Maintenance Manual



ESR4500 Series

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Statuscode 280 - 282

Status Code 280

Offsetfehler Stromsensor
Offset Error Current Sensor

LOG BOOK display:

2	8	0		X	X	X	X	X	h			X	X	X	C
C	U	R	R	.		S	E	N	S	O	R			H	M

Explanation: Internal monitoring of current measurement sensors in hydraulic drive module power circuit while truck is powered up.

Effect on truck:
- Truck starts up.
- Main contactor activated
- Hydraulic drive module remains deactivated.
- Creep mode possible.

Possible Causes: Replace hydraulic drive module

Status Code 281

Temperatursensor Kurzschluss oder offener Stromkreis
Temperature Sensor Short or Open Circuit

LOG BOOK display:

2	8	1		X	X	X	X	X	h			X	X	X	C
T	E	M	P	.	S	E	N	S	O	R				H	M

Explanation: Internal monitoring of temperature sensors in hydraulic drive module

Effect on truck:
- Truck starts up.
- Main contactor activated
- Fwd./rev. reach and lowering possible.
- Creep mode possible.

Possible Causes: Replace hydraulic drive module

Status Code 282

Kurzschluss ECR2
ECR2 Short Circuit

LOG BOOK display:

2	8	2		X	X	X	X	X	h			X	X	X	C
E	C	R	2		S	H	O	R	T		C	I	R	C	.

Explanation: Short circuit between Channel A and Channel B on hydraulic motor encoder.

Effect on truck:
- Truck starts up.
- Main contactor activated
- Creep mode travel possible.
- Fwd./rev. reach and lowering possible.

Possible Causes:
- Select menu A2.29. Activate reach and check following displays:
  SET SPEED = 1000 for fwd. Reach or 530 for rev. reach. If these values are present, VCM and HDM are ok.
  ACTUAL SPEED = 0. No feedback from encoder.
- Check line from CA201 to PC429, check encoder cable.
- Replace motor or rotor.

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- Using a crowbar push the 1st mast stage in the outer mast down until you can remove the top and bottom mast rollers.
- Now using the crane pull the 1st mast stage completely out of the outer mast. Place the mast stage on a suitable surface.

Replacing the Mast Rollers

General

You will need the special tool (P/N 810705) to calculate the required roller diameter. The mast roller bearing journals are slightly angled. Calculating the diameter by manually pulling the roller through the channel will produce an incorrect result.



MS-2140-011

The mast rollers are replaced in 2 main stages:

- Calculating the required roller diameter to prevent jamming or excessive play above the running area of the roller in the mast channel.
- Calculating the number of shims required to prevent lateral jamming or tipping between the left and right-hand mast channels.

Remove the mast and dismantle it as described in the previous sections. Clean the mast channels and remove all mast rollers and the shims.

Mast Roller Assembly

Calculating the Roller Diameter

You have a choice of 3 roller diameters:

Code B, 101,47 mm, Part No. 807334-002

Code C, 102,14 mm, Part No. 807334-003

Code D, 102,45 mm, Part No. 807334-004

- Always start with roller Code D. Fit the roller onto the tool (Fig. MS-2140-011).

INFORMATION

Rollers do not run in 500 mm areas (see Fig. MS-2140-012)! Only apply the tool outside these areas in order to calculate the required roller diameter.
For fork carriages with 6 rollers, always select the mean roller diameter to be one grade lower than calculated. This will avoid jamming when the rollers enter the mast channel.

- Using the tool, pull the roller through the corresponding mast channel (see Fig. MS-2140-012). The roller should not jam at any point, nor should it even become stiff. In this case repeat the process with the next smallest roller until the roller easily rolls along the full running area of the mast channel. Put the roller down so that it can easily be identified at a later stage. Repeat these steps for all the mast rollers and the fork carriage rollers in their respective mast channels.

Calculating the Required Number of Shims

There are shim sizes available:

1.6 mm thickness	Part No. 060030-057
0.7 mm thickness	Part no. 060030-85
0.4 mm thickness	Part no. 795534

Outer Mast / 1st Mast Stage

- Fit both rollers (without shims) at the top of the outer mast.
- Position the 1st mast stage in the outer mast.

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The following table contains the numbers of the wire harnesses used on the ESR4500. The list contians the wire harness number and a reference to the area in which the wire harness is located.

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Main Harness from Ser. No. 5A204798

PC 205 (VCM)	
1	5904 SVH
2	001 SES
3	002 FS
4	003 RS
5	004 ACS
6	300 12 V +
7	600 12 V -
8	614 CAN GND
9	020 ECR 5 A
10	5920 BEACON
11	5913 Travel AL
12	5910 SVS
13	5908 PVAL
14	2930 B+
15	5905 PVRE
16	005 SPS
17	2909 KYS
18	018 RES 1
19	022 RES 2
20	104 POT 5
21	106 POT 1
22	900 CAN H
23	905 CAN L
24	5902 ED1
25	017 FLS /LCS
26	5911 SV5
27	5907 PVAR
28	504 B -
29	5906 PVRT
30	019 HGT(R)S
31	007 BFS
32	008 BPS
33	009 BRS
34	105 POT 6
35	101 POT 2
36	102 POT 3
37	103 POT 4
38	021 ECR 5 B
39	024 PLS
40	023 ORS
41	5909 SVT
42	5903 PVL

PC 206 (VCM)	
PIN	Wire No.
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	006 BLS
13	113 LS
14	
15	
16	

PC 204 (SDM)	
PIN	Wire NO
1	2936 B+ (FU4)
2	5912 BRAKE
3	309 +5 V ECR3
4	612 GND ana./dig
5	014 CH. 1 ECR3
6	015 CH. 2 ECR3
7	-
8	618 CAN GND
9	-
10	109 Ch.2 Stepper
11	111 Ch.1 Stepper
12	-
13	026 SFS 2
14	-
15	909 CAN L
16	115 THS 3
17	-
18	-
19	025 SFS 1 SA
20	-
21	-
22	-
23	904 CAN H

PC 203 (Display)	
PIN	Wire No.
1	908 CAN L
2	901 CAN H
3	615 CAN GND
4	907 CAN L
5	902 CAN H
6	616 CAN GND
7	
8	
9	
10	
11	
12	
13	
14	318 11 V+ Output
15	624 GND B-
16	319 11 V+ Output
17	
18	2908 B+ KEY
19	202 B+ perm.
20	507 GND B-

PC 416 (CAN-CON.)	
PIN	Wire No.
1	900 / 901 CAN H
2	905 / 906 CAN L
3	614 / 615 CAN GND
4	-
5	319 11 V+
6	625 GND Display

PC 411 (POT6 AUX)	
PIN	Wire No.
1	305
2	105
3	605
4	

PC 410 (POT5 SS)	
PIN	Wire No.
1	304
2	104
3	604
4	

PC 409 (POT4 TLT)	
PIN	Wire No.
1	303
2	103
3	603
4	

PC 408 (POT3 Reach)	
PIN	Wire No.
1	302
2	102
3	602
4	

PC 407 (POT2 Lift)	
PIN	Wire No.
1	301 +
2	101 S
3	601 -
4	

EDS (aux. Contactor)	
PIN	Wire No.
1	201
2	2951

ED1 (LINE-CONT.)	
PIN	Wire No.
1	2902
2	5902/5928

S1 (LINE-CONT.)	
Power B+	
S	Wire No.
1	200 / 206 / 207

S2 (LINE-CONT.)	
Power B+	
S	Wire No.
2	203 / 2923

PC 202 Tract. (TCM)		
PIN		
1	2905	
2	-	
3	308	12 V +
4	610	GND
5	012	CH. A
6	013	CH. B
7	616	CAN GND
8	617	CAN GND
9		
10		
11		
12		
13		
14	907 CAN L	
15	906 CAN L	
16	108 TMP	
17	611	TMP GND
18		
19		
20		
21		
22	902 CAN H	
23	903 CAN H	

PC 201 Pump (HCM)		
PIN	Wire No.	
1	2929	
2	5919	
3	307	12 V +
4	606	GND
5	010	CH. A
6	011	CH. B
7	617	CAN GND
8	618	CAN GND
9		
10		
11		
12	607	
13	607	
14	908 CAN L	
15	909 CAN L	
16	107	TMP
17	609	TMP GND
18		
19		
20		
21		
22	903 CAN H	
23	904 CAN H	

FUSE-BOX		
Fuse No.	PIN	Wire No.
FU1	1	200
15 A / 80 V	7	201 / 202
FU 2	2	203 / 204
15 A / 80 V	8	2926
FU3	3	204
15 A / 80 V	9	2903
FU 4	4	205
30 A / 80 V	10	2936 / 2937
FU5	5	206
15 A / 80 V	11	2959 / 2996
FU 6	6	207
15 A / 80 V	12	2960 / 2997

PC 401 (FAN 1)	
PIN	Wire No.
1	2931
2	5915

PC 402 Start up Card	
PIN	Wire No.
1	2904
2	2923
3	5901
4	2927
5	5912
6	2903
7	---
8	---
9	2902
10	5928
11	5914
12	2926
13	5927
14	2950
15	--
16	--

RELAY-OPTIONS		
30	2996	
86	2924	K12
85	927	
87	2953	
30	2997	
86	927	K13
85	502	
87	2954	

PC 421 (Travel Alarm)	
PIN	Wire No.
1	2925
2	5913
3	2960
4	513

PC 404 (FS)	
PIN	Wire No.
A	2906
B	-
C	002

PC 406 (RS)	
PIN	Wire No.
A	2907
B	-
C	003

PC 405 (HNS)	
PIN	Wire No.
A	5914
B	-
C	501

PC 415 (FAN 2)	
PIN	Wire No.
1	2932
2	5916

(BRS)	
PIN	Wire No.
1	2911
2	009

PC 420 (KYS)	
PIN	Wire No.
A	2951
B	-
C	2901

PC 414 (ECR 4)		
PIN	Wire No.	
1	109	P1
2		
3	110	P3
4	111	P4
5		
6	112	P6

(ORS)	
PIN	Wire No.
1	2910 ORS
2	023

(HCM)	
B+	
S	Wire No.
1	205

(HCM)	
B-	
S	Wire No.
1	508/ 508 / 510 / 511

(HCM)	
B-	
S	Wire No.
1	500 / 505 / 506

SP1 SP3 SP4 SP5 SP6 SP7 SP8 SP12 SP13

wire 109 wire 110 wire 110 wire 109

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