Troubleshoot valve 210 and/or 215 and replace if necessary.

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**
  Flow-chart for trouble-shooting alarm 499

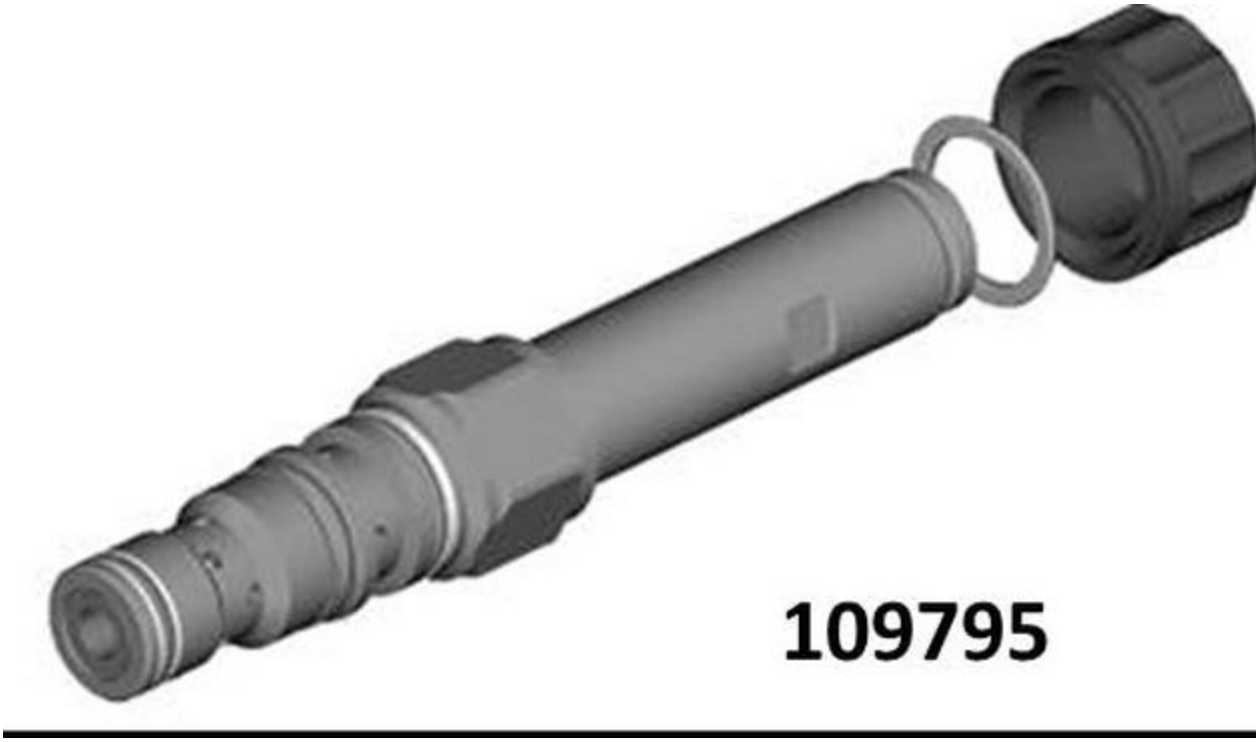
Relevant documentation	
Description	**DMS No.**
V82 Error499 flowchart	0033-9769

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

(Rexroth) Valve/Solenoid- Pos. 210 & 215

Relevant spare parts		
Description	**Item No.**	**Status**
SOL VAL KSDEU1CA/HCG24N0K4M	60096475	Phased out
ELECTRIC SEAT VALVE	109795	Available
COIL GZ37-4 24VDC 19W	60106201	Available


60106201



(Parker) 3/2 DIRECTIONAL VALVE- 60111617

Relevant spare parts	
Description	**Item No.**
3/2 DIRECTIONAL VALVE	60111617

Troubleshoot pitch valve cables and connectors. Repair or replace if necessary

Does this solve the problem?

1] Yes

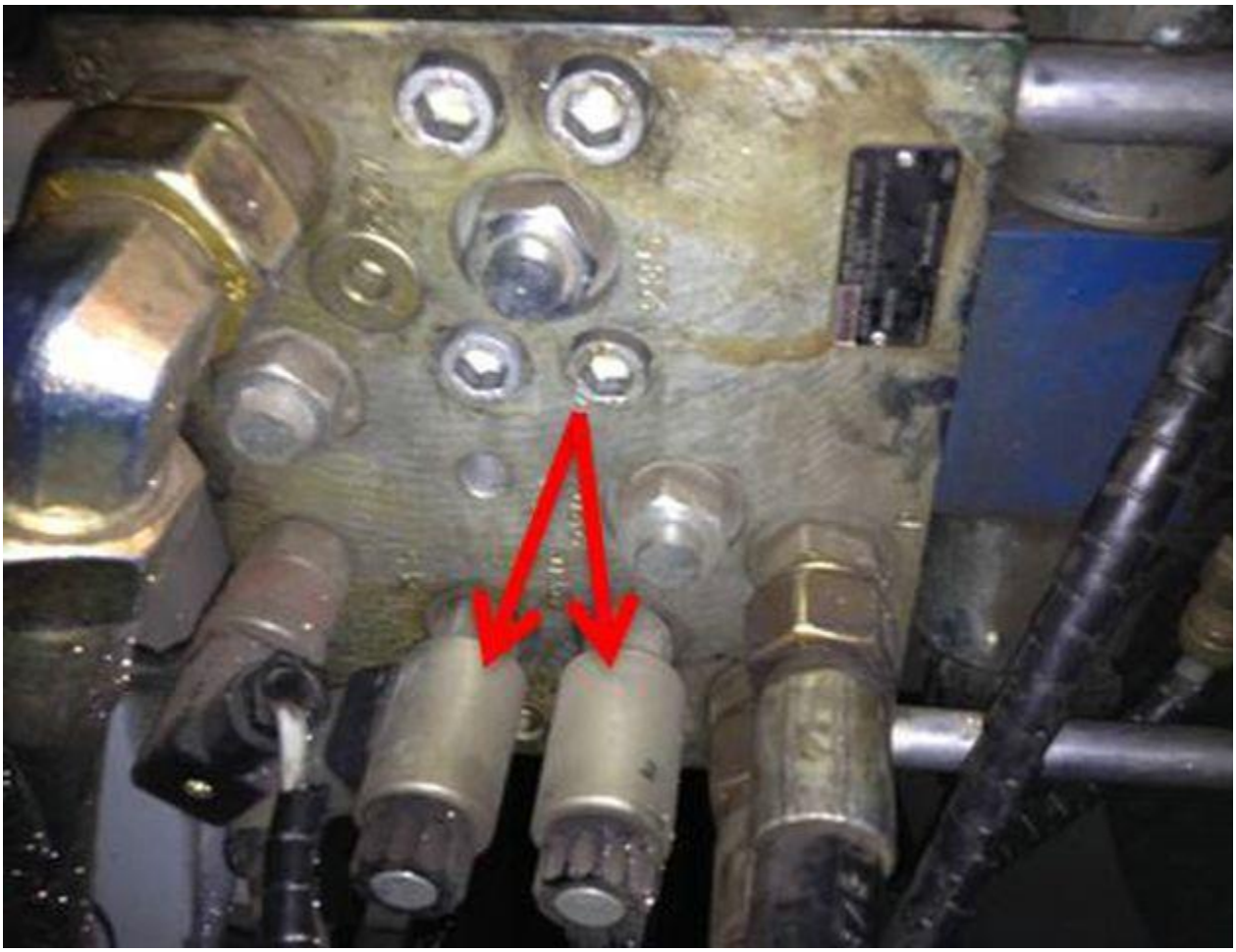
2] No

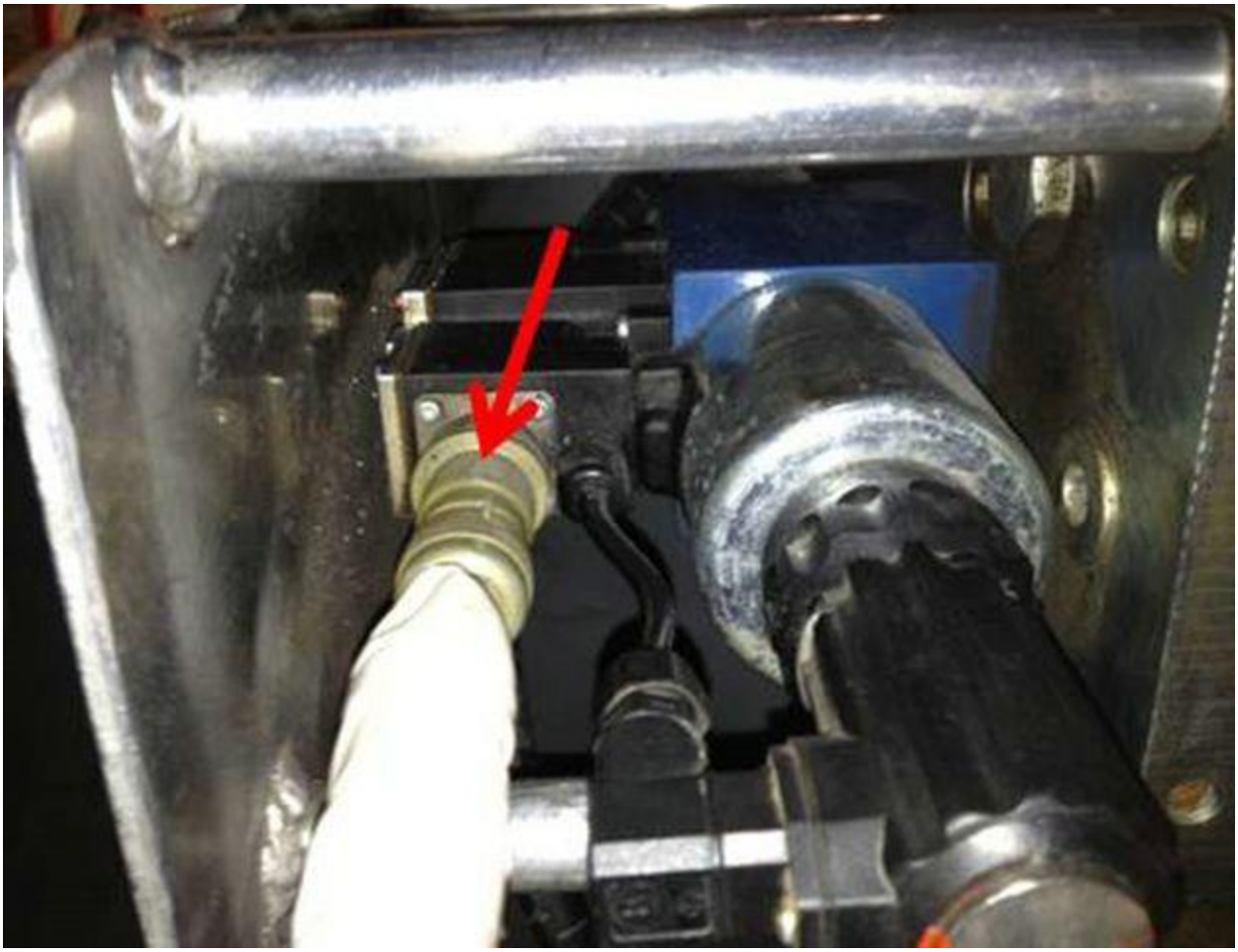
3] I don't know

- **Explanation**

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

The wires in the cable to the shutdown valve (pos.215) and locking valve (pos.210) 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 the rotor revolution (1 flutter per revolution)

Loose connection in the proportional valve cable:

Cable, Parking valve-Pos.210

Relevant spare parts	
Item	**Item no.**
CABLE W940 PARKING VALVE	60021534
CABLE W944 PARKING VALVE	60021536
CABLE W948 PARKING VALVE	60021538

Cable, Shutdown valve-Pos.215

Relevant spare parts	
Item	**Item no.**
CABLE W941 SHOT DOWN VALVE	60021535
CABLE W945 SHOT DOWN VALVE	60021537
CABLE W949 SHOT DOWN VALVE	60021539

Cable, Proportional valve-Pos.205

Relevant spare parts	
Item	**Item no.**
CABLE W956 PRO VALVE	60021544
CABLE W957 PRO VALVE	60021545
CABLE W958 PRO VALVE	60021546

Manually grease blade bearing

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

Check the turbine alarm logs for occurrences of blade specific alarms e.g. 466 or 491 are specific to blade 1.

Run each blade individually from the hub.

During pitching observe any abnormalities turning the blade e.g. excessive noise from the bearing. other than smooth rotation of the brearing (Jerking into run position and stop position), failure of bearing to move at a normal rate of speed.

If abnormalities are found, the bearing can be manually greased and operational tast performed once again.

Relevant documentation	
Description	**DMS No.**
Blade Bearing Manual Grease Procedure	0024-9719

If the abnormalities remain, the bearing could be failed and replacement may be necessary.

Relevant documentation	
Description	**DMS No.**
V82 Error499 flowchart	0033-9769

Check the Blade bearing Auto lubrication pump functioning and check whether grease reaching all the lubrication point as per 1001450 - Service Instruction for Lubrication Unit for Blade Bearings.

Relevant documentation	
Description	**DMS No.**
SI_Auto lub for blade bearing NM82	1001450

If Pump failure or power supply cable W953 for pump failure, replace the same.

Relevant spare parts	
Description	**Item No.**
GREASE PUMP P203 ARCTIC	60067070
GREASE PUMP P203 std	60112213

Relevant spare parts

Description	Item No.
CABLE W953 LUBR PUMP M11	60021542

Drawing for Grease pump complete assembly:

Relevant documentation	
Description	**DMS No.**
Bearing greasing system std	6010383

Part number for sub-assemblies:

COMPONENT	DESCRIPTION	QUANTITY PER	UM	Remarks
60067073	METERING DEVICE "PRIMARY"	1,000	EA	Distributor Manifold
60080996	GREASE HOSE ASSEMBLY (1210 MM.	1,000	EA	Hoses from pump to Distributor manifold to Sla Manifold
60080997	GREASE HOSE ASSEMBLY (390MM)	2,000	EA	
60080998	GREASE HOSE ASSEMBLY (7840 MM.	2,000	EA	
60080999	GREASE HOSE ASSEMBLY (6290 MM.	1,000	EA	
60111921	Protective hood /m.strop red	1,000	EA	Fittings& Accessories fo above hose&Manifold
60111922	Elbow LL6MMx1/8K	1,000	EA	
60112211	Check valve ⅛6, high pressure	4,000	EA	
60112212	Protective cap f. quick fittin	4,000	EA	
60067074	METERING DEVICE "SECONDARY"	1,000	EA	Slave Manifold (for 1 blad
60067085	HOSE ⅛6 x 320MM (CUT LENGTH)	1,000	EA	Hoses from Slave manifol to Blade bearing (for 1 blade)
60067086	HOSE ⅛6 x 490MM (CUT LENGTH) S	1,000	EA	
60067087	HOSE ⅛6 x 1200MM (CUT LENGTH)	1,000	EA	
60067088	HOSE ⅛6 x 1380MM (CUT LENGTH)	1,000	EA	
60067089	HOSE ⅛6 x 2080MM (CUT LENGTH)	1,000	EA	
60067090	HOSE ⅛6 x 2250MM (CUT LENGTH)	1,000	EA	
60112212	Protective cap f. quick fittin	6,000	EA	Fittings& Accessories fo
60112214	Quick fittings 90 elbow ⅛6	6,000	EA	above hose&Manifold (for

Troubleshoot valve 205 and replace if necessary

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**

  Please see 0033-9769 Flowchart for troubleshooting error 499 on V82

Relevant documentation	
Description	**DMS No.**
V82 Error499 flowchart	0033-9769
SM, CIM2303, prop. valve failure	0014-4659

Parker:

Relevant spare parts	
Description	**Item No.**
PROP. VALVE D31FHE01C	60112621

You can check CIM2303 for additional information.

Relevant CIM case		
CIM case	**Task list**	**SWI**
2303	14333	

Bosh Rexroth:

Relevant spare parts	
Description	**Item No.**
PROP VAL 4WREE 10R75-2X/G24K31	60078979

You can check CIM1914 for additional information.

Relevant CIM case		
CIM case	**Task list**	**SWI**
1914	14334	

Replace the defective Pitch position sensor and defective cables

Does this solve the problem?

1] Yes

2] No

3] I don't know

- **Explanation**
  IN THE HUB:

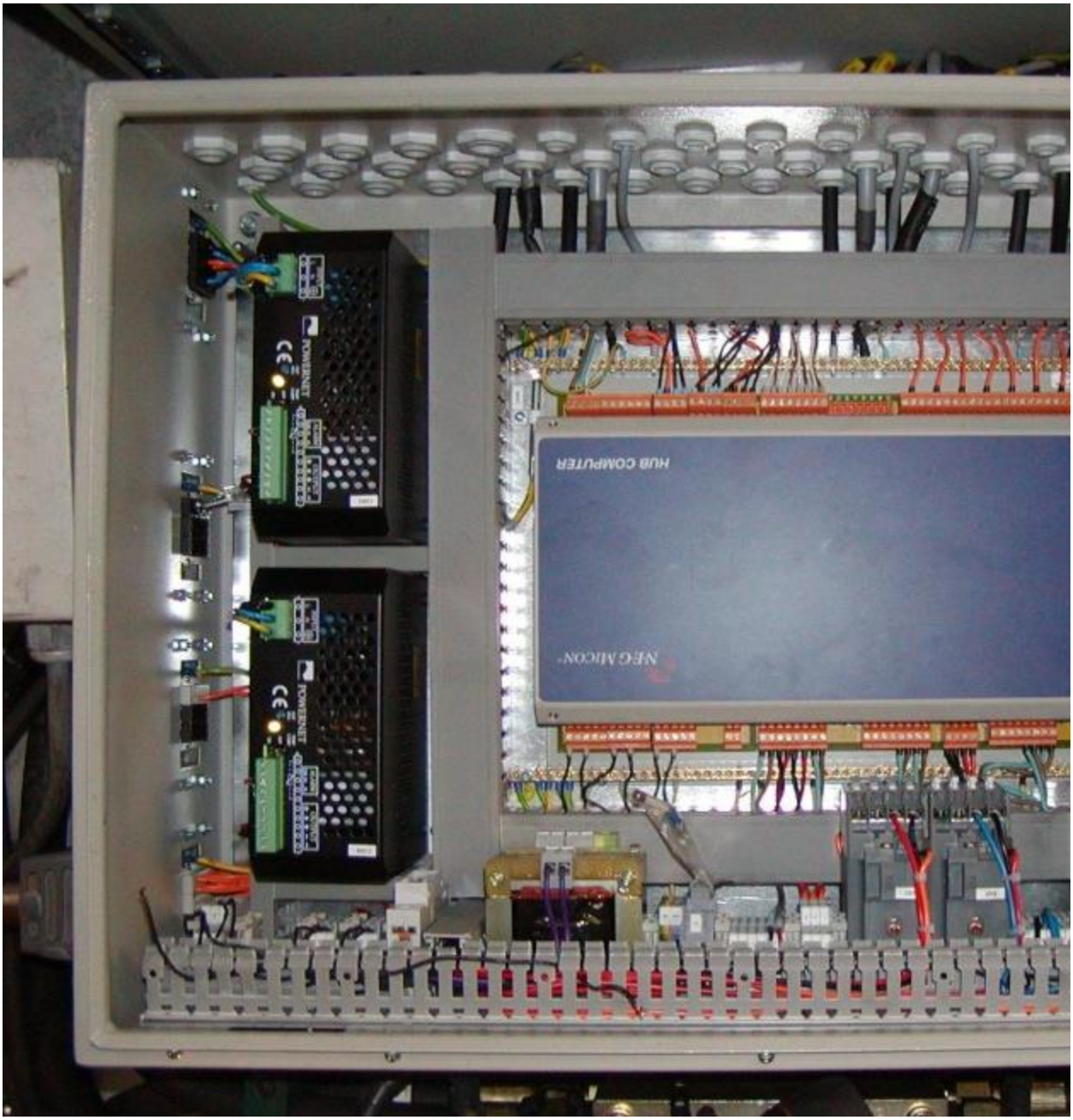
  Check the alarm snapshot/data logger to determine which blade caused the alarm.

  Check for any loose connections in the hub computer terminals for the blade position sensors (X19).

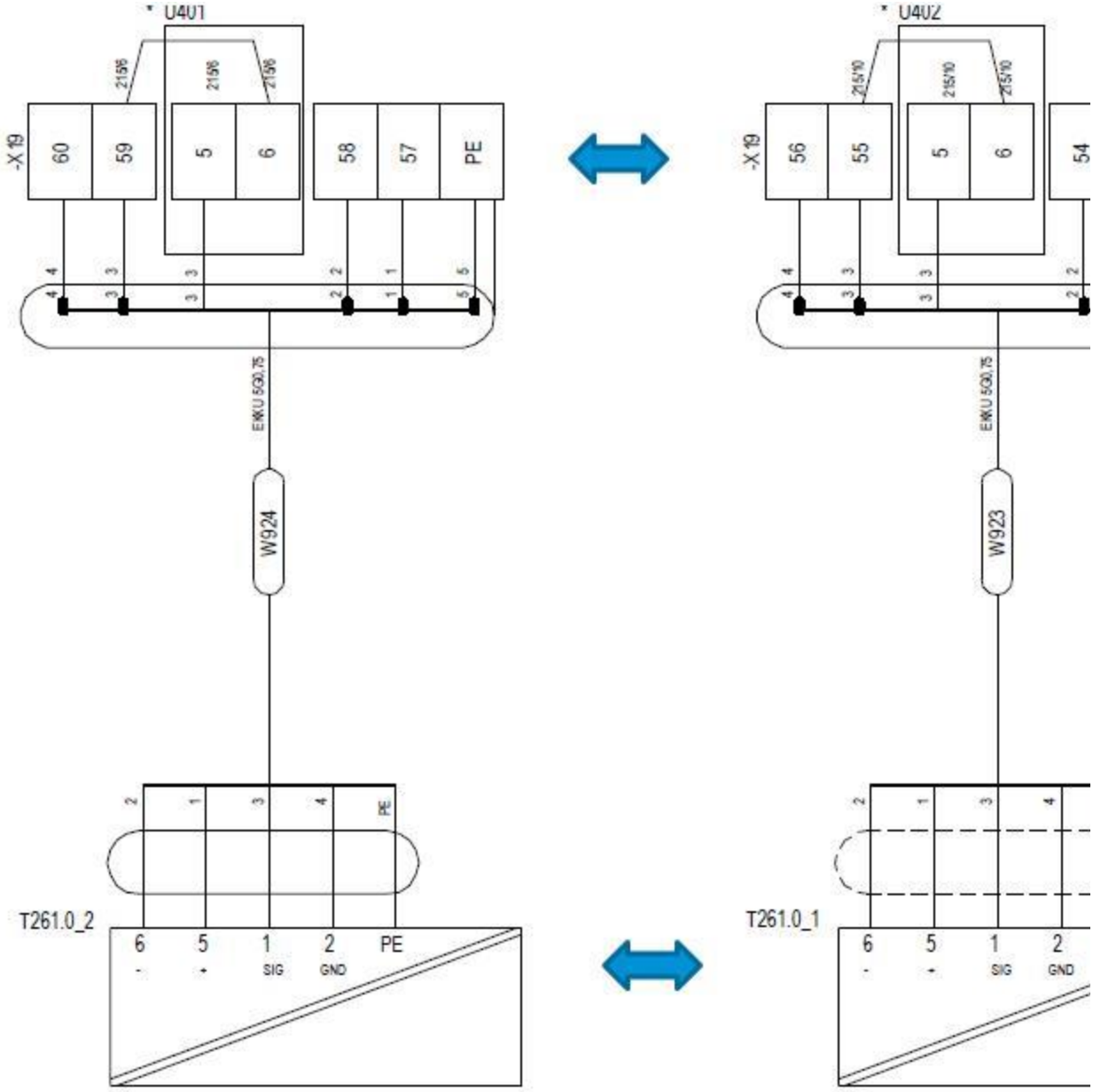
  Check for any loose connections on the blade position sensors.


BALLUFF
BTL5-E10-M0950-A-SA211
-S135
071215573 HU

If the offending blade has been identified, swap the signal wire to the position transducer (Balluff) on the hub computer. If the fault follows to the new blade then the fault is either in the position transducer or one of the cables.



In the example below, we are swapping the plugs between blades C and B.



Place the cables back to their original position and then swap pitch position sensor from affected blade to another working blade.

If the alarm follows the sensor to the other blade, the pitch position sensor is defective.

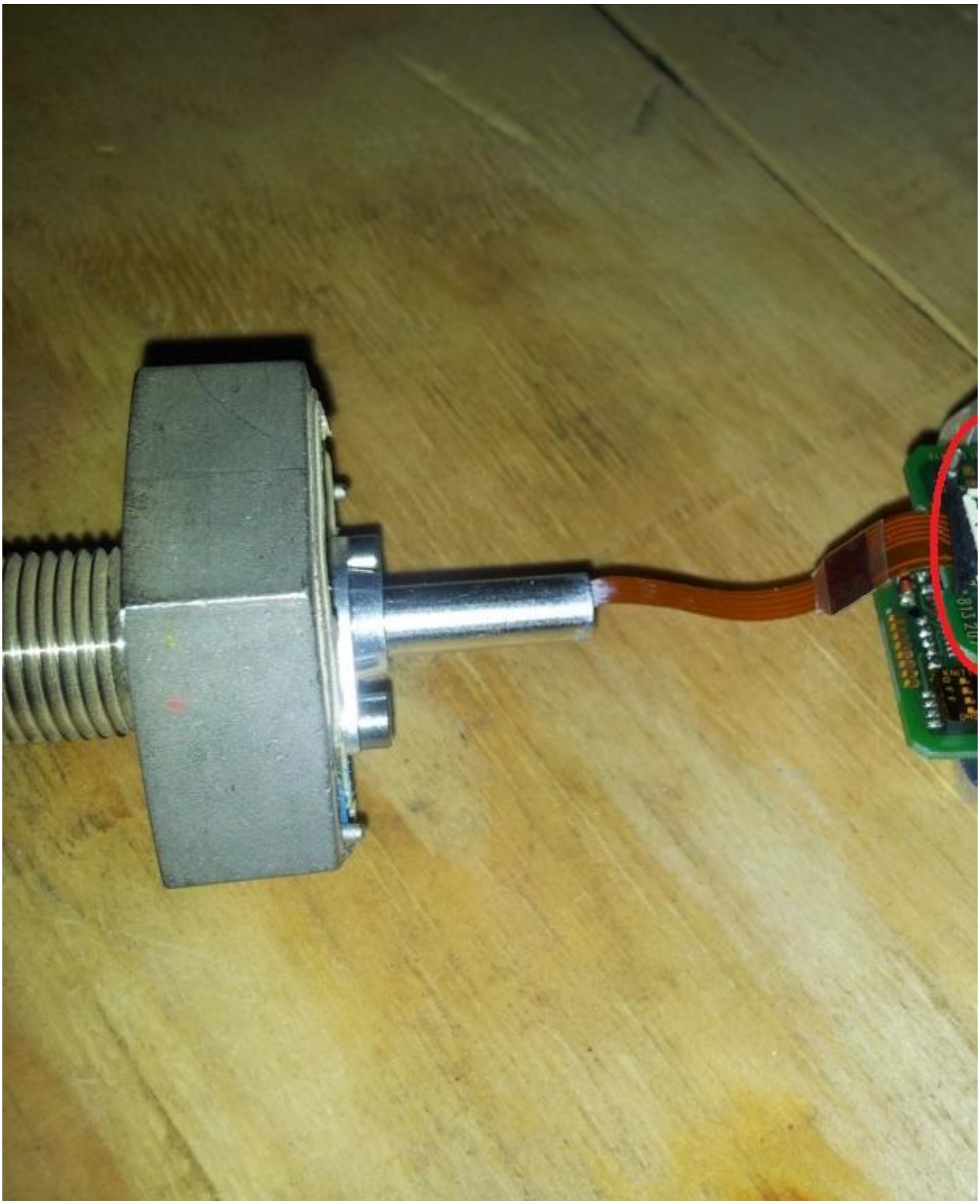
If it does not, the pitch position sensor is likely not the cause.

Pitch position sensor Item number

Relevant spare parts	
Description	**Item No.**
TRANSDUCER BTL5-E10-M0950-A-S	60098816

Service Module Item Number:

Relevant spare parts	
Description	**Item No.**
SERVICEMODUL, BTL5 - E10	60102394



Check the cable for any or short due to the cable rubbing near the hub casting or friction between the cable and the

hydraulic hose.

Replace any defective cables.

Pitch position sensor cable Item Number:

Relevant spare parts	
Description	**Item No.**
CABLE W923 T261 1 P	60101018
CABLE W924 T261 2 Pos.	60101148
CABLE W925 T261 3 Pos.	60101149