

## Check the power supply unit input and out put

Does this solve the problem?

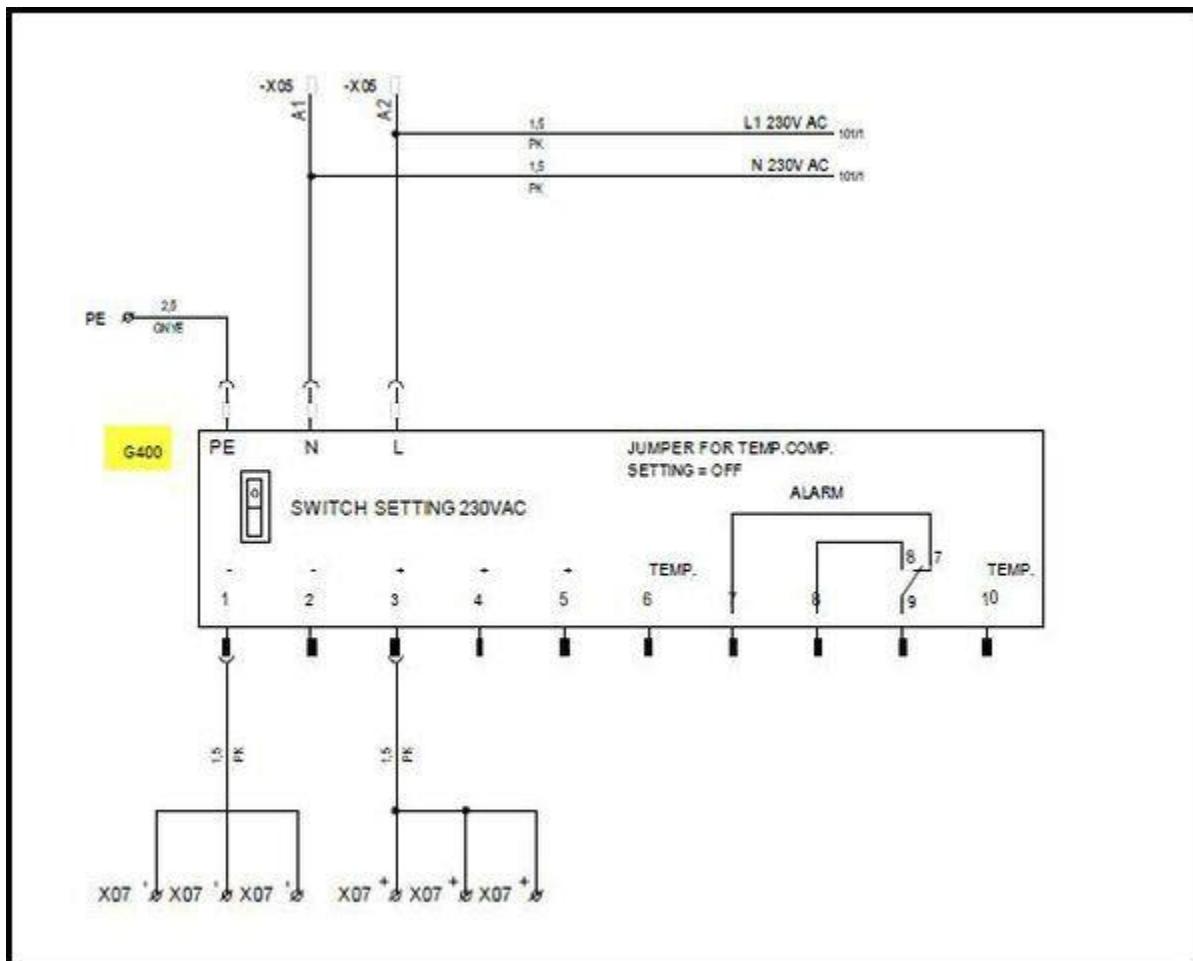
1] Yes

2] No

3] I don't know

- **Explanation**  
At Hub

+AK4 hub panel check the LED glowing or not and check the Input and output supply voltage at G400 Power net.  
There is no LED glow and output change the power supply unit





Relevant spare parts	
Description	Item Number
PS ADC 5483R-3 10A-27,4 NM PIN	<a href="#">188453</a>

#### Test/replace accumulators

Does this solve the problem?

Yes

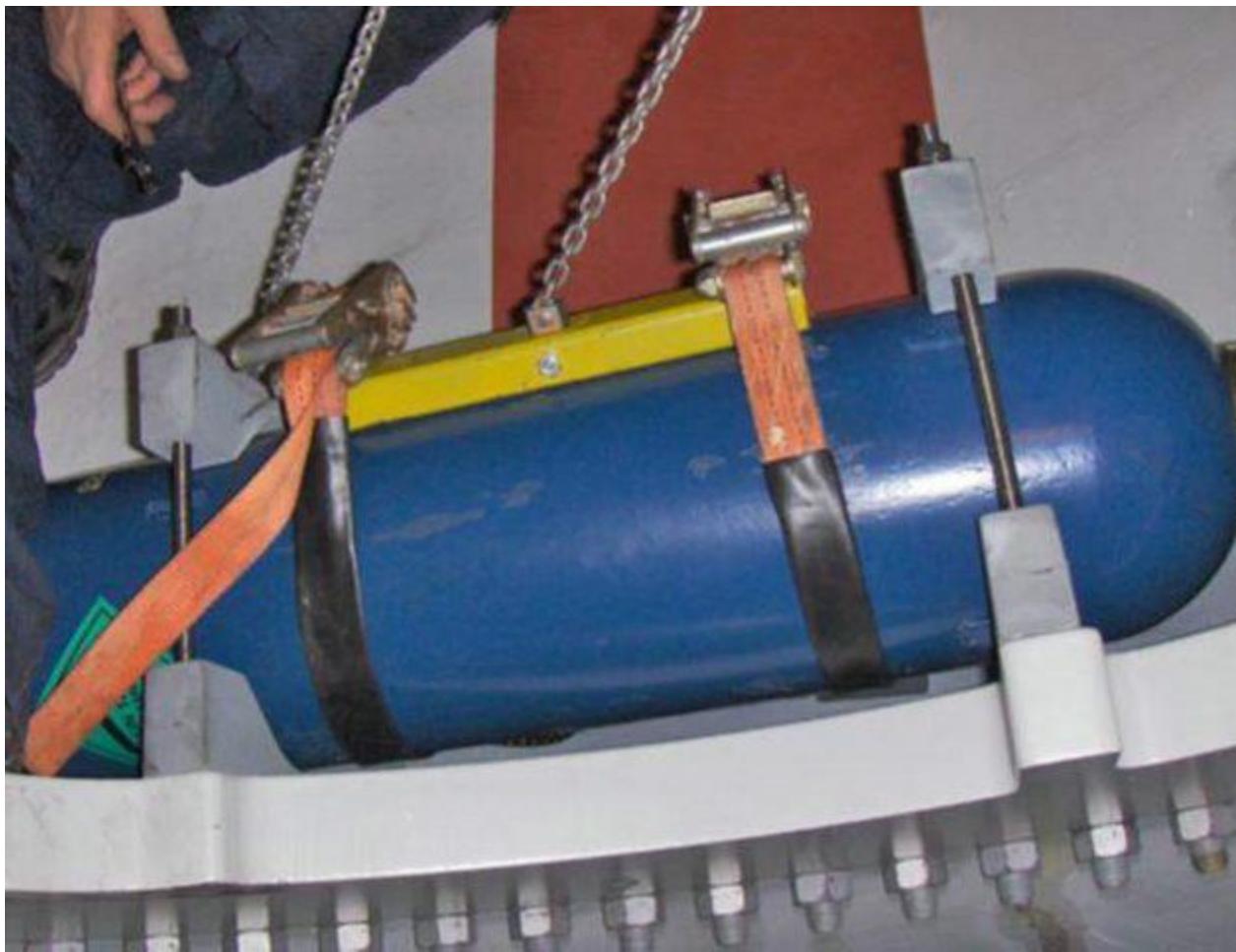
2] No

3] I don't know

• **Explanation**

Test accumulators in accordance with [DMS941918](#) - Recharging of Nitrogen Accumulators. Replace or repair (if approved) any failed accumulators.

Relevant documentation	
Description	DMS No.
Charging of Nitrogen Accumulators	<a href="#"><u>941918</u></a>



V82 accumulator charge kit 222826:



### Check the Hub Computer Connectors

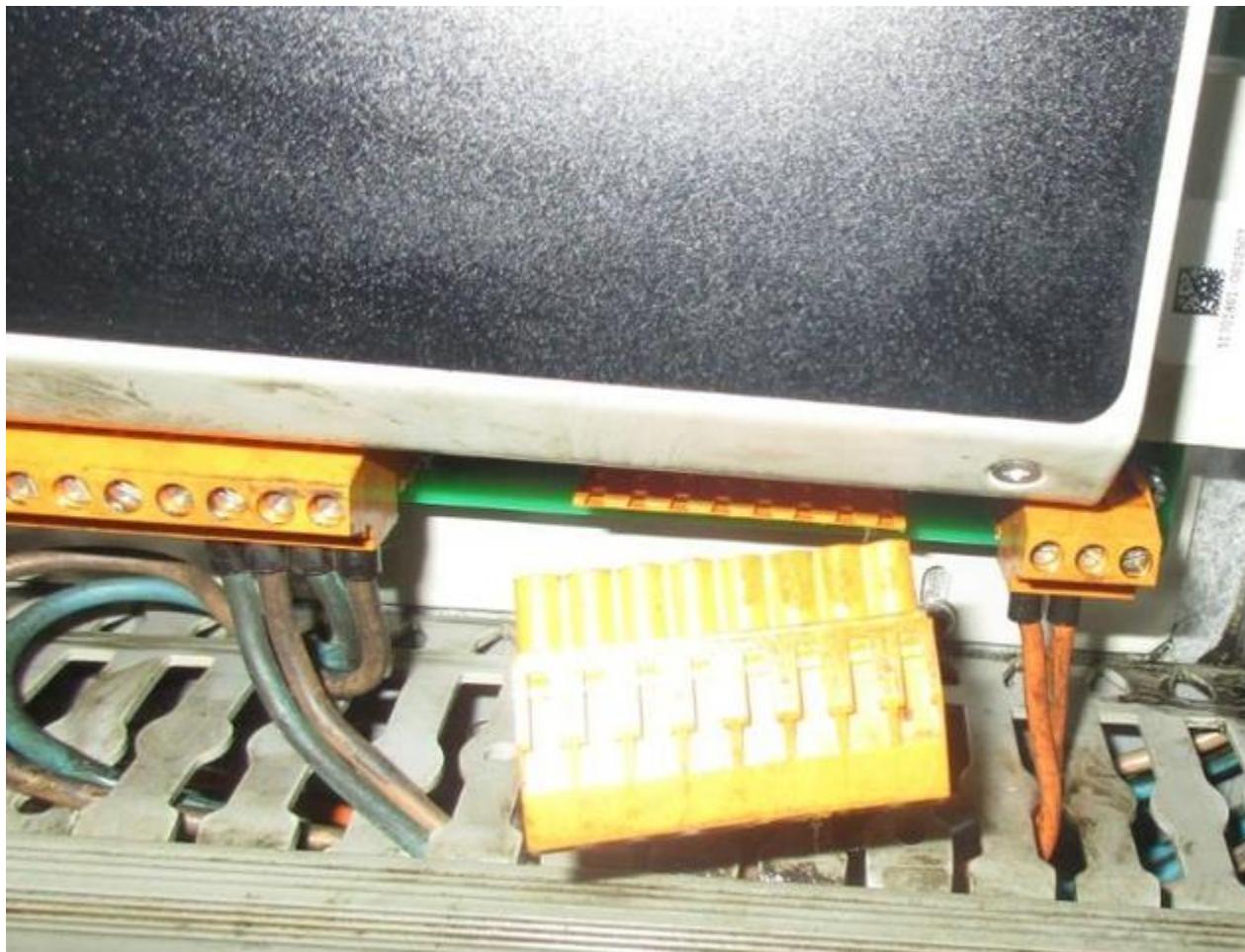
Does this solve the problem?

- 1] Yes
- 2] No
- 3] I don't know

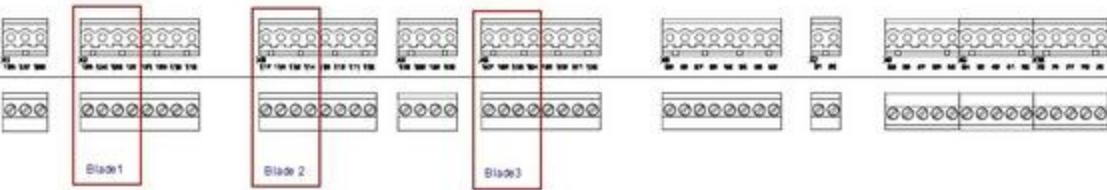
• **Explanation**

Loose Connection in the connectors or loose connectors in the Hub Computers will cause this error. Check and

tighten the connectors.



## NAV Computer Output



Pin	Description
1	EMERGENCY STOP PELAY NO
2	EMERGENCY STOP PELAY NC
3	EMERGENCY STOP PELAY COMMAND
4	PAGING VALVE Y2152_1
5	WING 1
6	SHUT DOWN VALVE Y2152_1
7	WING 1
8	SHURE
9	SHURE
10	SHURE
11	24V DC SUPPLIED TO OUTPUT
12	24V DC SUPPLIED TO OUTPUT
13	24V DC SUPPLIED TO OUTPUT
14	24V DC SUPPLIED TO OUTPUT
15	PAGING VALVE Y2152_2
16	WING2
17	SHUT DOWN VALVE Y2152_2
18	WING2
19	SHURE
20	SHURE
21	SHURE
22	SHURE
23	SHURE
24	SHURE
25	SHURE
26	SHURE
27	SHURE
28	SHURE
29	SHURE
30	SHURE
31	SHURE
32	SHURE
33	SHURE
34	SHURE
35	SHURE
36	SHURE
37	SHURE
38	SHURE
39	SHURE
40	SHURE
41	SHURE
42	SHURE
43	SHURE
44	SHURE
45	SHURE
46	SHURE
47	SHURE
48	SHURE
49	SHURE
50	SHURE
51	SHURE
52	SHURE
53	SHURE
54	SHURE
55	SHURE
56	SHURE
57	SHURE
58	SHURE
59	SHURE
60	SHURE
61	SHURE
62	SHURE
63	SHURE
64	SHURE
65	SHURE
66	SHURE
67	SHURE
68	SHURE
69	SHURE
70	SHURE
71	SHURE
72	SHURE
73	SHURE
74	SHURE
75	SHURE
76	SHURE
77	SHURE
78	SHURE
79	SHURE
80	SHURE
81	SHURE
82	SHURE
83	SHURE
84	SHURE
85	SHURE
86	SHURE
87	SHURE
88	SHURE
89	SHURE
90	SHURE
91	SHURE
92	SHURE
93	SHURE
94	SHURE
95	SHURE
96	SHURE
97	SHURE
98	SHURE
99	SHURE
100	SHURE
101	SHURE
102	SHURE
103	SHURE
104	SHURE
105	SHURE
106	SHURE
107	SHURE
108	SHURE
109	SHURE
110	SHURE
111	SHURE
112	SHURE
113	SHURE
114	SHURE
115	SHURE
116	SHURE
117	SHURE
118	SHURE
119	SHURE
120	SHURE
121	SHURE
122	SHURE
123	SHURE
124	SHURE
125	SHURE
126	SHURE
127	SHURE
128	SHURE
129	SHURE
130	SHURE
131	SHURE
132	SHURE
133	SHURE
134	SHURE
135	SHURE
136	SHURE
137	SHURE
138	SHURE
139	SHURE
140	SHURE
141	SHURE
142	SHURE
143	SHURE
144	SHURE
145	SHURE
146	SHURE
147	SHURE
148	SHURE
149	SHURE
150	SHURE
151	SHURE
152	SHURE
153	SHURE
154	SHURE
155	SHURE
156	SHURE
157	SHURE
158	SHURE
159	SHURE
160	SHURE
161	SHURE
162	SHURE
163	SHURE
164	SHURE
165	SHURE
166	SHURE
167	SHURE
168	SHURE
169	SHURE
170	SHURE
171	SHURE
172	SHURE
173	SHURE
174	SHURE
175	SHURE
176	SHURE
177	SHURE
178	SHURE
179	SHURE
180	SHURE
181	SHURE
182	SHURE
183	SHURE
184	SHURE
185	SHURE
186	SHURE
187	SHURE
188	SHURE
189	SHURE
190	SHURE
191	SHURE
192	SHURE
193	SHURE
194	SHURE
195	SHURE
196	SHURE
197	SHURE
198	SHURE
199	SHURE
200	SHURE
201	SHURE
202	SHURE
203	SHURE
204	SHURE
205	SHURE
206	SHURE
207	SHURE
208	SHURE
209	SHURE
210	SHURE
211	SHURE
212	SHURE
213	SHURE
214	SHURE
215	SHURE
216	SHURE
217	SHURE
218	SHURE
219	SHURE
220	SHURE
221	SHURE
222	SHURE
223	SHURE
224	SHURE
225	SHURE
226	SHURE
227	SHURE
228	SHURE
229	SHURE
230	SHURE
231	SHURE
232	SHURE
233	SHURE
234	SHURE
235	SHURE
236	SHURE
237	SHURE
238	SHURE
239	SHURE
240	SHURE
241	SHURE
242	SHURE
243	SHURE
244	SHURE
245	SHURE
246	SHURE
247	SHURE
248	SHURE
249	SHURE
250	SHURE
251	SHURE
252	SHURE
253	SHURE
254	SHURE
255	SHURE
256	SHURE
257	SHURE
258	SHURE
259	SHURE
260	SHURE
261	SHURE
262	SHURE
263	SHURE
264	SHURE
265	SHURE
266	SHURE
267	SHURE
268	SHURE
269	SHURE
270	SHURE
271	SHURE
272	SHURE
273	SHURE
274	SHURE
275	SHURE
276	SHURE
277	SHURE
278	SHURE
279	SHURE
280	SHURE
281	SHURE
282	SHURE
283	SHURE
284	SHURE
285	SHURE
286	SHURE
287	SHURE
288	SHURE
289	SHURE
290	SHURE
291	SHURE
292	SHURE
293	SHURE
294	SHURE
295	SHURE
296	SHURE
297	SHURE
298	SHURE
299	SHURE
300	SHURE
301	SHURE
302	SHURE
303	SHURE
304	SHURE
305	SHURE
306	SHURE
307	SHURE
308	SHURE
309	SHURE
310	SHURE
311	SHURE
312	SHURE
313	SHURE
314	SHURE
315	SHURE
316	SHURE
317	SHURE
318	SHURE
319	SHURE
320	SHURE
321	SHURE
322	SHURE
323	SHURE
324	SHURE
325	SHURE
326	SHURE
327	SHURE
328	SHURE
329	SHURE
330	SHURE
331	SHURE
332	SHURE
333	SHURE
334	SHURE
335	SHURE
336	SHURE
337	SHURE
338	SHURE
339	SHURE
340	SHURE
341	SHURE
342	SHURE
343	SHURE
344	SHURE
345	SHURE
346	SHURE
347	SHURE
348	SHURE
349	SHURE
350	SHURE
351	SHURE
352	SHURE
353	SHURE
354	SHURE
355	SHURE
356	SHURE
357	SHURE
358	SHURE
359	SHURE
360	SHURE
361	SHURE
362	SHURE
363	SHURE
364	SHURE
365	SHURE
366	SHURE
367	SHURE
368	SHURE
369	SHURE
370	SHURE
371	SHURE
372	SHURE
373	SHURE
374	SHURE
375	SHURE
376	SHURE
377	SHURE
378	SHURE
379	SHURE
380	SHURE
381	SHURE
382	SHURE
383	SHURE
384	SHURE
385	SHURE
386	SHURE
387	SHURE
388	SHURE
389	SHURE
390	SHURE
391	SHURE
392	SHURE
393	SHURE
394	SHURE
395	SHURE
396	SHURE
397	SHURE
398	SHURE
399	SHURE
400	SHURE
401	SHURE
402	SHURE
403	SHURE
404	SHURE
405	SHURE
406	SHURE
407	SHURE
408	SHURE
409	SHURE
410	SHURE
411	SHURE
412	SHURE
413	SHURE
414	SHURE
415	SHURE
416	SHURE
417	SHURE
418	SHURE
419	SHURE
420	SHURE
421	SHURE
422	SHURE
423	SHURE
424	SHURE
425	SHURE
426	SHURE
427	SHURE
428	SHURE
429	SHURE
430	SHURE
431	SHURE
432	SHURE
433	SHURE
434	SHURE
435	SHURE
436	SHURE
437	SHURE
438	SHURE
439	SHURE
440	SHURE
441	SHURE
442	SHURE
443	SHURE
444	SHURE
445	SHURE
446	SHURE
447	SHURE
448	SHURE
449	SHURE
450	SHURE
451	SHURE
452	SHURE
453	SHURE
454	SHURE
455	SHURE
456	SHURE
457	SHURE
458	SHURE
459	SHURE
460	SHURE
461	SHURE
462	SHURE
463	SHURE
464	SHURE
465	SHURE
466	SHURE
467	SHURE
468	SHURE
469	SHURE
470	SHURE
471	SHURE
472	SHURE
473	SHURE
474	SHURE
475	SHURE
476	SHURE
477	SHURE
478	SHURE
479	SHURE
480	SHURE
481	SHURE
482	SHURE
483	SHURE
484	SHURE
485	SHURE
486	SHURE
487	SHURE
488	SHURE
489	SHURE
490	SHURE
491	SHURE
492	SHURE
493	SHURE
494	SHURE
495	SHURE
496	SHURE
497	SHURE
498	SHURE
499	SHURE
500	SHURE

## Troubleshoot/Replace valve

Does this solve the problem?

- 1] Yes
- 2] No
- 3] I don't know

Measure pressure in Mx1 while valve 215 activated pressure is to be equal to the acc. pressure.

Measure pressure in Mx1 while valve 215 deactivated - pressure is to be 0 bar.

If either of these values are not as specified the valve is defect and must be replaced.

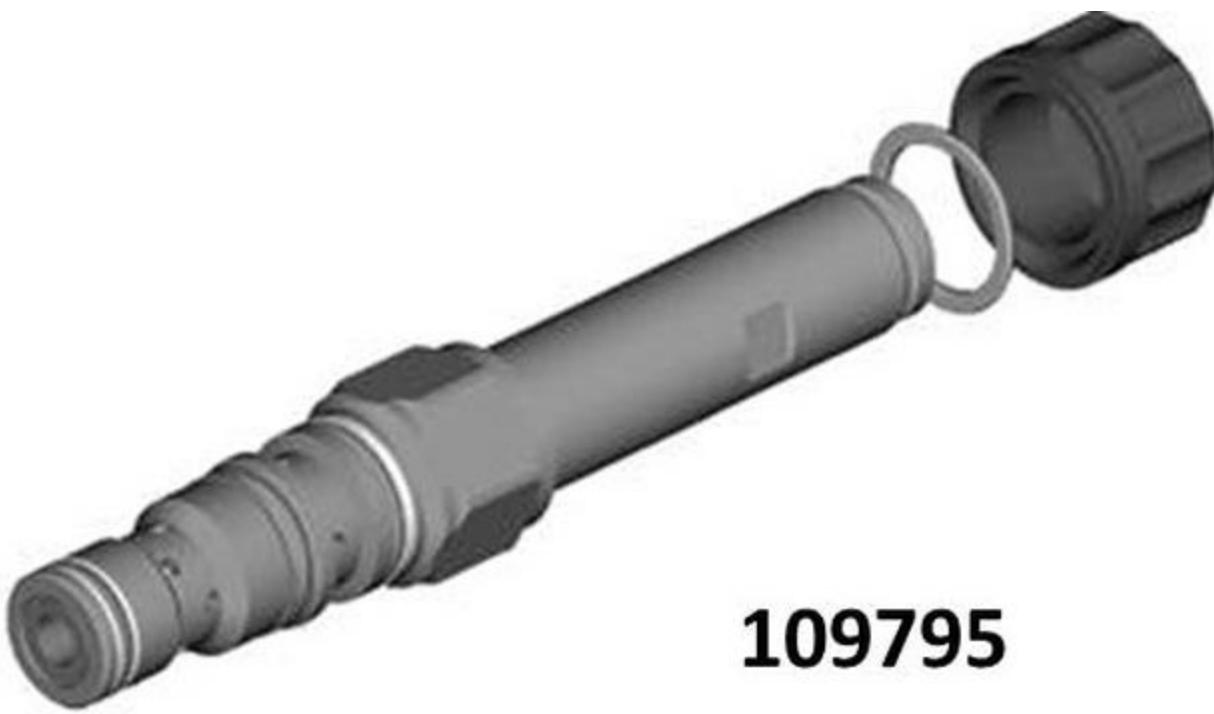
The part No.60096475 is phased out and henceforth replaced by 109795 & 60106201.

(Rexroth) Valve/Solenoid- 215

Relevant spare parts		
Description	Item No.	Status
SOL VAL KSDEU1CA/HCG24N0K4M	<a href="#">60096475</a>	Phased out
ELECTRIC SEAT VALVE	<a href="#">109795</a>	Available
COIL GZ37-4 24VDC 19W	<a href="#">60106201</a>	Available



**60106201**



**109795**

Parker) 3/2 DIRECTIONAL VALVE- 60111617

Relevant spare parts	
Description	Item No.
3/2 DIRECTIONAL VALVE	<a href="#">60111617</a>

**Troubleshoot pitch valve cables and connectors-repair or replace as necessary.**

**Does this solve the problem?**

1] Yes

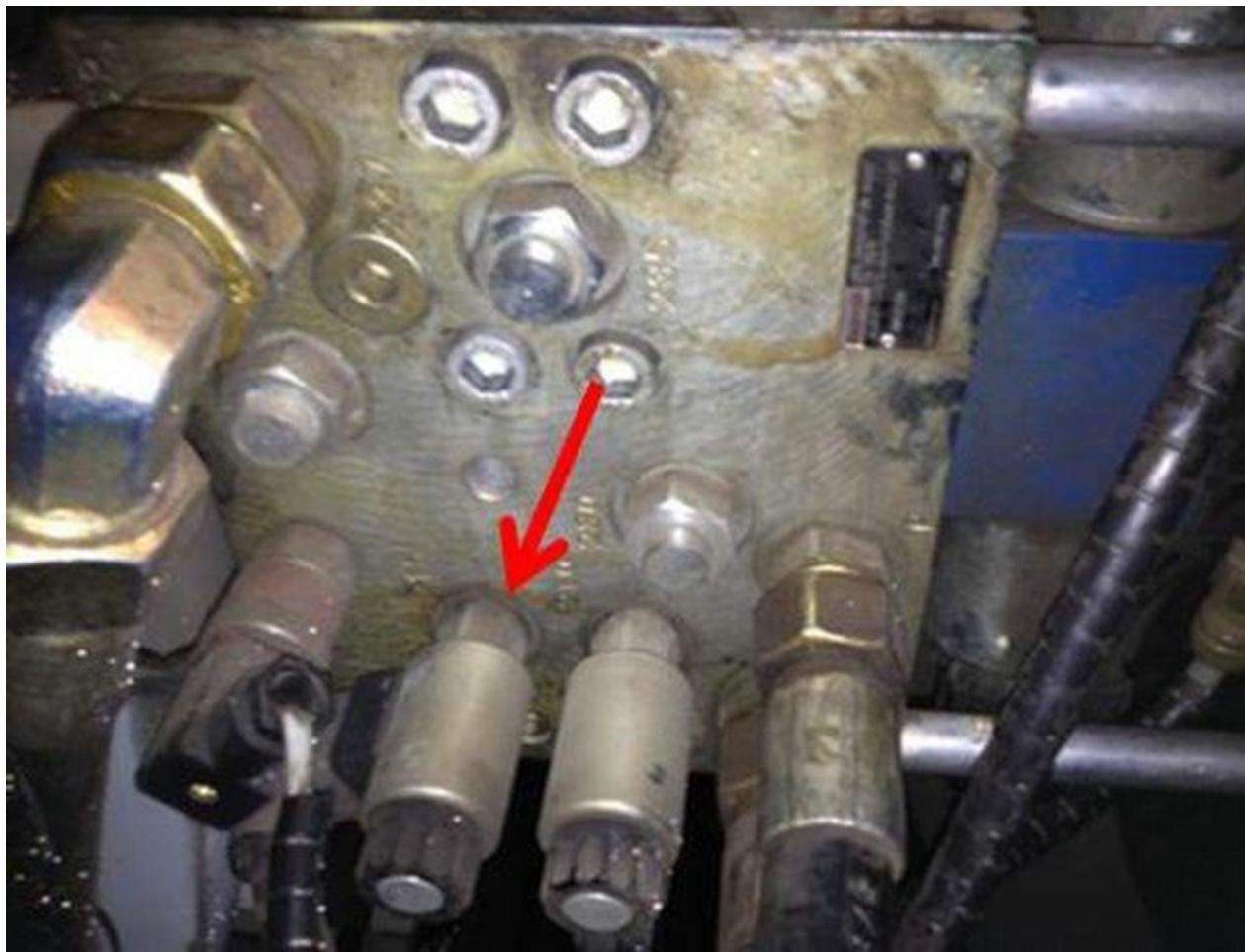
2] No

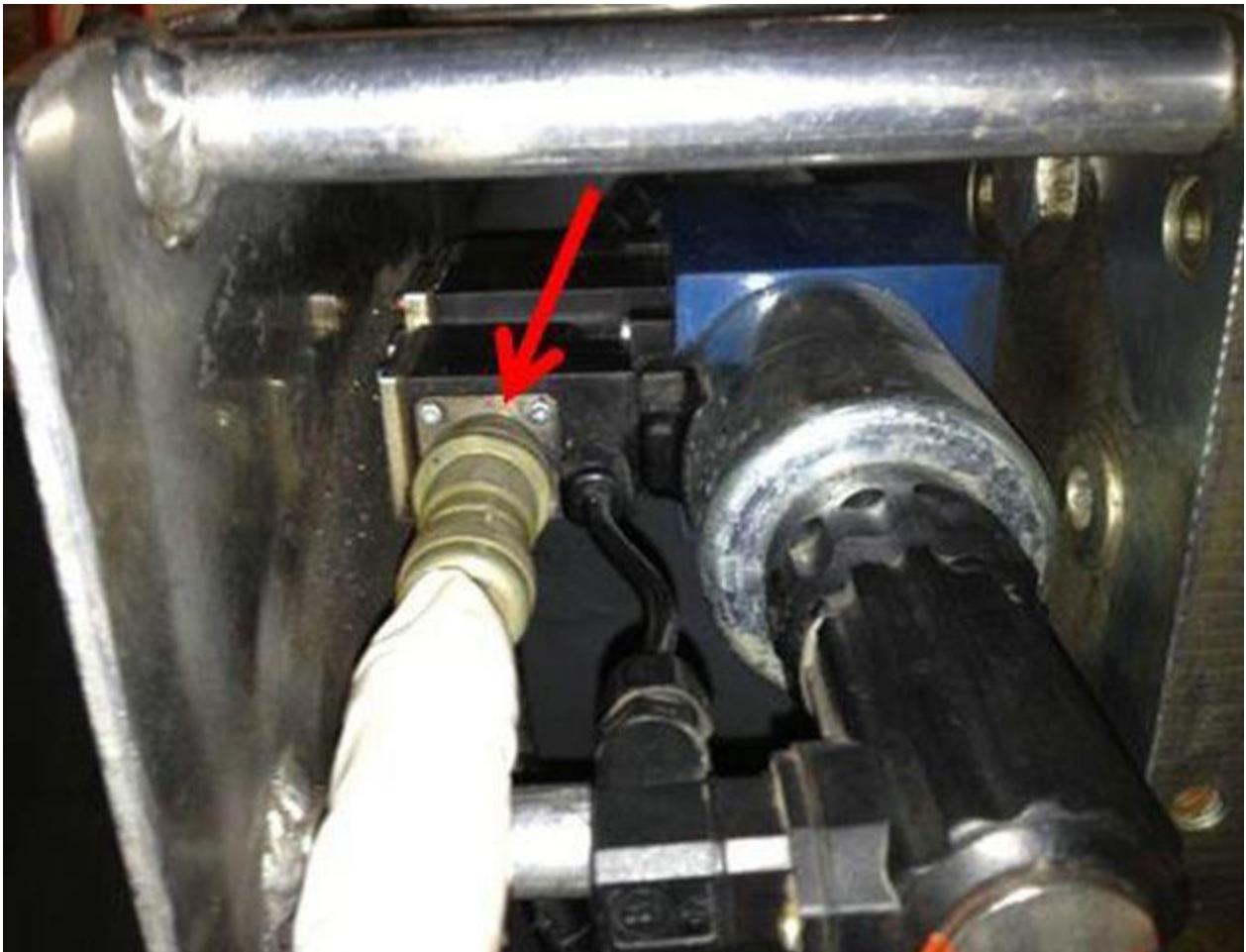
3] I don't know

● **Explanation**

Damage to cables for proportional valves and solenoid valves can cause this alarm.

The wires in the cable to the shutdown valve (pos. 215) tend to break inside the insulation directly beneath the strain-relief near the connector.





Flex the cable at this point on the cable while pitching to detect if a wire within the cable is broken.



During operation the offending blade will “flutter” a bit as the wire flexes in the hub. If it is broken badly enough you will hear the blade “hammer” as power to the valve is interrupted.

If a data logger is armed you will see the blade position flutter.

If you are watching real time on the TAC it is usually in perfect unison with rotor revolution (1 flutter per revolution).

#### Cable, Parking valve-Pos.210

Relevant spare parts	
Description	Item No.
CABLE W940 PARKINK VALVE (Blade1)	<a href="#">60021534</a>

CABLE W944 PARKINK VALVE (Blade2)	<a href="#">60021536</a>
CABLE W948 PARKINK VALVE (Blade3)	<a href="#">60021538</a>

#### Cable, Shutdown valve-Pos.215

Relevant spare parts	
Description	Item No.
CABLE W941 SHOT DOWN VALVE	<a href="#">60021535</a>
CABLE W945 SHOT DOWN VALVE	<a href="#">60021537</a>
CABLE W949 SHOT DOWN VALVE	<a href="#">60021539</a>

#### Cable, Proportional valve-Pos.205

Relevant spare parts	
Description	Item No.
CABLE W956 PRO VALVE	<a href="#">60021544</a>
CABLE W957 PRO VALVE	<a href="#">60021545</a>
CABLE W958 PRO VALVE	<a href="#">60021546</a>

#### Troubleshoot/replace valve (pos. 205)

##### Does this solve the problem?

- 1] Yes
- 2] No
- 3] I don't know

- **Explanation**

Test the proportional valve for the affected blade:  
Park the actuator.

Measure feedback from proportional valve on X08 (pin 1 and. 2 for blade 1)

When cylinder is parked the mA should be between 11,6 and 11,9 mA

When cylinder is pitched towards run, the mA should be below 11 mA

When cylinder is pitched towards stop, the mA should be above 12,5 mA

#### Parker Proportional Valve

Relevant spare parts	
Description	Item No.
PROP. VALVE D31FHE01C	<a href="#">60112621</a>

Relevant CIM case		
CIM case	Task list	SWI
<a href="#">2303</a>	14333	

#### Rexroth Proportional Valve

Relevant spare parts	
Description	Item No.
PROP VAL 4WREE 10R75-2X/G24K31	<a href="#">60078979</a>

Relevant CIM case		
CIM case	Task list	SWI
<a href="#"><u>1914</u></a>	14334	



Rexroth Proportional Valve-



**Inspect bearing/ manually lubricate**

**Does this solve the problem?**

- 1] Yes
- 2] No
- 3] I don't know

• **Explanation**

Manually pitch the suspect blade locally in the hub.

Listen for any abnormal noise from the bearing.

If abnormal noise can be heard from the bearing manually grease the bearing in accordance with document DMS0024-9719 - V82 Blade Bearing Manual Grease Procedure.

Relevant documentation	
Description	DMS No.
V82 Blade Bearing Manual Grease Procedure	<a href="#">0024-9719</a>

If the noise continues combined with multiple blade errors for that blade the blade bearing could be close to failing and should be further diagnosed.

Manually run the grease pump in the hub to verify operation.

Ensure that grease is reaching all 6 lubrication points on each of the blade bearings.

If grease is failing to reach any of the lubrication points, inspect the grease lines and distributor blocks in each of the blades.

If grease is not reaching any of the 18 lubrication points, there is likely a problem with the pump or the main distribution block in the hub.

#### Test/replace linear transducer

##### Does this solve the problem?

1] Yes

2] No

3] I don't know

##### • Explanation

Remove the blade position transducer (Balluff sensor) from the affected blade actuator and swap with another blade. If the pitch position anomaly follows the transducer to the other blade- it is defective and must be replaced.

Relevant spare parts	
Description	Item No.
SERVICEMODUL, BTL5 - E10	<a href="#">60102394</a>

## Troubleshoot/Repair cylinder

### Does this solve the problem?

- 1] Yes
- 2] No
- 3] I don't know

- **Explanation**

Test the pitch cylinder for internal leakage.

### CAUTION: Oil under pressure

Oil in the hydraulic system is under high pressure.

If the pressure is not relieved prior to opening 86.3/4T3, oil splashes or oil vapor will occur.

W **Do not** open with pressure on.

u It is important to start by screwing one end of a measuring hose onto test nipple 86.2/4T2 which is the one without pressure.

u Screw the other end onto 86.3/4T3.

### Cylinder Internal Leakage at Stop Position:

The pitch cylinder is tested at Stop position by bypassing valve 240. This is done by test hoses.

1. Fully extend (Stop) pitch cylinder.
  2. Discharge accumulators by opening valve 222.
- Close it when oil stops flowing.
3. MSP and MA are connected by test hose – **connect test hose to MSP before connecting it to MA.**

4. Activate valve 215.
5. Activate valve 210.
6. Connect MB to bucket / measuring glass.
7. Charge accumulators above 200 bar.
8. Record leakage at MB.

**NOTE: The pitch cylinder has internal leakage if oil is constantly leaking from MB (if the pitch cylinder is tight at the next test it is also possible that leakage is from valve 226).**

#### **Cylinder Internal Leakage at Run Position:**

The pitch cylinder is tested at the most frequent run position ( $-0.5^\circ$  = ~5 mm from fully retracted) by connecting B-side to accumulators and isolating A-side.

1. Fully extend (Stop) Pitch cylinder.
2. Discharge accumulators by opening valve 222. Close the valve when oil stops flowing.
3. Pitch cylinder is positioned at pitch angle  $-0.5^\circ$
4. Activate valve 215.
5. Deactivate valve 210 by removing connector.
6. Start pump by commanding pitch towards run.
7. Observe cylinder.

If the pitch cylinder is drifting to run then valve 230 is leaking. If the pitch cylinder is drifting to stop then the cylinder is leaking.

If the pitch cylinder is found to be leaking internally, inspect/replace the piston/piston seals in accordance with document: 0023-2047- Pitch Actuator Piston Rod Replacement, NM72/82, V82.

**Relevant spare parts**

Description	Item No.
Pre-assembled piston rod (Bosch Rexroth).	<a href="#">60110963</a>
Actuator seal kit (STD + Arctic Bosh Rexroth).	<a href="#">60110956</a>
HYDR CYL ROD-PISTON 125/90 (Parker).	<a href="#">60114035</a>
Hydr Cyl Piston Seal Kit Ø 125 (Parker).	<a href="#">60114089</a>