (delay) not only for each direction of the crane's various functions, but also with different settings for e.g. raising and lowering movements. Damping determines how softly the crane responds to the three way joystick's movements.

MultiDrive 2 uses CAN bus digital technology for communicating between units in the control system. The CAN bus cable, which runs through the system, provides power and data protocols. Depending on the degree and angle of joystick actuation, the DA module supplies the valve solenoid with proportional current.



Controller Basic 6F MD2

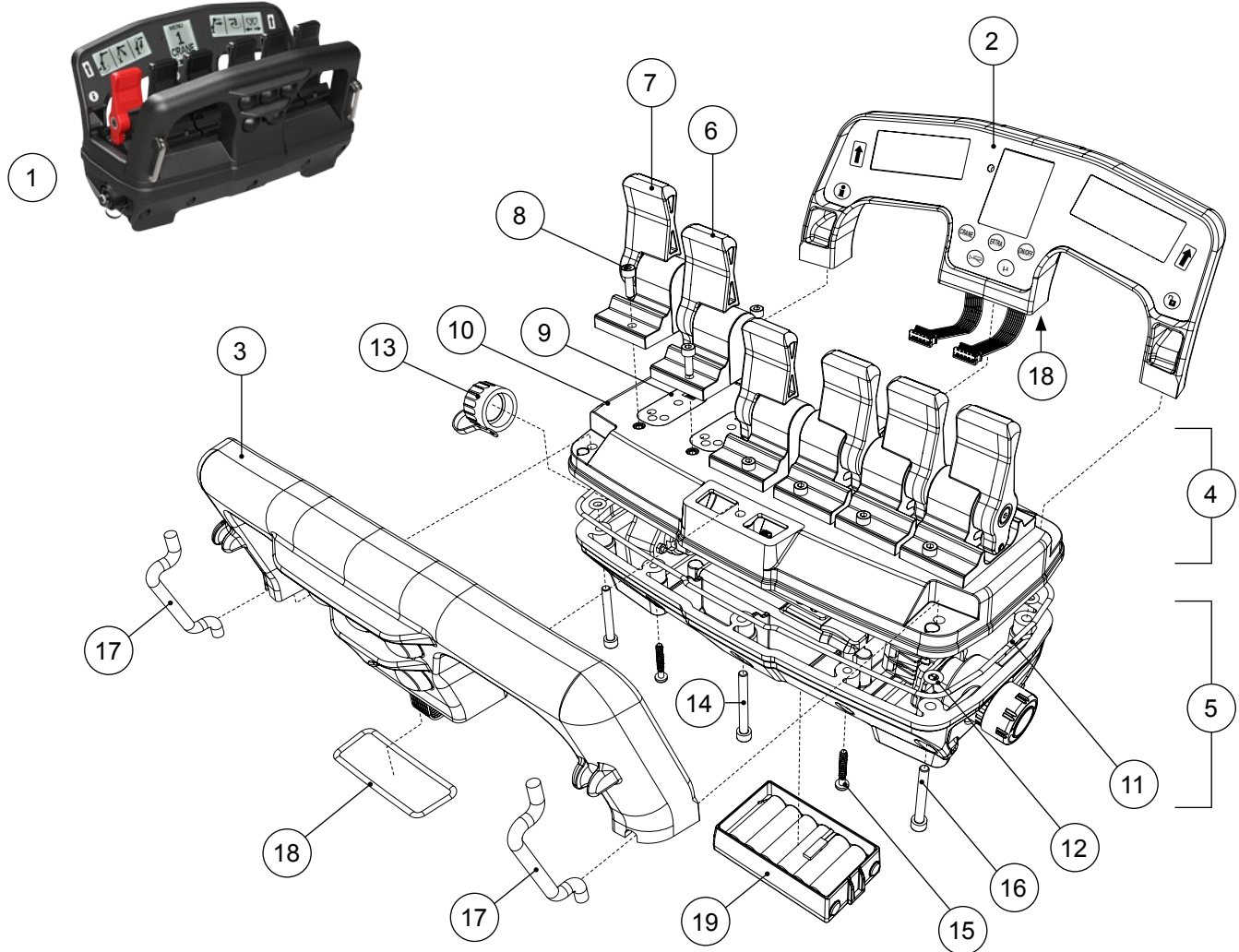
Spare parts



Pos.	Part no.	Description	Note
1	1218B	Controller Basic 6F MD2	
2	E1235	Handle diode, Controller Basic 6F MD2	Incl. symbol sign
3	E1284	Symbol sign, Controller Basic 6F MD2	Symbol label supplied on a separate sheet
4	E1390	Handle push button, controller 6F MD2	
5	E1198	Top module, controller 6F MD2	Incl. levers
6	E1200	Bottom module, controller 6F MD2	Incl. stop button, contact chassis and cap
7	0498	Lever black	Incl. screws and gasket
8	0499	Lever red	Incl. screws and gasket
9	S2831	Screw MC6S FT M4x12 A4-70 Black nickel plated	
10	E0447	Gasket 44,6x21,4x2 Silicone red	
11	E1197	Top box, controller 6F MD2	Excl. levers
12	S2920	O-ring 224x2,62 NBR 70	
13	S2939	O-ring 6x2 NBR 70	
14	S2532	Cap, controller	
15	S0238	Screw MC6S M5x45 A4-70 Black nickel plated	
16	S2938	Screw TPPT T40x25 FZB	
17	S2912	Screw MC6S M5x40 A4-70 Black nickel plated	
18	E1377	Attachment carrier strap MD2	
19	S2940	O-ring 45x2 NBR 70	
20	1201	Battery NiMH 7.2V	

Controller Display 6F MD2

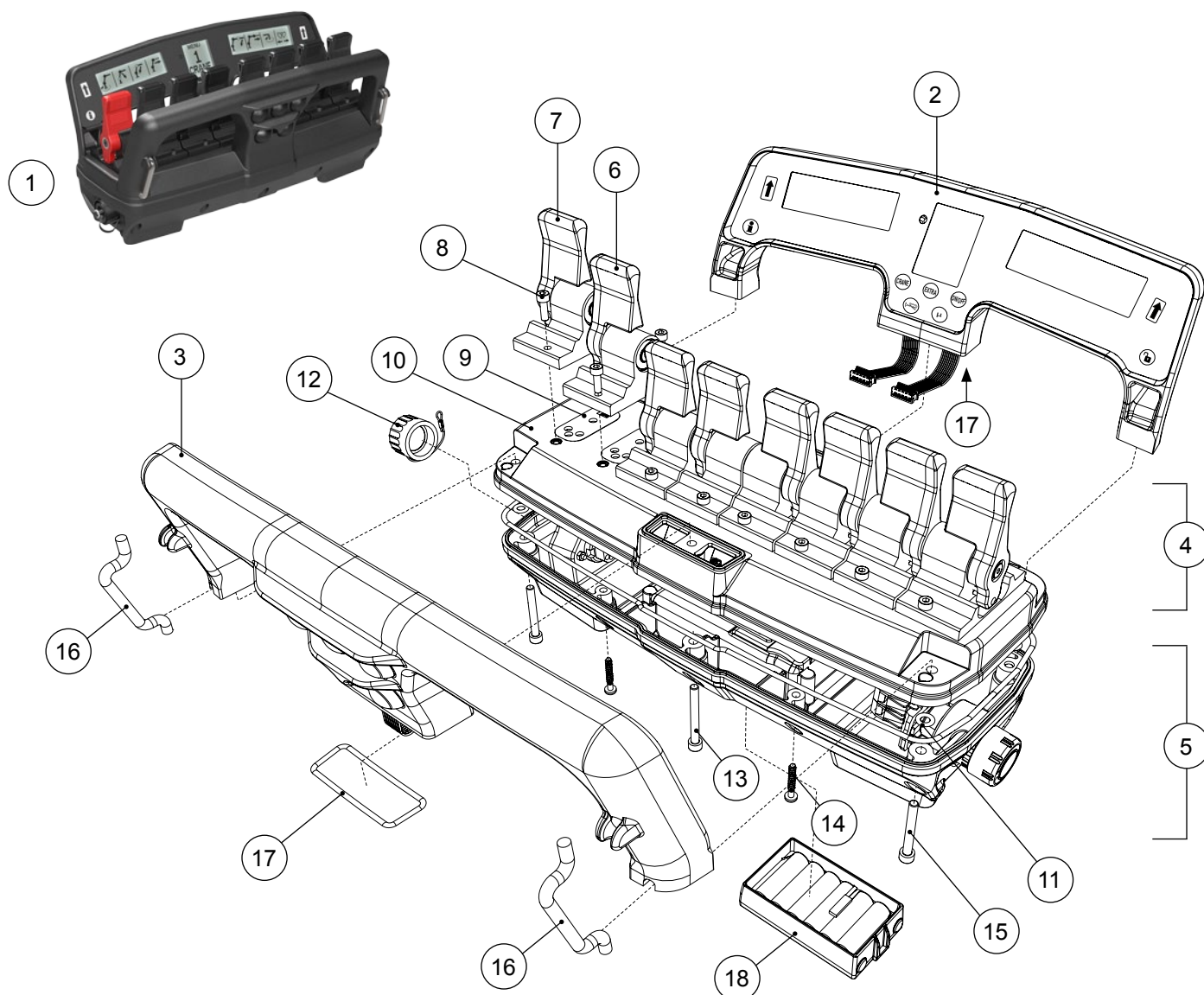
Spare parts



Pos.	Part no.	Description	Note
1	1218	Controller Display 6F MD2	
2	E1193	Handle display, Controller Display 6F MD2	
3	E1390	Handle push button, controller 6F MD2	
4	E1198	Top module, controller 6F MD2	Incl. levers
5	E1200	Bottom module, controller 6F MD2	Incl. stop button, contact chassis and cap
6	0498	Lever black	Incl. screws and gasket
7	0499	Lever red	Incl. screws and gasket
8	S2831	Screw MC6S FT M4x12 A4-70 Black nickel plated	
9	E0447	Gasket 44,6x21,4x2 Silicone red	
10	E1197	Top box, controller 6F MD2	Excl. levers
11	S2920	O-ring 224x2,62 NBR 70	
12	S2939	O-ring 6x2 NBR 70	
13	S2532	Cap, controller	
14	S0238	Screw MC6S M5x45 A4-70 Black nickel plated	
15	S2938	Screw TPPT T40x25 FZB	
16	S2912	Screw MC6S M5x40 A4-70 Black nickel plated	
17	E1377	Attachment carrier strap MD2	
18	S2940	O-ring 45x2 NBR 70	
19	1201	Battery NiMH 7.2V	

Controller Display 8F MD2

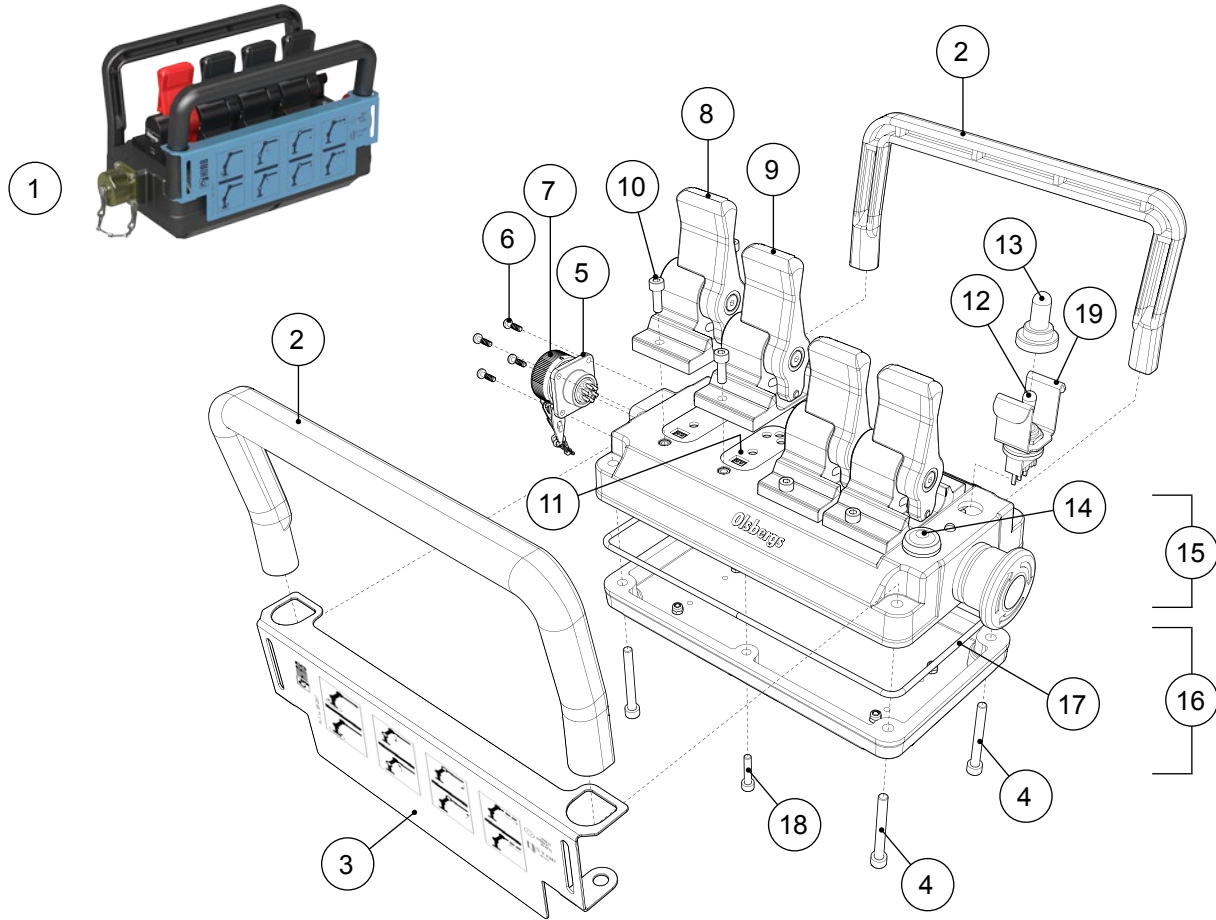
Spare parts



Pos.	Part no.	Description	Note
1	1287	Controller Display 8F MD2	
2	E1370	Handle display, Controller Display 8F MD2	
3	E1371	Handle push button, controller 8F MD2	
4	E1372	Top module, controller 8F MD2	Incl. levers
5	E1373	Bottom module, controller 8F MD2	Incl. stop button, contact chassis and cap
6	0498	Lever black	Incl. screws and gasket
7	0499	Lever red	Incl. screws and gasket
8	S2831	Screw MC6S FT M4x12 A4-70 Black nickel plated	
9	E0447	Gasket 44,6x21,4x2 Silicone red	
10	E1369	Top box, controller 8F MD2	Excl. levers
11	S2939	O-ring 6x2 NBR 70	
12	S2532	Cap, controller	
13	S0238	Screw MC6S M5x45 A4-70 Black nickel plated	
14	S2938	Screw TPPT T40x25 FZB	
15	S2912	Screw MC6S M5x40 A4-70 Black nickel plated	
16	E1377	Attachment carrier strap MD2	
17	S2940	O-ring 45x2 NBR 70	
18	1201	Battery NiMH 7.2V	

Controller Cable 4F MD S&S

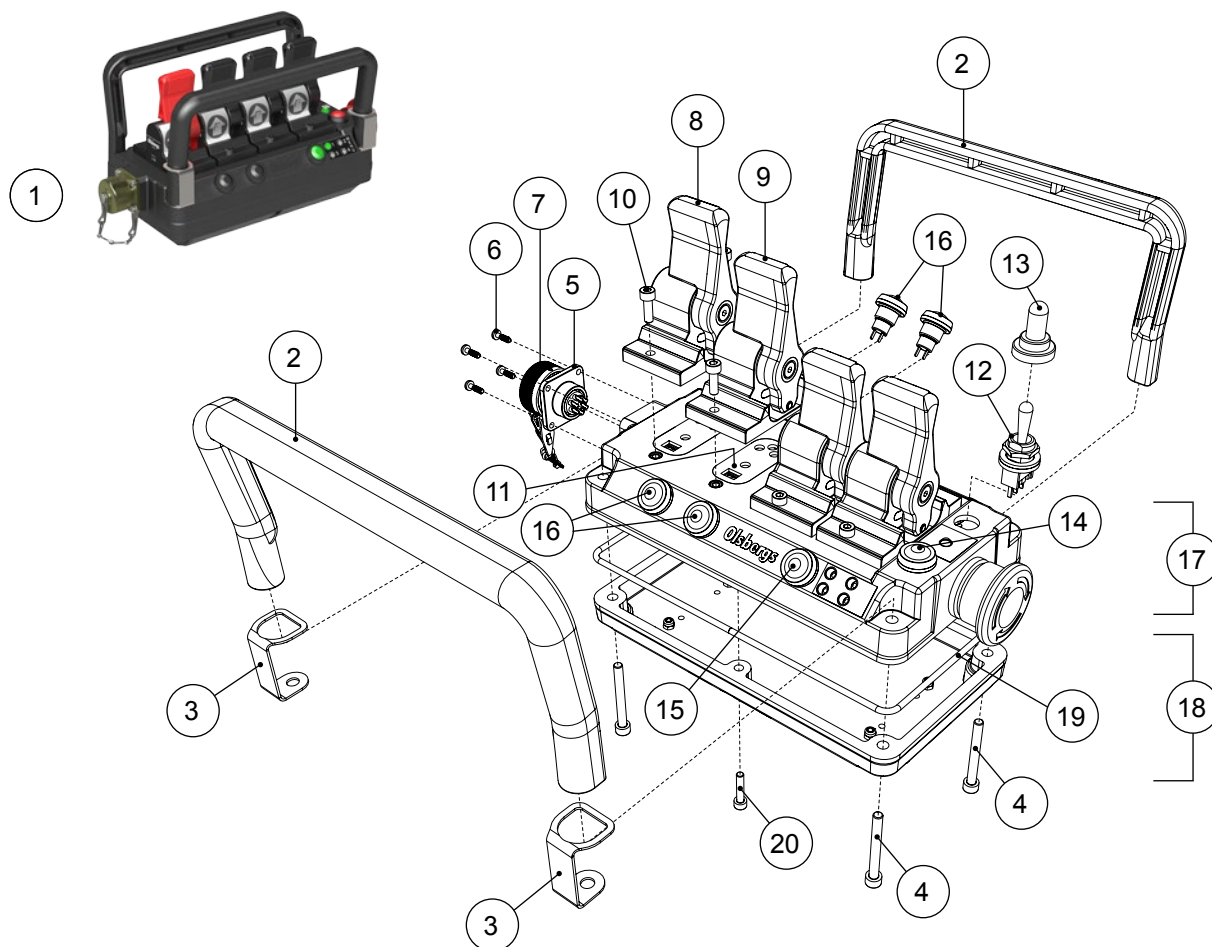
Spare parts



Pos.	Part no.	Description	Note
1	1211	Controller Cable 4F MD S&S	
2	E0996	Arch, controller 4F MD	Incl. attachments
3	E1137	Symbol sign, functions	
4	S0238	Screw MC6S M5x45 A4-70 Black nickel plated	
5	S2813	Contact chassis	
6	S2654	Screw TPPT T30x10 A2	
7	S2818	Cap, controller MD	
8	0499	Lever red	Incl. screws and gasket
9	0498	Lever black	Incl. screws and gasket
10	S2831	Screw MC6S FT M4x12 A4-70 Black nickel plated	
11	E0447	Gasket 44,6x21,4x2 Silicone red	
12	S1618	Toggle switch, tri-state	
13	S1620	Rubber cover	
14	S2416	Push button red	
15	E1114	Top box, controller cable 4F MD S&S	Excl. arch, attachments and levers
16	E1113	Bottom box, controller 4F MD	
17	S2803	O-ring 180x3 NBR 70	
18	S1776	Screw MC6S FT M4x20 A4-70 Black nickel plated	
19	E1133	U-profile, micro-switch	

Controller Cable 4F MD K

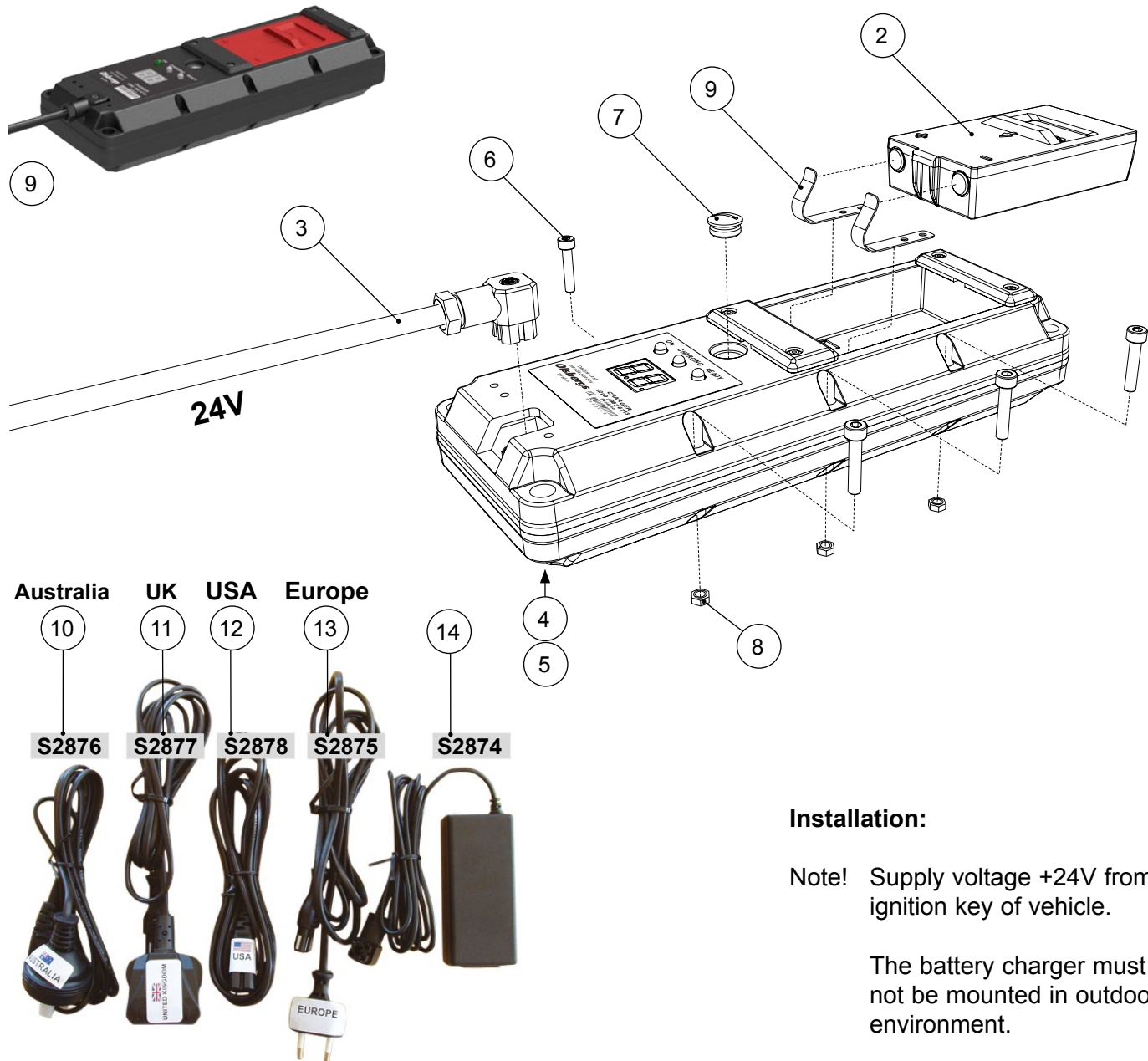
Spare parts



Pos.	Part no.	Description	Note
1	1211K	Controller Cable 4F MD K	
2	E0996	Arch, controller 4F MD	Incl. attachments
3	E0461	Attachment carrier strap MD	
4	S0238	Screw MC6S M5x45 A4-70 Black nickel plated	
5	S2813	Contact chassis	
6	S2654	Screw TPPT T30x10 A2	
7	S2818	Cap, controller MD	
8	0499	Lever red	Incl. screws and gasket
9	0498	Lever black	Incl. screws and gasket
10	S2831	Screw MC6S FT M4x12 A4-70 Black nickel plated	
11	E0447	Gasket 44,6x21,4x2 Silicone red	
12	S1618	Toggle switch, tri-state	
13	S1620	Rubber cover	
14	S2416	Push button red	
15	S2418	Push button green	
16	S2414	Push button black	
17	E1114-K	Top box, controller cable 4F MD K	Excl. arch, attachments and levers
18	E1113	Bottom box, controller 4F MD	
19	S2803	O-ring 180x3 NBR 70	
20	S1776	Screw MC6S FT M4x20 A4-70 Black nickel plated	

Battery charger NiMH 7.2V

Spare parts



Installation:

Note! Supply voltage +24V from ignition key of vehicle.

The battery charger must not be mounted in outdoors environment.

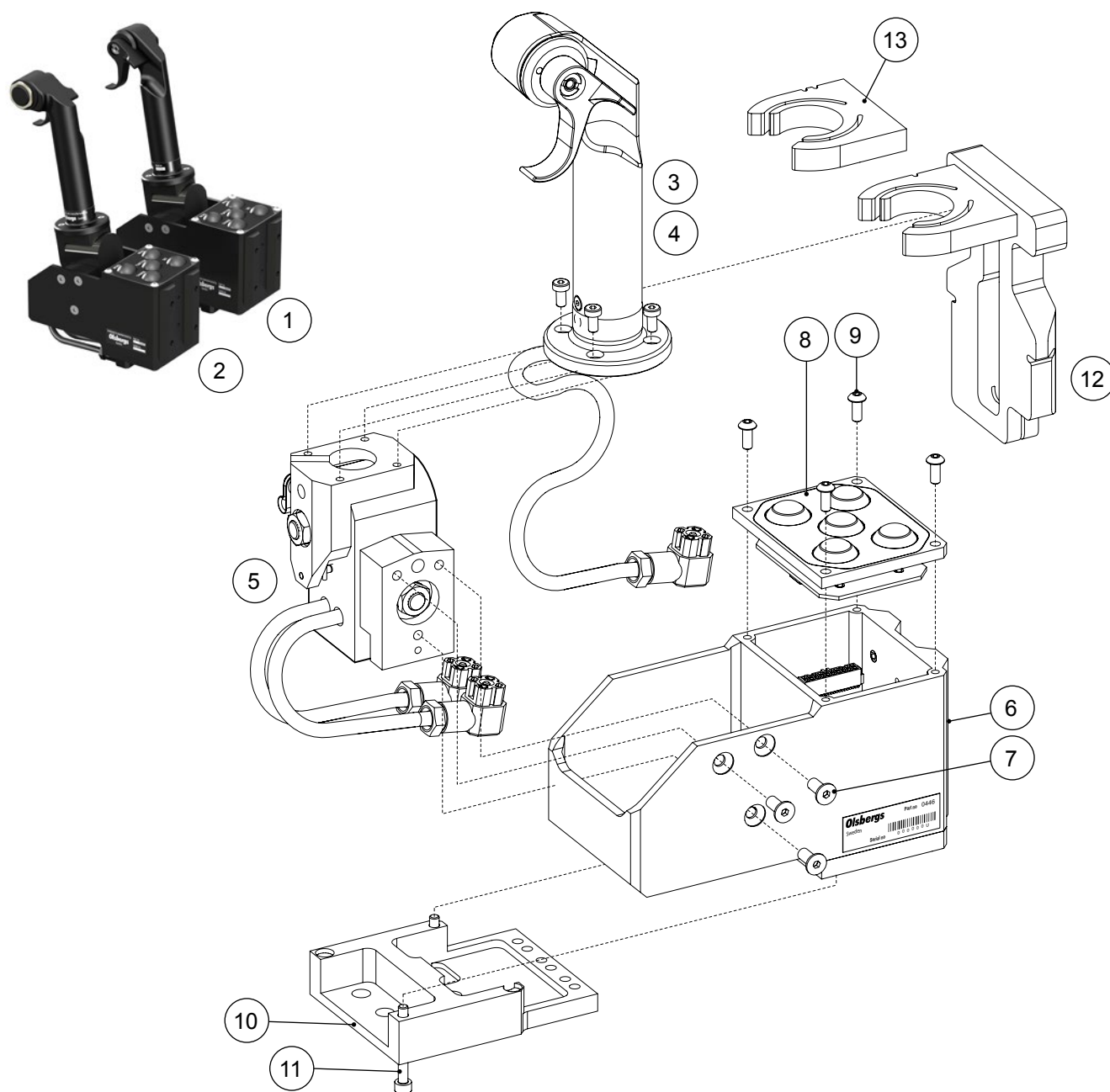
Pos.	Part no.	Description	Note
1	1200	Battery charger NiMH 7.2V	Incl. cable, screw and spacing tube
2	1201	Battery NiMH 7.2V	
3	E0723	Cable (2x0,5 mm²) 5.0 m	
4	S2005	Screw RXS PH B8x50 A4	
5	S2341	Spacing tube DRM 4380x20 charger	
6	S1776	Screw MC6S FT M4x20 A4-70 Black nickel plated	
7	S0923	Plug PG7	
8	S2026	Nut M6M M4 A4-80 DIN 934	
9	E0492	Leaf-spring plate	

Options:

Pos.	Part no.	Description	Note
10	S2876	Mains lead set, Australia, KI2, 2 m, 2,5A	
11	S2877	Mains lead set, UK, KI2, 1,8 m, 3A	
12	S2878	Mains lead set, USA, KI2, 1,8 m, 10A(UL)	
13	S2875	Mains lead set, Europe, KI2, 1,8 m, 2,5A	
14	S2874	Switching power supply unit 12V / 2,5A	

D3 Joysticks

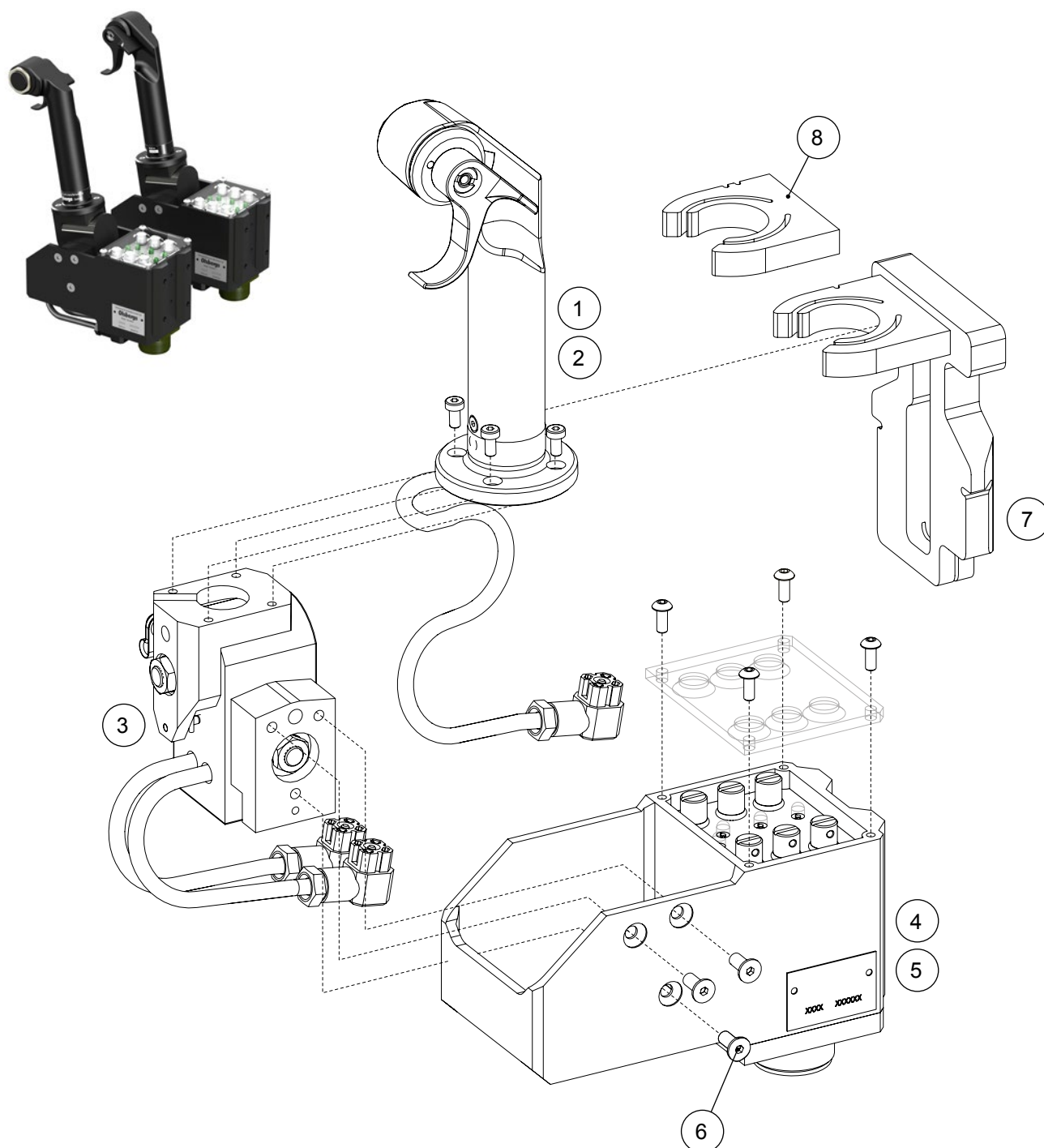
Spare parts



Pos	Part no.	Description	Note
1	1280	Joystick D3, right	
2	1281	Joystick D3, left	
-	0444	Joint and stick A3/D3, right	Incl. part no. 0441 and 0440
-	0445	Joint and stick A3/D3, left	Incl. part no. 0442 and 0440
3	0441	Stick A3/D3, right	Incl. screws
4	0442	Stick A3/D3, left	Incl. screws
5	0440	Joint A3/D3	Fits both right and left stick.
6	0446	Chassis D3, complete with button covers	Fits both right and left stick.
7	S1222	Screw MF6S FT M5x12 10.9 Black chrome	
8	E1327	Button Cover D3, complete	Fits both right and left stick.
9	S0191	Screw MK6S FT M4x10 10.9 Black chrome	
10	1499	Cover cables joystick D3, kit	Incl. screws
11	S3372	Screw MC6S FT M4x35 10.9 Black chrome	
12	E1724	Transport fixture, joystick	Fits joints with serial number 5000 and higher.
13	E1723	Clip 2G, joystick (requires an E1724)	Fits joints with serial number from 2991 up to 4999.

A3 Joysticks

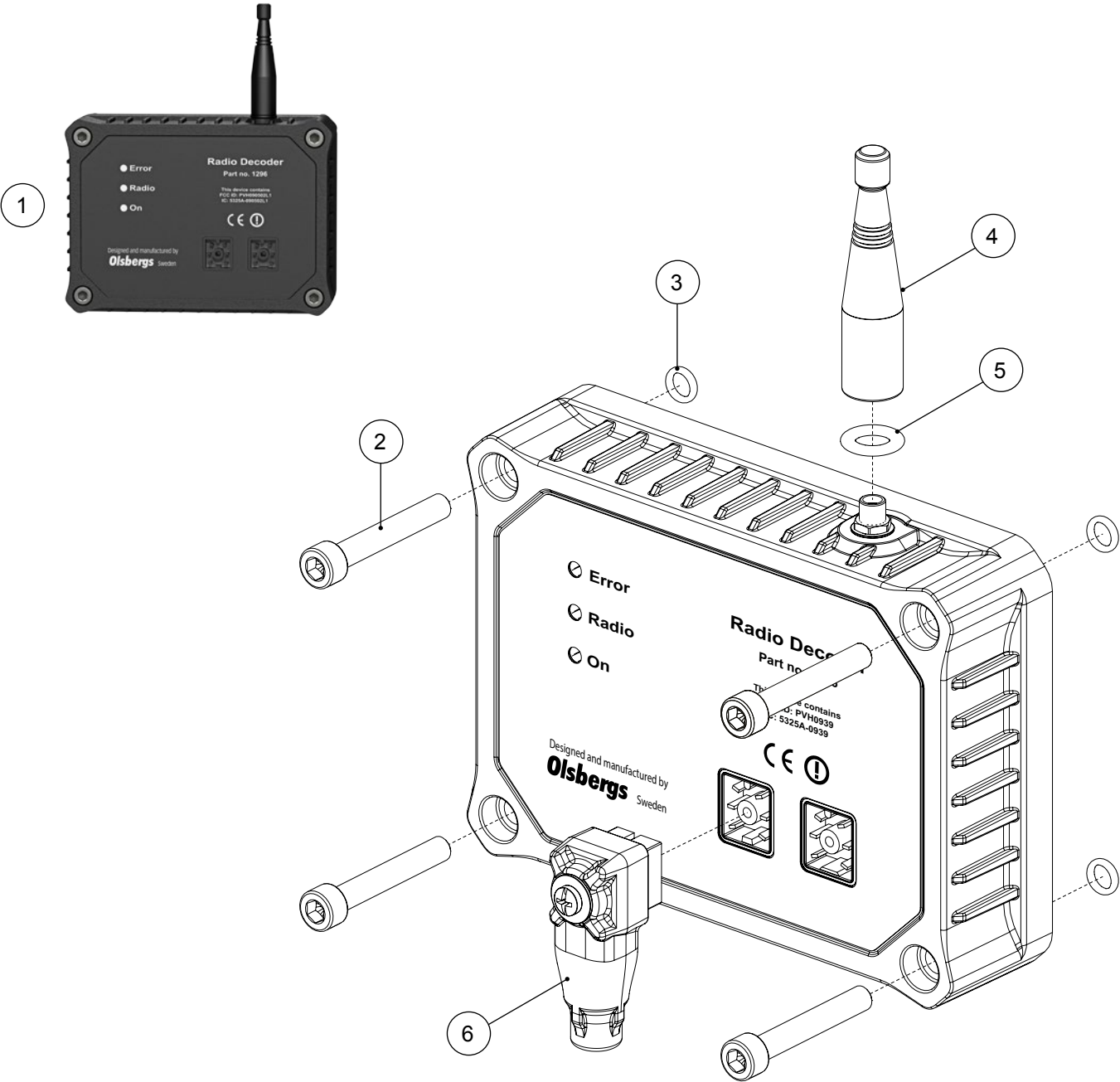
Spare parts (only available as spare part)



Pos	Part no.	Description	Note
-	0444	Joint and stick A3/D3, right	Incl. part no. 0441 and 0440
-	0445	Joint and stick A3/D3, left	Incl. part no. 0442 and 0440
1	0441	Stick A3/D3, right	Incl. screws
2	0442	Stick A3/D3, left	Incl. screws
3	0440	Joint A3/D3	Fits both right and left stick.
4	0443	Chassis A3 complete	Fits both right and left stick.
5	0443S	Chassis A3 with delay, complete	Fits both right and left stick.
6	S1222	Screw MF6S FT M5x12 10.9 Black chrome	
7	E1724	Transport fixture, joystick	Fits joints with serial number 5000 and higher.
8	E1723	Clip 2G, joystick (requires an E1724)	Fits joints with serial number from 2991 up to 4999.

Radio Decoder MD2 M

Spare parts



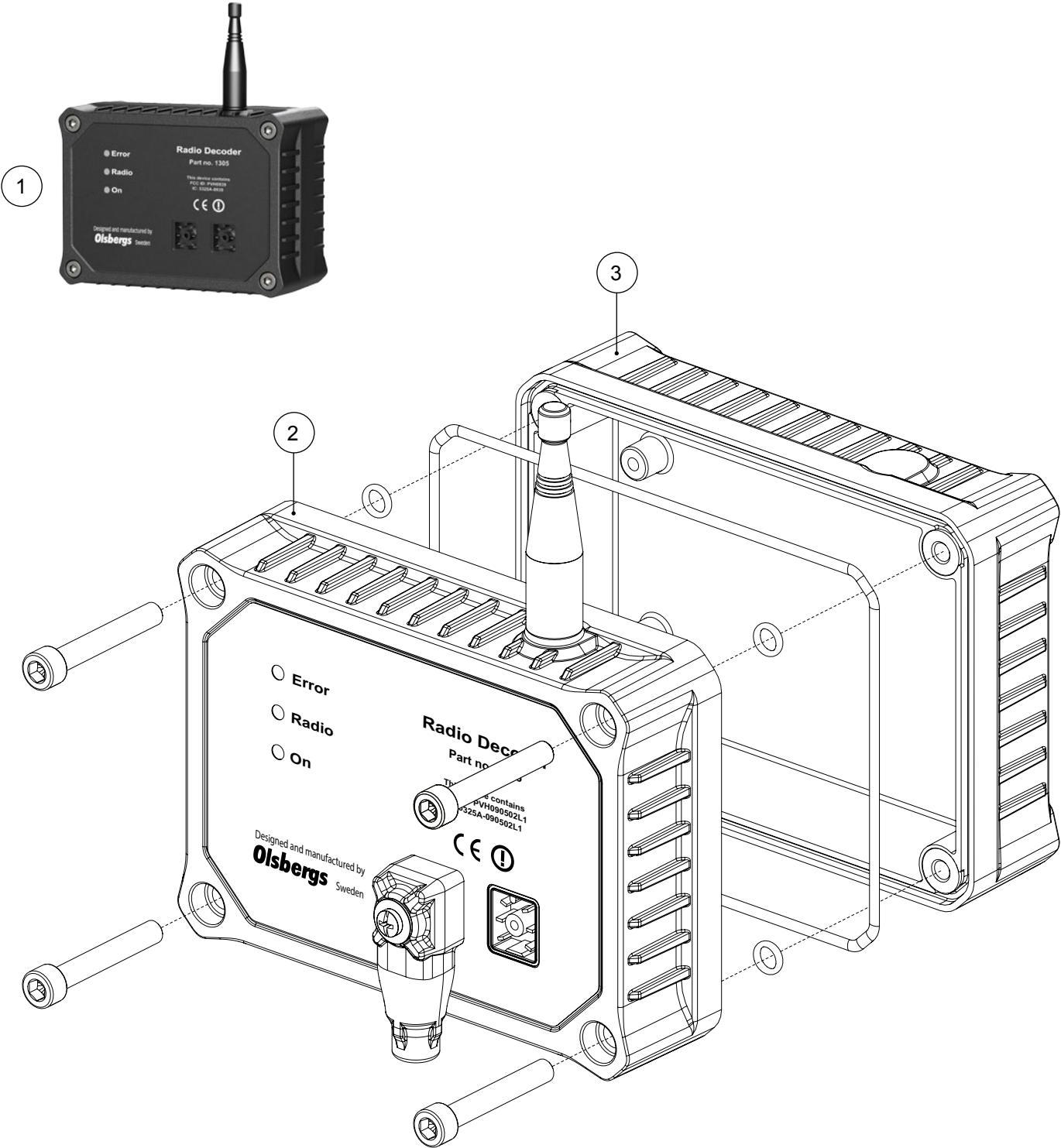
Pos.	Part no.	Description	Note
1	1296	Decoder Radio, top module MD2 M	Yellow label with art. no.
2	S3152	Screw MC6S M6x40 A4-70	
3	S2556	O-ring 5,28x1,78 NBR 70	
4	S3183	Antenna stub ½ wave length RSMA 2.4GHz	
5	S2948	O-ring 8x3 EPDM 70	
6	E0854	Strapped plug, decoder	

Possible bottom modules

Pos.	Part no.	Description	Note
-	1293	Relay Box, bottom module MD2 M	Incl. O-ring
-	E1431	Bottom box, high	Incl. O-ring

Radio Decoder MD2, Kit

Replacement kit for decoder 1219



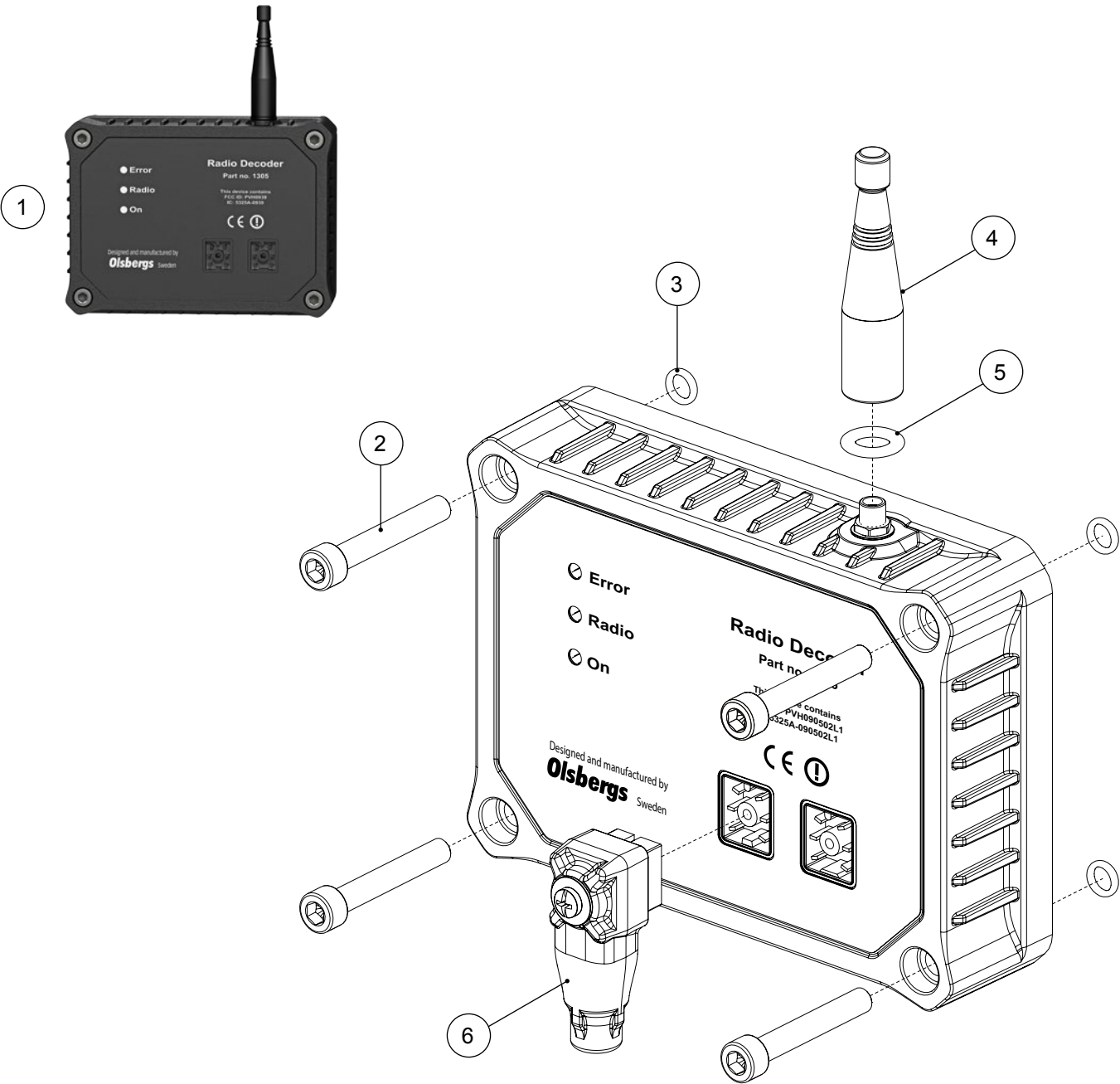
NOTE!

This kit is only for replacement of obsolete spare part no. 1219 and E1215

Pos.	Qty	Part no.	Description	Note
1	1	1493	Decoder Radio MD2, Kit	
2	1	1305	Decoder Radio, top module MD2	Incl. aerial
3	1	E1431	Bottom box, high	Incl. O-ring

Radio Decoder MD2

Spare parts



NOTE!

This radio decoder together with bottom box E1431, is only for use instead of obsolete part no. 1219. Speed 50 kbit/s.

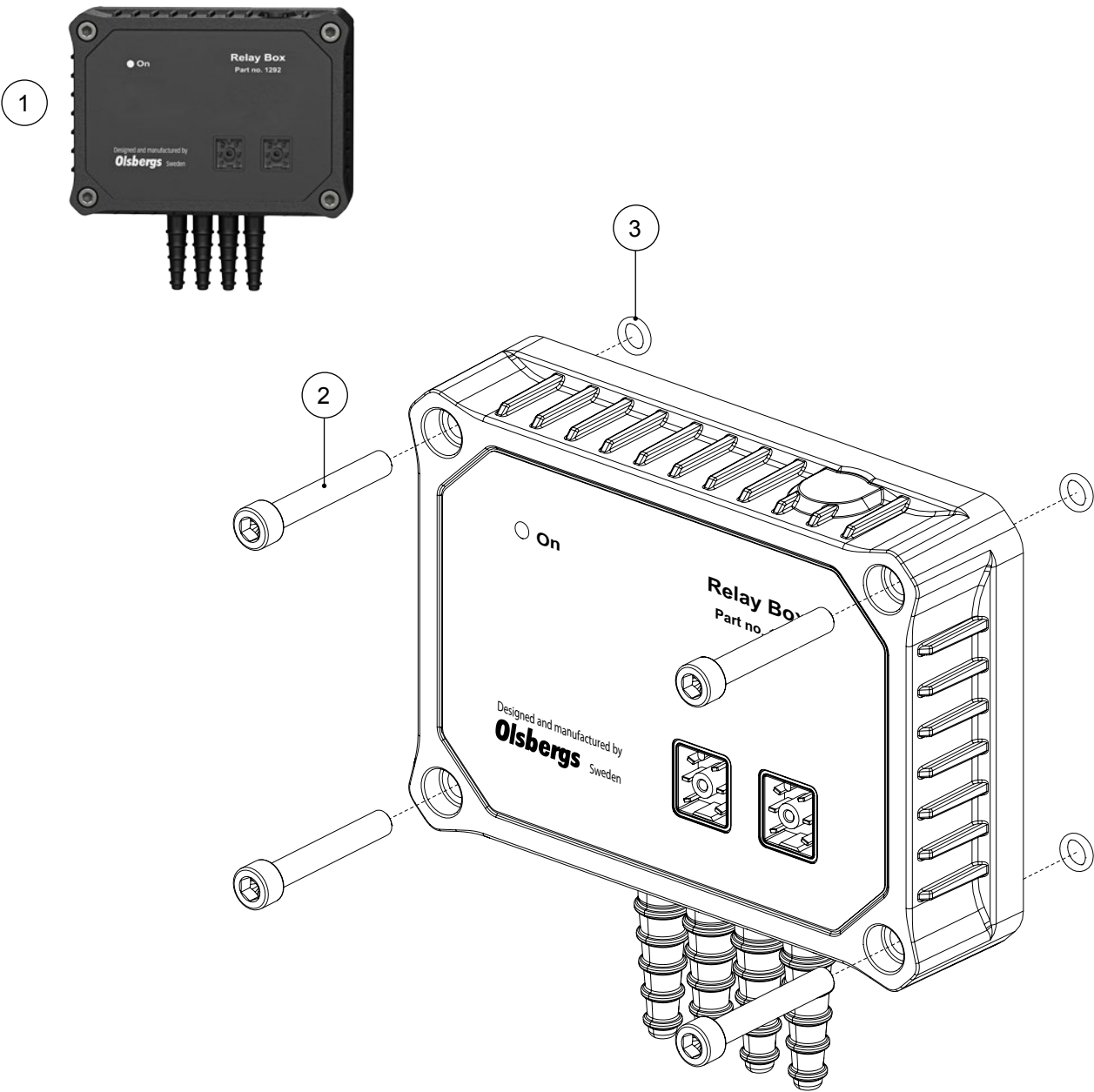
Pos.	Part no.	Description	Note
1	1305	Decoder Radio, top module MD2	Incl. aerial
2	S3152	Screw MC6S M6x40 A4-70	
3	S2556	O-ring 5,28x1,78 NBR 70	
4	S3183	Antenna stub ½ wave length RSMA 2.4GHz	
5	S2948	O-ring 8x3 EPDM 70	
6	E0854	Strapped plug, decoder	

Possible bottom module:

Pos.	Part no.	Description	Note
-	E1431	Bottom box, high	Incl. O-ring

Relay Box, top module MD2 M

Spare parts



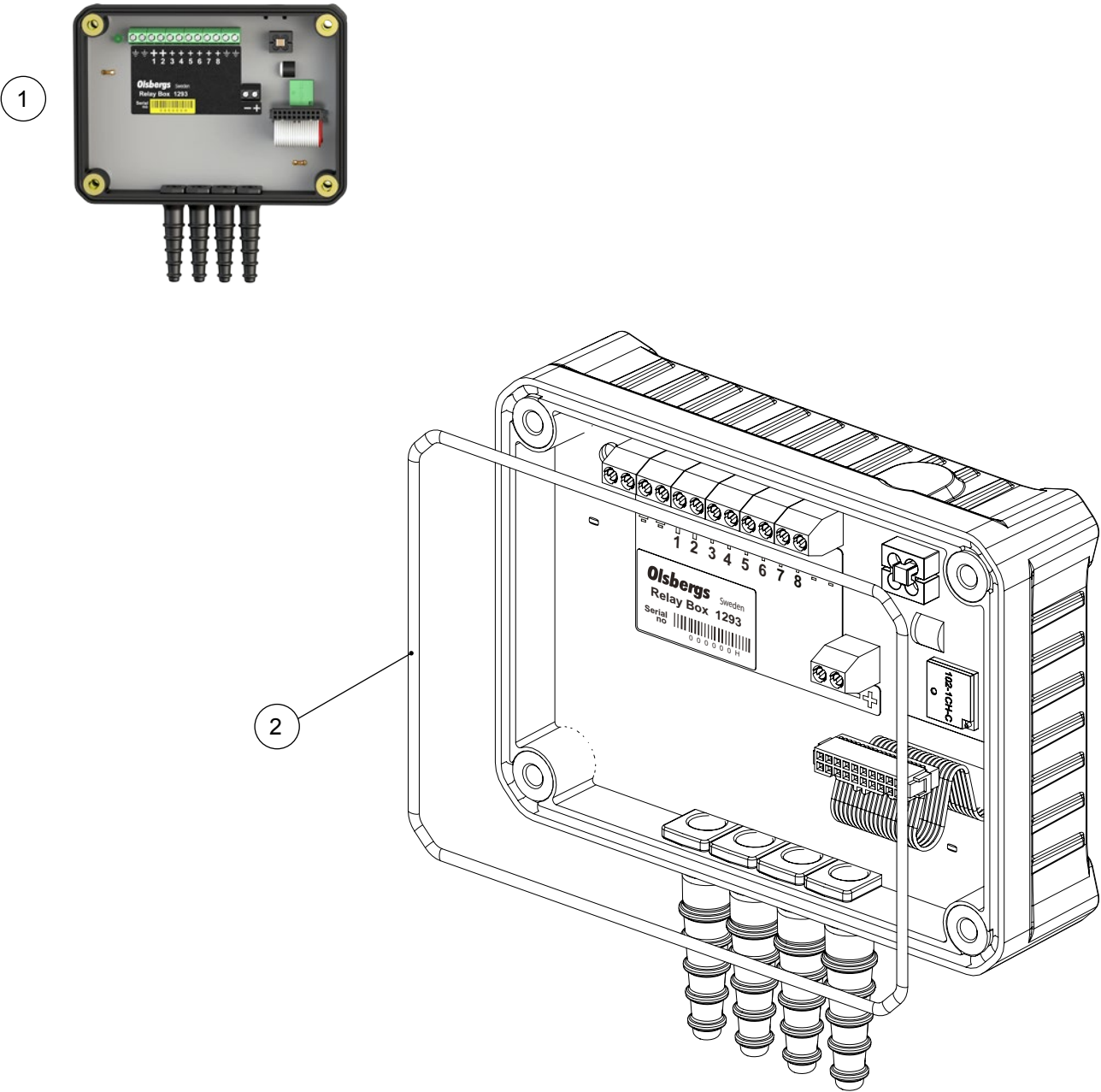
Pos.	Part no.	Description	Note
1	1292	Relay Box, top module MD2 M	
2	S3152	Screw MC6S M6x40 A4-70	
3	S2556	O-ring 5,28x1,78 NBR 70	

Possible bottom modules:

Pos.	Part no.	Description	Note
-	E1431	Bottom box, high	Incl. O-ring
-	1293	Relay Box, bottom module MD2 M	Incl. O-ring

Relay Box, bottom module MD2 M

Spare parts



Pos.	Part no.	Description	Note
1	1293	Relay Box, bottom module MD2 M	Incl. O-ring
2	S3151	O-ring 150x2 NBR 70	

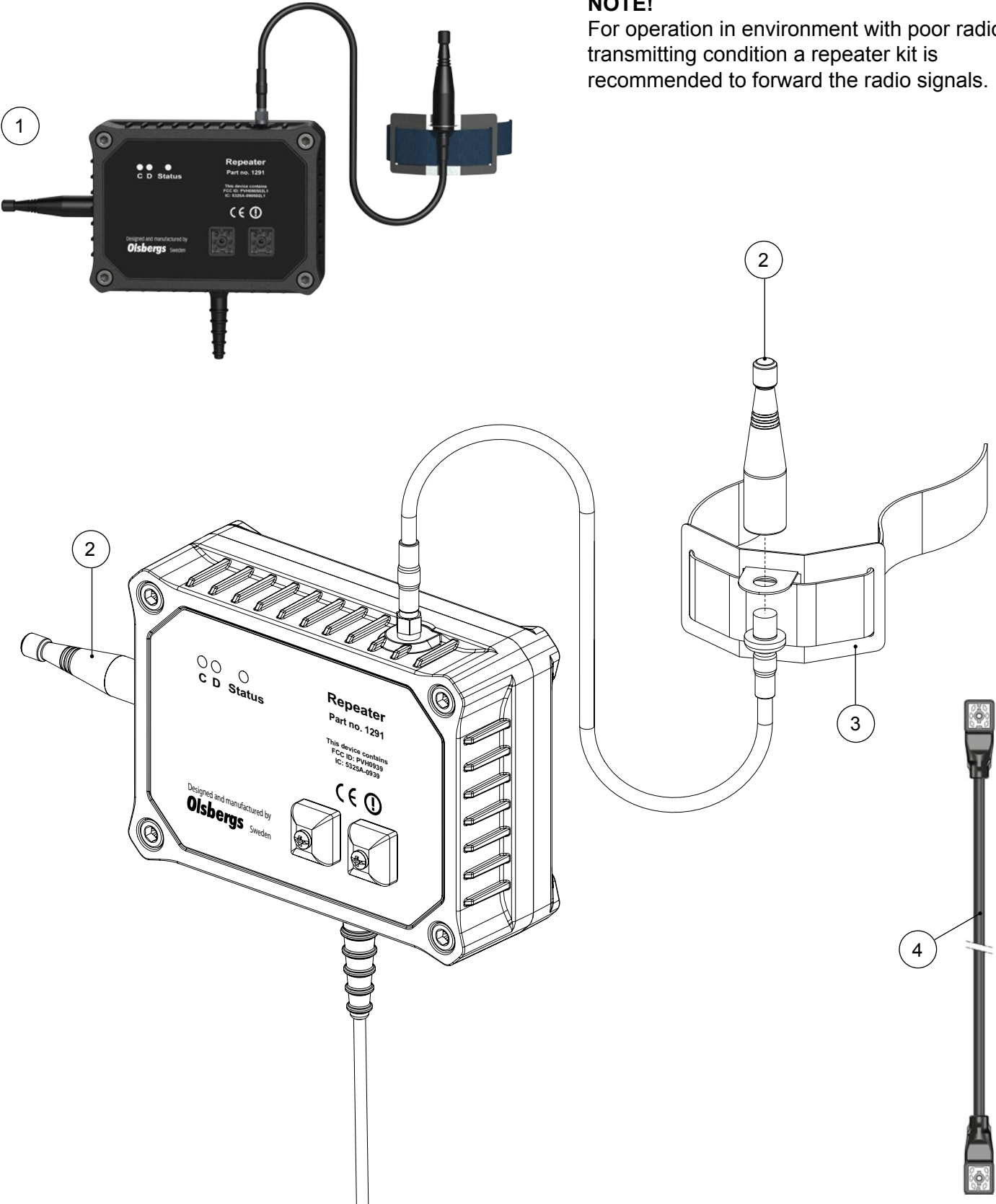
Possible top modules:

Pos.	Part no.	Description	Note
-	1296	Decoder Radio, top module MD2 M	Incl. aerial
-	1292	Relay Box, top module MD2 M	

Repeater MD2+MD2 M

Kit

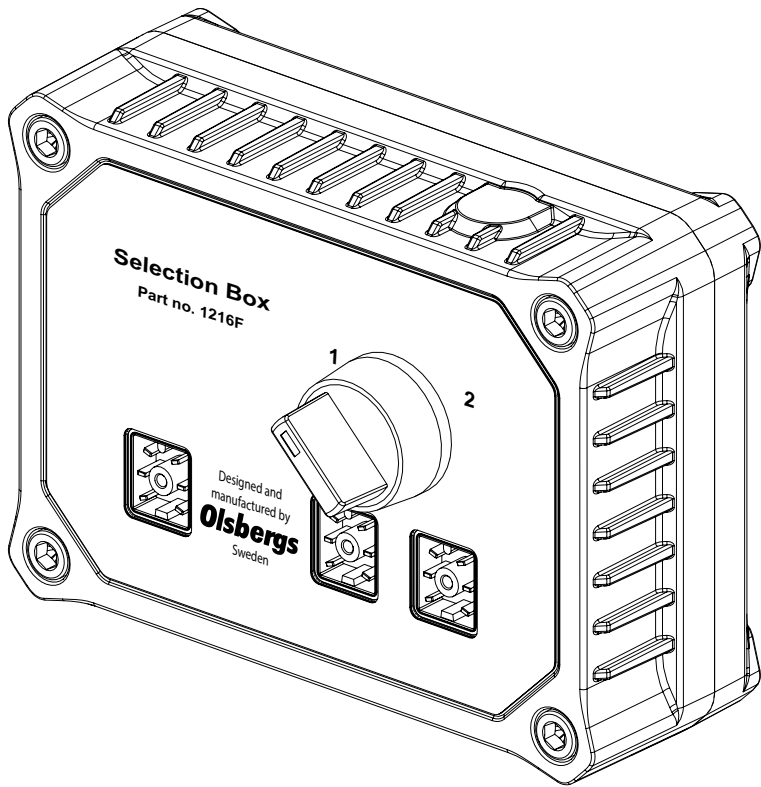
NOTE!
For operation in environment with poor radio transmitting condition a repeater kit is recommended to forward the radio signals.



Pos	Part no.	Description	Note
1 - 4	1495	Repeater MD2+MD2 M, Kit	
1	1291	Repeater MD2+MD2 M	Incl. bottom module, attachments and antennas
2	S3183	Antenna stub ½ wave length RSMA 2.4GHz	
3	E1437	Attachment carrier strap	Incl. strap 1,5 m
4	E1282	Cable CAN 4,0 m	Between decoder and repeater

Selection Box

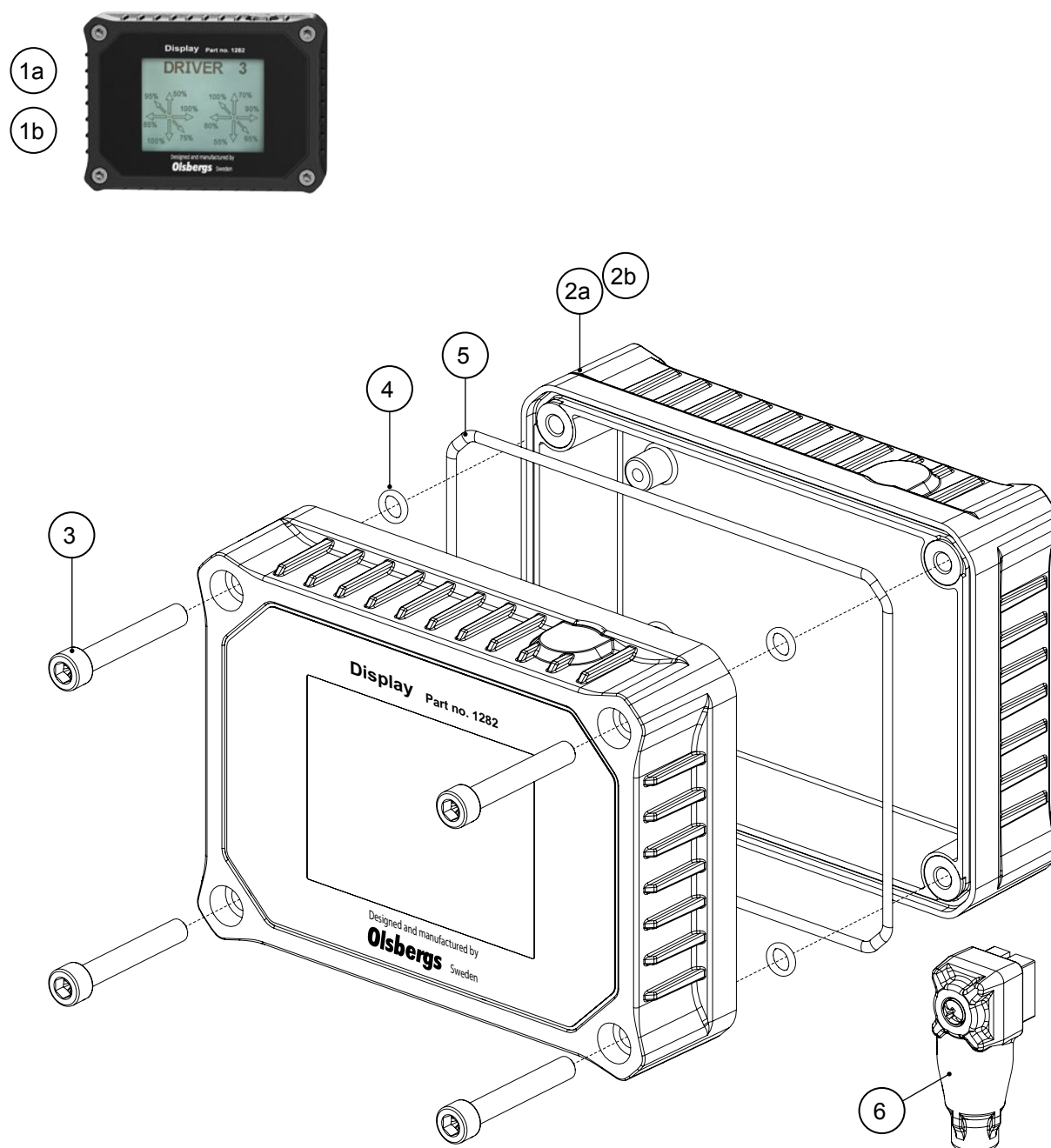
Spare parts



Pos.	Part no.	Description	Note
1	1216F	Selection box	

Display Box D3

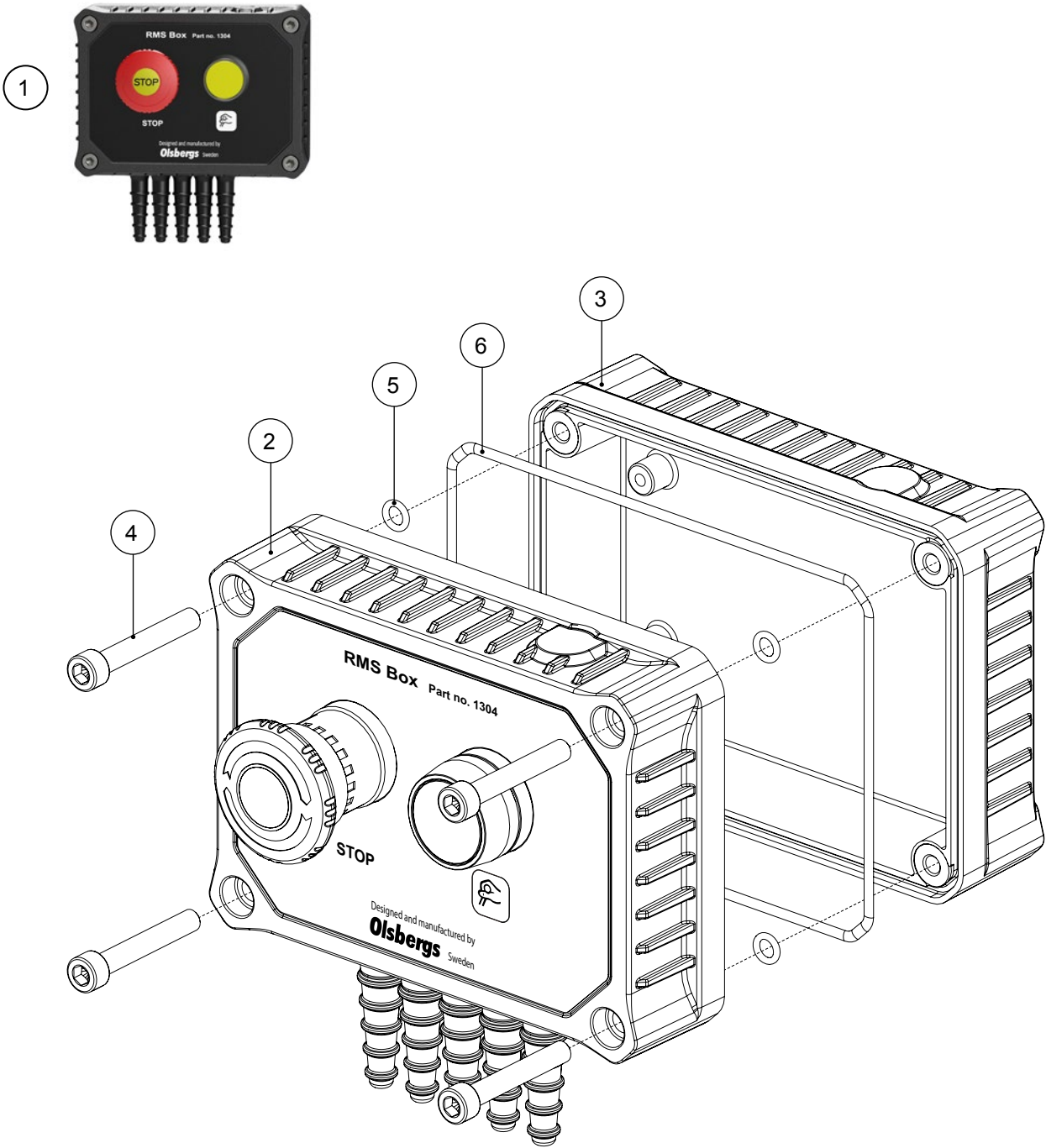
Spare parts



Pos	Part no.	Description	Note
1a	1282H	Display Box D3, high	
1b	1282L	Display Box D3, low	
2a	E1431	Bottom box high, complete	Incl. O-rings
2b	E1432	Bottom box low, complete	Incl. O-rings
3	S3152	Screw MC6S M6x40 A4-70	
4	S2556	O-ring 5,28x1,78 NBR 70	
5	S3151	O-ring 150x2 NBR 70	
6	E0792	Termination 120 ohm	

RMS Box

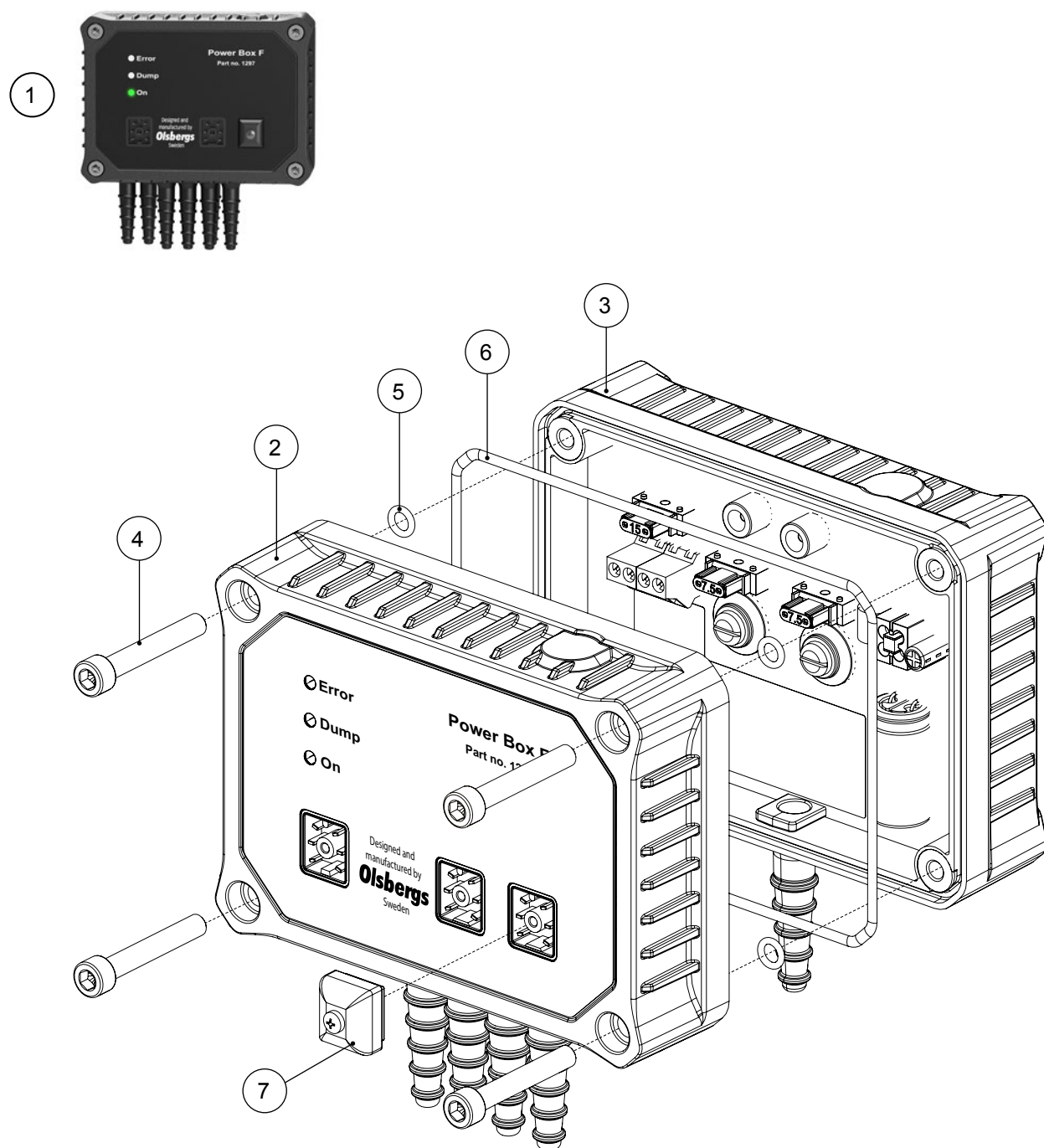
Spare parts



Pos	Part no.	Description	Note
1	1304	RMS Box	
2	E1542	RMS Box, top unit	Incl. screws and O-rings
3	E1431	Bottom box, high	Incl. O-rings
4	S3152	Screw MC6S M6x40 A4-70	
5	S2556	O-ring 5,28x1,78 NBR 70	
6	S3151	O-ring 150x2 NBR 70	

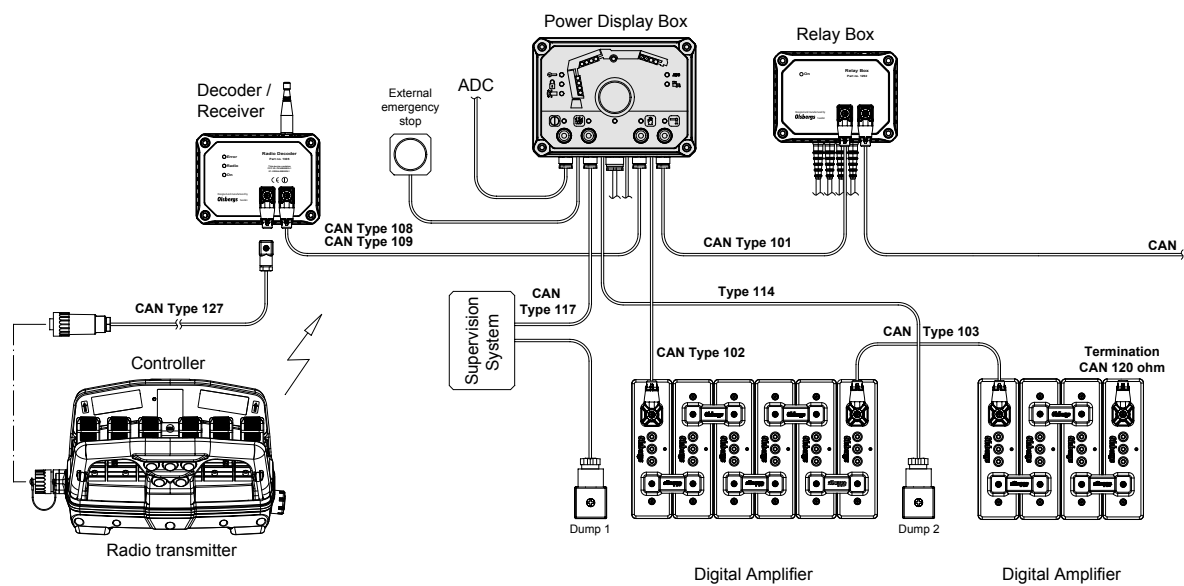
Power Box PB.F2 MD2+MD2 M

Spare parts

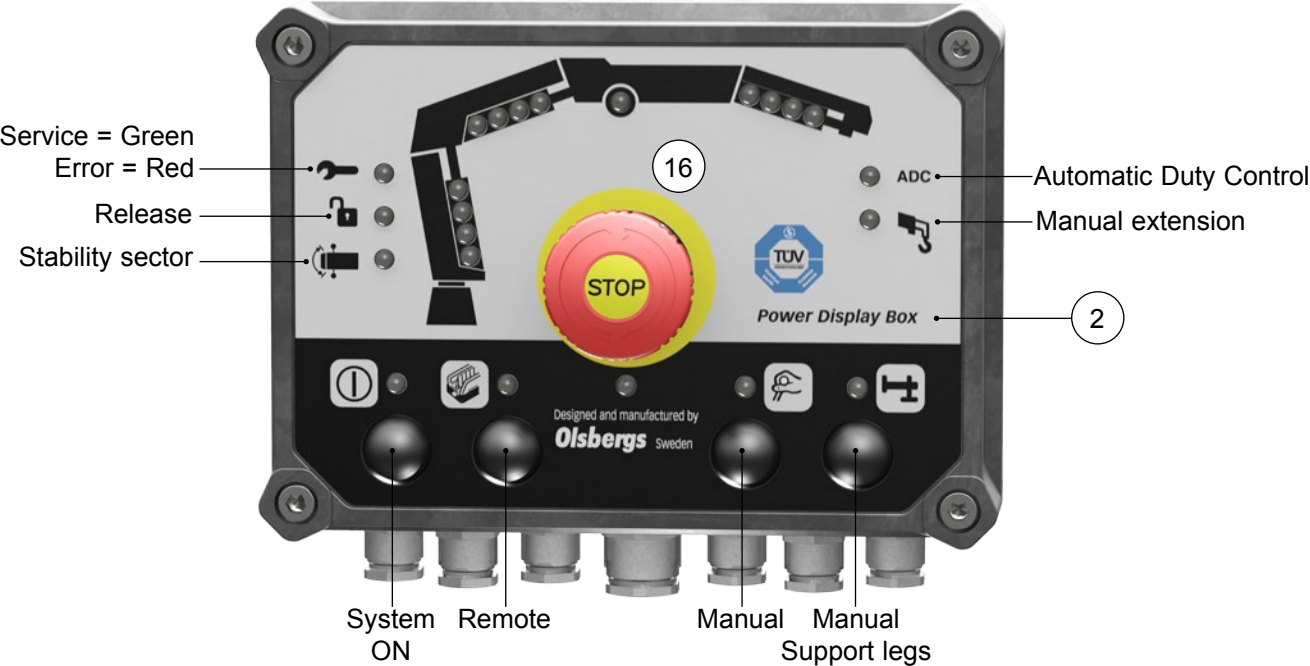


Pos	Part no.	Description	Note
1	1297	Power Box PB.F2 MD2+MD2 M	
2	E1539	Power Box PB.F2, top unit, MD2+MD2 M	Incl. screws and O-rings
3	E1541	Power Box PB.F2, bottom unit MD2+MD2 M	Incl. O-rings
4	S3152	Screw MC6S M6x40 A4-70	
5	S2556	O-ring 5,28x1,78 NBR 70	
6	S3151	O-ring 150x2 NBR 70	
7	S2539	Protective Cap	

Power Display Box - PDB / PDB S / PB OS



1 PDB (Power Display Box)



3 PDB S

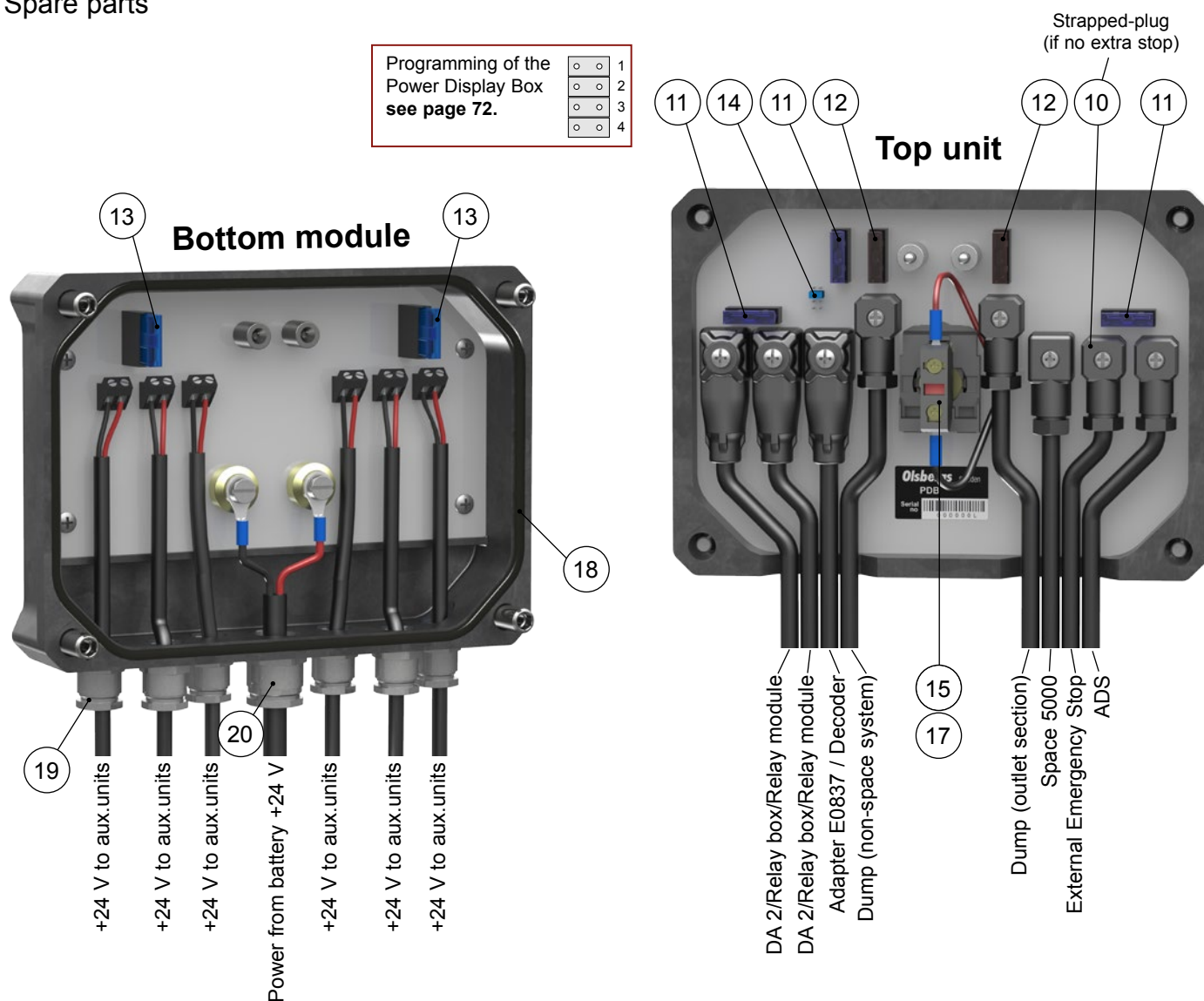


5 PB OS



Power Display Box - PDB / PDB S / PB OS

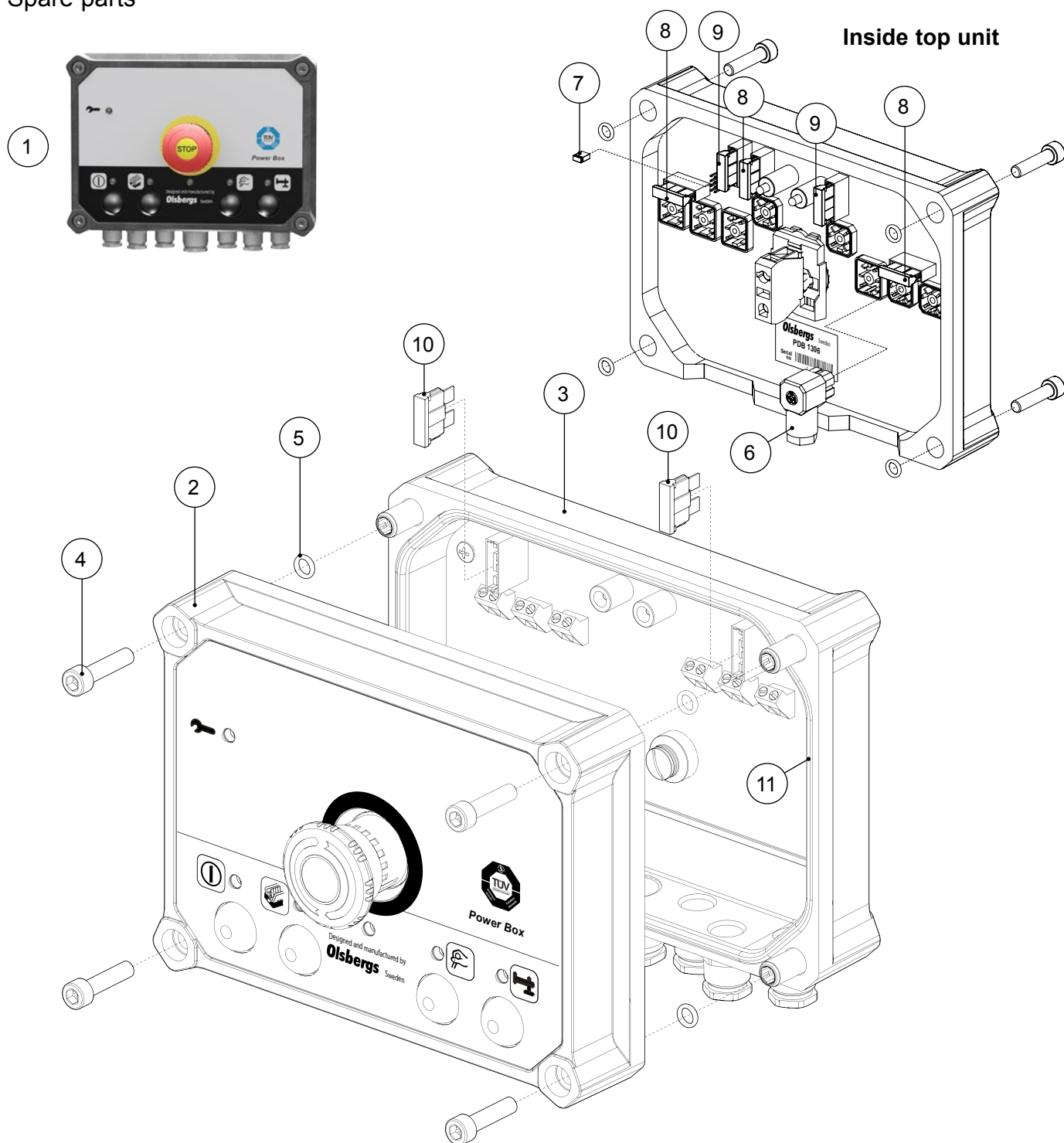
Spare parts



Pos.	Part no.	Description	Note
1	1208	Power Display Box PDB MD+MD2	Incl. extra fuses and jumpers
2	E1070	Power Display Box, top unit PDB MD+MD2	
3	1208S	Power Display Box PDB S MD+MD2	Incl. extra fuses and jumpers
4	E1070S	Power Display Box PDB S, top unit MD+MD2	
5	1208OS	Power Box PB OS MD+MD2	Incl. extra fuses and jumpers
6	E1070OS	Power Box PB OS, top unit MD+MD2	
7	E1081	Power Display Box, bottom module MD+MD2+MD2 M	Fits all PDB types
8	S2490	Screw MC6S FT M6x25 A4-70	
9	S2556	O-ring 5,28x1,78 NBR 70	
10	E0793	Strapped plug, ext. stop	
11	S2453	Fuse 3A	
12	F0593	Fuse 7,5A	
13	S2454	Fuse 15A	
14	S2605	Jumper, blue	
15	S2448	Circuit breaker	
16	S2447	Emergency button	
17	E0862	Nut, emergency off, PDB	
18	S2489	O-ring 184,5x3 NBR 70	
19	S2537	Cable fitting Ø15,2	
20	S2538	Cable fitting Ø20,4	

Power Box PBF

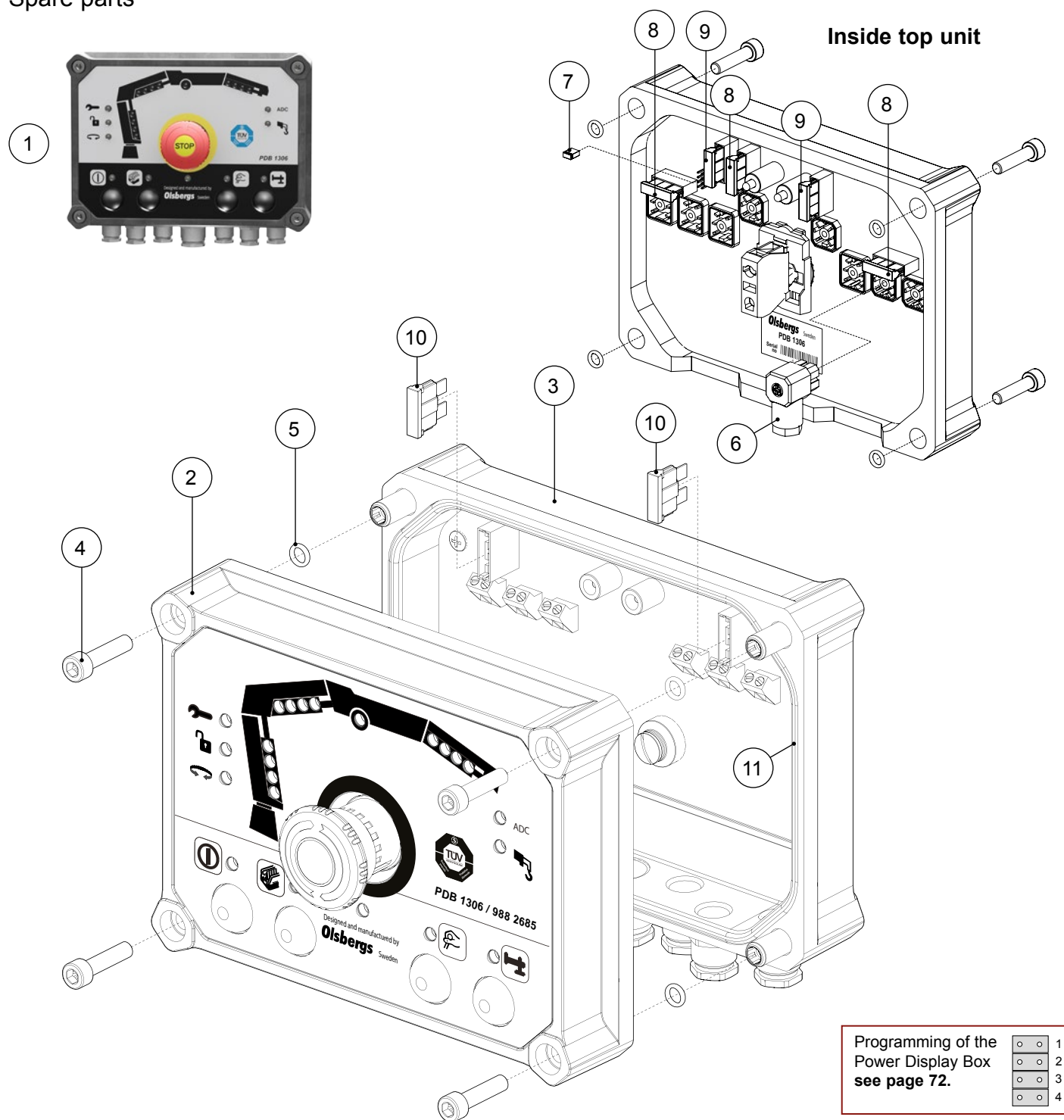
Spare parts



Pos.	Part no.	Description	Note
1	1208F	Power Box PBF MD+MD2	Incl. extra fuses and jumpers
2	E1070F	Power Box PBF, top unit MD+MD2	
3	E1081	Power Display Box, bottom module MD+MD2+MD2 M	Fits all PDB types
4	S2490	Screw MC6S FT M6x25 A4-70	
5	S2556	O-ring 5,28x1,78 NBR 70	
6	E0793	Strapped plug, ext. stop	
7	S2605	Jumper, blue	
8	S2453	Fuse 3A	
9	F0593	Fuse 7,5A	
10	S2454	Fuse 15A	
11	S2489	O-ring 184,5x3 NBR 70	

Power Display Box PDB MD2 M

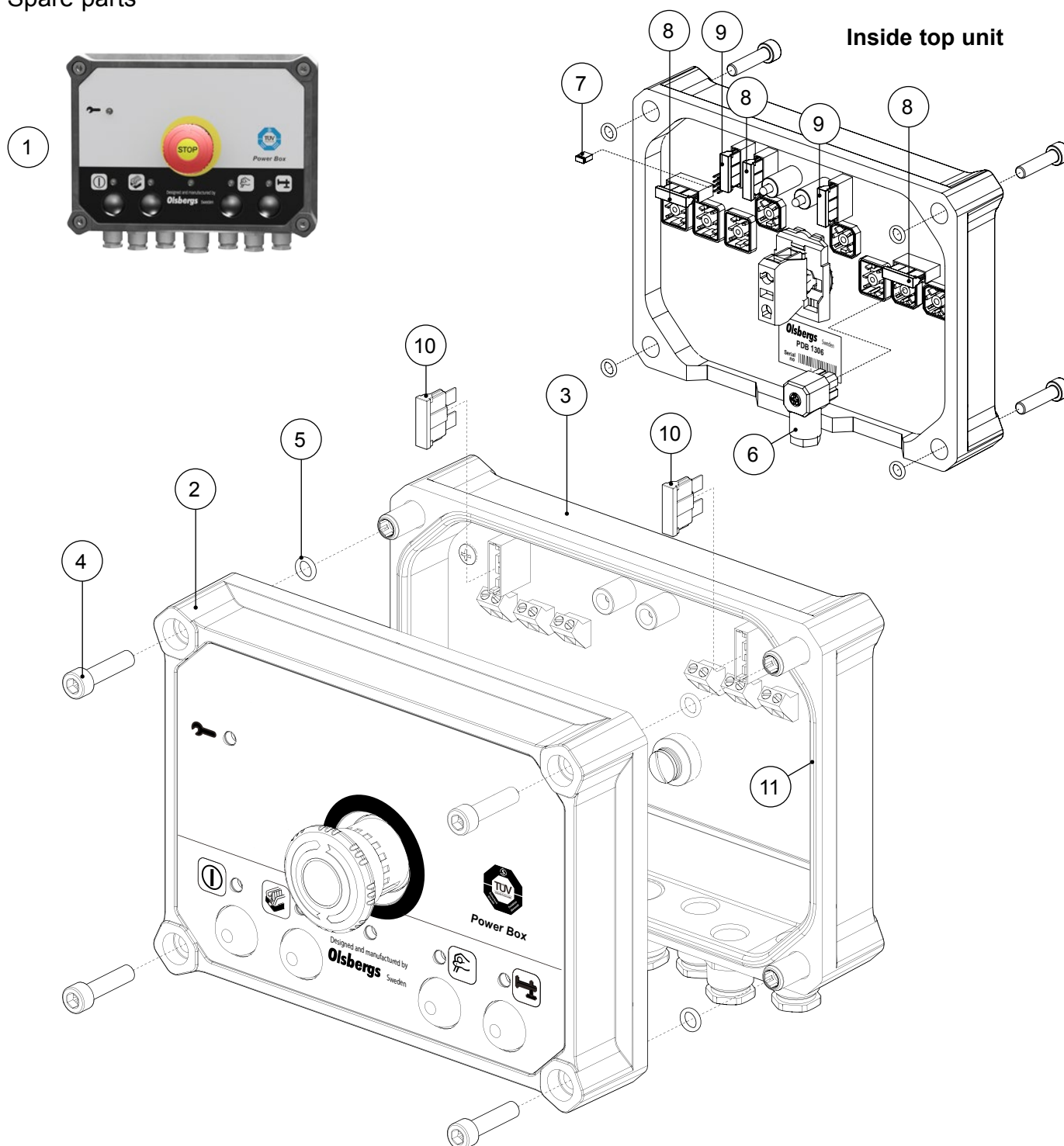
Spare parts



Pos.	Part no.	Description	Note
1	1306	Power Display Box PDB MD2 M	Incl. extra fuses and jumpers
2	E1478	Power Display Box PDB, top unit MD2 M	Yellow label with part no.
3	E1081	Power Display Box, bottom module MD+MD2+MD2 M	Fits all PDB types
4	S2490	Screw MC6S FT M6x25 A4-70	
5	S2556	O-ring 5,28x1,78 NBR 70	
6	E0793	Strapped plug, ext. stop	
7	S2605	Jumper, blue	
8	S2453	Fuse 3A	
9	F0593	Fuse 7,5A	
10	S2454	Fuse 15A	
11	S2489	O-ring 184,5x3 NBR 70	

Power Box PB OS MD2 M

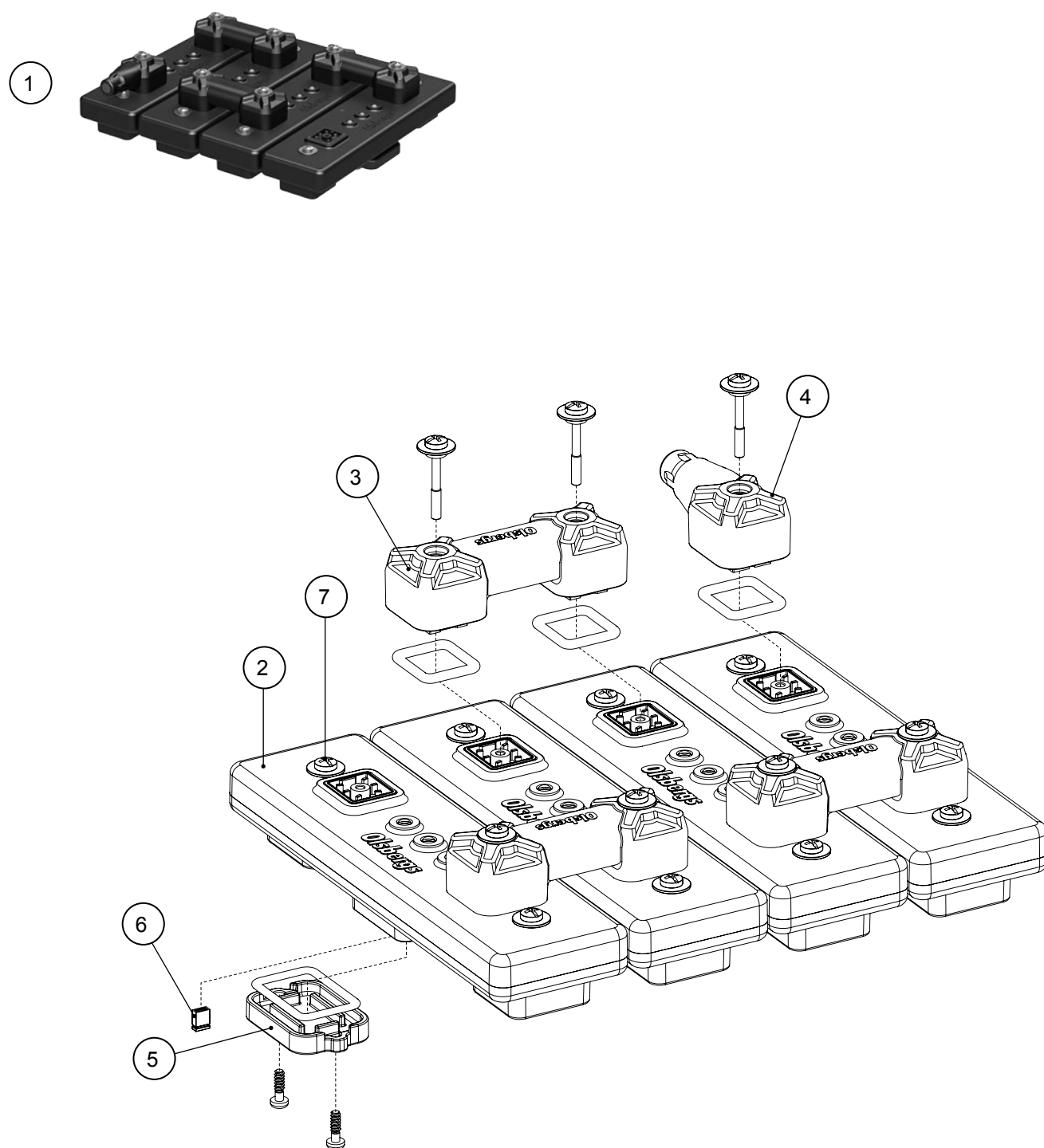
Spare parts



Pos.	Part no.	Description	Note
1	1306OS	Power Box PB OS MD2 M	Software 125 kbit/s
2	E1070F	Power Box PBF, top unit MD+MD2	Software 125 kbit/s
3	E1081	Power Display Box, bottom module MD+MD2+MD2 M	Fits all PDB types
4	S2490	Screw MC6S FT M6x25 A4-70	
5	S2556	O-ring 5,28x1,78 NBR 70	
6	E0793	Strapped plug, ext. stop	
7	S2605	Jumper, blue	
8	S2453	Fuse 3A	
9	F0593	Fuse 7,5A	
10	S2454	Fuse 15A	
11	S2489	O-ring 184,5x3 NBR 70	

Digital Amplifier DA2 4F MD+MD2, Kit

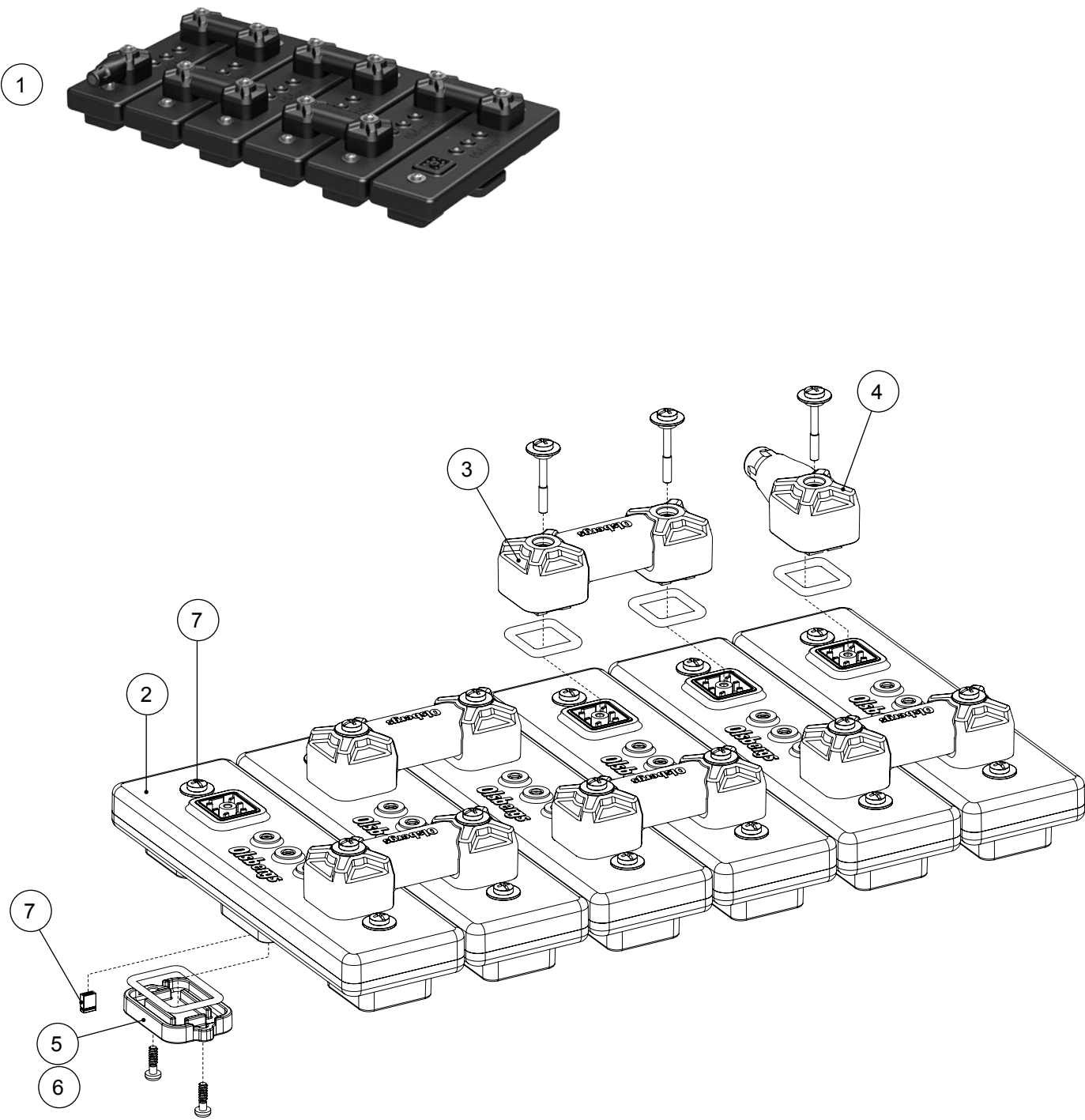
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1411	Digital Amplifier DA2 4F MD+MD2, Kit	
2	4	1205	Digital Amplifier DA2 MD+MD2	Incl. screws, cap and jumpers
3	3	E1163	Connector bridge DA	Incl. screws
4	1	E0792B	Termination CAN 120 ohm	
5	4	E1111	Cover DA2 black	Incl. screws and O-ring
6	16	S2605	Jumper, blue	
7	8	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer

Digital Amplifier DA2 6F MD+MD2, Kit

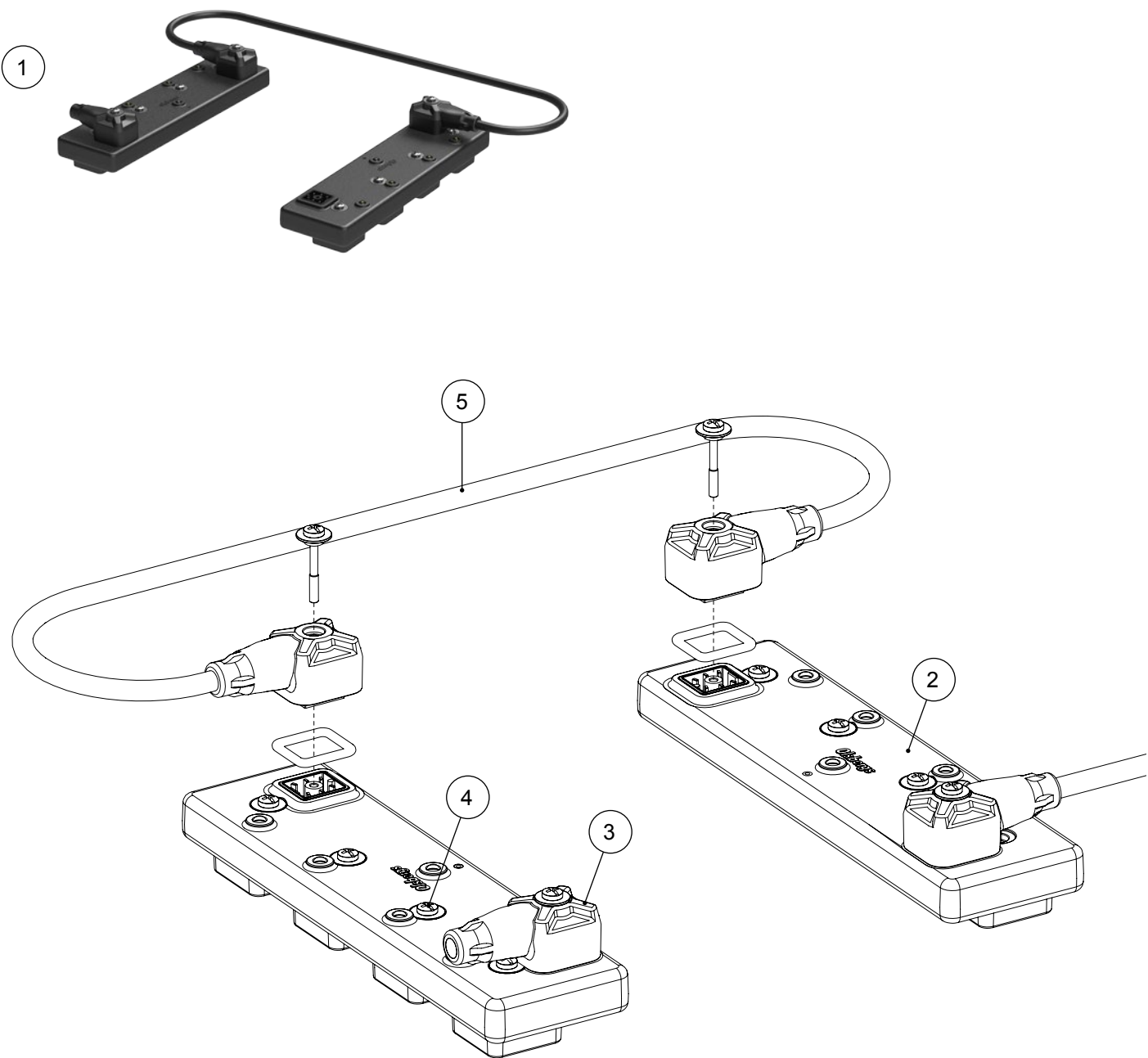
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1410	Digital Amplifier DA2 6F MD+MD2, Kit	
2	6	1205	Digital Amplifier DA2 MD+MD2	Incl. screws, cap and jumpers
3	5	E1163	Connector bridge DA	Incl. screws
4	1	E0792B	Termination CAN 120 ohm	
5	5	E1111	Cover DA2 black	Incl. screws and O-ring
6	1	E1112	Cover DA2 red	Incl. screws and O-ring
7	24	S2605	Jumper, blue	
8	12	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer

Digital Amplifier DA14 4F MD2, Kit

Spare parts



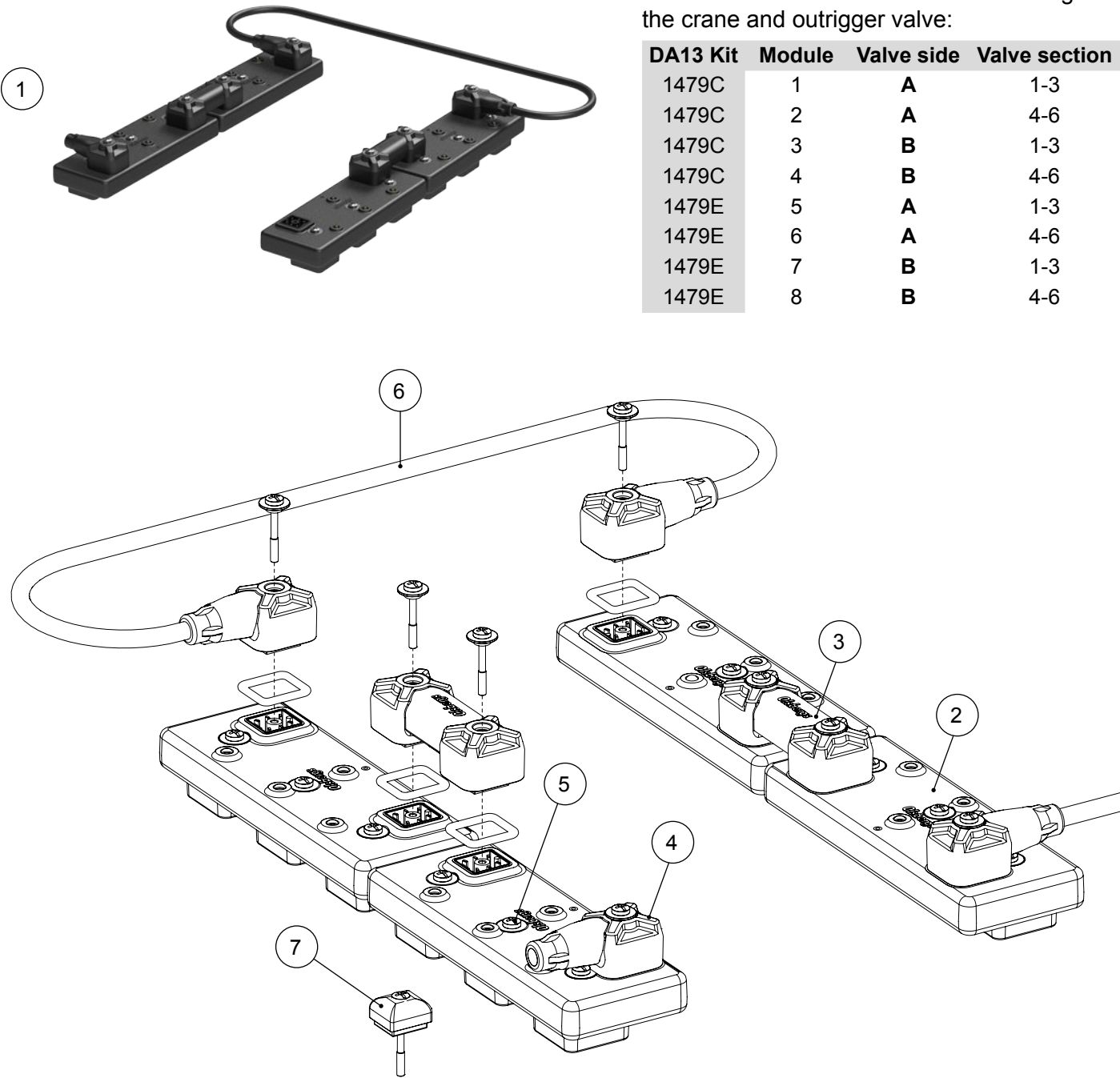
Pos.	Qty.	Part no.	Description	Note
1	1	1480	Digital Amplifier DA14 4F MD2, Kit	
2	2	1207	Digital Amplifier DA14 MD2	Incl. screws
3	1	E0792B	Termination CAN 120 ohm	
4	8	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer
5	1	E1278BB	Cable CAN GO6-GO6 0,75 m	

Digital Amplifier DA13 6F MD2, Kit

Spare parts

DA modules come pre-programmed, numbered and must be installed following on the crane and outrigger valve:

DA13 Kit	Module	Valve side	Valve section
1479C	1	A	1-3
1479C	2	A	4-6
1479C	3	B	1-3
1479C	4	B	4-6
1479E	5	A	1-3
1479E	6	A	4-6
1479E	7	B	1-3
1479E	8	B	4-6



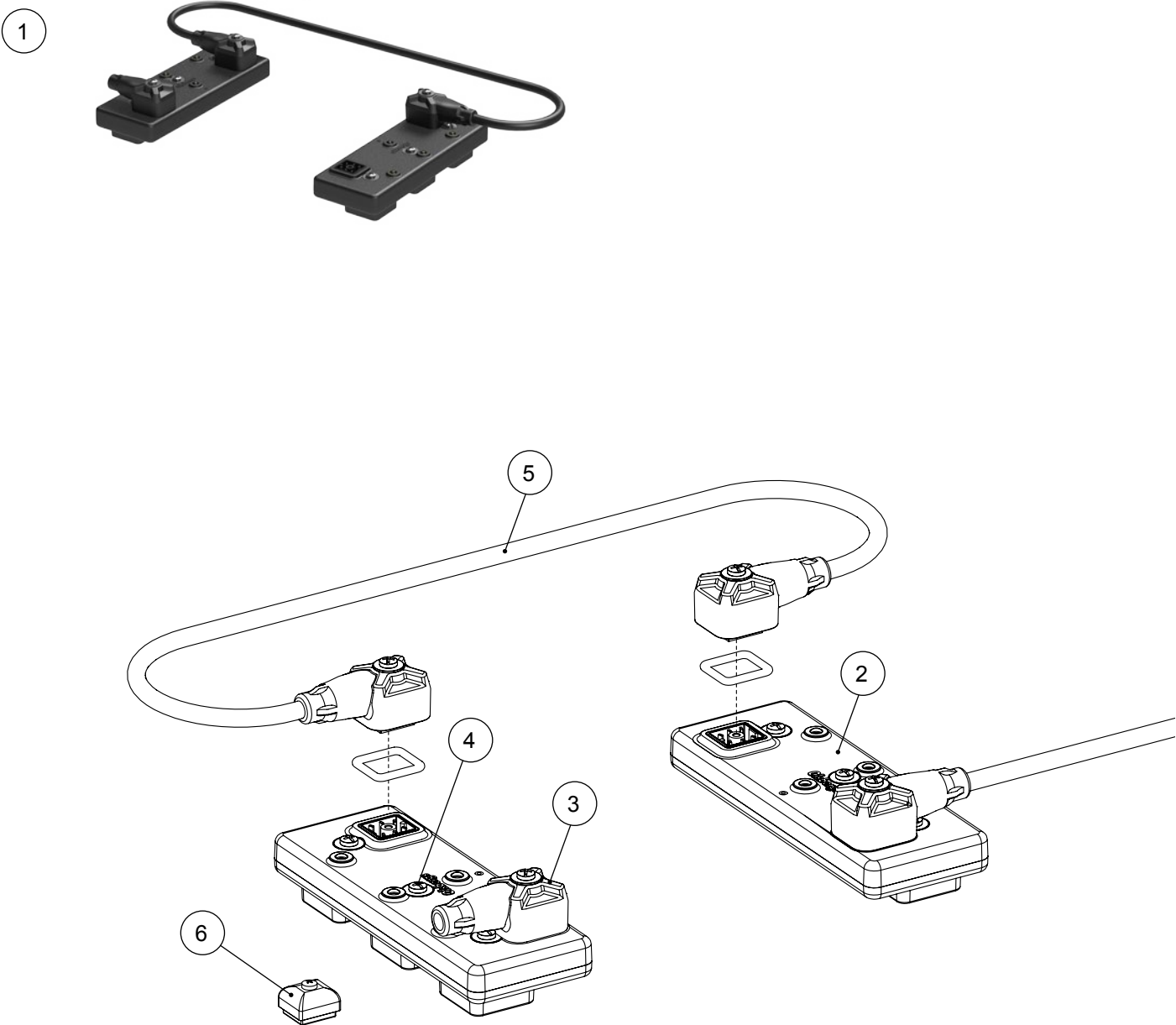
ATTENTION!

When the system has DA13 sets on both the crane valve and outrigger valve, the 120Ω termination E0792B (Pos.4) on one DA13 set must be replaced with S2539 (Pos.7).

Pos.	Qty.	Part no.	Description	Note
1A	1	1479C	Digital Amplifier DA13 6F MD2, Kit C	Kit for crane valve
1B	-	1479E	Digital Amplifier DA13 6F MD2, Kit E	Kit for outrigger valve
2	4	1283	Digital Amplifier DA13 MD2	Incl. screws
3	2	E1163	Connector bridge DA	Incl. screws
4	1	E0792B	Termination CAN 120 ohm	
5	12	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer
6	1	E1278BB	Cable CAN GO6-GO6 0,75 m	
7	1	S2539	Protective Cap	

Digital Amplifier DA13 3F MD2, Kit

Spare parts



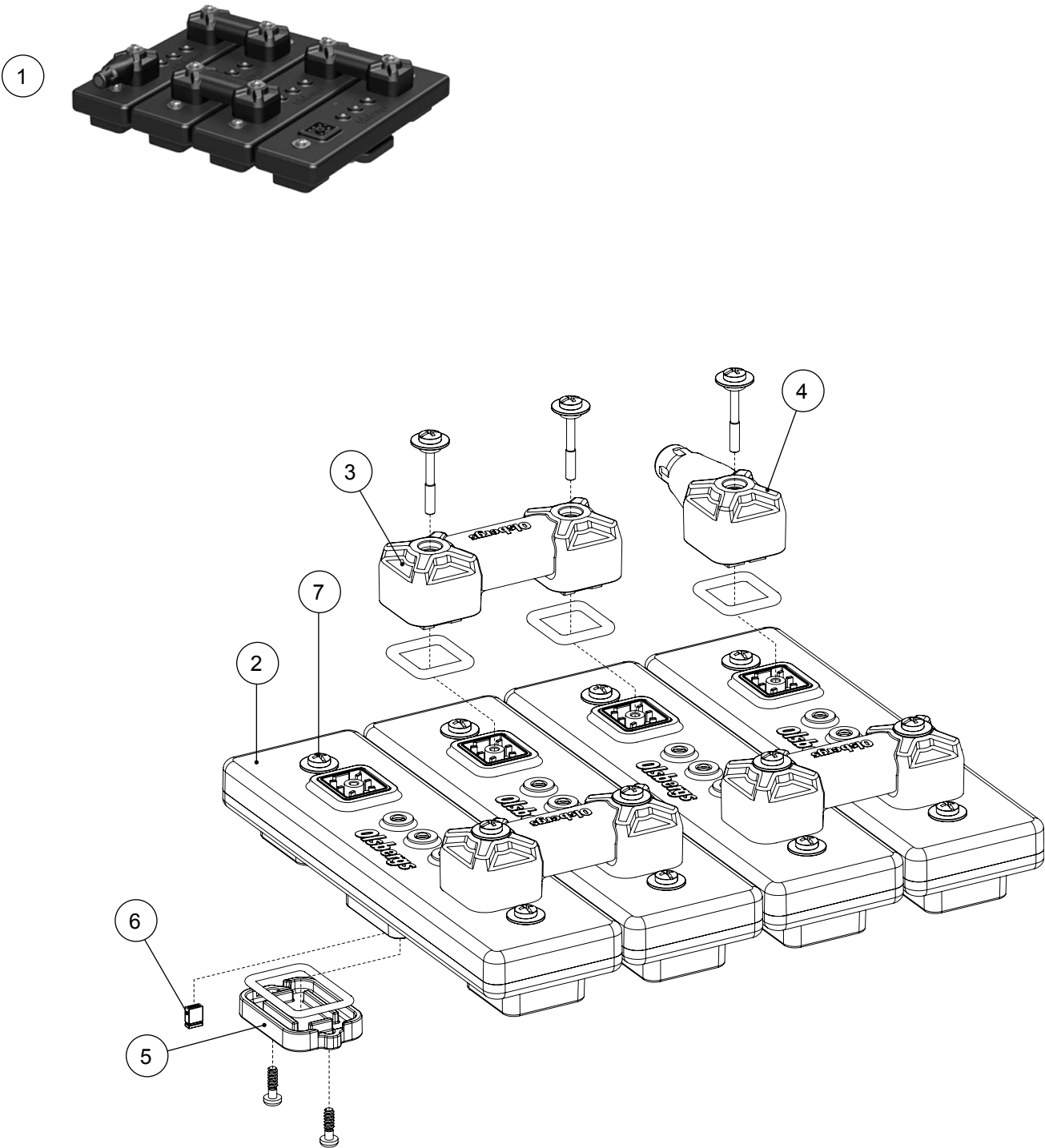
ATTENTION!

When the system has DA13 sets on both the crane valve and outrigger valve, the 120Ω termination E0792B (Pos.3) on one DA13 set must be replaced with S2539 (Pos.6).

Pos.	Qty.	Part no.	Description	Note
1	1	1482	Digital Amplifier DA13 3F MD2, Kit	Section 5,7 see page 32
2	2	1283	Digital Amplifier DA13 MD2	Incl. screws
3	1	E0792B	Termination CAN 120 ohm	
4	6	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer
5	1	E1278BB	Cable CAN GO6-GO6 0,75 m	Incl. O-rings and washers
6	1	S2539	Protective Cap	

Digital Amplifier DA2 4F MD2 M, Kit

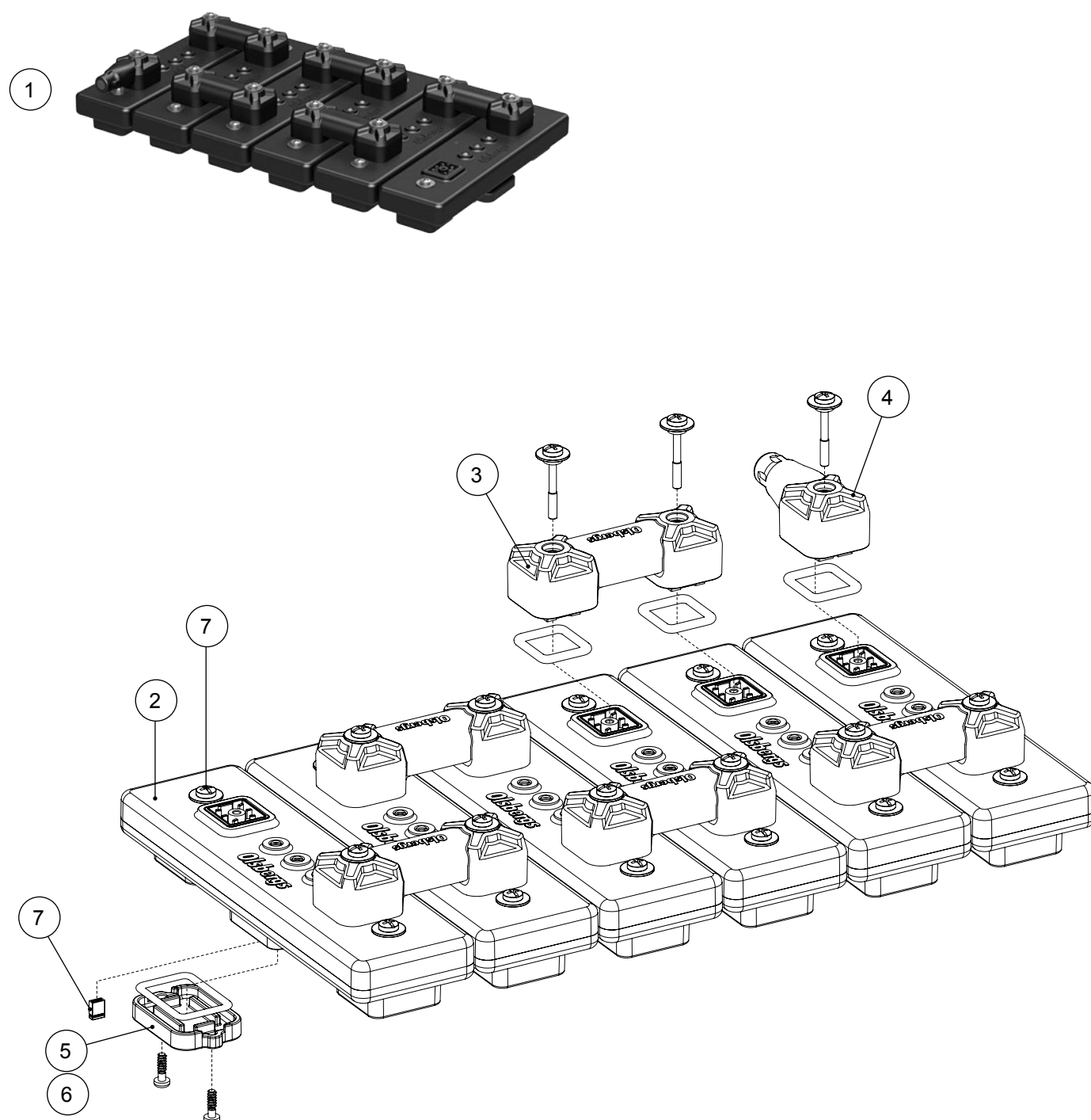
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1488	Digital Amplifier DA2 4F MD2 M, Kit	
2	4	1301	Digital Amplifier DA2 MD2 M	Yellow label with part no.
3	3	E1163	Connector bridge DA	Incl. screws
4	1	E0792B	Termination CAN 120 ohm	
5	4	E1111	Cover DA2 black	Incl. screws and O-ring
6	16	S2605	Jumper, blue	
7	8	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer

Digital Amplifier DA2 6F MD2 M, Kit

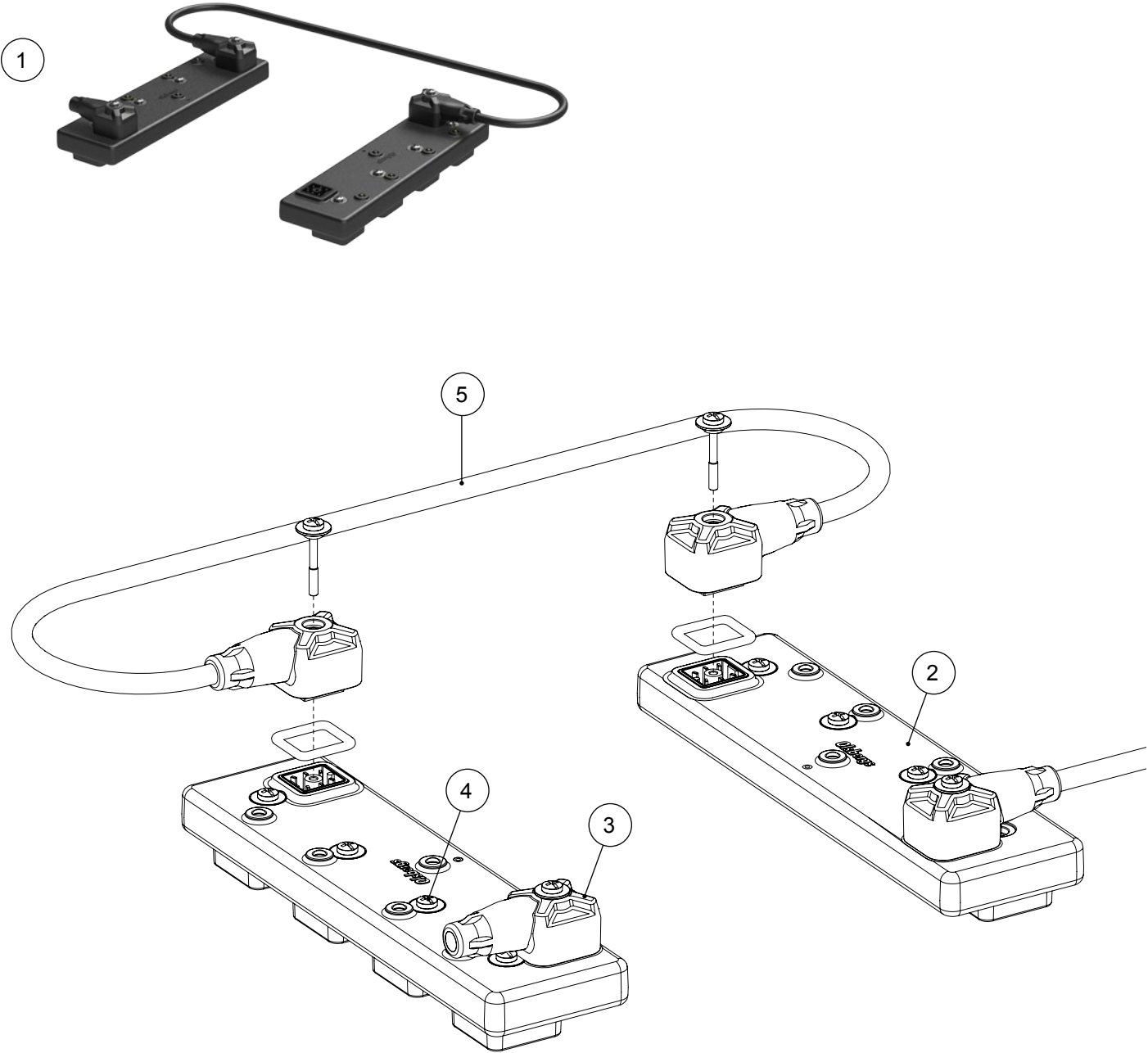
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1487	Digital Amplifier DA2 6F MD2 M, Kit	
2	6	1301	Digital Amplifier DA2 MD2 M	Yellow label with part no.
3	5	E1163	Connector bridge DA	Incl. screws
4	2	E0792B	Termination CAN 120 ohm	
5	5	E1111	Cover DA2 black	Incl. screws and O-ring
6	1	E1112	Cover DA2 red	Incl. screws and O-ring
7	24	S2605	Jumper, blue	
8	12	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer

Digital Amplifier DA14 4F MD2 M, Kit

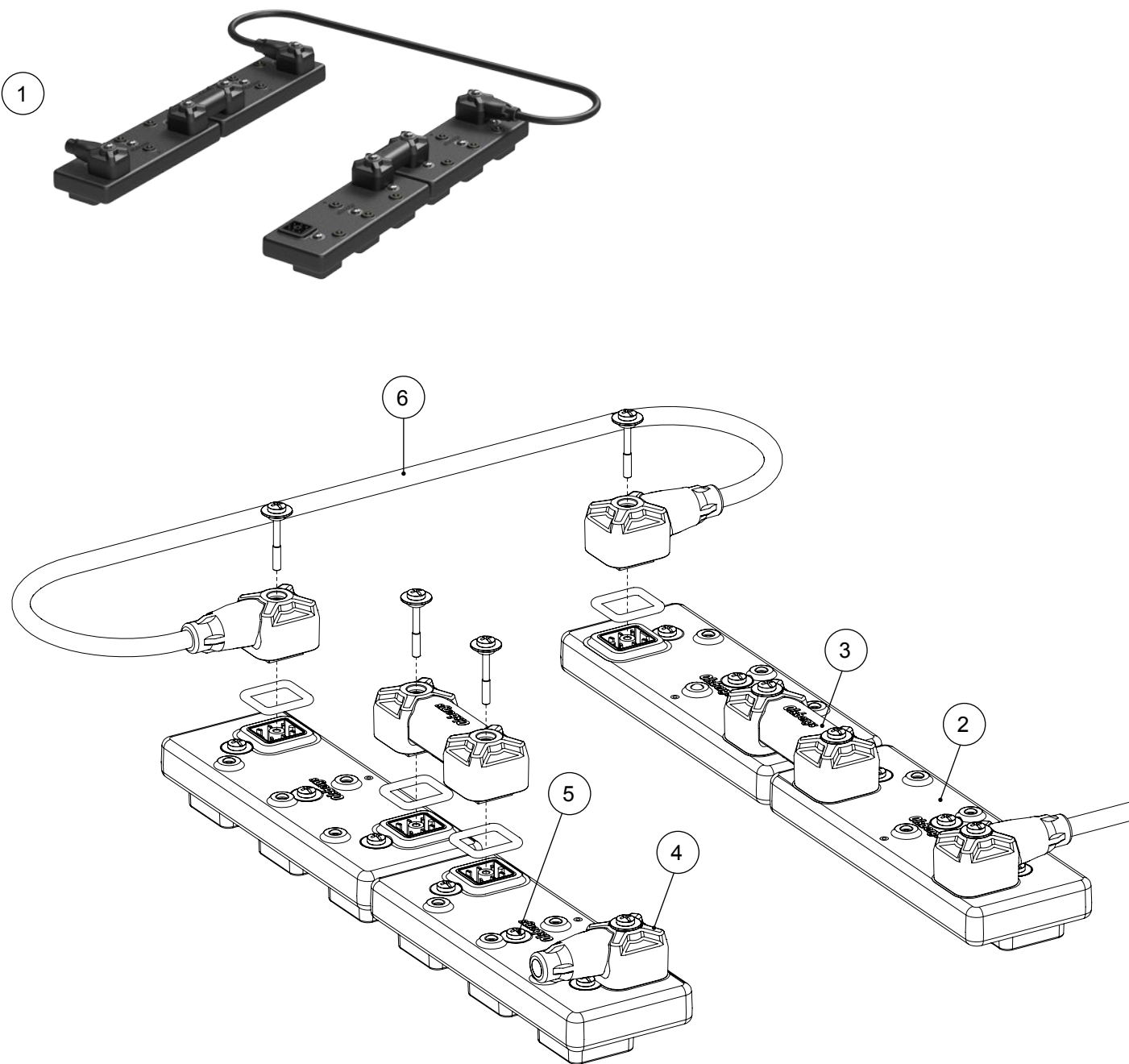
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1491	Digital Amplifier DA14 4F MD2 M, Kit	
2	2	1303	Digital Amplifier DA14 MD2 M	Yellow label with part no.
3	1	E0792B	Termination CAN 120 ohm	
4	8	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer
5	1	E1278BB	Cable CAN GO6-GO6 0,75 m	Incl. O-rings and washers

Digital Amplifier DA13 6F MD2 M, Kit

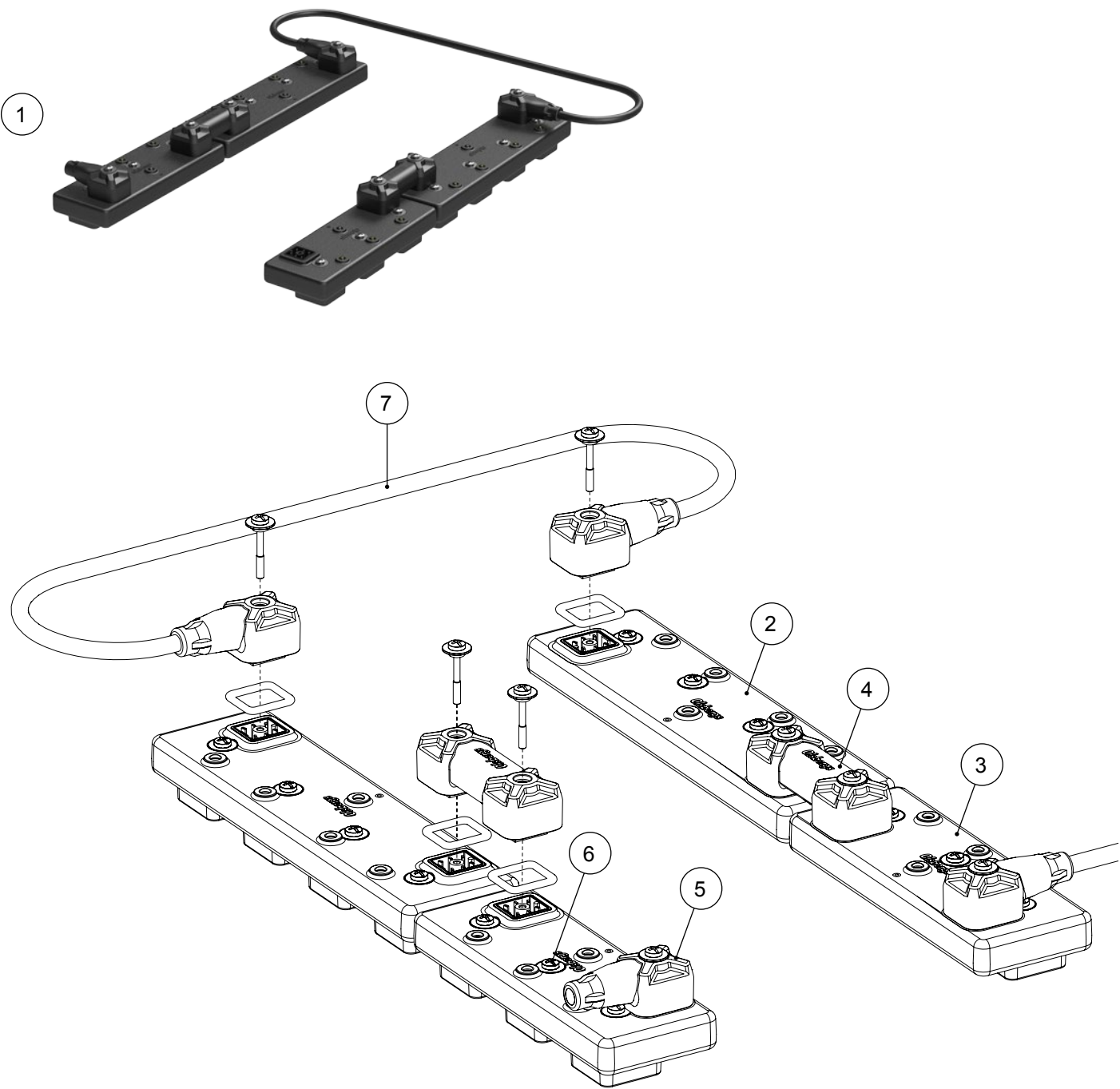
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1489	Digital Amplifier DA13 6F MD2 M, Kit	
2	4	1302	Digital Amplifier DA13 MD2 M	Yellow label with part no.
3	2	E1163	Connector bridge DA	Incl. screws
4	1	E0792B	Termination CAN 120 ohm	
5	12	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer
6	1	E1278BB	Cable CAN GO6-GO6 0,75 m	Incl. O-rings and washers

Digital Amplifier DA13+DA14 7F MD2 M, Kit

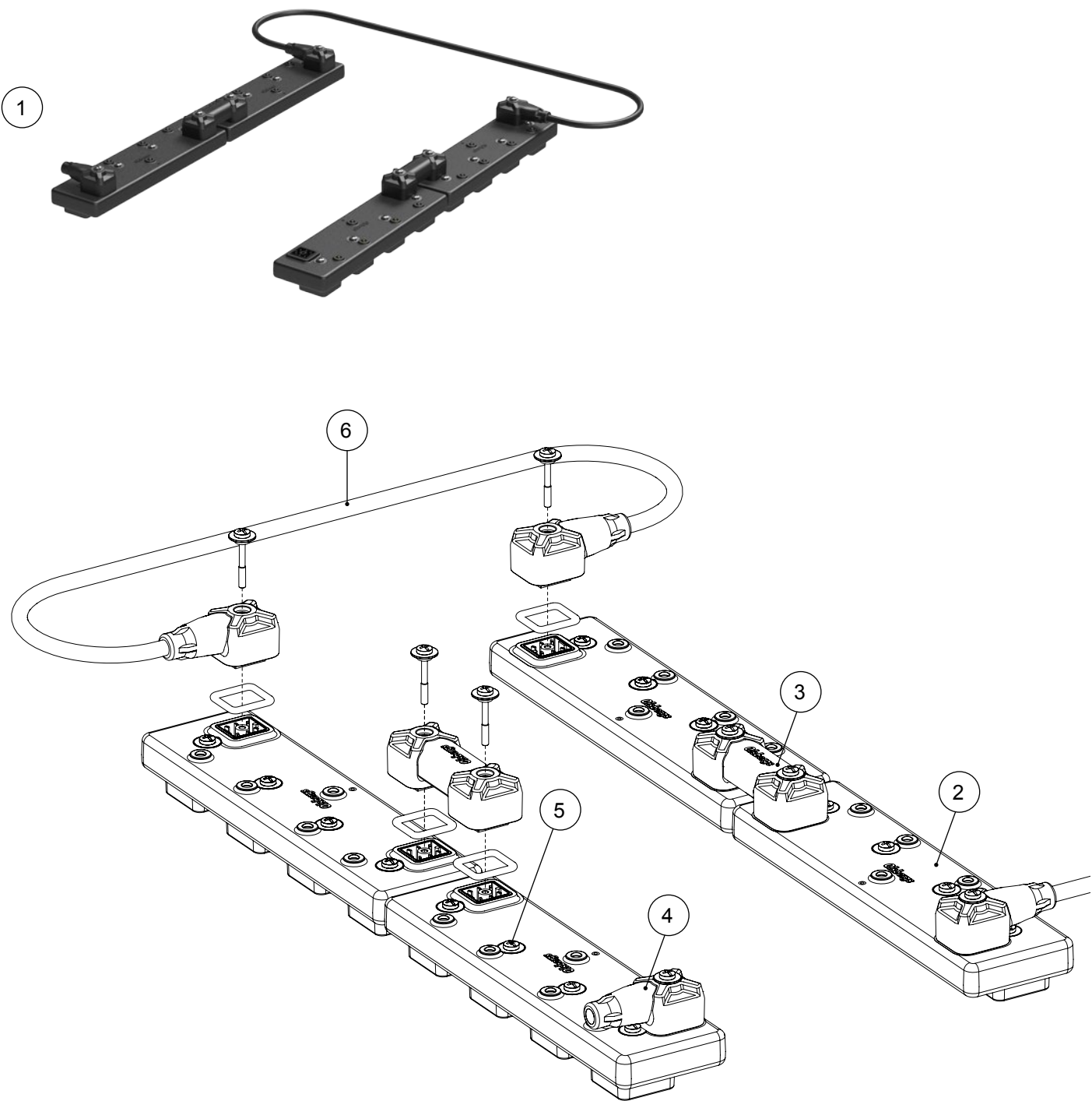
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1490	Digital Amplifier DA13+DA14 7F MD2 M, Kit	
2	2	1303	Digital Amplifier DA14 MD2 M	Yellow label with part no.
3	2	1302	Digital Amplifier DA13 MD2 M	Yellow label with part no.
4	2	E1163	Connector bridge DA	
5	1	E0792B	Termination CAN 120 ohm	
6	20	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer
7	1	E1278BB	Cable CAN GO6-GO6 0,75 m	Incl. O-rings and washers

Digital Amplifier DA14 8F MD2 M, Kit

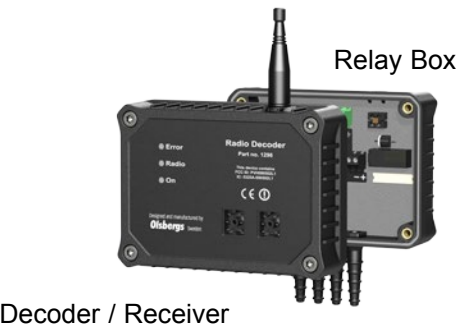
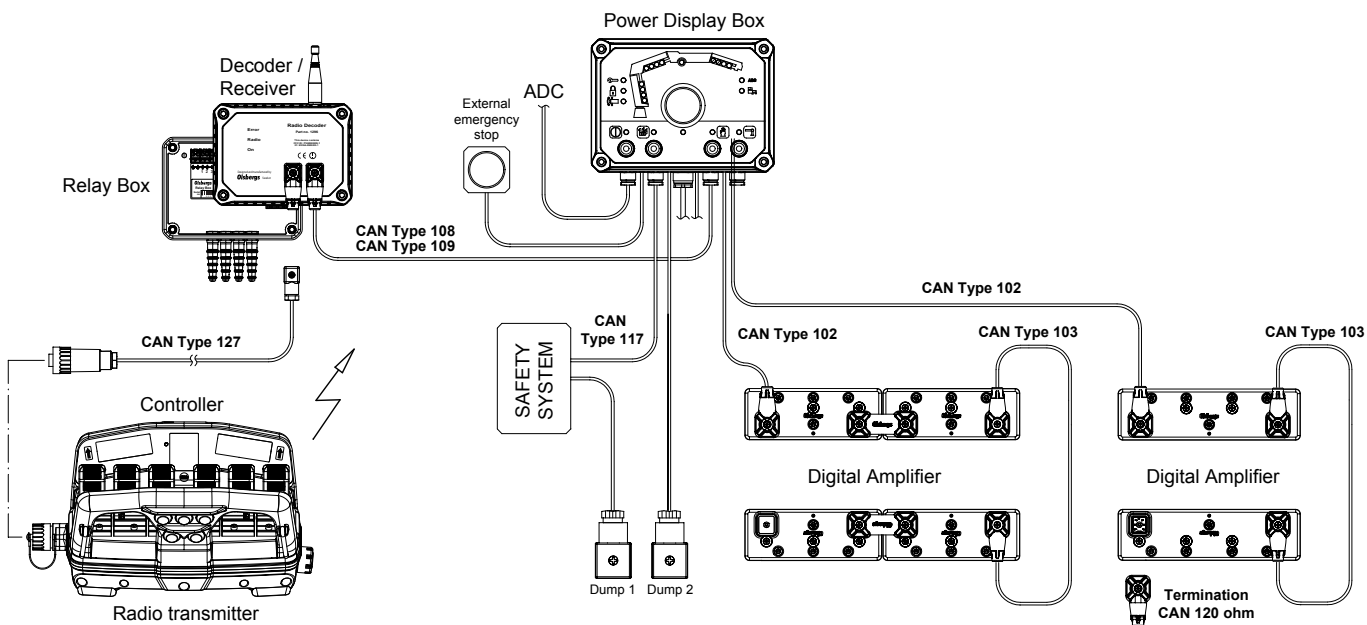
Spare parts



Pos.	Qty.	Part no.	Description	Note
1	1	1498	Digital Amplifier DA14 8F MD2 M, Kit	
2	4	1303	Digital Amplifier DA14 MD2 M	Yellow label with part no.
3	2	E1163	Connector bridge DA	Incl. screws
4	1	E0792B	Termination CAN 120 ohm	
5	16	E1378	Screw MRX PH M3x32, complete	Incl. O-ring and washer
6	1	E1278BB	Cable CAN GO6-GO6 0,75 m	Incl. O-rings and washers

System design

Radio system



Digital Amplifier DA14 4F



Digital Amplifier DA13 6F



Cable range

Cable CAN between PDB/Relay box, PDB/DA modules, DA/DA

GO6

GO6



Type 101

Part no.	Description	Part no.	Description
E0771	Cable CAN 0.5 m	E1281	Cable CAN 4.0 m
E0773	Cable CAN 1.0 m	E0774	Cable CAN 6.0 m
E0832	Cable CAN 1.5 m	E1330	Cable CAN 7.0 m
E0775	Cable CAN 2.0 m	E0776	Cable CAN 9.0 m
E1126	Cable CAN 2.5 m	E1335	Cable CAN 12.0 m
E0772	Cable CAN 3.0 m		

Cable CAN between PDB/DA modules, PBF/DA modules

GO6

GO6 Broad



Type 102

Part no.	Description	Part no.	Description
E0771B	Cable CAN 0.5 m	E0772B	Cable CAN 3.0 m
E0773B	Cable CAN 1.0 m	E1281B	Cable CAN 4.0 m
E0832B	Cable CAN 1.5 m	E0774B	Cable CAN 6.0 m
E0775B	Cable CAN 2.0 m	E0776B	Cable CAN 9.0 m
E1126B	Cable CAN 2.5 m	E1335B	Cable CAN 12.0 m

Cable CAN between DA/DA

GO6 Broad

GO6 Broad



Type 103

Part no.	Description	Part no.	Description
E1170BB	Cable CAN 0.22 m	E0775BB	Cable CAN 2.0 m
E0771BB	Cable CAN 0.5 m	E1126BB	Cable CAN 2.5 m
E1278BB	Cable CAN 0.75 m	E0772BB	Cable CAN 3.0 m
E0773BB	Cable CAN 1.0 m	E0774BB	Cable CAN 6.0 m
E0832BB	Cable CAN 1.5 m		

Cable CAN between PBF/DA modules

GO6

GO6 Broad 180° Rotated



Type 104

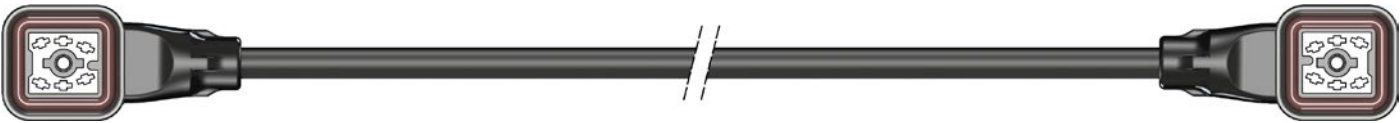
Part no.	Description	Part no.	Description
E0775BK	Cable CAN 2.0 m	E1281BK	Cable CAN 4.0 m

Cable range

Cable CAN between DA/DA

GO6 Broad 180° Rotated

GO6 Broad 180° Rotated



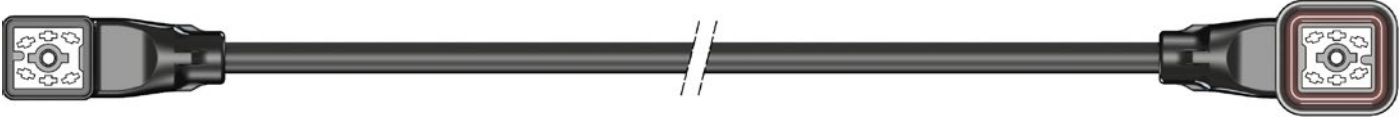
Type 105

Part no.	Description
E1278BBK	Cable CAN 0.75 m

Cable CAN between PBF/ DA modules (Forestry cranes)

GO6

GO6 Broad



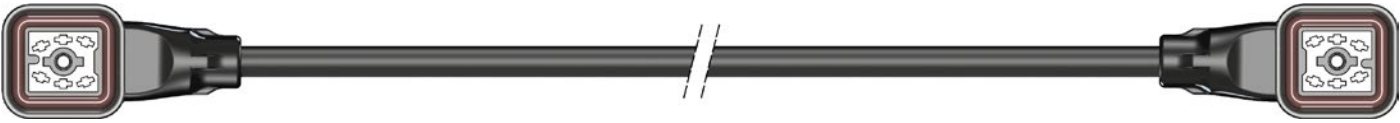
Type 106

Part no.	Description
E1287B	Cable CAN 8.0 m (Cable R839C)

Cable CAN between DA/DA (Forestry cranes)

GO6 Broad

GO6 Broad



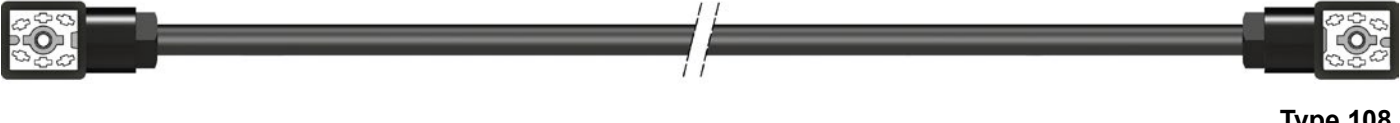
Type 107

Part no.	Description
E1287BB	Cable CAN 8.0 m (Cable R839C)

Cable CAN between PDB/Decoder

GO60

GO6



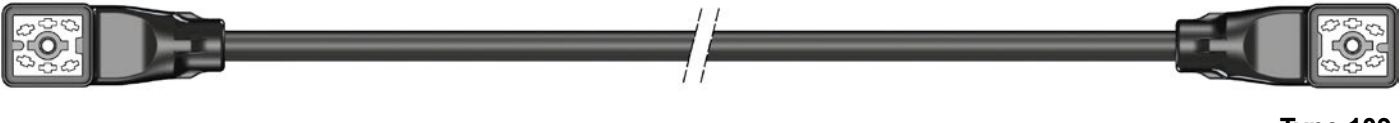
Type 108

Part no.	Description
E0777	Cable CAN 0,6 m

Cable CAN between PDB/Decoder, PDB/Selection box, PBF/Joystick, PBF/Selection box, Selection box/Joystick and Decoder/Controller

GO60

GO6

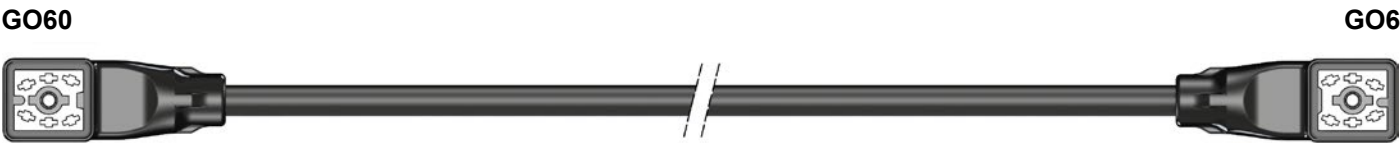


Type 109

Part no.	Description	Part no.	Description
E0779	Cable CAN 1.0 m	E1282	Cable CAN 4.0 m
E1222	Cable CAN 1.5 m	E1426	Cable CAN 5.0 m
E1285	Cable CAN 2.0 m	E1286	Cable CAN 6.0 m
E0778	Cable CAN 3.0 m		

Cable range

Cable CAN between PBF/Joystick, PBF/Selection box, Selection box/Joystick and Decoder/Controller



Type 110

Part no.	Description	Part no.	Description
E1247	Cable CAN 8.0 m (Cable R839C)	E1386	Cable CAN 14.0 m (Cable R839C)
E1331	Cable CAN 9.0 m (Cable R839C)	E1332	Cable CAN 15.0 m (Cable R839C)

Cable CAN between PDB/Signal box



Type 111

Part no.	Description
E1333	Cable CAN 1.0 m

Cable CAN between Cabin warning/Space



Type 112

Part no.	Description
E0836	Cable CAN (Cabin Warning) 7.0 m

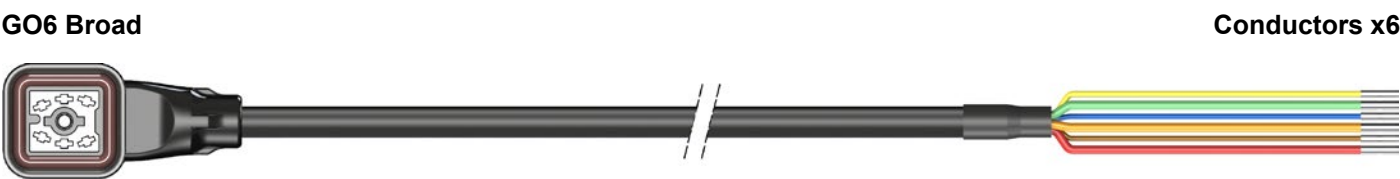
Cable CAN between PDB/Swivel



Type 113

Part no.	Description	Part no.	Description
E0886	Cable CAN 1.0 m	E1334	Cable CAN 2.0 m

Cable CAN between DA/Swivel

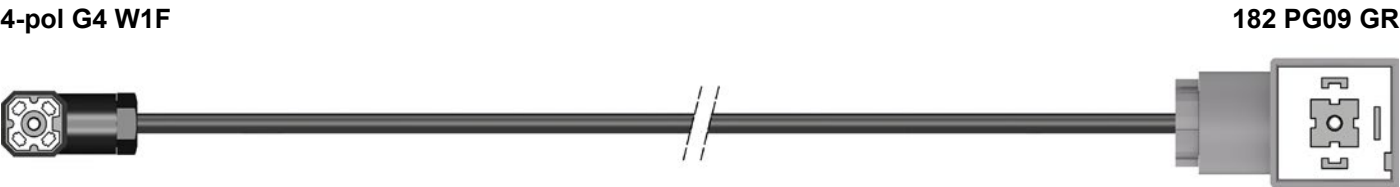


Type 113_1

Part no.	Description	Part no.	Description
E0886B	Cable CAN 1.0 m	E1334B	Cable CAN 2.0 m
E1545B	Cable CAN 1.5 m		

Cable range

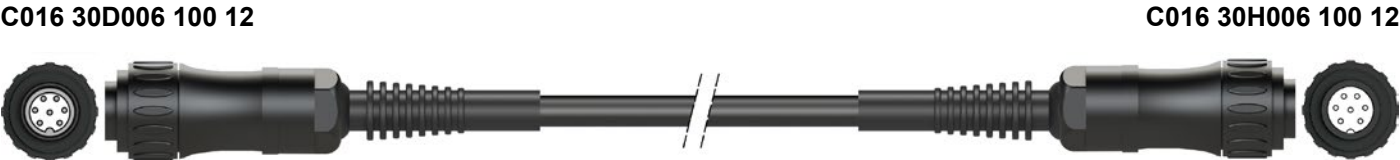
Cable between PDB/Dump 2



Part no.	Description	Part no.	Description
E0833	Cable Dump 2, 1.5 m	E1288	Cable Dump 2, 4.0 m
E0789	Cable Dump 2, 2.0 m	E1289	Cable Dump 2, 6.0 m
E0791	Cable Dump 2, 3.0 m		

Type 114

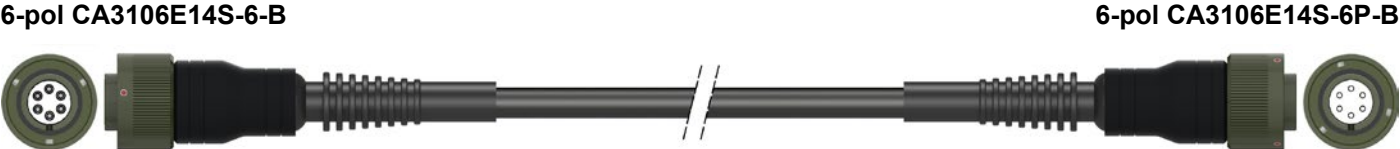
Cable CAN between Adapter/Controller



Part no.	Description	Part no.	Description
E1227	CAN (T3104-T3105), Controller 6.0 m	E0782	CAN (T3104-T3105), Controller 15.0 m
E1225	CAN (T3104-T3105), Controller 8.0 m	E0780	CAN (T3104-T3105), Controller 20.0 m

Type 115

MIL Cable CAN between Adapter/Controller



Part no.	Description
E1128	Cable CAN (Cable R839C) MIL Controller, 15.24 m
E1129	Cable CAN (Cable R839C) MIL Controller, 25.0 m

Type 116

Cable CAN between PDB/Space



Part no.	Description	Part no.	Description
E0784	Cable CAN (Space), 0.6 m	E1139	Cable CAN (Space), 3.0 m
E0783	Cable CAN (Space), 1.0 m	E1551	Cable CAN (Space), 4.0 m
E0785	Cable CAN (Space), 2.0 m		

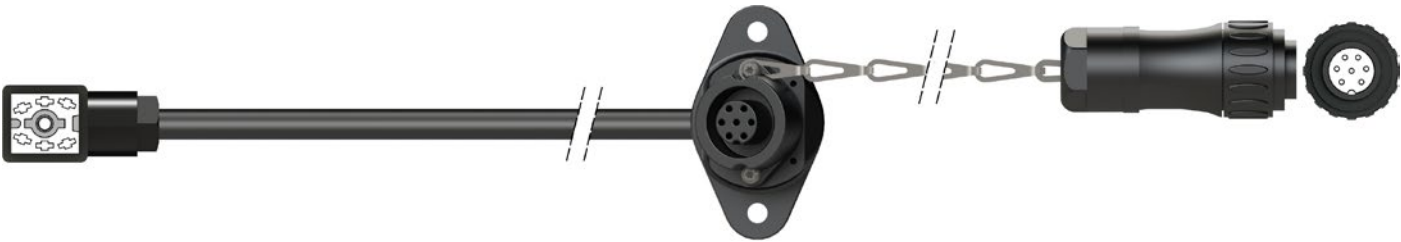
Type 117

Cable range

Cable CAN between PDB/Controller cable

GO60

Adapter E0865



Type 119

Part no.	Description	Adapter	Description
E0837	Cable CAN, Adapter, 1.0 m	E0865	Termination 120 Ohm
E0891	Cable CAN, Adapter, 3.0 m	E0865	Termination 120 Ohm

Cable CAN between Decoder/Controller cable

GO60

Adapter E0899



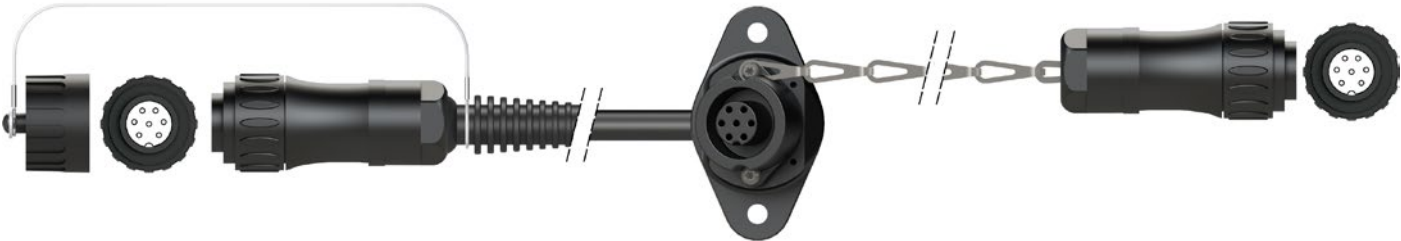
Type 120

Part no.	Description	Adapter	Description
E0999	Cable CAN, Adapter, 1.0 m	E0899	Strapped Cap

Cable CAN between Adapter/Controller cable

C016 30H006 100 12

Adapter E0865



Type 121

Part no.	Description	Adapter	Description
E1119	Cable CAN, Adapter-Adapter, 3.0 m	E0865	Termination 120 Ohm
E1079	Cable CAN, Adapter-Adapter, 9.0 m	E0865	Termination 120 Ohm

Cable (2-wire) between PDB/Dump 1 via customer box

4-pol G4 W1F

Conductors x2



Type 122

Part no.	Description	Part no.	Description
E1336	Cable Dump 1, 2.0 m	E1417	Cable Dump 1, 8.0 m
E1248	Cable Dump 1, 7.0 m		

Cable range

Cable (2-wire) between Swivel/Dump 1, PB.F2/Dump 1 and 2

MPM 182-09-N

Conductors x2



Type 123

Part no.	Description
E0788	Cable, Swivel/Dump, 2.0 m

Cable (2-wire) Repeater, PB.F2/RMS box

Conductors x2

Conductors x2



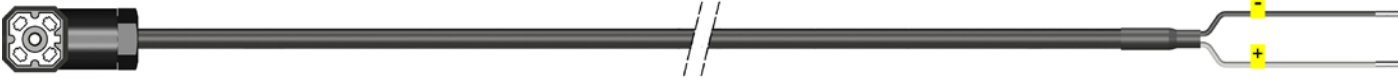
Type 124

Part no.	Description
E1532	Cable (2x0,5 mm²) 1.5 m

Cable (2-wire) between Truck power supply/Charger

G30 W 3 F E IVP

Conductors (marked) x2



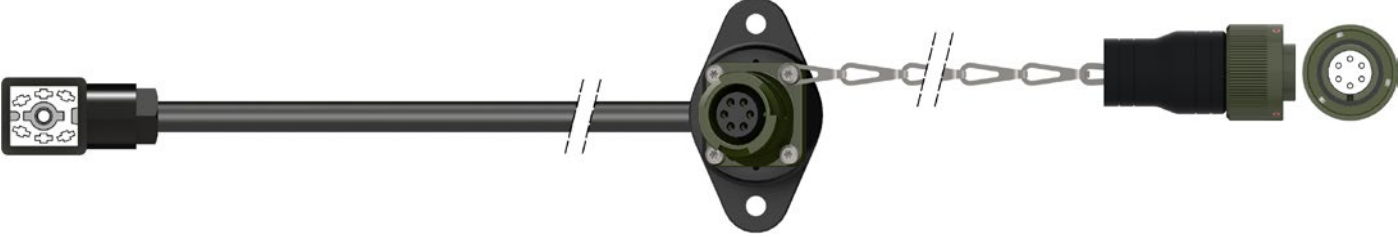
Type 125

Part no.	Description
E0723	Cable (2x0,5 mm²) 5.0 m

MIL Cable CAN between PDB and Controller cable E1128/E1129

GO60

Adapter E1132



Type 126

Part no.	Description	Adapter	Description
E1130	Cable CAN, MIL PDB, 1.0 m	E1132	Termination 120 Ohm MIL
E1136	Cable CAN, MIL PDB, 3.0 m	E1132	Termination 120 Ohm MIL

Cable CAN between Decoder and Controller

GO60

C016 10D006 010 12



Type 127

Part no.	Description
E0781	Cable CAN 4.0 m

Cable range

Cable (2-wire) between Joystick/Stop button

4-pol G4 W1F



Conductors x2

Type 128

Part no.	Description
E1239	Cable 2.0 m

Cable (2-wire) between Swivel/PDB S

Ring terminal (M6)



Conductors x2

Type 129

Part no.	Description
E0787	Cable, Swivel 1.3 m

Cable (2-wire) between PDB OS/Swivel

Ring terminal (M6) / G30 W 3 F E IVP



Conductors x2

Type 130

Part no.	Description
E0786	Cable, Swivel 0.5 m

Cable CAN between Relay box/Controller cable

GO6



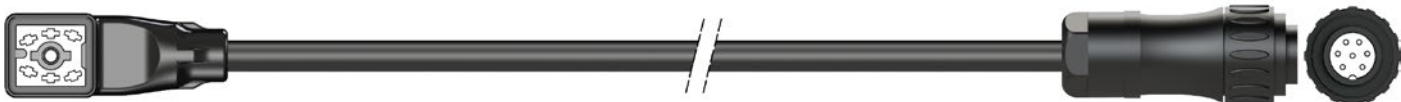
Adapter E0865

Type 131

Part no.	Description	Adapter	Description
E1479	Cable CAN, Adapter, Relay Box, 1.5 m	E0865	Termination 120 Ohm

Cable CAN between Decoder and Controller cable

GO6



C016 30H006 100 12

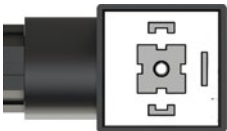
Type 132

Part no.	Description
E1434	Cable CAN 2.0 m

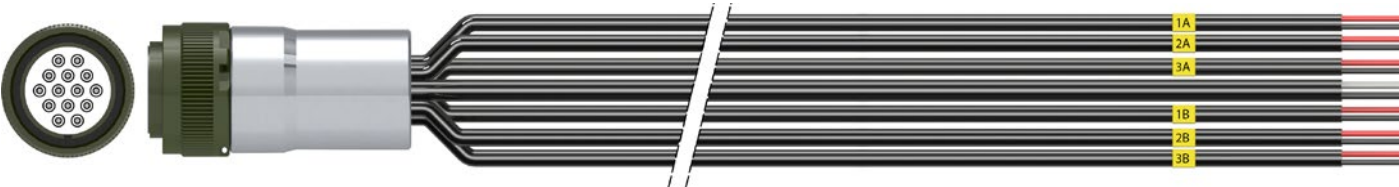
Cable range

Cable between A3 lever/positioners

Includes MPM 182-09-N
Part no. S0011 (x6)



14-pol MS3106E-20-27S



Type 201

Part no.	Description	Part no.	Description
0450	Cable shielded, 14H, 6.0 m	0454	Cable shielded, 14H, 15.0 m
0451	Cable shielded, 14H, 7.0 m	0456	Cable shielded, 14H, 25.0 m
0453	Cable shielded, 14H, 10.0 m		

Cable between Combi Drive Controller/SFB CD

2-pol bayonet

2-pol bayonet



Type 202

Part no.	Description	Part no.	Description
0095	Cable shielded, 2DB, 1.5 m	0094	Cable shielded, 2DB, 12.0 m
0093	Cable shielded, 2DB, 2.0 m	0090	Cable shielded, 2DB, 15.0 m
0091	Cable shielded, 2DB, 3.0 m	0092	Cable shielded, 2DB, 20.0 m
0098	Cable shielded, 2DB, 6.0 m	0096	Cable shielded, 2DB, 25.0 m
0100	Cable shielded, 2DB, 8.0 m	0097	Cable shielded, 2DB, 30.0 m
0099	Cable shielded, 2DB, 10.0 m		

Cable between Combi Drive SFB CD/DA CD and DA CD/DA CD

4-pol G4 W1F

4-pol G4 W1F



Type 300

Part no.	Description	Part no.	Description
E0435	Cable PDB CD - DA CD, 1.0 m	E0434	Cable DA CD - DA CD, 0.15 m

Cable range

Connector bridge between DA/DA



Type 200

Part no.	Description
E1163	Connector bridge DA

Strapped plugs and terminations

E0793



E0792



E0792B



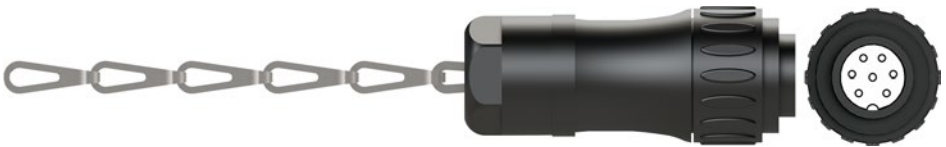
E0854



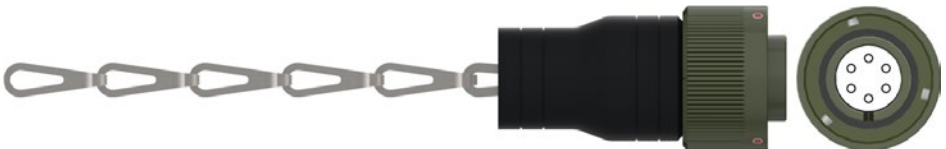
E0865



E0899



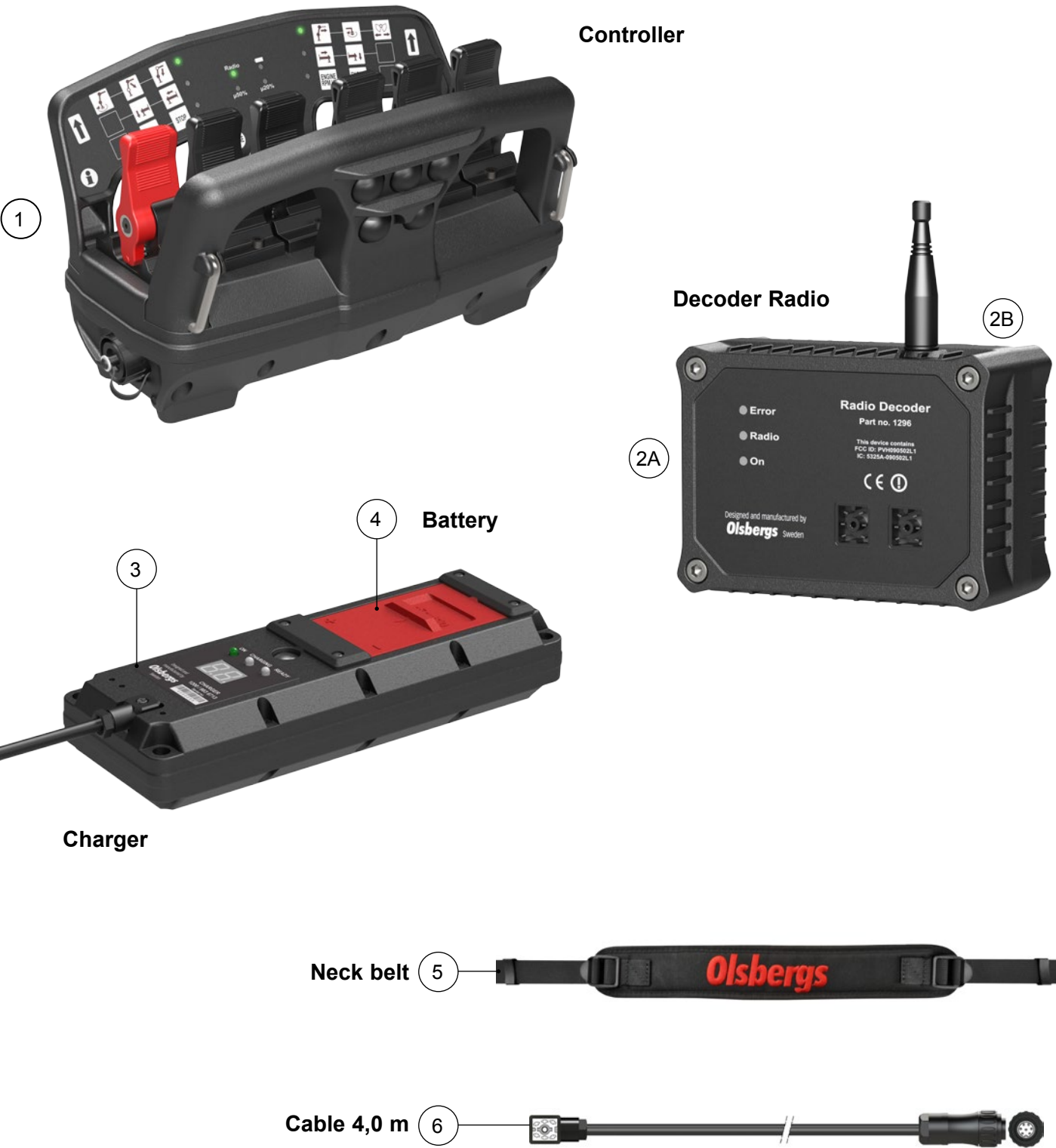
E1132



Part no.	Description	Part no.	Description
E0793	Strapped plug ext. emergency stop	E0865	Termination 120 ohm, adapter
E0792	Termination CAN 120 ohm	E0899	Strapped cap, adapter
E0792B	Termination CAN 120 ohm	E1132	Termination 120 ohm, MIL
E0854	Strapped plug, decoder		

Controller Basic 6F MD2

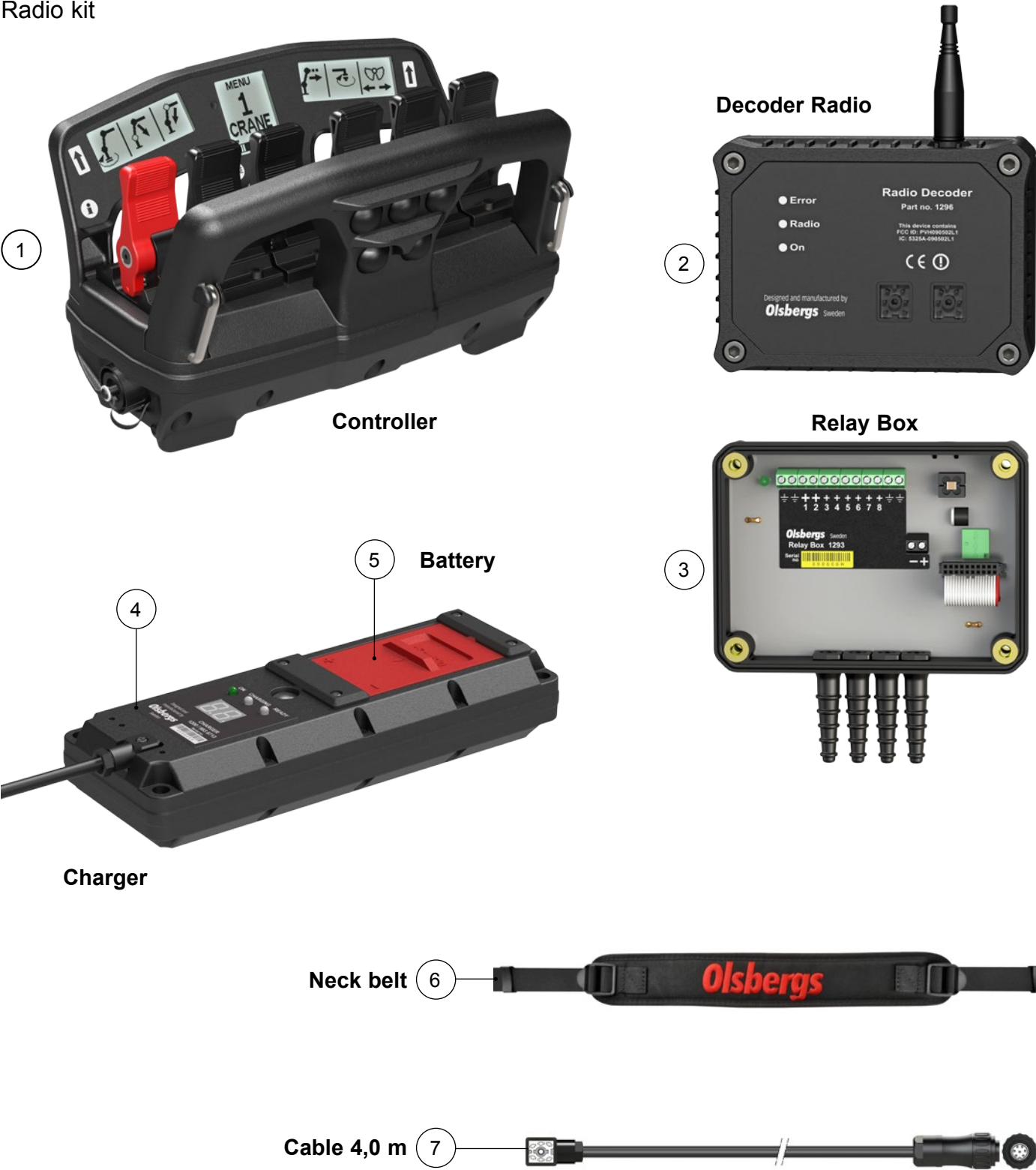
Radio kit



Pos.	Qty	Part no.	Description	Note
1 - 6	1	1550BO	Controller Basic 6F MD2, Radio kit	
1	1	1218B	Controller Basic 6F MD2	
2A	1	1296	Decoder Radio, top module MD2 M	
2B	1	E1431	Bottom box, high	
3	1	1200	Battery charger NiMH 7,2V	
4	2	1201	Battery NiMH 7,2V	
5	1	E1294	Neck belt	
6	1	E0781	Cable CAN GO60-T3105 4,0 m	

Controller Display 6F MD2 M

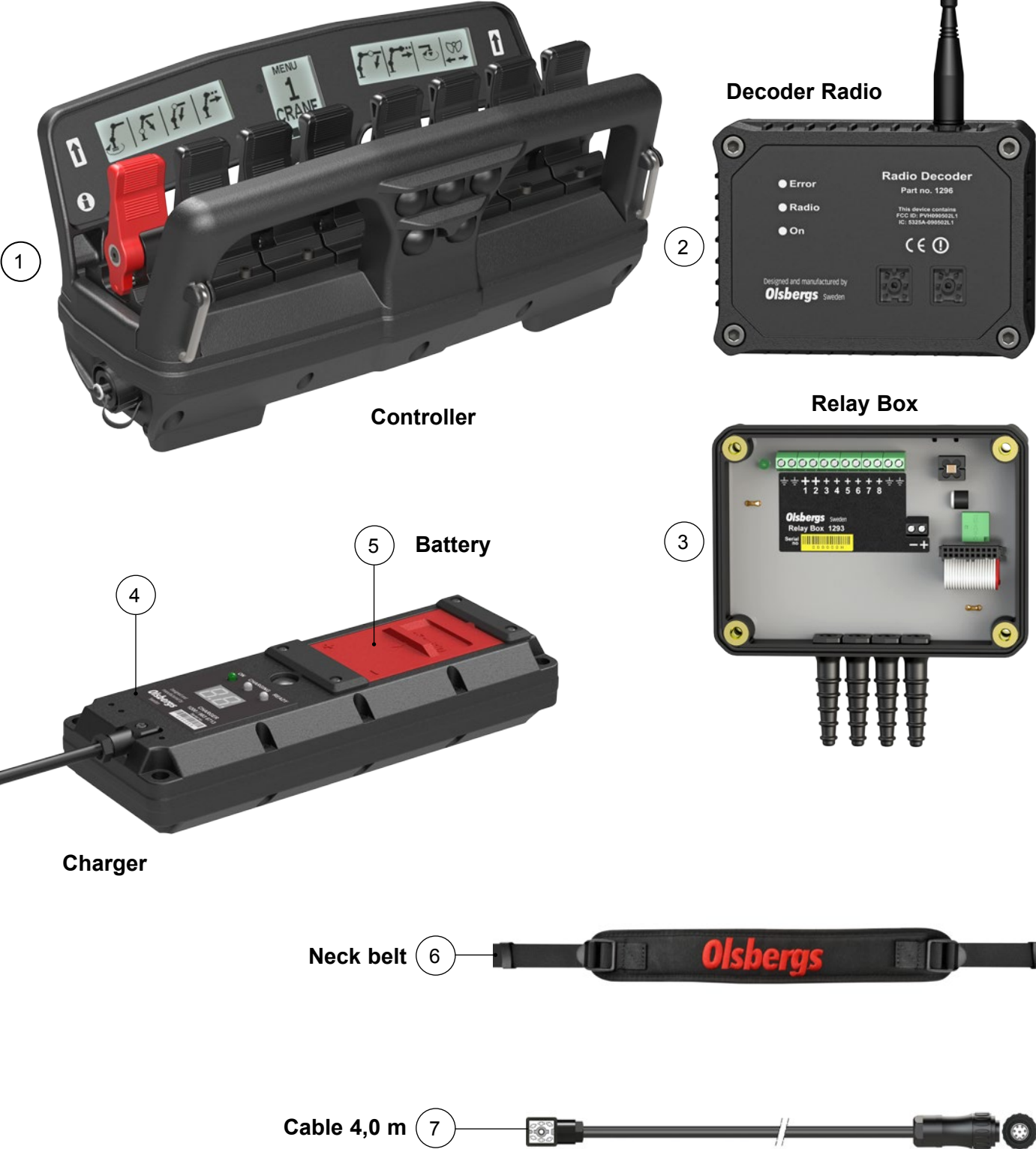
Radio kit



Pos.	Qty	Part no.	Description	Note
1 - 7	1	15530	Controller Display 6F MD2 M, Radio kit	
1	1	1218	Controller Display 6F MD2	
2	1	1296	Decoder Radio, top module MD2 M	
3	1	1293	Relay Box, bottom module MD2 M	
4	1	1200	Battery charger NiMH 7.2V	
5	2	1201	Battery NiMH 7.2V	
6	1	E1294	Neck belt	
7	1	E0781	Cable CAN GO60-T3105 4,0 m	

Controller Display 8F MD2 M

Radio kit



Pos.	Qty	Part no.	Description	Note
1 - 7	1	15540	Controller Display 8F MD2 M, Radio kit	
1	1	1287	Controller Display 8F MD2	
2	1	1296	Decoder Radio, top module MD2 M	
3	1	1293	Relay Box, bottom module MD2 M	
4	1	1200	Battery charger NiMH 7.2V	
5	2	1201	Battery NiMH 7.2V	
6	1	E1294	Neck belt	
7	1	E0781	Cable CAN GO60-T3105 4,0 m	

Controller Display 6F MD2

Cable kit

1
Controller



2
Battery Box
Black, Dummy



Cable CAN Controller
15,0 m



Cable CAN Adapter
PDB 1,0 m



Neck belt



Pos	Qty	Part no.	Description	Note
1 - 5	1	14160	Controller Display 6F MD2, Cable kit	
1	1	1218	Controller Display 6F MD2	
2	1	E1244	Battery Box Black, Dummy	
3	1	E0782	Cable CAN (T3104-T3105), Controller 15.0 m	
4	1	E0837	Cable CAN Adapter, PDB 1,0 m	Incl. termination E0865
5	1	E1294	Neck belt	

Controller Basic 6F MD2

Cable kit

1
Controller



2
Battery Box
Black, Dummy



Cable CAN Controller
15,0 m



Cable CAN Adapter
PDB 1,0 m



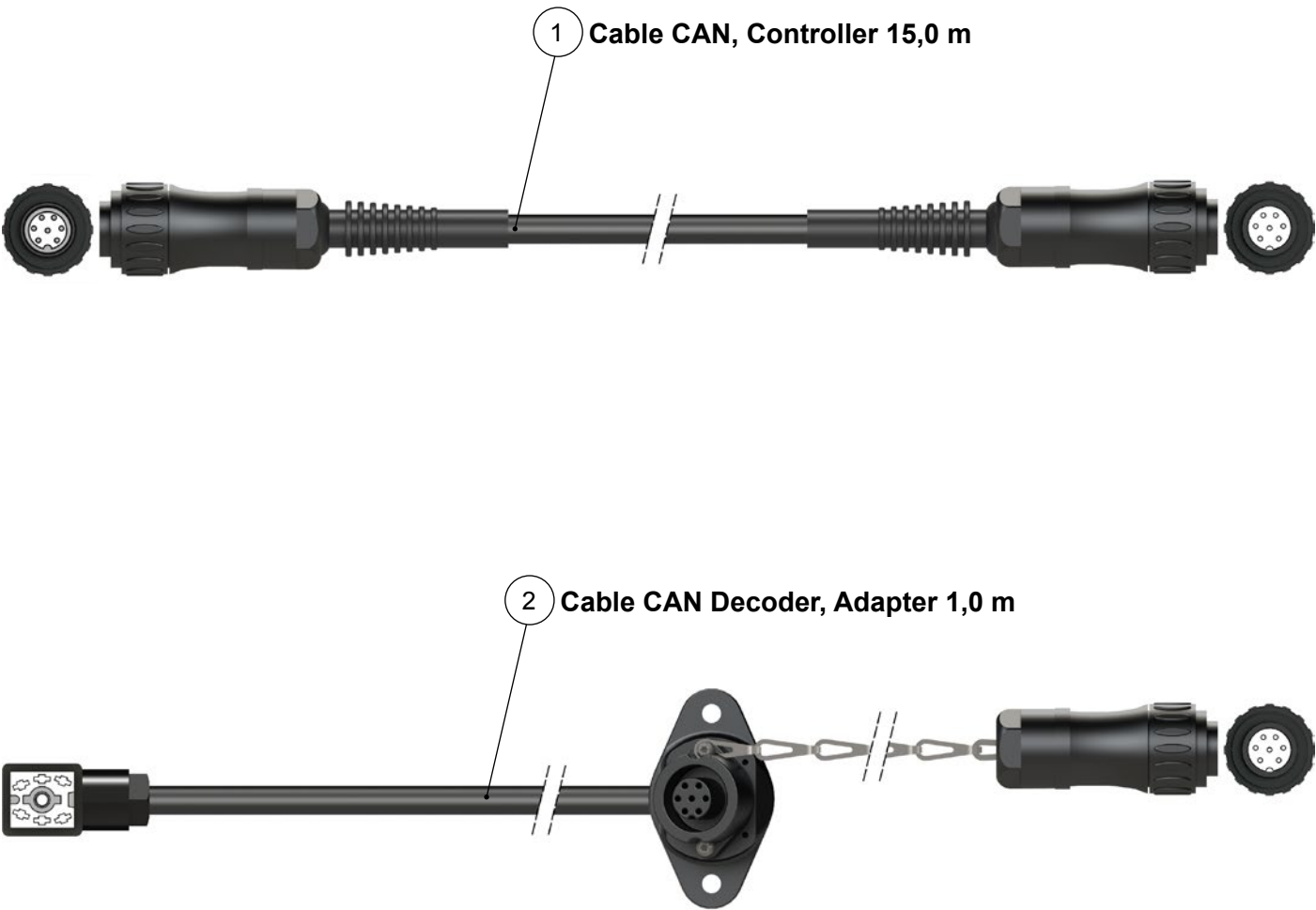
Neck belt 5



Pos	Qty	Part no.	Description	Note
1 - 5	1	1416BO	Controller Basic 6F MD2, Cable kit	
1	1	1218B	Controller Basic 6F MD2	
2	1	E1244	Battery Box Black, Dummy	
3	1	E0782	Cable CAN (T3104-T3105), Controller 15.0 m	
4	1	E0837	Cable CAN Adapter, PDB 1,0 m	Incl. termination E0865
5	1	E1294	Neck belt	

Control with cable via Radio Decoder

Cable Kit

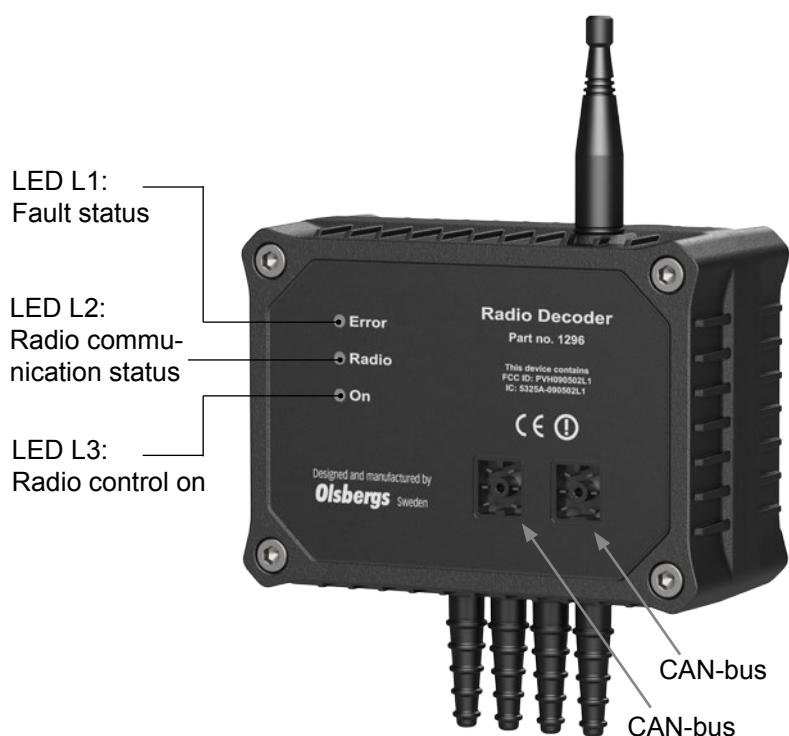


Pos	Qty	Part no.	Description	Note
1 - 2	1	1477	Radio Decoder MD2, Cable kit	
1	1	E0782	Cable CAN (T3104-T3105), Controller 15.0 m	
2	1	E0999	Cable CAN, Adapter, 1.0 m	Incl. strapped cap E0899

Radio Communication - Status

The radio decoder contains one of the radio units.
The decoder translates the radio traffic, consisting of lever and button data from the hand controller, to the CAN bus.

For safety reasons, it is extremely important that data is not corrupted, therefore the decoder has dual micro-processors which monitor each other to ensure accuracy in the translation. The controller and the decoder must be “paired” with each other to establish a connection. A unique code is loaded and stored in each unit.

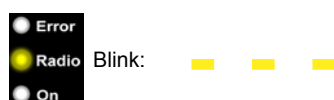


Blink mode for each LED in different operating cases:

Decoder on,
under initialization.



Decoder powered,
no radio connection.



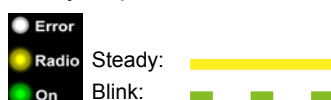
Teach-in procedure in
progress.



Cable operation.



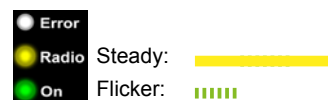
Radio connection present,
safety requirements not met.



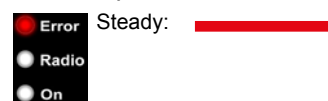
Teach-in procedure
complete.



Normal operation.



Internal error or failed
teach-in procedure.



Pairing of controller and radio decoder

Every system has a unique controller/decoder pair which only communicates with each other. In a system delivered from Olsbergs factory the controller and decoder are paired and ready to use.

If one unit has to be replaced, a new pairing procedure must be done in order to make the new pair communicate. The procedure to be done as follows:

1. Switch off the PDB.
2. Unscrew the left-hand connector on the decoder and remove it.
3. Connect the hand controller with the accompanying cable (E0781) to the decoder.
4. Switch on the PDB and select "remote".
5. Hold down the release button on the hand controller while pulling out the stop button.

When the yellow LED on the decoder starts to blink, let go of the release button. When the procedure is complete, the yellow LED goes out. If the procedure was successful, only the green LED remains lit, if not, the red LED is lit.

The procedure can take up to half a minute.



Getting started with the hand controller

The procedure for starting the system is described below.

Installing the battery

Install a fully-charged battery in the hand controller as shown on the right. **(Figure 1)**

The battery must be installed correctly or the hand controller will not start.

A fully-charged 1700 mAh battery provides approximately 8 hours of operation.

Activating the system on the crane

To turn on the crane's control unit press the on button on the Power Display Box, PDB. The LED above the button will then start to flash. **(Figure 2)**

Then press the remote control button on the PDB, the LED above this button will light and stay on. **(Figure 3)**

The decoder starts when remote control operation is selected and the decoder's yellow LED starts to blink.

The crane's control unit is now ready to be connected with the hand controller.

Activating the controller

To activate the hand controller pull the stop button out by turning it clockwise. The hand controller is powered up and starts to establish a radio link with the decoder on the crane. While radio contact is being established a flashing hourglass and the text "Wait" is shown on the centre display. **(Figure 4)** Remaining battery power is displayed and the signal strength symbol flashes when radio communication is established but the hand controller and decoder are still exchanging connection data.

Connection time for a cold-start can be up to 5 seconds. A cold-start occurs when the hand controller or decoder on the crane have been off for the last 10 minutes. When restarting within 10 minutes of turning off the hand controller, the radio link is still established and the hand controller is ready for use immediately.

The factory setting for the period of time the hand controller maintains contact with the decoder after pressing the stop button is 10 minutes.



Figure 1



Figure 2



Figure 3

Getting started with the hand controller

Radio link established

When the radio connection is established the yellow LED on the decoder shines steadily and the green LED blinks rapidly. **(Figure 5)**

The hourglass symbol on the hand controller disappears and the text “Wait” **(Figure 4)** is replaced by “CRANE 1”. **(Figure 7)**

The radio signal strength is now shown without blinking.

If the radio connection is disrupted for longer than 0.5 of a second, then “CRANE 1” is replaced by the “RESTART” symbol and the signal strength symbol will either disappears or start blinking. **(Figure 6)**

START MENU

If the hand controller has been turned off it will always restart in “CRANE 1”. **(Figure 7)**



Figure 4



Figure 6



Figure 5



Figure 7

Menu

Olsbergs hand controllers are equipped with a menu selection system as standard. There are three main menus which can be easily accessed via three push buttons.

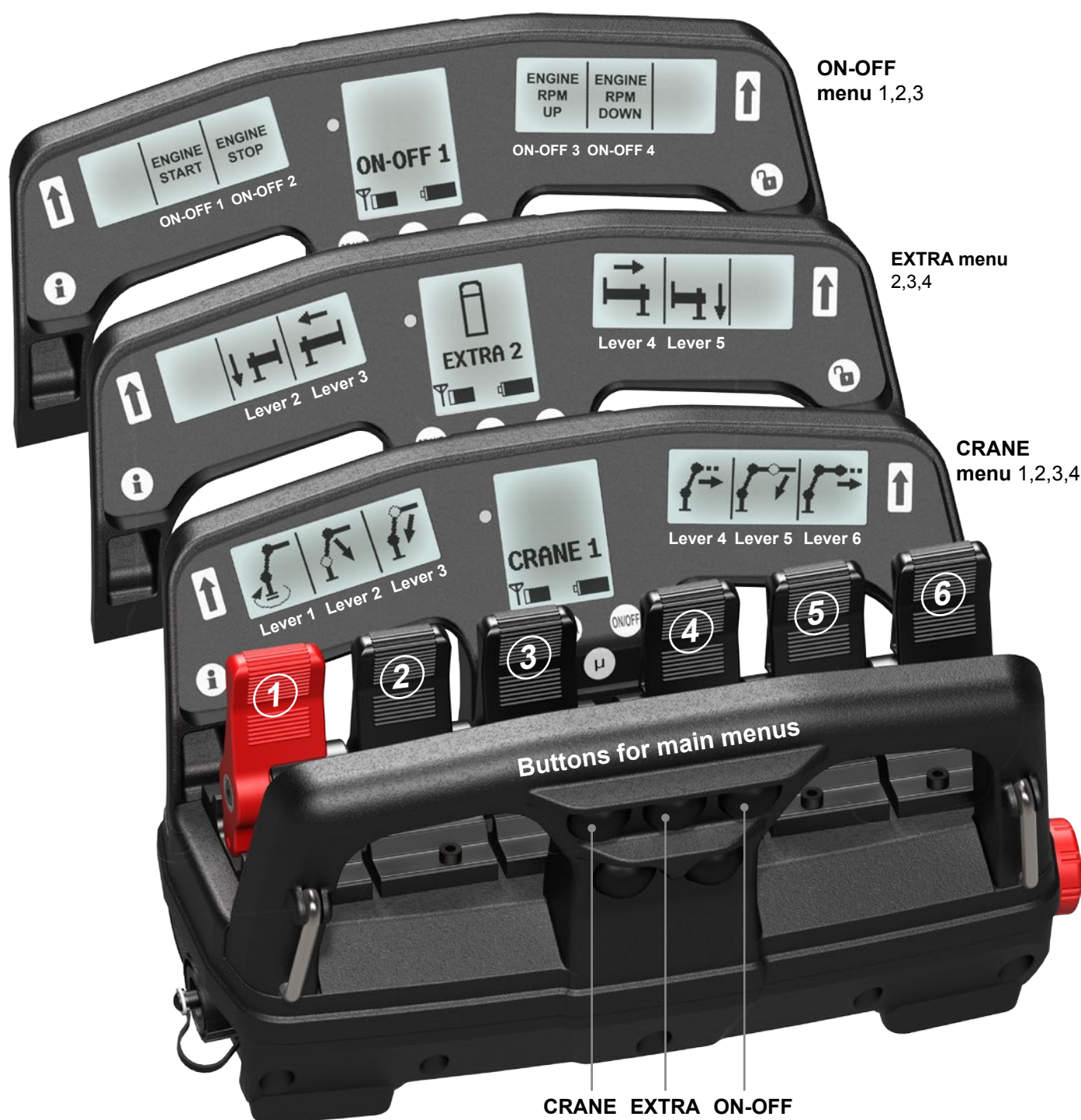
The main menus are:
the CRANE menu
the EXTRA menu
the ON-OFF menu

In each of the main menus the operator can select sub-menus by repeatedly pressing the same button, e.g. 1-2-3 and then back to 1 again.

As standard, up to 4 menus with 6 proportional functions together with 12 on-off functions, can be programmed.

The system with main menus enables the operator to change quickly from crane operation to outrigger operation and back again.

The hand controller always restarts in menu CRANE 1.



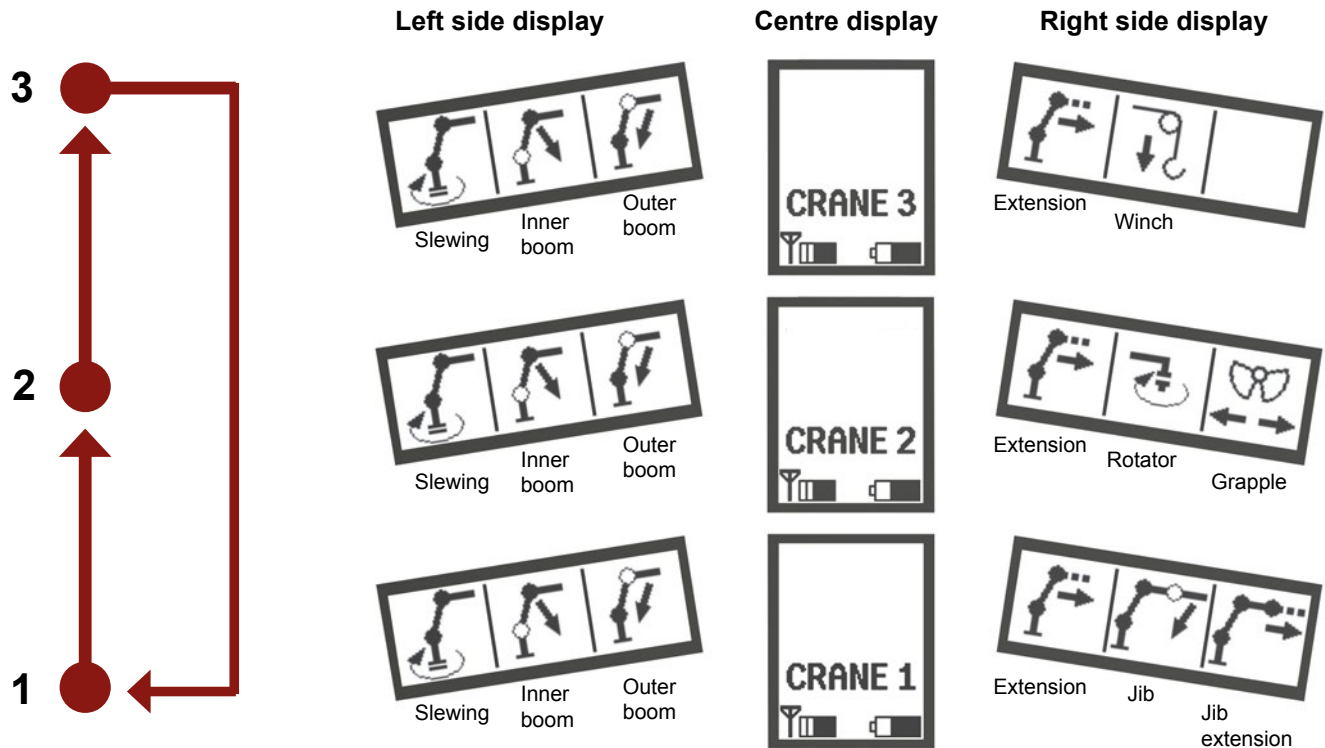
Main menu “CRANE”, proportional functions

The sub-menus in “CRANE” mode are configured when the crane is fitted to the vehicle. The right and left side displays show symbols representing the functions controlled by the corresponding levers.

When the crane menu changes, the symbols and texts change to match the functions available via the current menu.

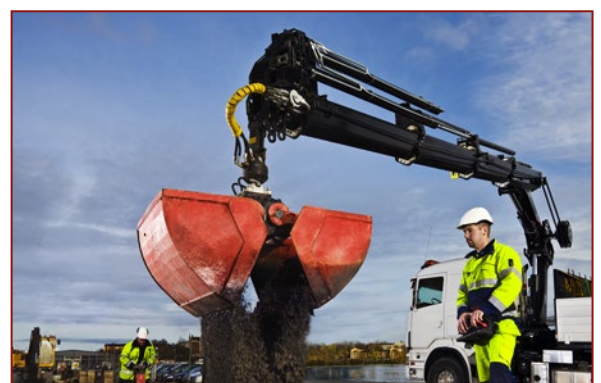
The symbols are stored in a symbol library. If the library does not contain the required symbol, a description of the function can be written instead. Only Arabic numerals and letters from the English alphabet can be used.

Symbols and texts can be configured via the safety system if it is an EU crane. “OS” cranes can be configured by a computer or delivered with a default configuration set in the factory.



”CRANE MENU” BUTTON

The left-hand button in the top row on the bar, facing towards the operator. When the operator pulls out the start button on the hand controller, it always starts in menu CRANE 1.

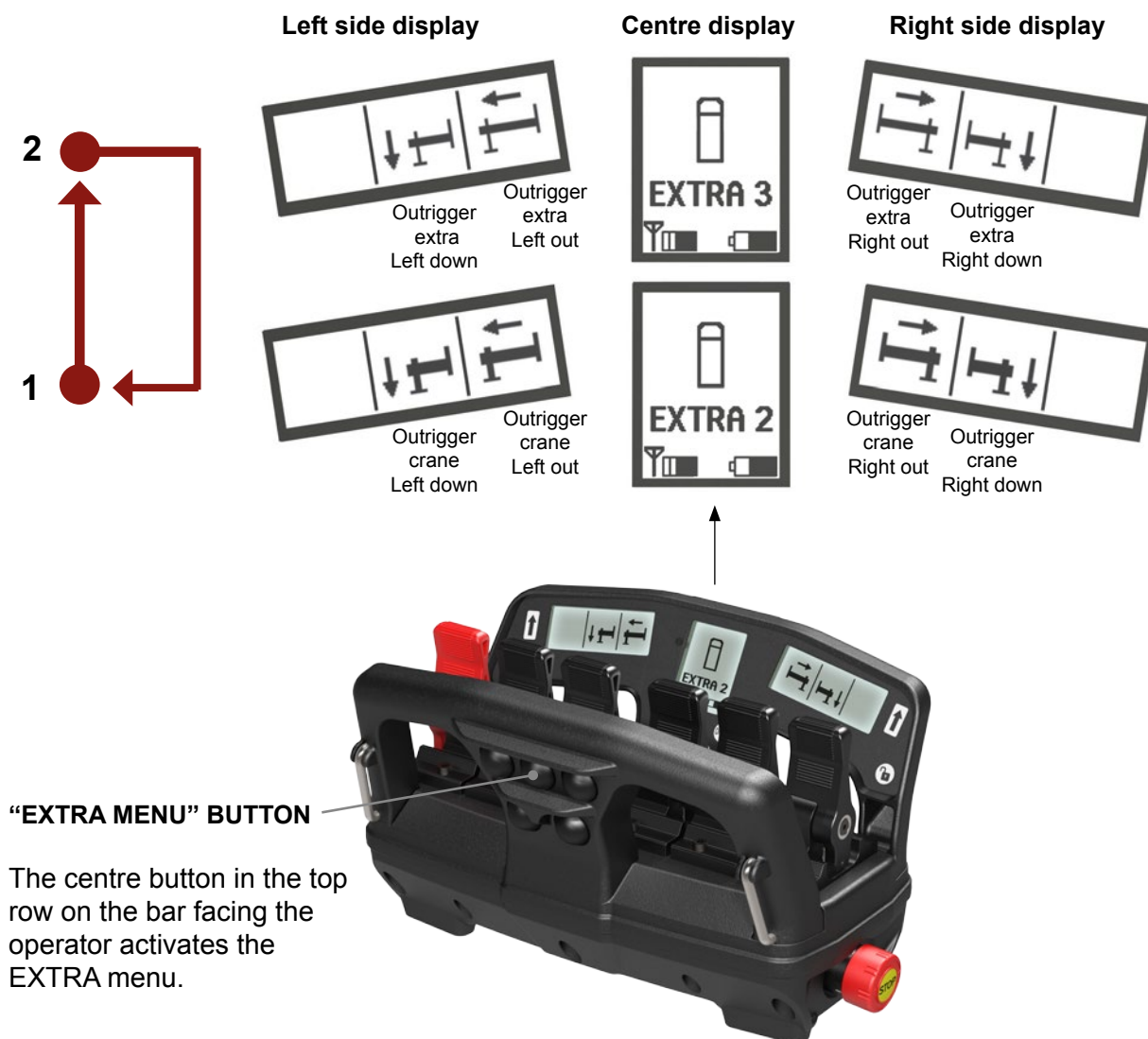


Main menu “EXTRA”, proportional functions

The “EXTRA” main menu contains additional hydraulic proportional functions that do not belong to the crane itself, such as outriggers front and rear, boat supports, levelling etc.

Here too, there is a symbol or text describing the function being used; the symbol is logically positioned in relation to the lever. Only Arabic numerals and the English alphabet can be used in the descriptions.

The symbols and descriptions are configured in the same way as the “CRANE” main menu and the same method is used for stepping between the sub-menus.



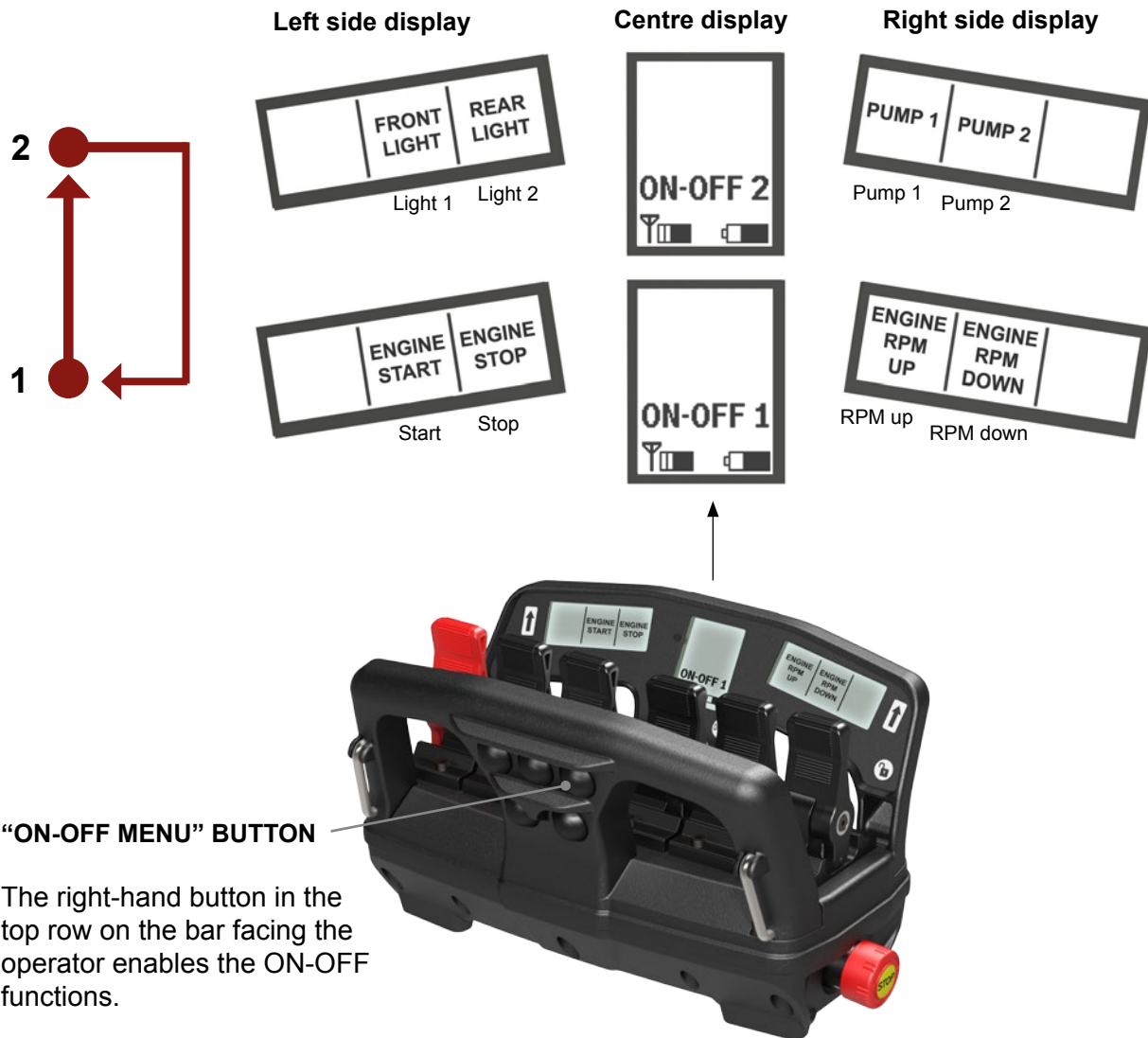
Main menu “ON-OFF”, on-off functions

The “ON-OFF” main menu contains functions such as start, stop and throttle. The functions are configured at the bodybuilder.

No symbols are used for these functions at present, instead, a description matching the respective function and lever is shown in the display.

The hand controller is prepared for the use of symbols for the ON-OFF functions. Only Arabic numerals and the English alphabet can be used in the descriptions.

The ON-OFF functions are controlled by the 4 levers located in the middle of the controller. Thus function 1 is controlled by lever 2, function 2 by lever 3 and so on. The ON-OFF functions are activated irrespective of which direction the lever is moved.



The right-hand button in the top row on the bar facing the operator enables the ON-OFF functions.

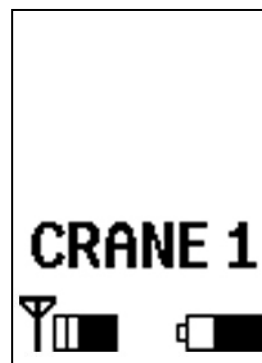


Centre display, view modes example

The centre display is the system's information centre. It shows information that is not directly related to the crane's operation.

The symbols used for this information are described in detail below.

The image to the right shows the appearance of the centre display during normal radio controlled operation of the crane.



FAULT

A symbol of a spanner is shown when the safety system discovers a fault in the system.

MICRO

Indicates that micro operation has been selected. Micro operation changes the sensitivity of the levers as follows:

At full lever deflection, $\mu 50\%$ yields 50% of normal speed and $\mu 20\%$ yields 20% of normal speed for the crane.

SERVICE

Indicates that the crane requires service.

PERSONNEL BASKET OPERATION

Indicates that MEWP-mode (operation from personnel basket) has been selected. This requires greater stability and lower speeds for crane movement.

SIGNAL STRENGTH

The number of bars shows the signal strength. Optimum reception is when all the bars are filled. When the symbol flashes the radio is connected but the start criteria have not been met.

MAIN MENU

The text shows which main menu has been selected while the number shows which sub-menu of that main menu applies. The main menus are: CRANE, EXTRA and ON-OFF. NOTE! The first menu number in EXTRA is one higher than the highest in CRANE. ON-OFF is numbered from 1.

ADC (Automatic Duty Control)

Indicates that the ADC function is on.

JDC (Jib Duty Control)

Indicates that the JDC function is on.

HDC (Hoist Duty Control)

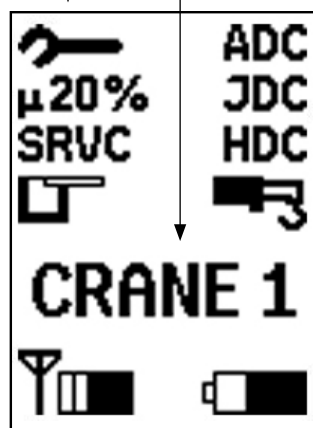
Indicates that the HDC function is on.

MANUAL EXTENSION

Manual extension is selected by pressing the horn and release buttons at the same time. The safety system acknowledges by showing this symbol.

BATTERY CAPACITY

The battery symbol shows the battery power remaining. When the system starts to blink there is only a few minutes of operation left. Information is sent to the safety system which can then emit a warning signal. If the system is run until the battery power fails the hand controller will automatically lock.



Centre display, view modes example

INDICATION OF MICRO / SRVC / MEWP /ADC / JDC / HDC / MANUAL EXTENSION

When one of the above functions is selected the symbol is enlarged (**Figure 1a**) for 3 seconds before returning to its normal size (**Figure 1b**) so as to alert the operator that a change has occurred.

FAULT INDICATION

An enlarged image of the fault symbol (**Figure 2a**) appears and the crane stops when a critical fault is detected. To continue, the fault must first be confirmed by pressing the release button, only then will the spanner go back to normal size. (**Figure 2b**)

When a noncritical fault is detected by the safety system an enlarged image of the spanner is shown (**Figure 2a**) for 3 seconds before returning to normal size. (**Figure 2b**)

ERROR CODE DISPLAY

The safety system sends error codes to the hand controller. By pressing the info-button on the left hand side under the display handle (**Figure 4**) the centre display changes window to show the error codes. (**Figure 3**)

Error codes scroll up on the display at the same rate as the safety system sends them, once every half second.

If there are more than 6 error codes at the same time the 6 most recent are shown.

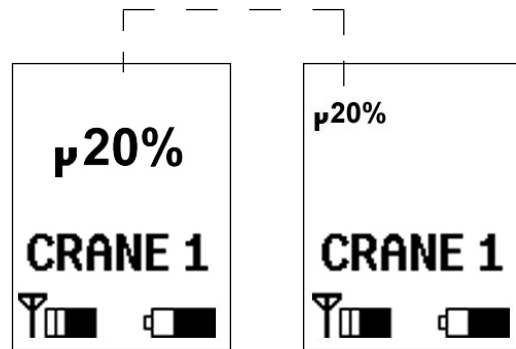


Figure 1a

Figure 1b

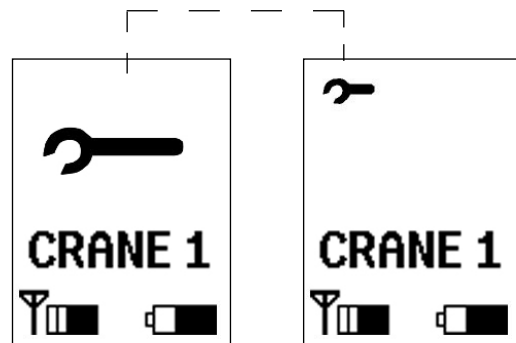


Figure 2a

Figure 2b

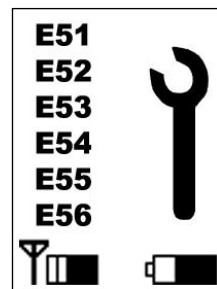


Figure 3



Figure 4

Overload protection “OLP”, warning signals example



Figure 1

Olsbergs hand controllers can provide information about the pressure in cylinders equipped with pressure sensors. This information is linked directly to each function.

The pressure is shown as a percentage of the maximum pressure permitted, furthermore it also shows if a particular motion is prohibited or if the crane is subject to overload protection, (OLP).

There are three types of OLP:

Crane-OLP: means that the crane is under maximum load.

Outrigger-OLP: means that one of the outriggers of the crane or vehicle is under maximum load.

VSL-OLP: means that the stability limit of the crane or vehicle has been reached.

Overload is shown on the hand controller's displays as follows.

Crane-OLP

Indicated by showing 100% for those functions that have pressure sensors in the cylinders. Any movement that would increase the load is blocked. (Figure 1)

Outrigger-OLP

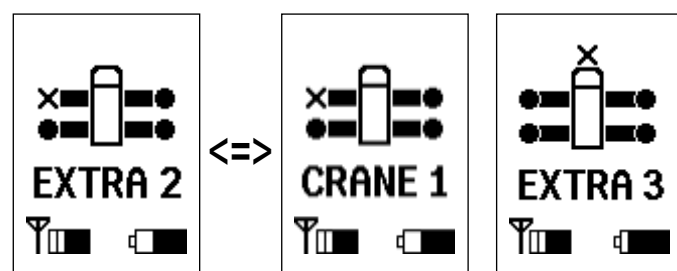
Outrigger-OLP means that one of the outriggers is under maximum load and a symbol is shown in the centre display with the actual outrigger crossed.

At outrigger-OLP this symbol is shown irrespective of which menu is shown in the centre display. Outrigger-OLP "front left" or "front right" are indicated at the same spot on the symbol in the centre display.

VSL-OLP

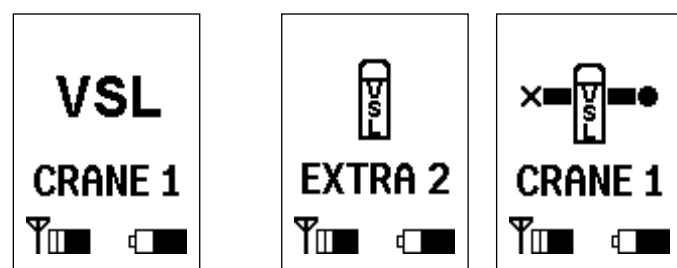
VSL-OLP means that the stability limit of the crane/-vehicle has been reached and VSL is indicated on the centre display. If outrigger-OLP and VSL-OLP occur at the same time, VSL is indicated in the same symbol as the outrigger OLP.

At all types of OLP the crane/vehicle stops and all levers must be moved to neutral position before the crane/vehicle can be operated out of OLP position and the central display returns to normal.



Regardless of which menu is active Outrigger -OLP will be shown. Here outrigger-OLP "mid left".

Outrigger-OLP "front left"/"front right"



VSL-OLP

Outrigger-OLP "mid left" occurred at the same time as VSL-OLP.

Configuration

Blocking on max load/release

When a function has been blocked due to an OLP, a cross is shown in the relevant lever's display when an attempt is made to activate it.

If the crane has got stuck the release button must be activated to enable it to be moved from this position. **(Figure 2)**

If the OLP release is accepted this is shown by an unlocked padlock in the centre display. **(Figure 3)**
The crane will then operate at reduced speed for a limited period of time.



Figure 2

WARNING AT 50%, 70%, 90% and 100%

Some of the crane's functions are connected to pressure sensors which show the pressure in these cylinders as a percentage of maximum permitted pressure when it exceeds 50%.

The percentage is shown as 50%, 70%, 90% or 100% alternating with the lever's symbol, once per second.

When a pressure sensor reaches 100% all motions that would increase the load can be blocked. These configurations are set by the crane manufacturer.

If the operator attempts to activate a blocked function a cross replaces the symbol. The cross disappears and the symbol returns when the lever is returned to the neutral position. **(Figure 4 and 5)**

The hand controller must be configured specifically for the particular crane or vehicle if it is to show the correct symbol or text.

Default settings for the crane symbols are set in the factory during final testing.

Configuration of other functions and tools is conducted by the body builder when mounting the crane on the vehicle.

Cranes that have a safety system can utilize the terminal program to configure the crane. "OS" cranes without a safety system can be configured via a computer or be adjusted in the factory.

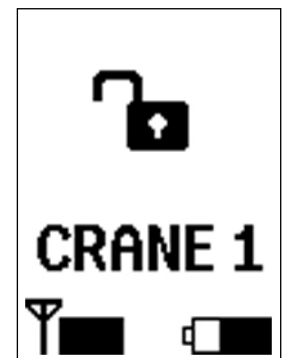


Figure 3

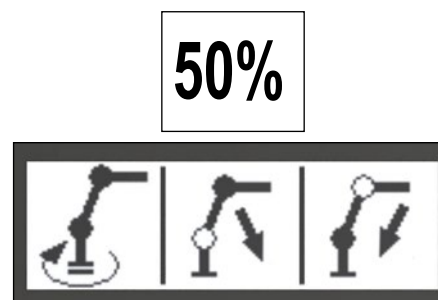


Figure 4

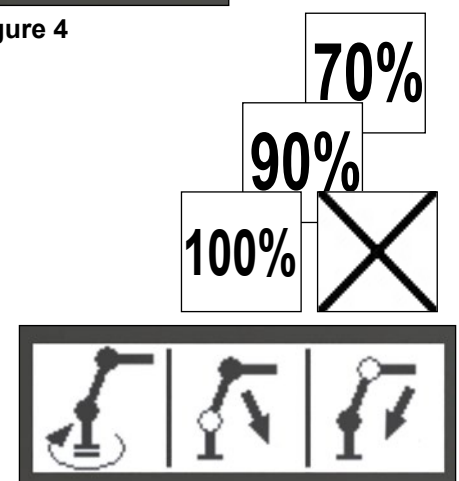


Figure 5

Other instructions

Locking/unlocking the hand controller

The hand controller can be locked to prevent unauthorized persons, such as children, from starting the hand controller and operating the crane. (Figure 1)

Locking the hand controller

- Press the EXTRA button and the ON-OFF button when the stop button is pressed in.
- Continue to hold the buttons pressed at the same time as the stop button is pulled out.

The centre display will now show a locked padlock.



Note!

If battery power drops too low the hand controller will lock automatically.

Unlocking the hand controller

- Press the EXTRA button and the ON-OFF button when the stop button is pressed in.
- Continue to hold the buttons pressed at the same time as the stop button is pulled out.

The hand controller is ready for use.

Low ambient temperature

The LCD-type displays on the hand controller are somewhat slow in changing state in low temperatures. At 0°C, it will take approximately 1 second, and at -20°C it can take up to 8 seconds before the symbols have completely updated.

For safety reasons, quick shifts within a menu are not possible at temperatures below -10°C; though shifting between different menus will still be possible as normal.

To avoid the inconvenience that may be caused by the above, the hand controller should be stored at a temperature above +10°C when not in use.



Figure 1

No signal from the safety system

If a fault develops in communication with the safety system during operation, the system stops the crane. The centre display shows the spanner symbol to indicate that there is a fault. The crane can only be operated manually under emergency conditions if this occurs.

Replacing a hand controller or decoder

Every system has a unique controller/decoder pair which only communicates with each other. If one unit has to be replaced, a special procedure must be followed to make the new pair communicate. The procedure is as follows:

1. Switch off the PDB.
2. Unscrew the left-hand connector on the decoder and remove it.
3. Connect the hand controller with the accompanying cable (E0781) to the decoder.
4. Switch on the PDB and select "remote".
5. Hold down the release button on the hand controller while pulling out the stop button.

When the yellow LED on the decoder starts to blink, let go of the release button. When the procedure is complete, the yellow LED goes out. If the procedure was successful, only the green LED remains lit, if not, the red LED is lit.

The procedure can take up to half a minute.

Other instructions

Cable control

The hand controller is normally used in radio mode but it is also possible to operate it via a cable.

A four-meter cable (E0781) is supplied as standard with the hand controller. The cable is intended to be used for short-term operation and when pairing in conjunction with the replacement of hand controllers or decoders. The cable connects to the vehicle via the decoder's left-hand CAN bus connector. **(Figure 2)**

If the hand controller is to be wired permanently or for a long period, an adapter cable (E0837) is run from the PDB and installed at a suitable location on the vehicle. To give the operator greater freedom of movement, a 15 meters cable (E0782) is used between the adapter and the controller.

When the cable is connected to the hand controller, the centre display shows that the controller is in cable operation mode. The symbols for signal strength (radio) and battery capacity are replaced with the symbol for cable operation. **(Figure 3)**

Engage manual extension

This function must be activated so that the safety system can calculate the capacity when manual extension is used. This is done by pressing the release and horn buttons at the same time until the manual extension symbol appears on the centre display. Use the same procedure to disengage the manual extension function.



Figure 2

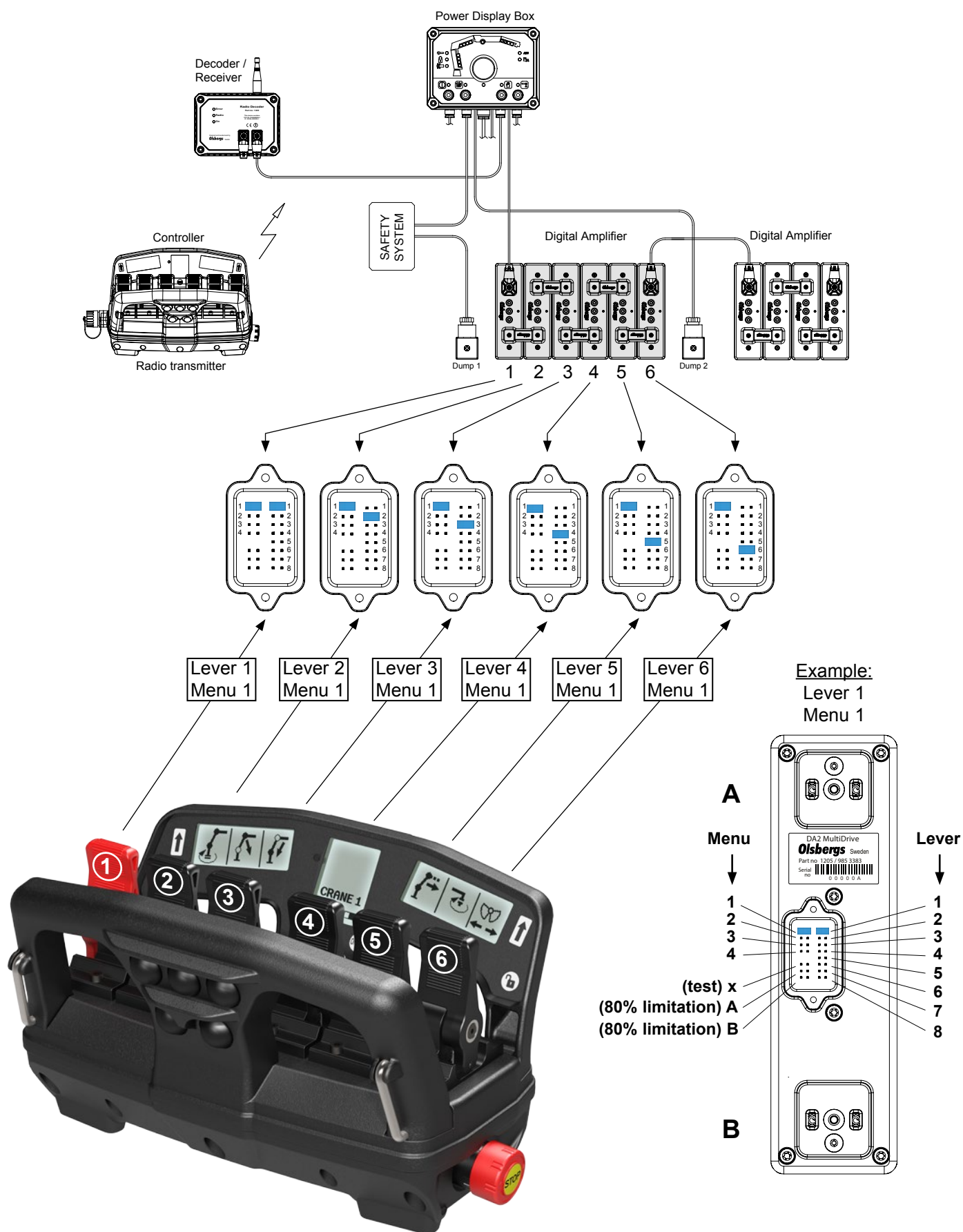


Figure 3



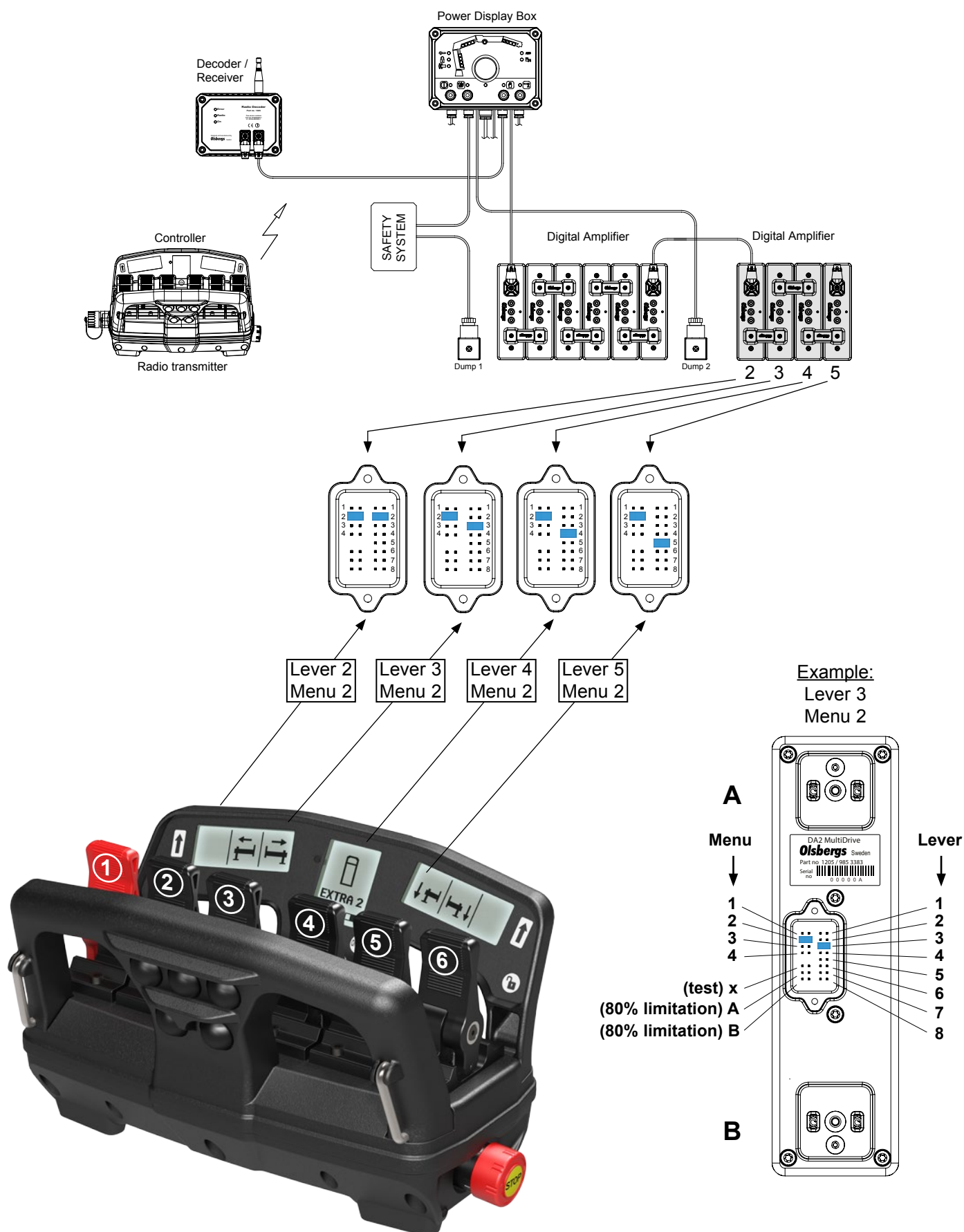
How to program DA2 modules in two MENUS.

6 DA2 units in MENU 1



How to program DA2 modules in two MENUS.

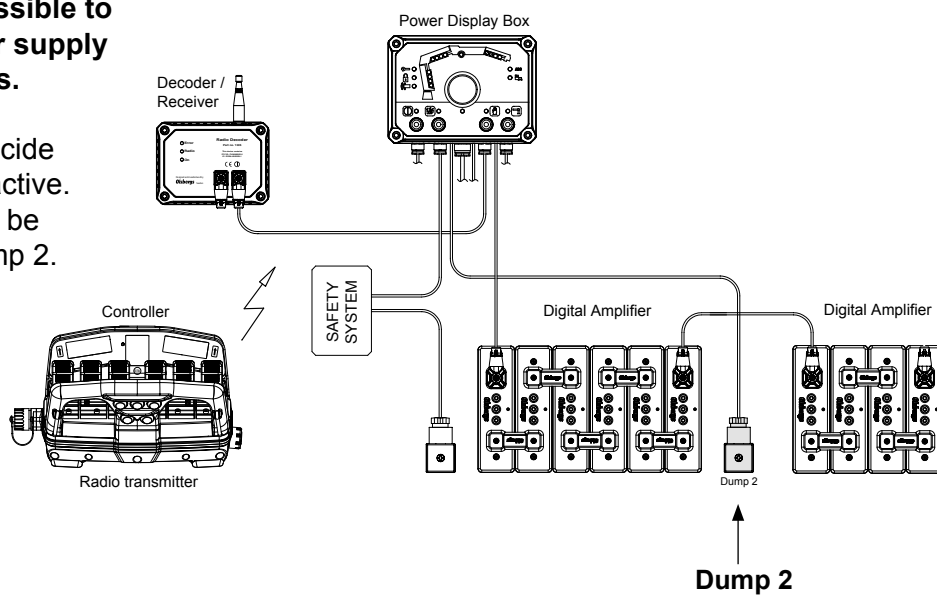
4 DA2 units in MENU 2



How to configure the Power Display Box to automatically activate Dump 2

In the MultiDrive system it is possible to automatically activate the power supply to Dump 2 in one or more menus.

The jumper settings in the PDB decide in which menu/menus Dump 2 is active. Maximum three of four menus can be used to automatically activate Dump 2. In menu 1, Dump 2 shall never be active.



Dump 2

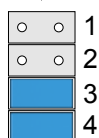
Not active in **MENU 1**

Not active in **MENU 2**

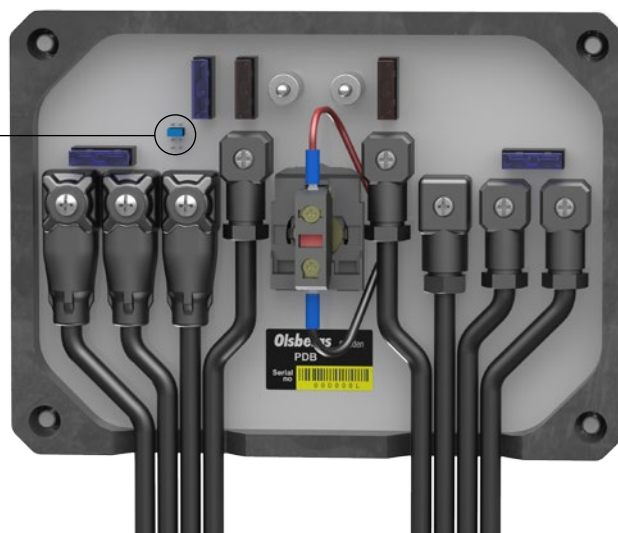
Active in **MENU 3**

Active in **MENU 4**

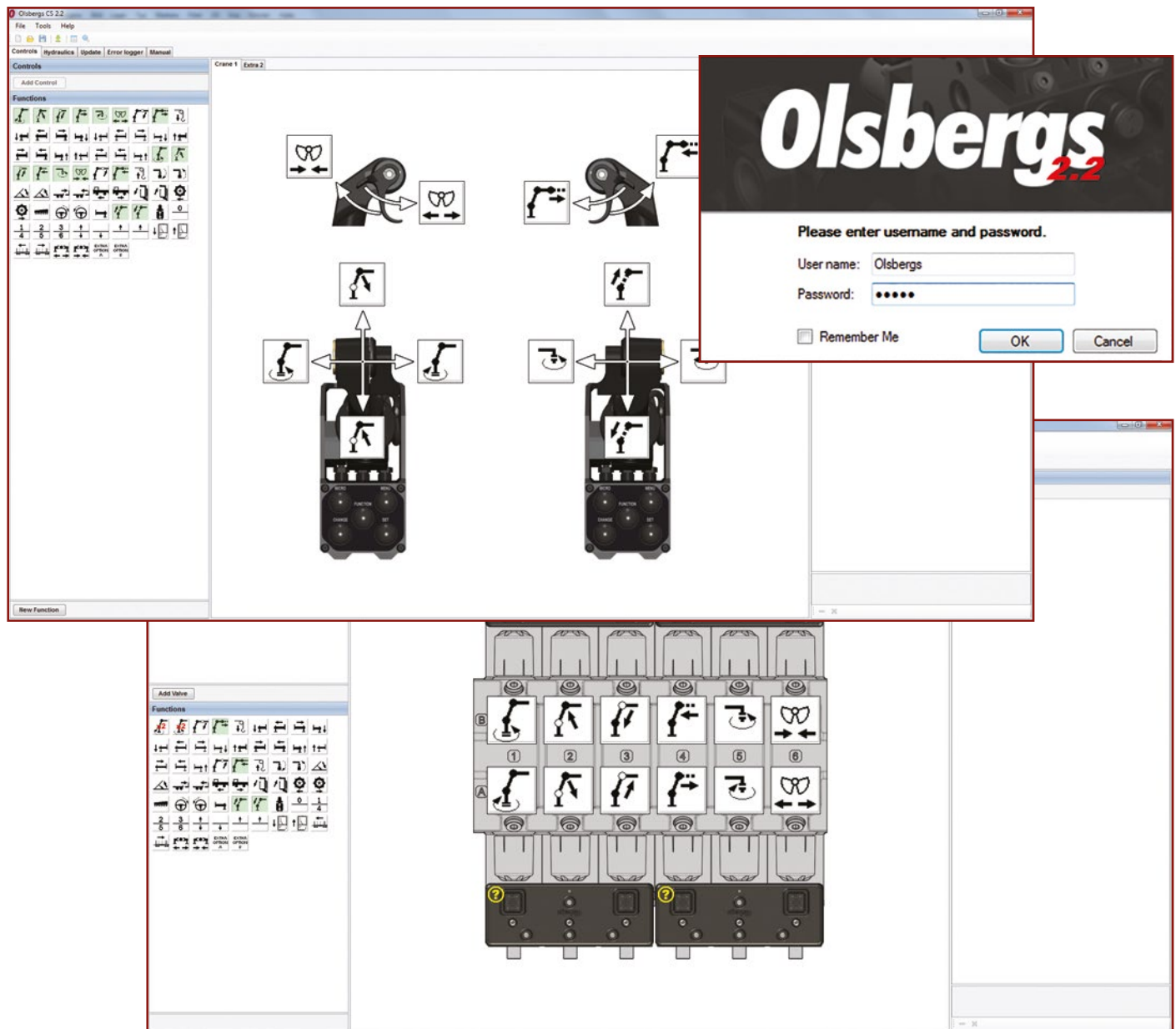
Jumper setting



Top unit



Olsbergs Configuration Software, OCS



Simple, quick and easy configuration

With Olsbergs Configuration Software, OCS, it is quick and easy to configure Olsbergs Multidrive 2 Control systems according to own preferences. OCS system can be used for configure both forestry crane systems (50 kbps) and loader crane systems (125 kbps). The system is very easy to use and it is designed to be installed on a standard PC equipped with a USB port .

Easy menus with" Drag and Drop " feature

OCS menu system is run either by using shortcuts in the form of icons or via the tabs File, Tools and Help and sub menus. Configurable controllers , joysticks and valves are pre-programmed in scroll lists selectable by clicking on their names.

An icon library with standard functions are available for quick configuration of both controllers , levers and valves. Just click on the icon and drag to the desired location on the device to be configured. As easy as it could be!

Create driver menus unique

Up to eight menus can be configured in the loader crane system, four menus of type Crane and Extra as well as four menus of type On/Off. Configurations are saved and can be reused for other systems.

Olsbergs Configuration Software, OCS

In the forest crane system, there are a Crane and an Extras menu to be configured.

Create customised texts on controller displays

The system offers the ability to individualize the controllers by writing own texts that appear in the displays instead of , or in addition to, the existing symbols in the system.

System status and diagnostics

OCS provides the ability to log the CAN traffic and store it in an encrypted file. The information in the encrypted file can then be analysed by a Olsbergs certified technician.

User manual

In OCS user manuals in Swedish and English, are integrated both in printable format as well as in a web format that can be easily read on the screen. The user manual contains all necessary information about the system and how to use it, easily accessible and well described.

Olsbergs OCS system kit

OCS software is delivered on a USB-stick along with a CAN/USB drive, a power supply adapter and a CAN cable. The software can be installed with multiple users. When ordering, please state where login details should be sent.



Power supply adapter



CAN/USB drive

GO6-GO6 cable



USB-stick with OCS software

Part no.	Description	Note
1485	Olsbergs OCS, System kit	Incl. USB-stick, CAN/USB drive, Power supply and CAN cable

Getting started with the display and D3 joysticks



D3 joysticks are a driver's tools for controlling the crane.

The joysticks have ball bearing joints that provide a special control feel, and they use contact less technology for long service life. Each joystick has a microprocessor that constantly senses its position and converts this information to a data protocol for transmission via the CAN bus.

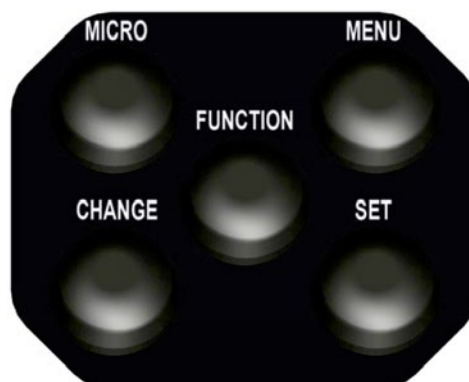
There are buttons on the joysticks for selecting MENU and MICRO. These buttons act on the entire system regardless of the joystick in use. The driver profile buttons FUNCTION, CHANGE and SET only apply to the joystick the keypad belongs to.

MICRO

Precision operating mode. All crane functions run at 50% or 20% of normal speed at full joystick actuation. Pressing the button once gives 50%; twice gives 20%

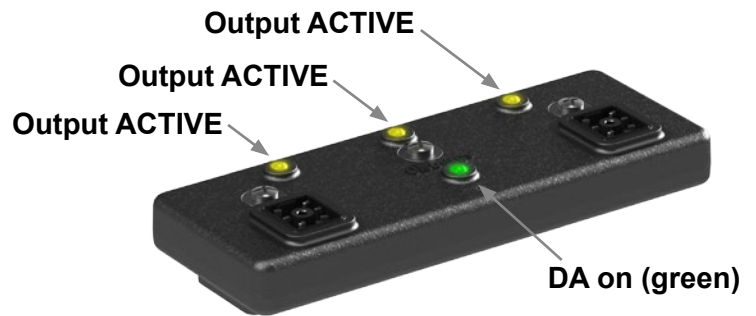
CHANGE

Only active in the configuration menu. Press CHANGE to select a submenu and to select a value or driver.



FUNCTION

Only active in standby mode. Press FUNCTION to reach the configuration menu, tuning and to scroll between the different main menus.



DA modules are available in two models – DA13 and DA14 – and they constitute the interface between system electronics and hydraulics. Data is transmitted to the DA modules located on the positioner solenoids via the CAN bus. The DA modules convert the data to pulse-width modulated control current.

Control current acts on the positioner solenoids which in turn control valve spool position in direct proportion to the degree of three way joystick actuation. Each DA13/DA14-module controls three or four valve functions respectively in one direction.

Function settings

All DA modules are delivered factory aligned. A configuration program – OCS – determines the functions the respective modules will control and the menu in which they are active.

MENU

For switching operating menu from e.g. crane mode to outriggers or other extra functions.

SET

Only active in the configuration menu. Press SET to confirm a selected driver or value and to scroll out of a submenu or main menu.

Getting started with the display and D3 joysticks



In normal operations the display provides information on the selected operating mode, whether MICRO is active or if there is a fault. The display provides a visual presentation of selections made when configuring driver profiles and selecting drivers.



Various operating modes and diagnostic alerts

If MICRO is selected, the chosen micro mode is shown at the bottom left corner of the display in the driver menu.



Start-up safety check

The system senses if a joystick is not in the neutral position at start-up. This is shown in the display by a warning triangle and flashing symbols for the functions actuated. After 10 seconds, only the warning triangle is shown.



Functions actuated at start-up are automatically disconnected. If the joystick is not actuated at the next start it will function normally again.

If a button is depressed or short circuit at start-up it is indicated in the same way. The button remains inactive until it is no longer short circuit.



Status information

If the system loses contact with a joystick this is also shown in the display.

Power box PB.F2

Power Box, PB.F2, which acts as the system control centre, is powered by a 24V supply from the vehicle battery.

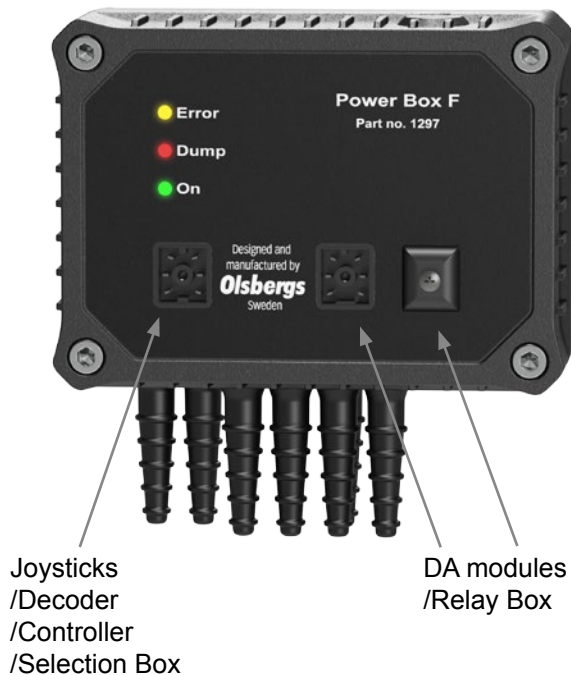
The PB.F2 has three LEDs that indicate different operational modes, statuses, errors, etc. There are means for connecting remote control (radio, controllers or joysticks) and outputs to the DA modules or RMS box.

PB.F2 houses many safety-related functions in respect of both hardware and software. The box has robust input protection on the 24V supply that protects the rest of the system from dirty power.

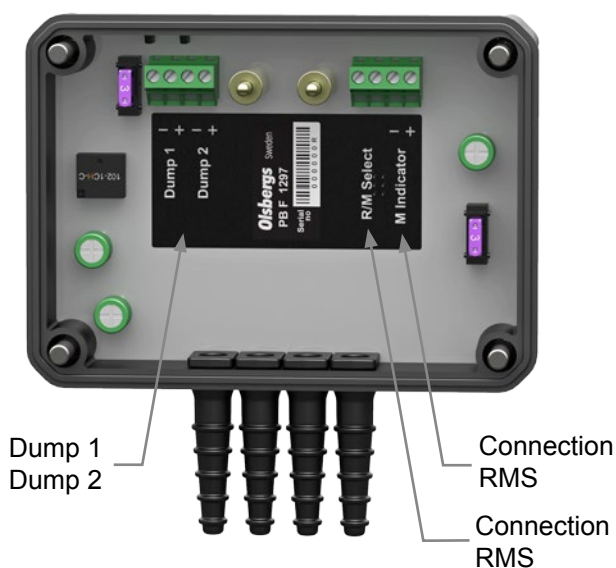
The system has full functionality between 16V and 32V. Olsbergs control system circuit breakers are located in the PB.F2.

The PB.F2 is designed for systems that have no requirement for emergency stop integrated in the power supply.

An optional RMS box can be connected that includes an emergency stop and a push button for selecting remote or manual system control. The LED in the button lights up when the dump valve is activated in manual mode and there is power from the DA output.



Top unit



Bottom



System start-up

System activation

When power to the PB.F2 is activated, e.g. when the power take-off on the truck is engaged, the PB.F2 starts up in standby and the system is ready for remote control. **(Figures 1 and 3)**

When the control system is activated by the switch button installed in the crane cab, the PB.F2 and the system switch to crane mode. In this mode the machine or crane is operated by the D3 joysticks in the cab.

When the system is energized it is possible to directly select manual crane operation by activating the button  on the RMS box. **(Figure 2)**

The next time the button is pressed the system reverts to standby. The LED in the button lights up when the dump valve is activated in manual mode and there is power from the DA output.

When an extra function e.g. outriggers must be run from the crane cab, press the menu button on the joystick chassis once; EXTRA will be shown in the display. **(Figures 4a and 4b)**

If drivers forget to switch off at the switch button when they leave the cab, RESTART will be shown in the display. The system must be switched off and on again using the switch button in the crane cab in order to restart. **(Figure 5)**



Figure 1



Figure 2



Figure 3



Figure 4a



Figure 4b



Figure 5

Settings

DRIVER - selection

1. Put the system in STANDBY
2. Press the FUNCTION button on one of the joysticks; DRIVER is the first main menu. **(Figure 1)**
3. Press CHANGE to select the highlighted menu.
4. Using the CHANGE button, scroll until the correct driver is shown in the display. Top speed and whether or not any function has a changed direction appears under each driver. **(Figures 2 and 3)**
5. Exit the driver settings submenu by pressing the SET button or by selecting drive mode by means of the rocker switch/stop button on the panel in the cab.



Figure 1

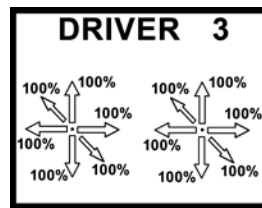


Figure 2

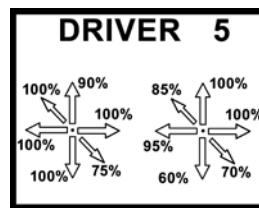


Figure 3

SPEED – limiting top speed

1. Put the system in STANDBY
 2. Press the FUNCTION button on the joystick whose function must be limited.
 3. Using the FUNCTION button, scroll until SPEED is highlighted in the display. **(Figure 1)**
 4. Press CHANGE to select the highlighted menu. **(Figure 2)**
 5. Highlight the function that must be limited by actuating (pulling) the joystick for the function concerned. **(Figure 3)**
 6. Using the CHANGE button, scroll until the correct value appears. 100% = no limitation, 50% = maximum limitation. **(Figure 4)**
 7. Confirm the set value by pressing the SET button. **(Figure 5)**
- Repeat items 5-7 until the functions that must be limited are completed.



Figure 1

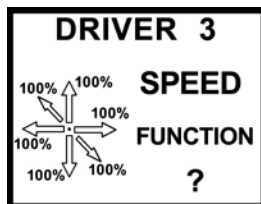


Figure 2

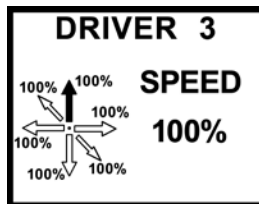


Figure 3

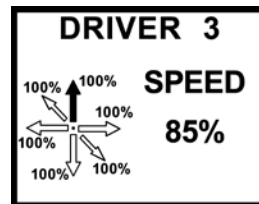


Figure 4

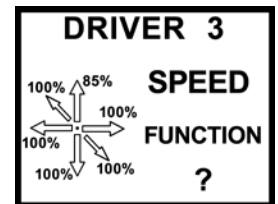


Figure 5

Settings

DELAY – delaying acceleration

1. Put the system in STANDBY
 2. Press the FUNCTION button on the joystick whose function must be limited.
 3. Using the FUNCTION button, scroll until DELAY is highlighted in the display. **(Figure 1)**
 4. Press CHANGE to select the highlighted menu. **(Figure 2)**
 5. Highlight the function that must be limited by actuating (pulling) the joystick for the function concerned. **(Figure 3)**
 6. Using the CHANGE button, scroll until the correct value appears.
0 = no delay, 4 = maximum delay. **(Figure 4)**
 7. Confirm the set value by pressing the SET button. **(Figure 5)**
- Repeat items 5-7 until the functions that must have delays are completed.



Figure 1

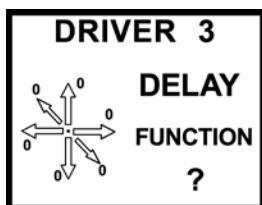


Figure 2

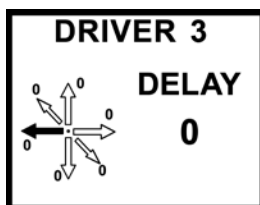


Figure 3

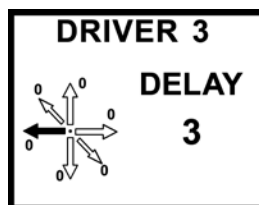


Figure 4

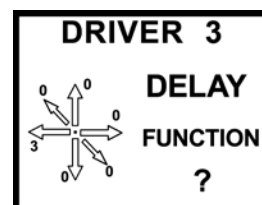
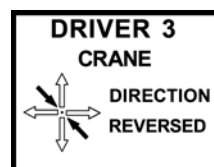
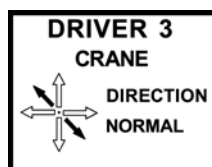
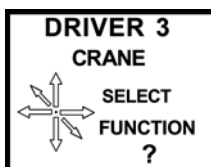
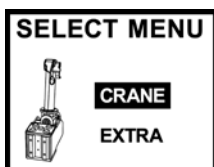


Figure 5

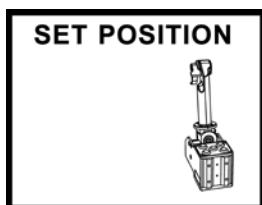
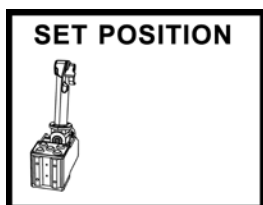
SERVICE – Service mode

Service mode allows service workshops to make the following settings:

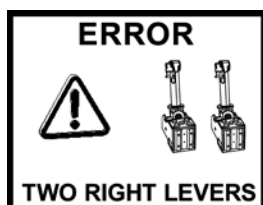
1. The ability to change directions on one or more functions. For one or more drivers.



2. The ability to allocate left or right side to a chassis/joystick as when replacing parts.



3. Safety check – if e.g. the chassis from a right side joystick is installed on the left, the symbol below will be shown in the display. The chassis can then be reconfigured as described in item 2 (above) to assume the left position.



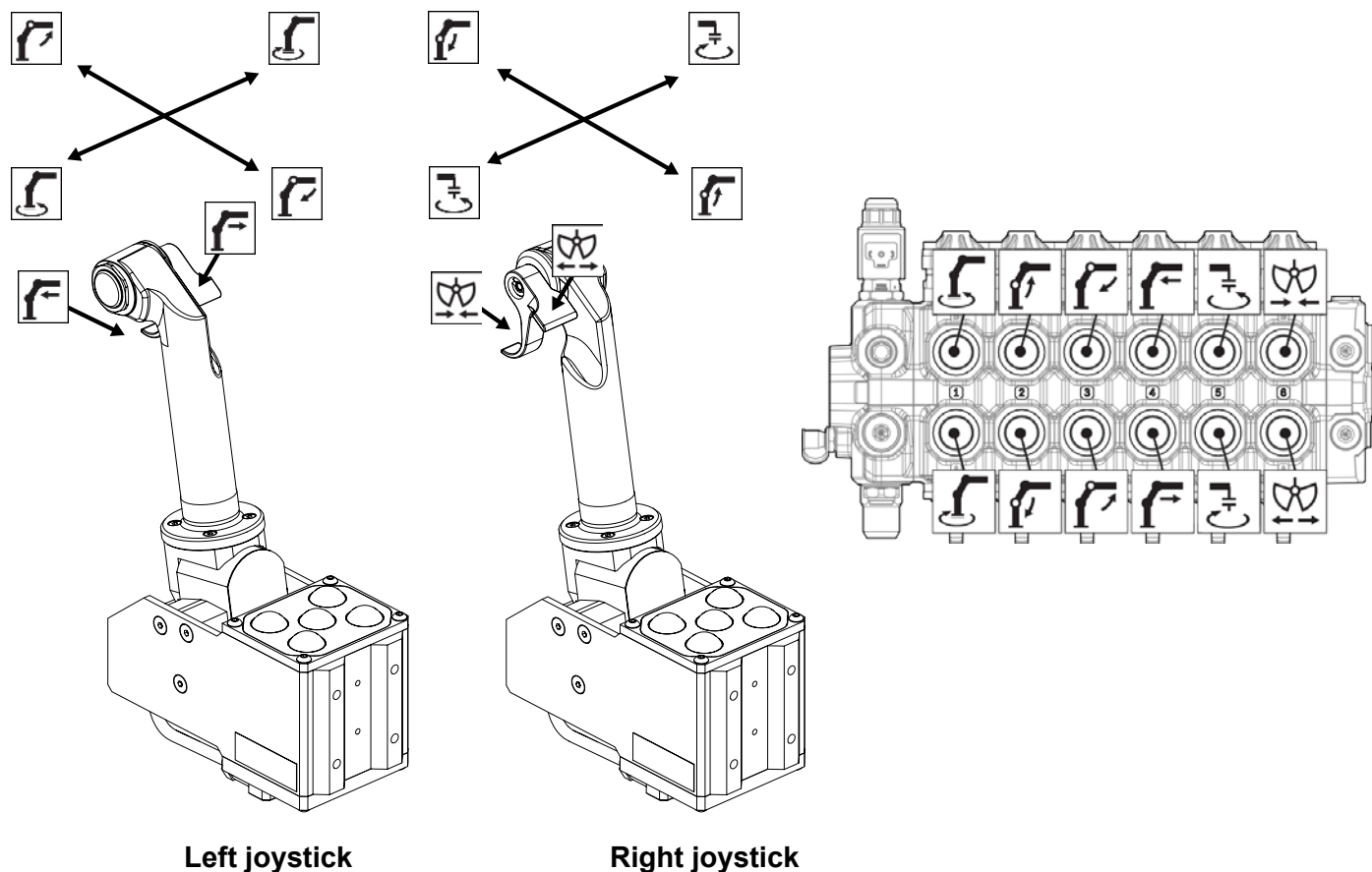
Example of circuit diagram - D3 system with DA13



When the system has DA13 sets on both the crane valve and outrigger valve, the 120Ω termination (part no. E0792B) on one DA13 set must be replaced with part no. S2539. See spare parts DA13

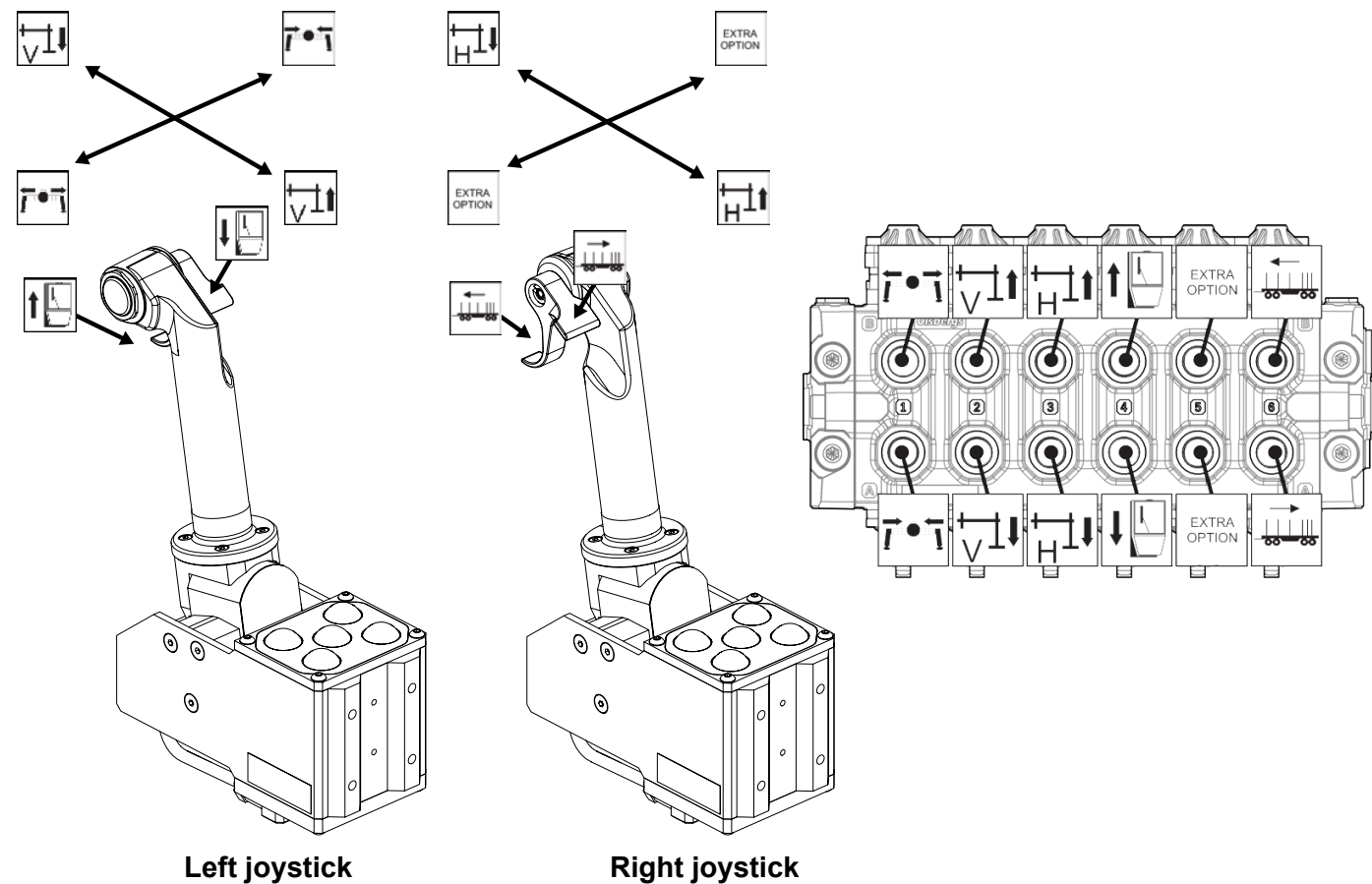
Joystick functions connected to the Crane valve Q300

Menu CRANE



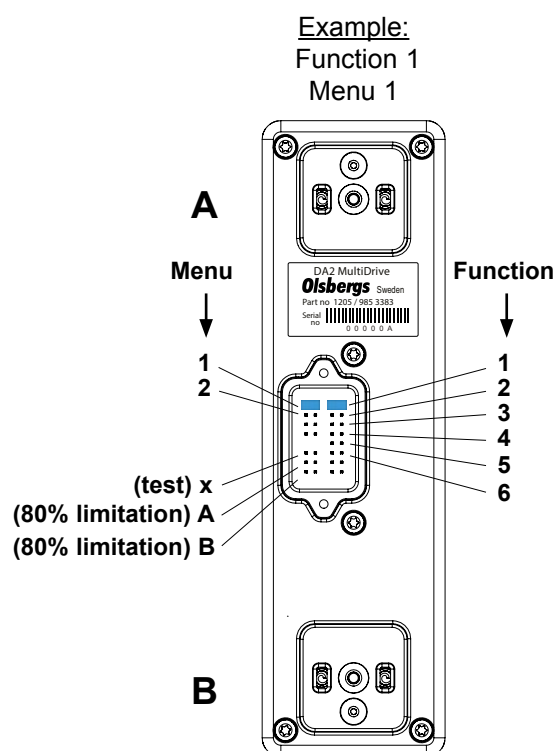
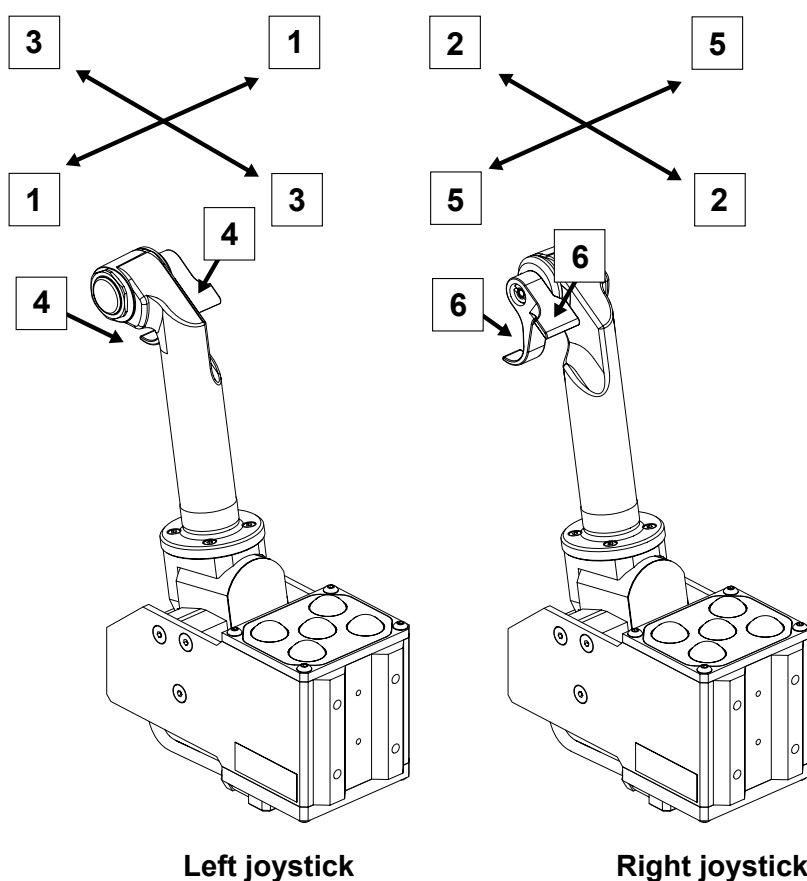
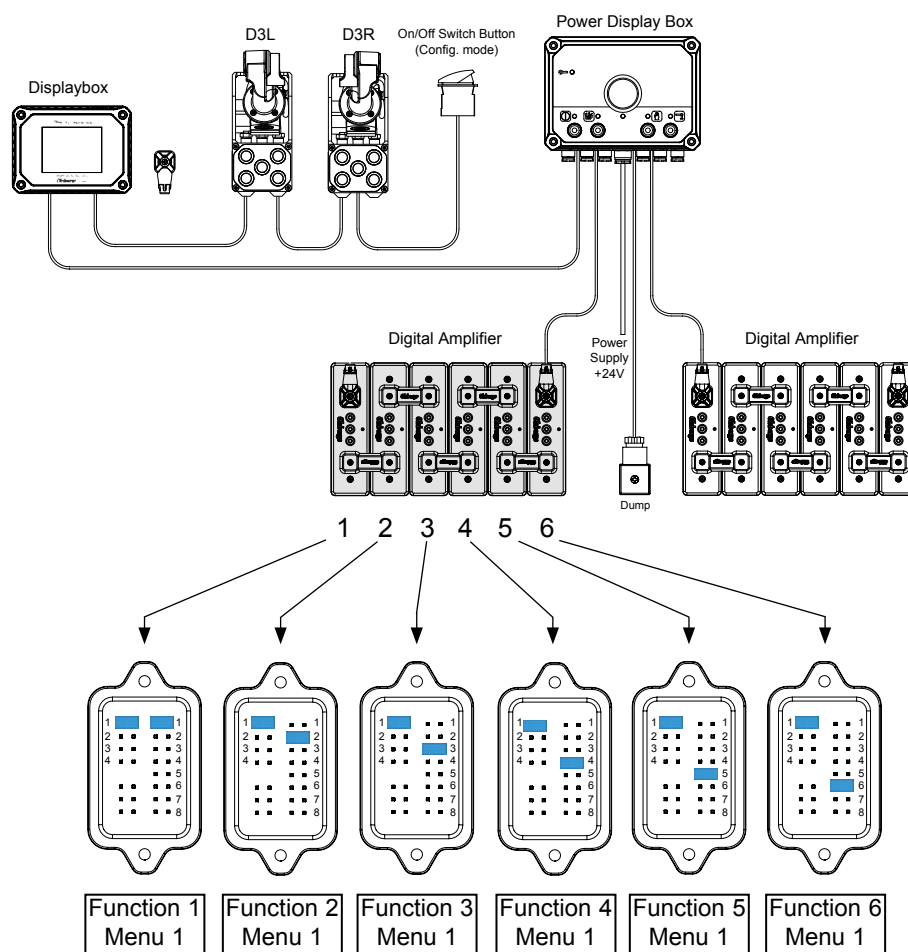
Joystick functions connected to the Outrigger valve Q200

- Menu EXTRA -



How to program DA2 modules in two menus.

6 DA2 units in menu 1 "CRANE"



MultiDrive 2 - D3 system (This error code indication system is available in Display boxes with serial number 853 and higher.)

Error codes

Olsbergs MultiDrive D3 system uses error codes in order to indicate if something is wrong or if there are deviation from set values in the system. The error code is indicated in the Display box and the letter in the error code indicates in which module of the system the error is located.

Error code ending with U relates to joysticks and chassis

Error code ending with R relates to PBF

Error code ending with O,P relates to DA13 resp. DA14 modules

Error code ending with I relates to DA2

D3 Joystick

Error code	Error type	Error code	Error type
100U	Right joystick out of position at start	200U	Left joystick out of position at start
101U	Right joystick out of position at start	201U	Left joystick out of position at start
102U	Right joystick out of position at start	202U	Left joystick out of position at start
103U	Right joystick out of position at start	203U	Left joystick out of position at start
104U	Right joystick not valid lever value	204U	Left joystick not valid lever value
105U	Right joystick not valid lever value	205U	Left joystick not valid lever value
110U	Right joystick out of position at start	210U	Left joystick out of position at start
111U	Right joystick out of position at start	211U	Left joystick out of position at start
112U	Right joystick out of position at start	212U	Left joystick out of position at start
113U	Right joystick out of position at start	213U	Left joystick out of position at start
114U	Right joystick not valid lever value	214U	Left joystick not valid lever value
115U	Right joystick not valid lever value	215U	Left joystick not valid lever value
120U	Right joystick trigger out of position at start	220U	Left joystick trigger out of position at start
121U	Right joystick trigger out of position at start	221U	Left joystick trigger out of position at start
122U	Right joystick trigger out of position at start	222U	Left joystick trigger out of position at start
123U	Right joystick trigger out of position at start	223U	Left joystick trigger out of position at start
124U	Right joystick trigger not valid lever value	224U	Left joystick trigger not valid lever value
125U	Right joystick trigger not valid lever value	225U	Left joystick trigger not valid lever value
130U	Right joystick Micro button short circuit/pushed in	230U	Left joystick Micro button short circuit/push
131U	Right joystick Menu button short circuit/pushed in	231U	Left joystick Menu button short circuit/pushed in
132U	Right joystick Function button short circuit/pushed in	232U	Left joystick Function button short circuit/pushed in
133U	Right joystick Change button short circuit/pushed in	233U	Left joystick Change button short circuit/pushed in
134U	Right joystick Set button short circuit/pushed in	234U	Left joystick Set button short circuit/pushed in

Correct errors in D3 joysticks/buttons

Joystick out of position - Secure that joystick including trigger is in neutral position at start (Transition Standby to Crane).

Not valid lever value - Probable sources to problem:

- 1) Short circuit to ground or supply voltage,
- 2) No contact - connector or cable loose alternatively cable breakage in the lever.

Button short circuit or pushed in– Secure that the button is not pushed in.
If the button is not pressed in the button is malfunctioning and must be changed.

MultiDrive 2 - D3 system (This error code indication system is available in Display boxes with serial number 853 and higher.)

Error codes

PBF Power supply box

Error code	Error type	Error code	Error type
001R	CAN Transmitter passive	008R	High voltage
002R	CAN Transmitter active	009R	Low voltage
003R	CAN Transmitter passive	012R	Internal error
004R	CAN Transmitter active	100R	Dump 1 fuse broken
006R	System overloaded		

Correct errors in PBF

001R-004R Error detected in the system CAN bus. - Check cables and connection points (Connectors).

006R The system uses higher current than expected. - Systematically check for short circuits.

008R Battery voltage higher than allowed. - Check if the charging regulator in the truck is working.

009R Battery voltage lower than allowed. - Check if the truck's battery/generator is OK.

012R Internal error in the PBF. - Visit service centre for check and eventual replacement.

100R - Check the fuse and replace it if out of order.

DA14 modules

Error code	Error type
100P	Disruption exit 1
101P	Short circuit exit 1
110P	Disruption exit 2
111P	Short circuit exit 2
120P	Disruption exit 3
121P	Short circuit exit 3
130P	Disruption exit 4
131P	Short circuit exit 4

DA13 modules

Error code	Error type
100O	Disruption exit 1
101O	Short circuit exit 1
110O	Disruption exit 2
111O	Short circuit exit 2
120O	Disruption exit 3
121O	Short circuit exit 3

DA2 modules

Error code	Error type
012I	Internal error

Correct errors in DA modules

Disruption – No contact with the positioners

Step 1. Secure that the DA modules are attached properly to the positioners.

Step 2. Check that the positioners are OK by measuring the resistance over the contact plates.

Set value 28-33 Ohm. If the resistance is within the set values the DA module must be replaced. If not, the positioner must be replaced.

Short circuit – Check the positioner is OK by measuring the resistance over the contact plates.

Set value 28-33 Ohm. If the resistance is within the set values the DA module must be replaced. If not, the positioner must be replaced.

Internal error – Internal error in the DA module - replace the broken DA to a new DA.

Note! Important at replacement of DA module to configure the new DA exactly as the DA replaced.

DA2 is configured via jumpers on the backside of the DA module. DA13 and DA14 are configured via OCS system alternatively at the service centre.

MultiDrive MD2 M - Machine Directive 2006/42/EG

The following changes were implemented in MultiDrive 2 from January 2010 in order to adapt the products to the new Machinery Directive.

The speed in the CAN bus in which the protocols are sent were increased from 50 kbit/s to 125 kbit/s due to increased volume of information to be handled.

The DA2, DA13, DA14 and the PDB were adapted to 125 kbit/s and were given new part numbers.

***Important: Do not use a "new" unit in an "old" system and vice versa.
All units in a system must be able to send information in the same speed.***

The Controllers 6F and 8F adapt to the speed automatically and can be used in "old" or "new" systems.

Radio Decoder, top module MD2 M, part no. 1296 and Relay Box, bottom module MD2 M, part no. 1293 set the chosen speed automatically. The old Radio Decoder, part no. 1219 and the old Relay Box can handle only 50 kbit/s.

The systems for OS-cranes are still working with the lower speed and the PDB-OS is therefore not comprised of the higher speed.

New changes as of 2012

The Termination CAN E0792 has been replaced with Termination CAN 120 Ohm E0792B for easier and better application together with improved environmental resistance.

The Cable CAN E1278 /988 2251 has been replaced with Cable CAN GO6-GO6 1278BB for easier and better application together with improved environmental resistance.

Notes

Notes

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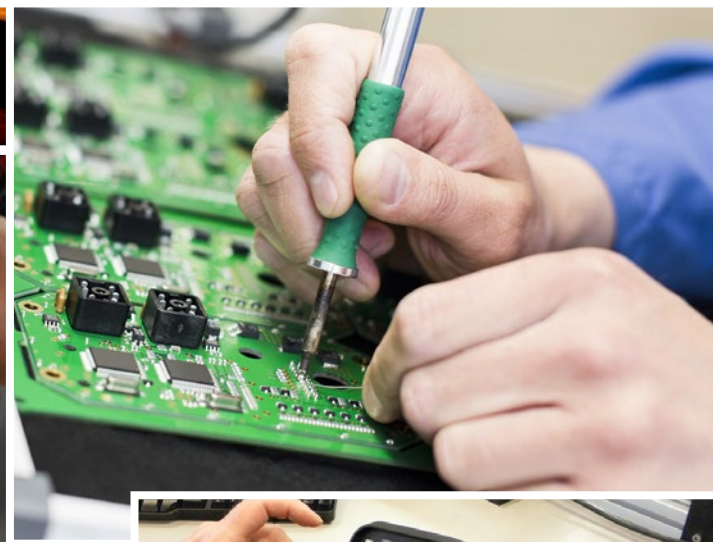
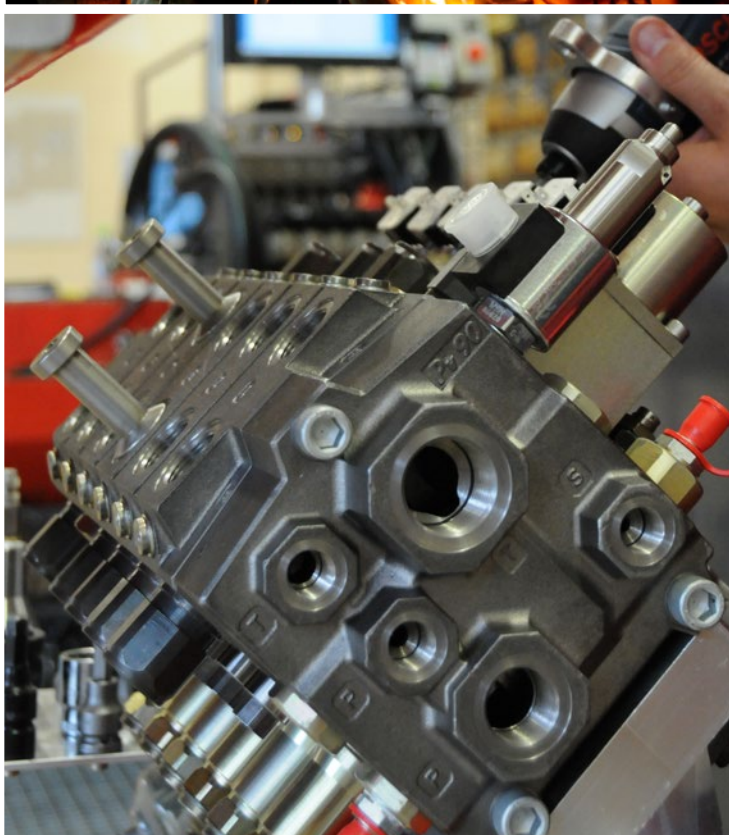


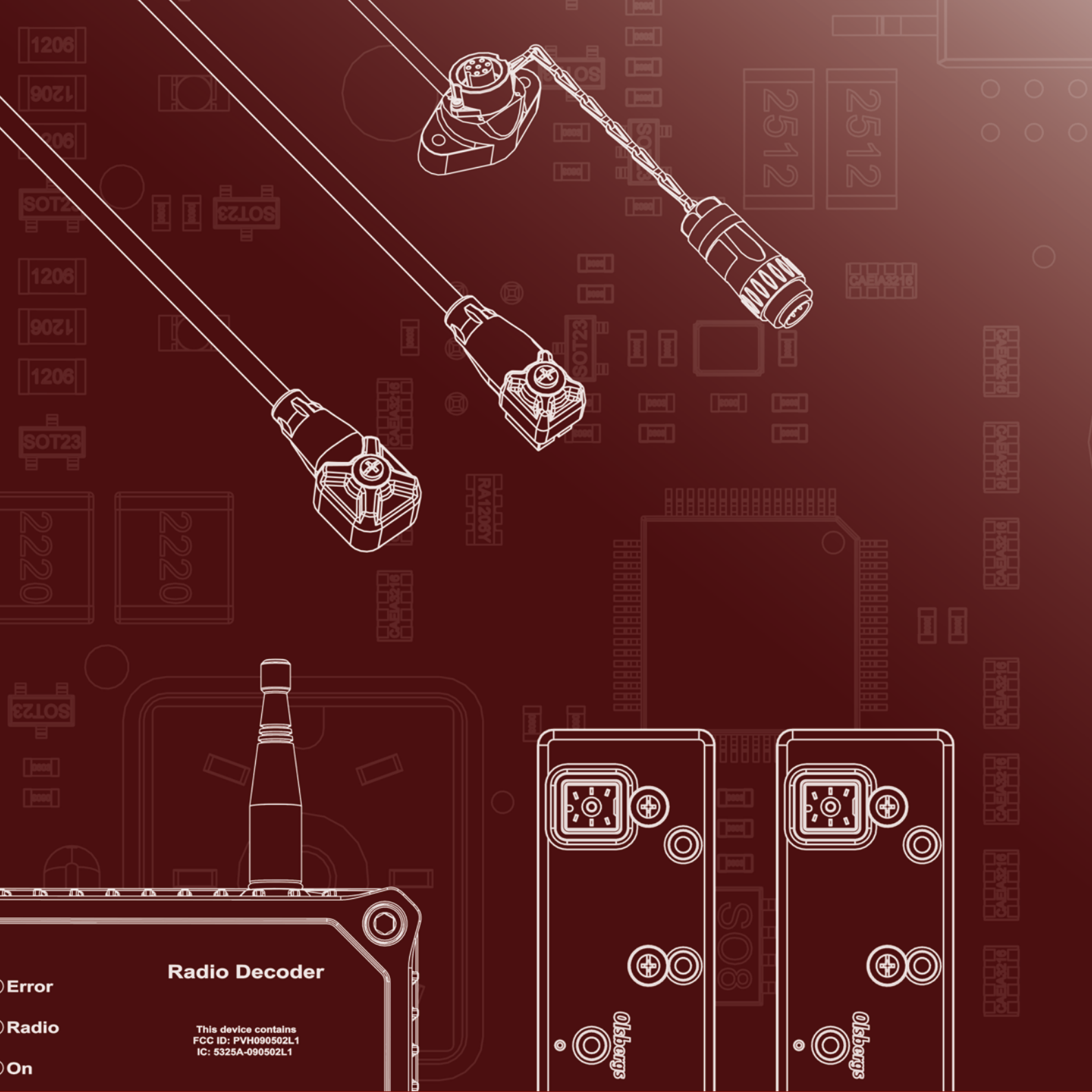
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