

## Check the compensator valve setting and replace the defective valve

Does this solve the problem?

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

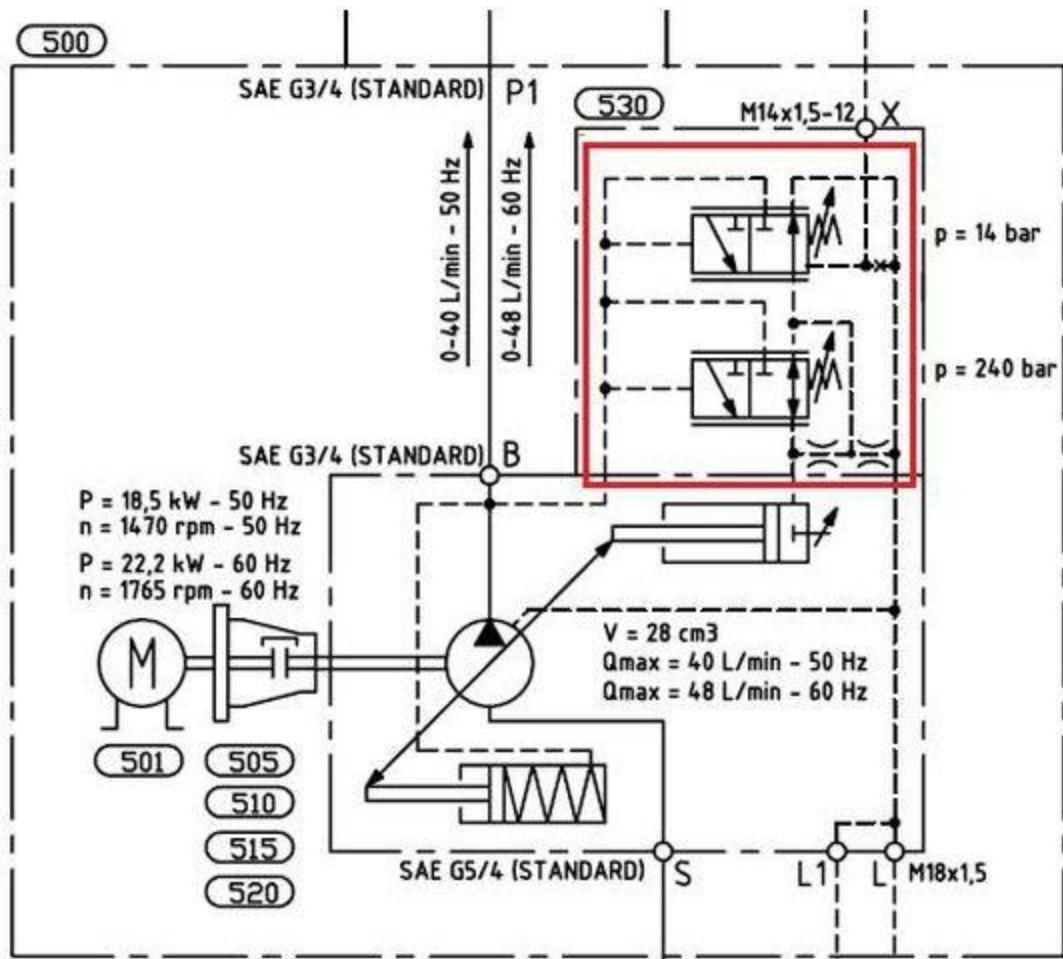
- **Explanation**  
**IN THE HUB:**

Check the compensator valve (relief valve) setting in the hydraulic pitch pump.

Pressure Relief Valve Setting

Relevant documentation	
Description	DMS No.
Pressure Relief Valve Setting	<a href="#">0006-8149</a>

**REXROTH SYSTEM:**

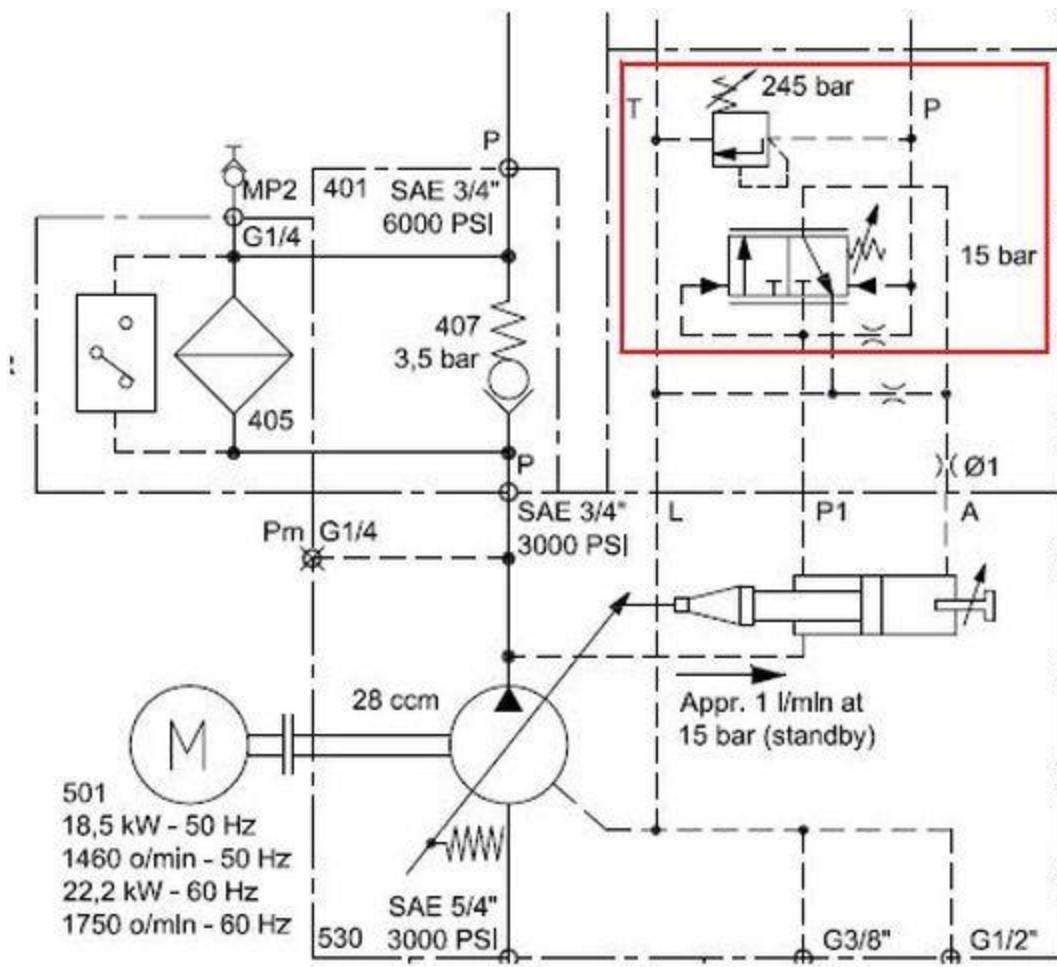


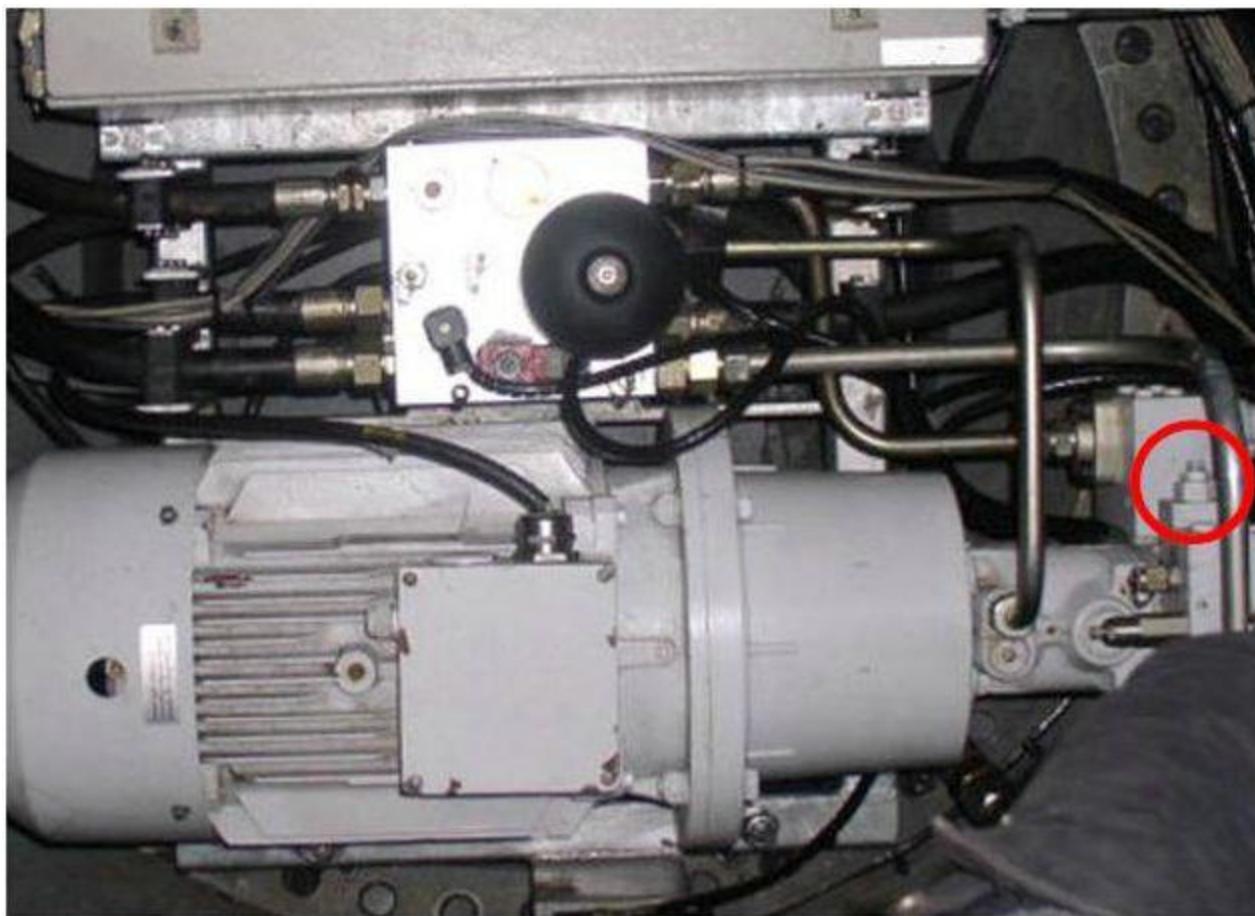


Part number for Rexroth compensator valve:

Relevant spare parts	
Description	Item No.
VALVE DFR1 RAL7032 240/14 BAR	<a href="#">60113742</a>

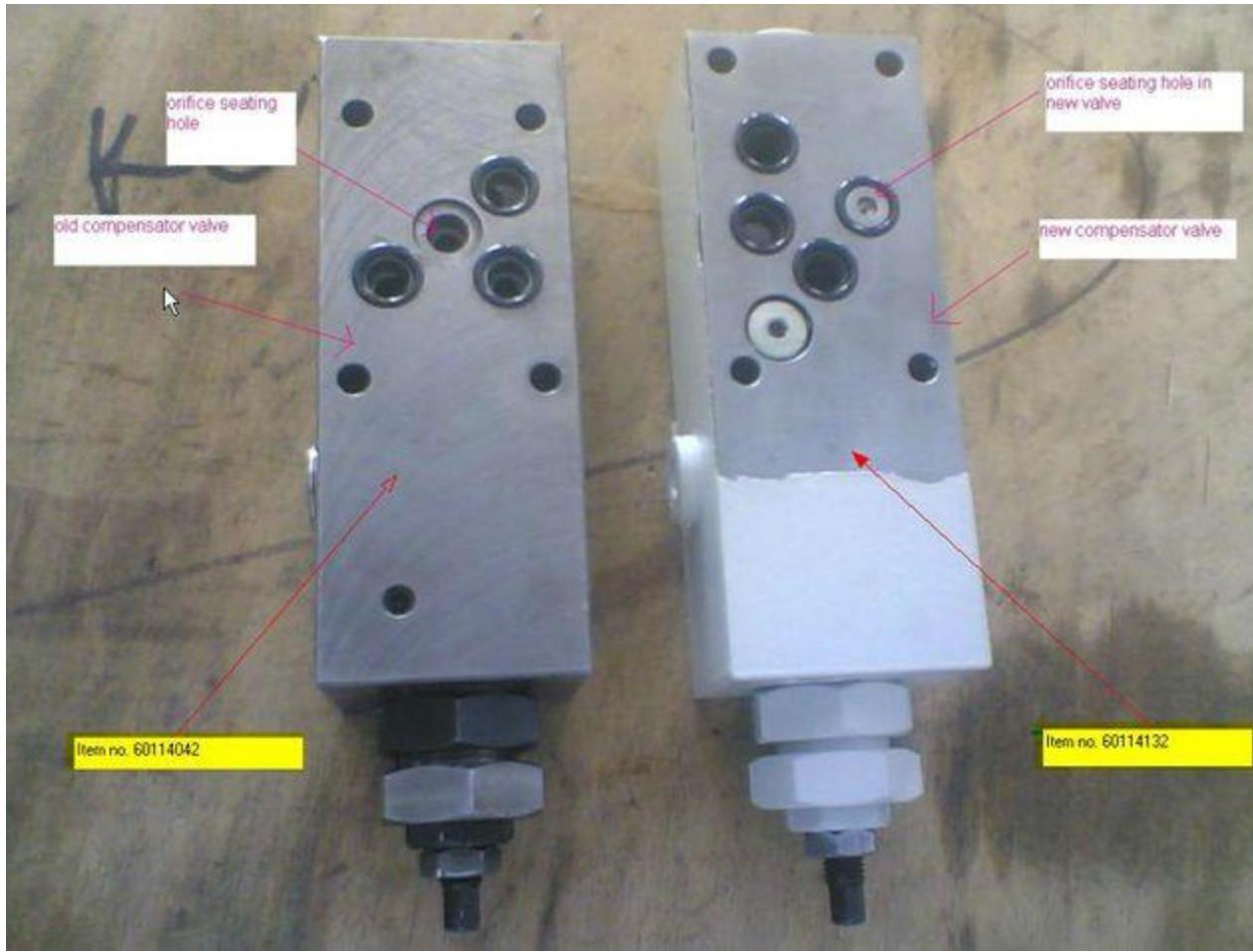
PARKER SYSTEM:





Parker hydraulic systems have two different types of compensator valves.

Ensure the valve type before replacing with a new valve.



**Part number for Parker compensator valve:**

Old type: 60114042 HYDR PUMP PRESSURE CONT. VALVE

New type: 60114132 HYDR PRES. COMP. VALVE 245/15

Relevant spare parts	
Description	Item No.
HYDR PUMP PRESSURE CONT. VALVE	<a href="#">60114042</a>

HYDR PRES. COMP. VALVE 245/15	<a href="#"><u>60114132</u></a>

**Replace the defective proportional valve and/or defect cables**

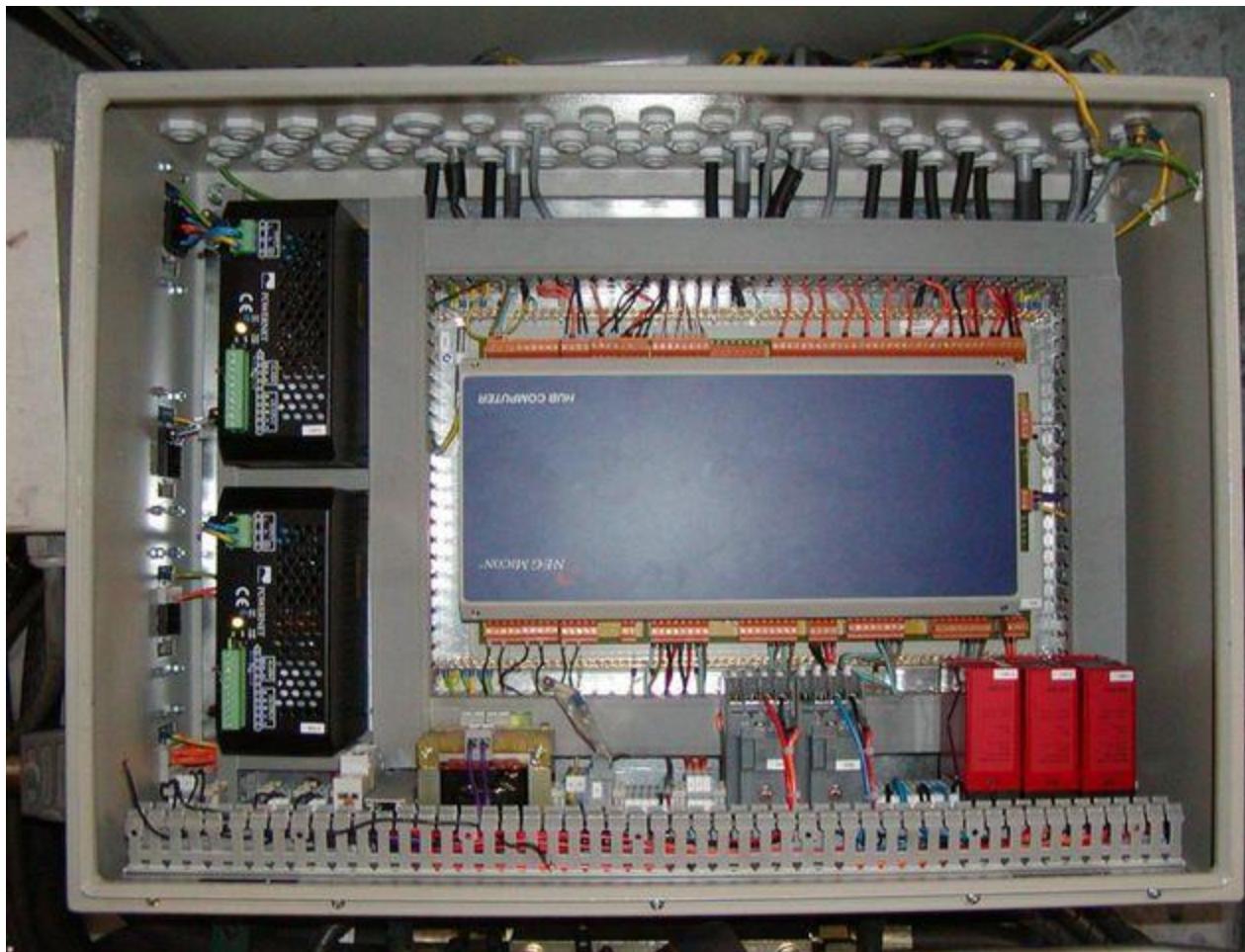
**Does this solve the problem?**

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

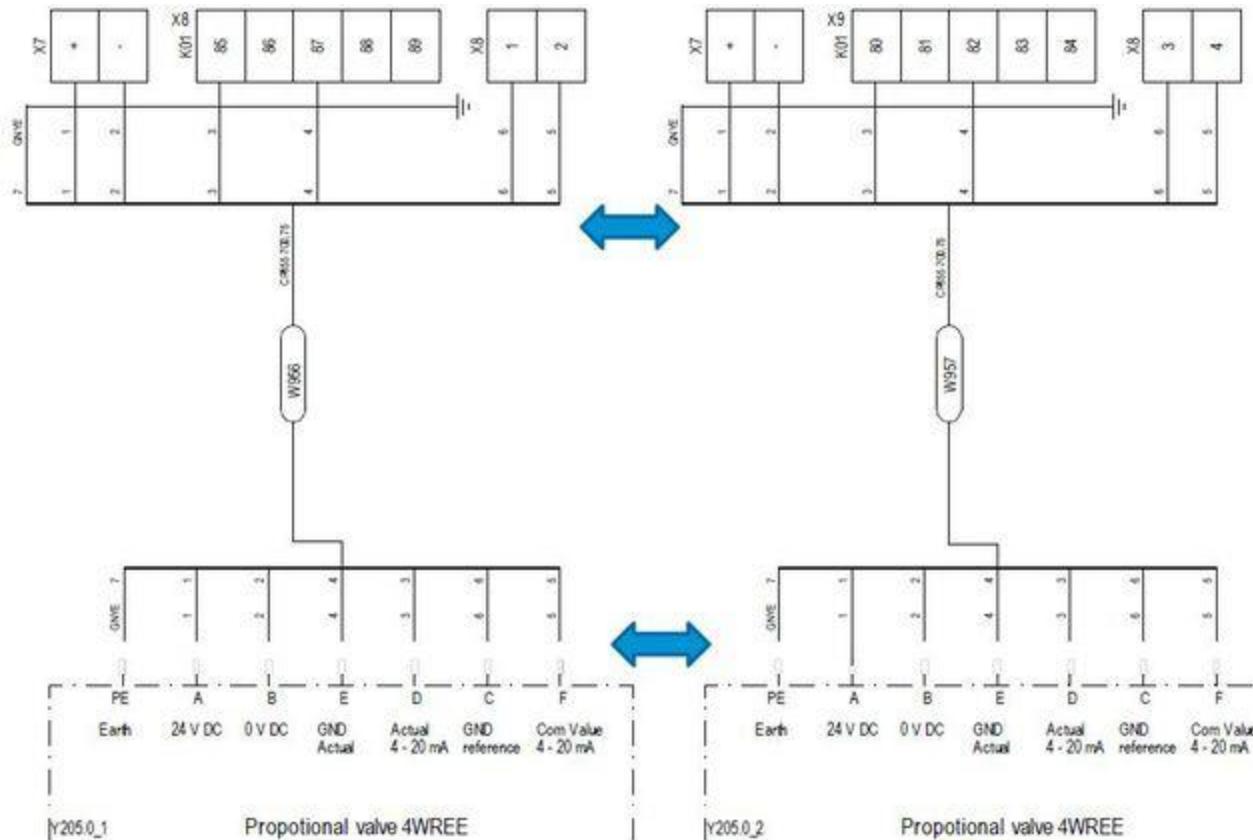
- **Explanation**  
**IN THE HUB:**

First swap the proportional valve signal wires with those of another blade in the hub computer.

If the fault follows to the new blade then the fault is either in the proportional valve or one of the cables.



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



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

If the alarm follows the valve to the other blade, the proportional valve is defective.

If it does not, the proportional valve is likely not the cause.

For Parker proportional valves check to see the color of the LED on the valve circuit board.

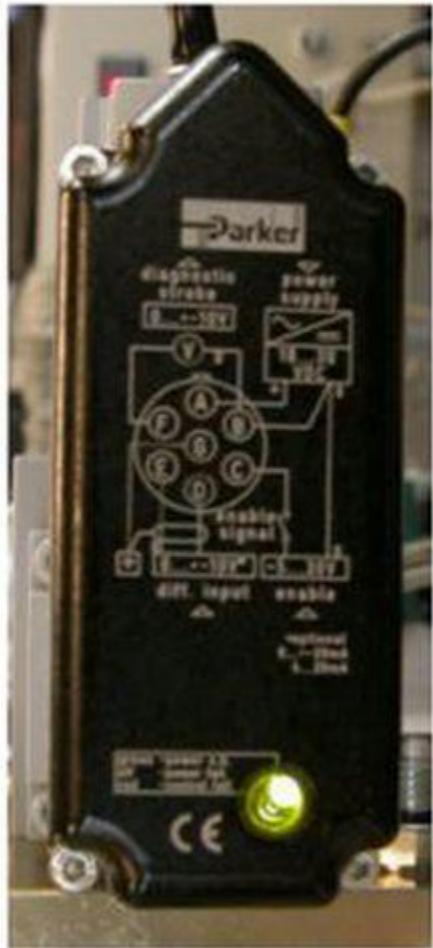
Parker hydraulics below SWI

#### Relevant documentation

Description	DMS No.
V82 Hydraulic pitch control system	<a href="#">0001-3199</a>

The LED should be green with the pitch system pressurized.

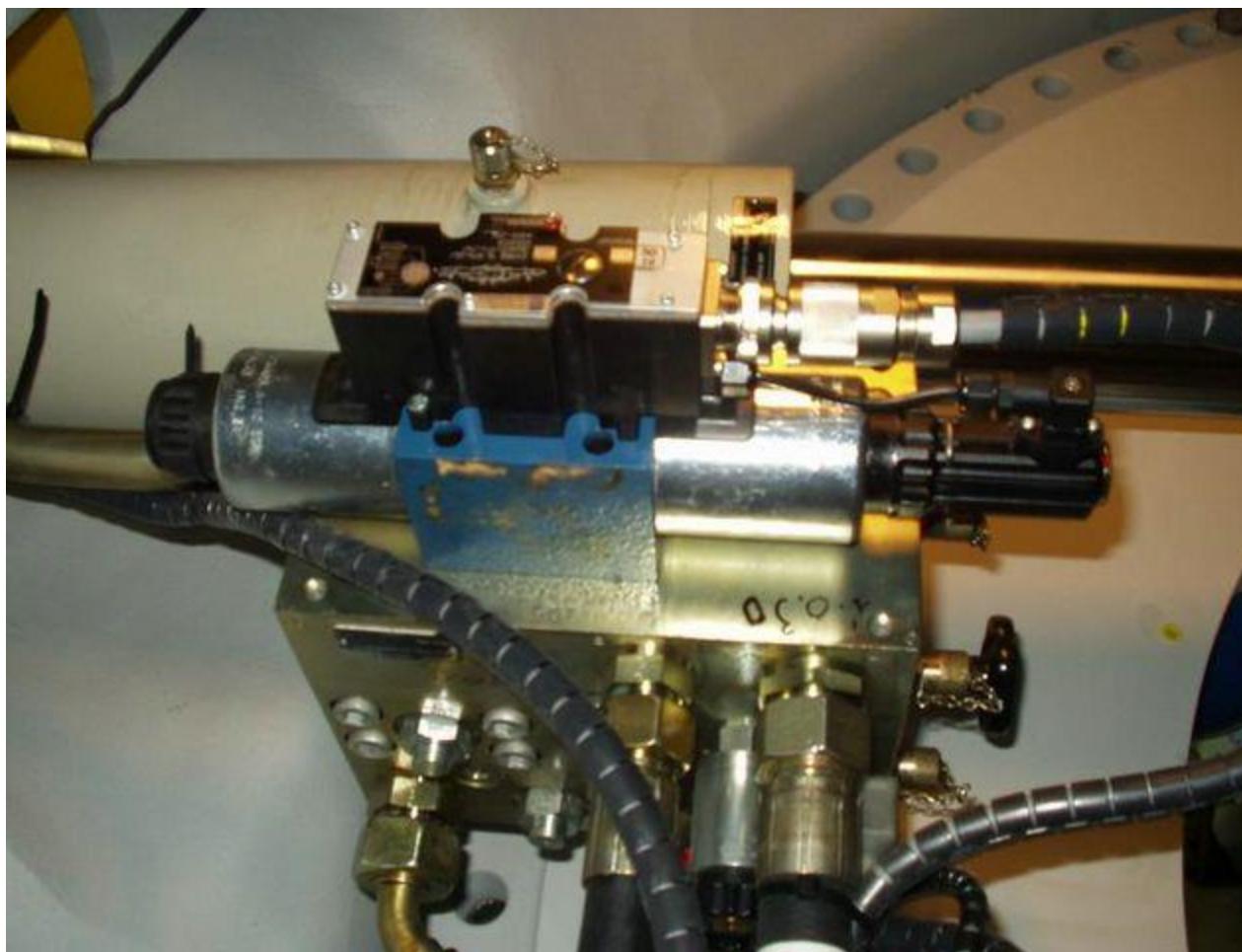
If it is red and there is pressure verified on test port MP, then the valve may also be defective.



Display Color	Indicates
Green	Normal operation
Off	Supply voltage outside permissible range of 18 to 30 VDC
Red	Spool position error / Low pilot pressure

Replacement of proportional valve below SWI

Relevant documentation	
Description	DMS No.
Proportional Valve Replacement	<a href="#">0016-1690</a>





Parker Proportional Valve

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

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

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

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

#### Part number for Proportional valve Cable

Relevant spare parts	
Description	Item No.
Cable W 956 Proportional valve Y0205.0-1	<a href="#">60021544</a>

#### Replace the defective valves

##### Does this solve the problem?

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

- **Explanation**  
IN THE HUB:

Check the hydraulic circuit diagram.

Relevant documentation	
Description	DMS No.
V82 Pitch Hydr Supl Unit circuit, Parker	<a href="#">5003018</a>
Hydr. circuit, V82 pitch axis, Parker	<a href="#">5003013</a>
Hyd. Supply Unit Circuit, Rexroth	<a href="#">5003347</a>
V82 Pitch control manifold	<a href="#">5003025</a>
Pump-manifold for Hub frame. Rexroth	<a href="#">5002046</a>

Check the three blade pitch pressures through the controller for any drop while the turbine is in the operation.

If any of blade pitch pressures drop –check the affected blade pitch hydraulic system.

If all three pitch pressures drop – check the main distribution block hydraulic system.

**Circuit pressure line reference:**

- Pilot pressure line
- High pressure line
- Low pressure line
- Medium (Flush)Pressure

**PARKER SYSTEM -MAIN MANIFOLD:**

Hydraulic Pitch Control System Supplier Parker

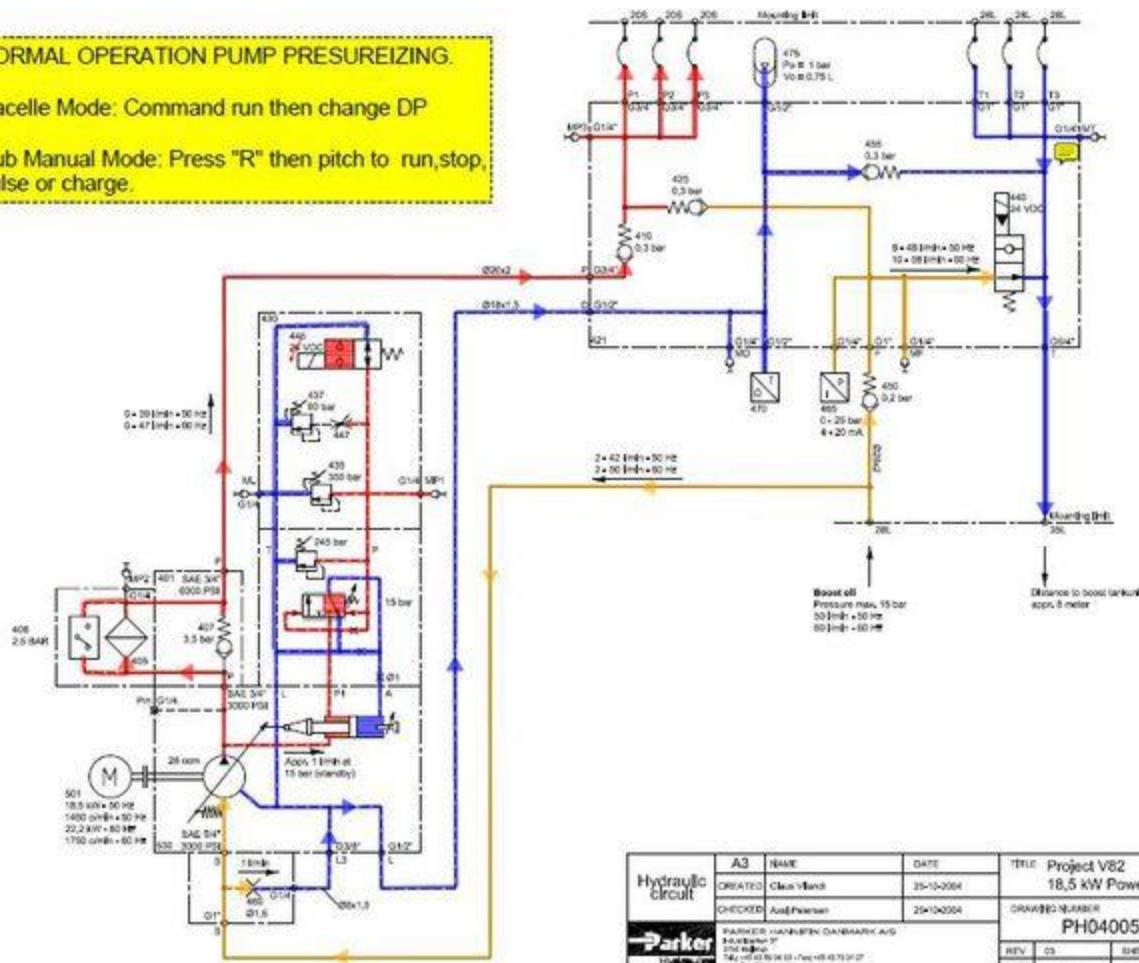
Relevant documentation	
Description	DMS No.
Hydraulic Pitch Control System Supplier Parker	<a href="#">0001-3199</a>

Main distribution block when pump pressurizing mode:

### NORMAL OPERATION PUMP PRESSUREIZING.

Nacelle Mode: Command run then change DP

Hub Manual Mode: Press "R" then pitch to run,stop,pulse or charge.



Hydraulic circuit	A3	NAME	DATE	TRIE Project V82 18.5 kW Powerunit
	CREATED	Claus Mørk	25-10-2004 <th data-kind="parent" data-rs="2">DRAWING NUMBER PH040056-C</th>	DRAWING NUMBER PH040056-C
CHECKED	Anne Petersen	29-10-2004		
PARKER HANIFIN DANMARK A/S Hanshøjvej 37 DK-2730 Ballerup, Denmark Tel: +45 46 56 63 00 • Fax: +45 46 56 63 27	REV	C3	SHEET 1	

Check the following position valves:

Check the valve operation. If any of the valves are defective, replace with new.

Part number for valves:

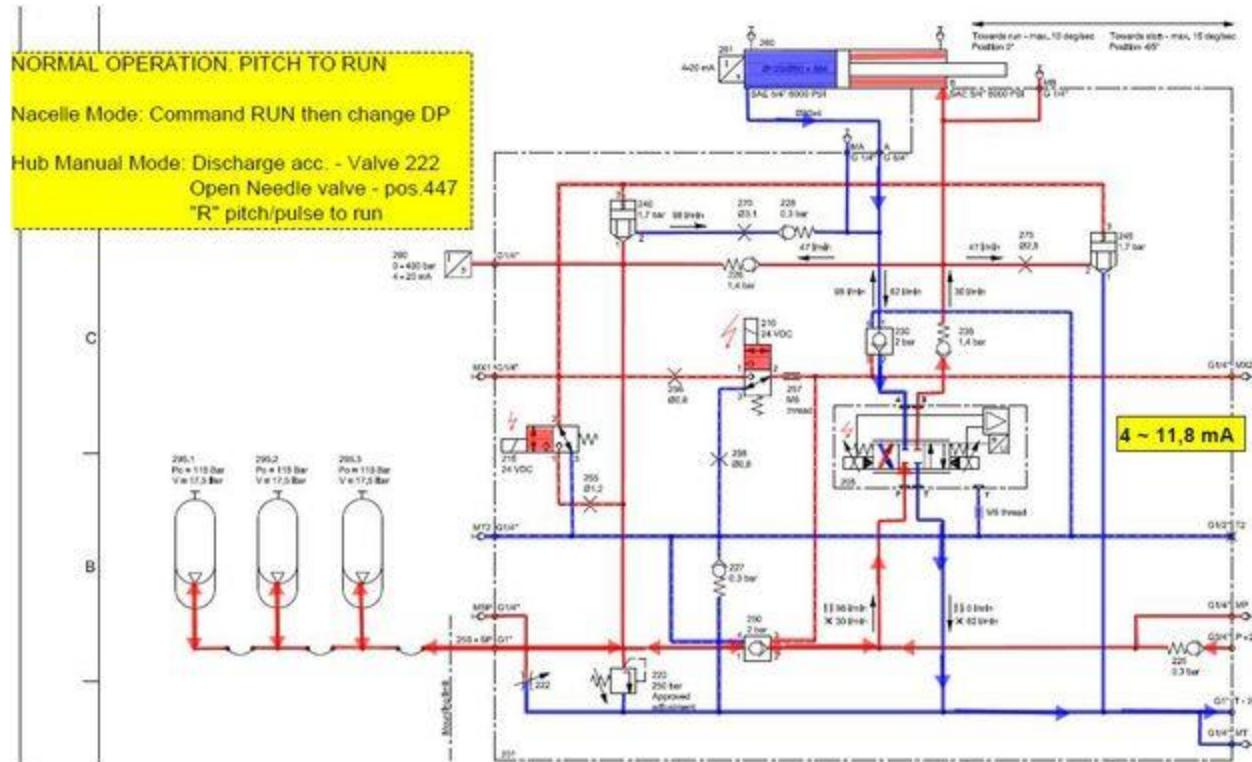
#### Relevant spare parts

Description	Item No.	Location
CHECK VALVE, 0,3 BAR, 375L	<a href="#">60111616</a>	410

CHECK VALVE, 0,3 BAR, 82L	<a href="#">60111613</a>	425, 455
SOL. VALVE NO, DS201 NR	<a href="#">60112645</a>	440
COIL, 30 WATT 24 VDC DIN PLUG	<a href="#">60112646</a>	
RELIEF VALVE, RDH-08-2-S-50, 138 - 345 BAR	<a href="#">60112643</a>	435
RELIEF VALVE, RDH-08-2-S-30, 69 - 207 BAR	<a href="#">60104030</a>	437
SOL. VALVE NO, DSH081 NL	<a href="#">60112647</a>	445
COIL 24VDC DIN PLUG S8LDD024	<a href="#">60104025</a>	445A
NEEDLE VALVE, NVH-2201	<a href="#">60104032</a>	447
KNOB FOR NEEDLE VALVE	<a href="#">60112623</a>	447A



Pitch distribution block when turbine in ready for operation mode:



Check the following position valves:

Swap the valves one by one in to other manifolds and check valve operation.

If the fault shifted to other blades the valve is likely defective. If not check other valves.

#### Part number for valves:

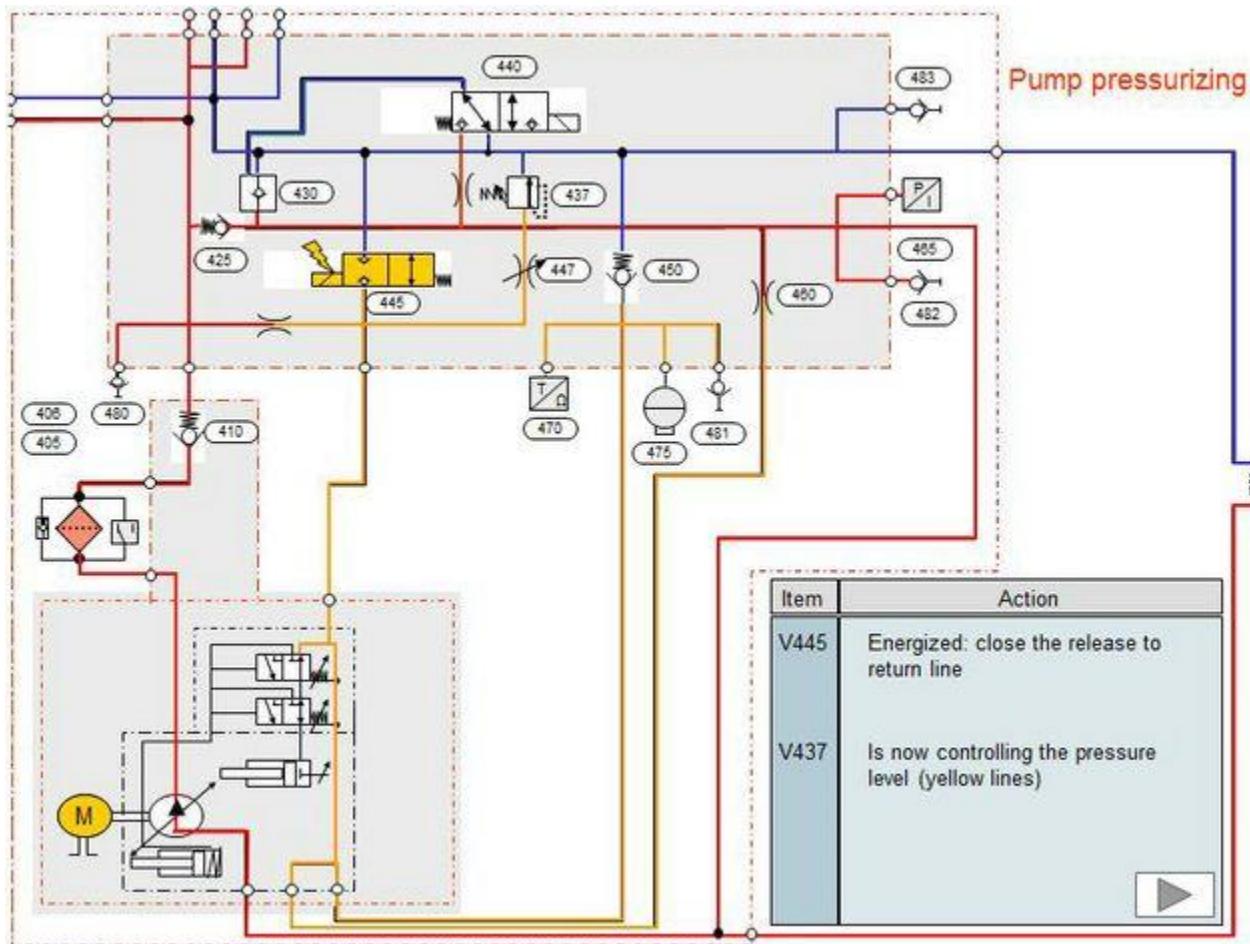
Relevant spare parts		
Description	Item No.	Location
CHECK VALVE PILOT:CVEV-XCN A30	<a href="#">60096481</a>	230 , 250 -
NEEDLE VALVE, NVH-2201	<a href="#">60104032</a>	222
KNOB FOR NEEDLE VALVE	<a href="#">60112623</a>	222A

3/2 DIRECTIONAL VALVE	<a href="#">60111617</a>	210, 215 -
LOGIC ELEMENT PIL. OPERATED	<a href="#">60111630</a>	240, 245 -
PRESSURE CONTROLVALVE:RDDT-QWN	<a href="#">60096477</a>	220 -
CHECK VALVE CVH103P20	<a href="#">60112628</a>	235 -
PROP. VALVE D31FHE01C	<a href="#">60112621</a>	205 -



## REXROTH SYSTEM -MAIN MANIFOLD:

Main distribution block when pump pressurizing mode:



Check the following position valves:

Check the valve operation. If valves are defective replace with new.

Part number for valves:

Relevant spare parts

Description	Item No.	Position
ACCUM HYDR 0BAR 0.7L 1/2" BS	<a href="#">103805</a>	475
CHECK VALVE: M-SR 15 KE02-1X/	<a href="#">60096479</a>	410, 425
PRESSURE CONTROL VALVE: KBD2HO	<a href="#">60096503</a>	437
VLV SOLENOI KSDER1PA/HG24N9K4M	<a href="#">60098803</a> (phased out)	445
CHECK VALVE COFA-XBN	<a href="#">60099554</a>	430

The part No. 60098803 is phased out. It is replaced by 780430.

Relevant spare parts		
Description	Item No.	Status
VLV SOLENOI KSDER1PA/HG24N9K4M	<a href="#">60098803</a>	Phased out
KSDER1PB/HN9V F BRAKE UNIT 3MW	<a href="#">780430</a>	Available

#### Part Number for Solenoid Valve

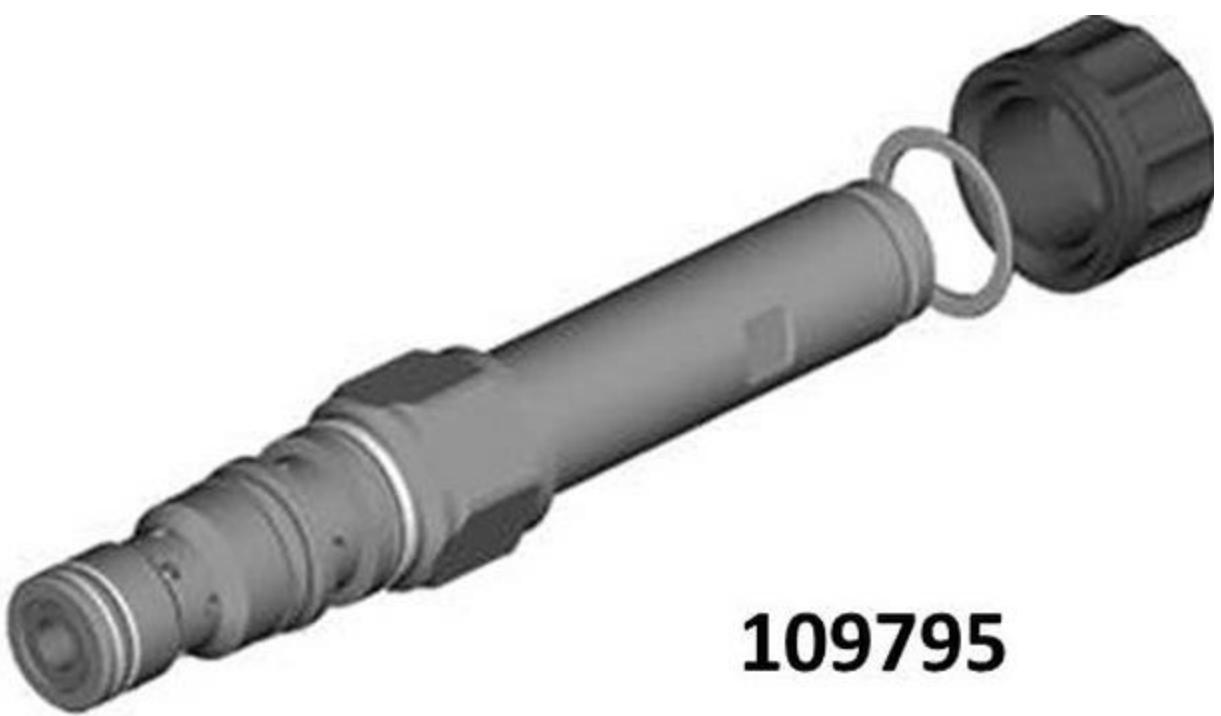
The part No.60096475 is phased out and henceforth replaced by 109795 & 60106201.

#### (Rexroth) Valve/Solenoid- (210 & 215)

Relevant spare parts		
Description	Item No.	Status
SOL VAL KSDEU1CA/HCG24N0K4M	<a href="#">60096475</a>	Phased out

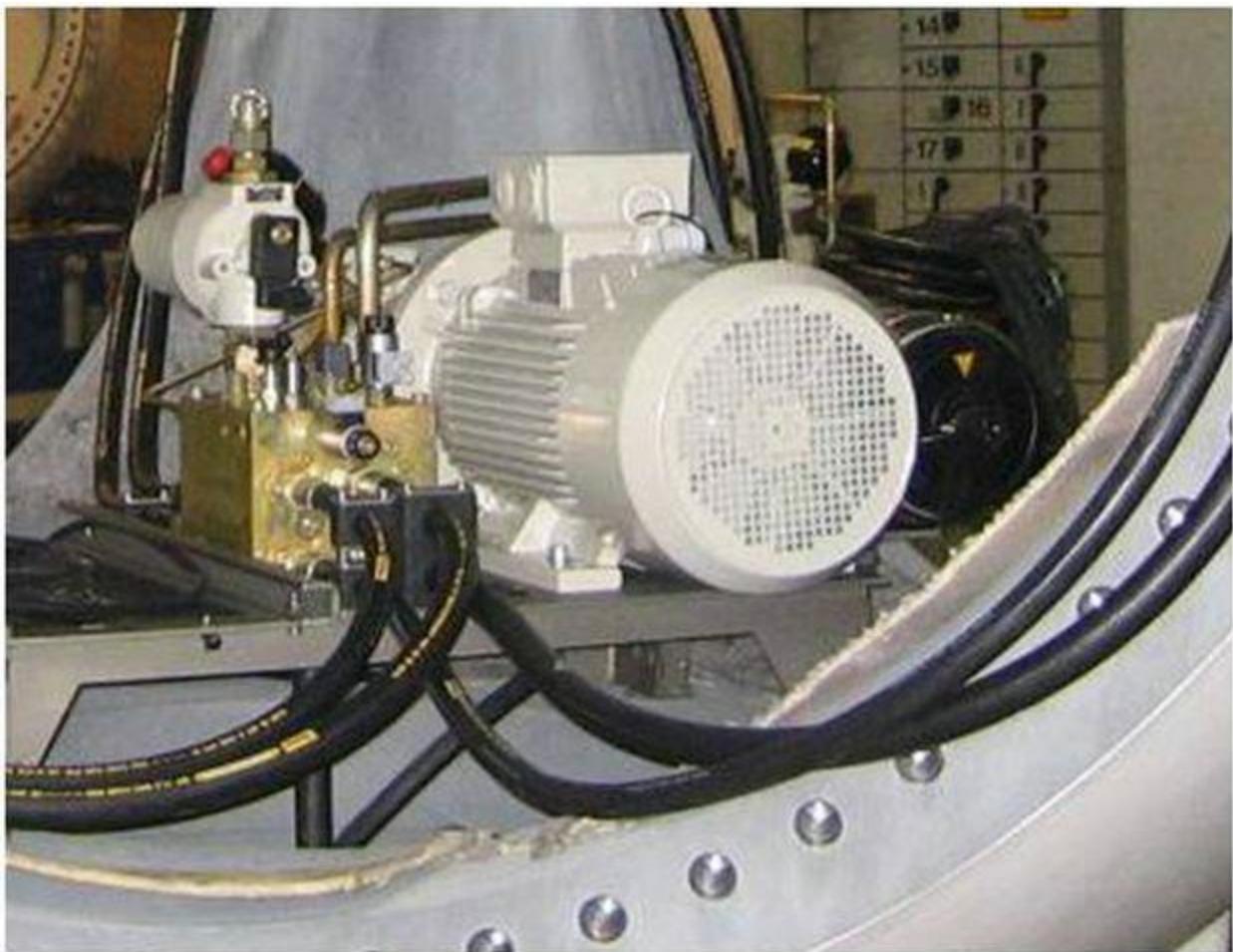
ELECTRIC SEAT VALVE	<a href="#"><u>109795</u></a>	Available
COIL GZ37-4 24VDC 19W	<a href="#"><u>60106201</u></a>	Available





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**109795**



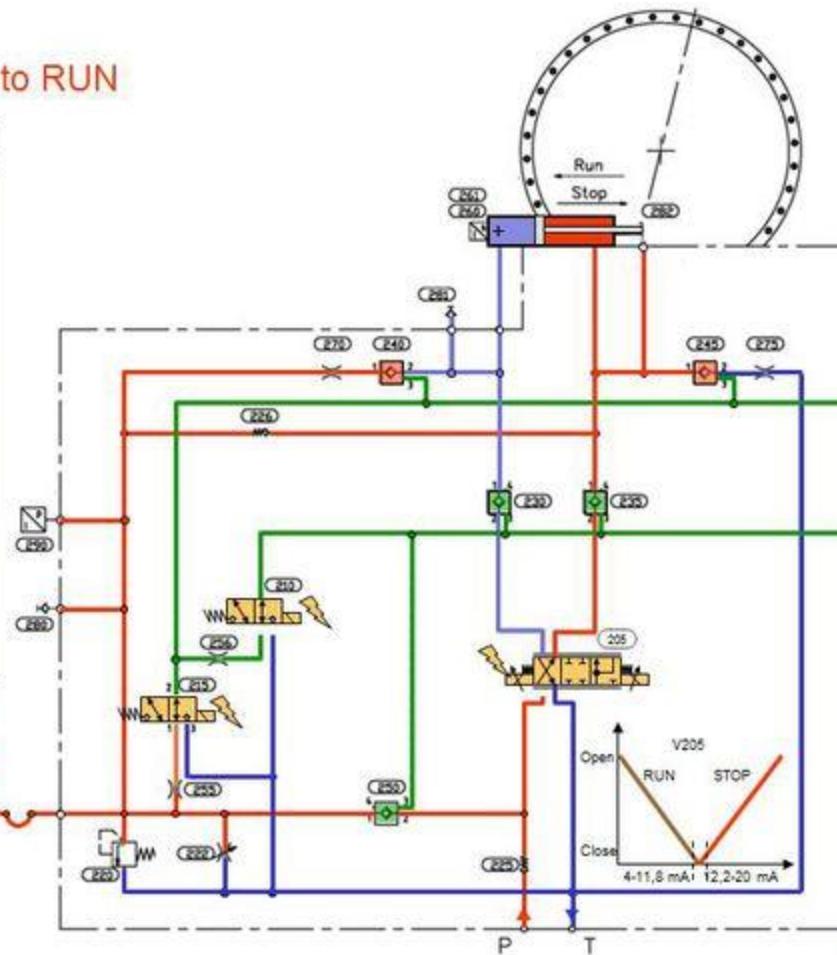
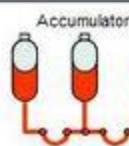
**REXROTH SYSTEM -PITCH MANIFOLD:**

Pitch distribution block when turbine in ready for operation mode:

## Normal operation, pitch to RUN

Item	Action
V215	Energized: operation to run.
V240	Closed
V245	Closed
V210	Energized
V230	Open
V235	Open
V205	Prop.-valve take position "open to run" acc. to 4-11,8 mA. The actuator is taking a corresponding position
V230 V205	Oil is drained from the actuator's plus side to the return line.

Ready  
 Ready  
 Ready  
 Ready



Check the following position valves:

Swap the valves one by one in to other manifolds and check valve operation.

If the fault shifted to other blades the valve is likely defective. If not, check other valves.

Part number for valves:

Relevant spare parts		
Description	Item No.	Position
THROTTLE VALVE NFCC-LCN A40122	<a href="#">105103</a>	222

PROP VAL 4WREE 10R75-2X/G24K31	<a href="#">60078979</a>	205
PRESSURE CONTROLVALVE:RDDT-QWN	<a href="#">60096477</a>	220
CHECK VALVE: M-SR 15 KE02-1X/	<a href="#">60096479</a>	225
CHECK VALVE: CXFA-XFN A30314JG	<a href="#">60096480</a>	226
CHECK VALVE PILOT: CVEV-XCN A30	<a href="#">60096481</a>	230, 235, 250
VALVE CHECK PILOT COFA-XAN A30	<a href="#">60096493</a>	240, 245

#### Part Number for Solenoid Valve

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

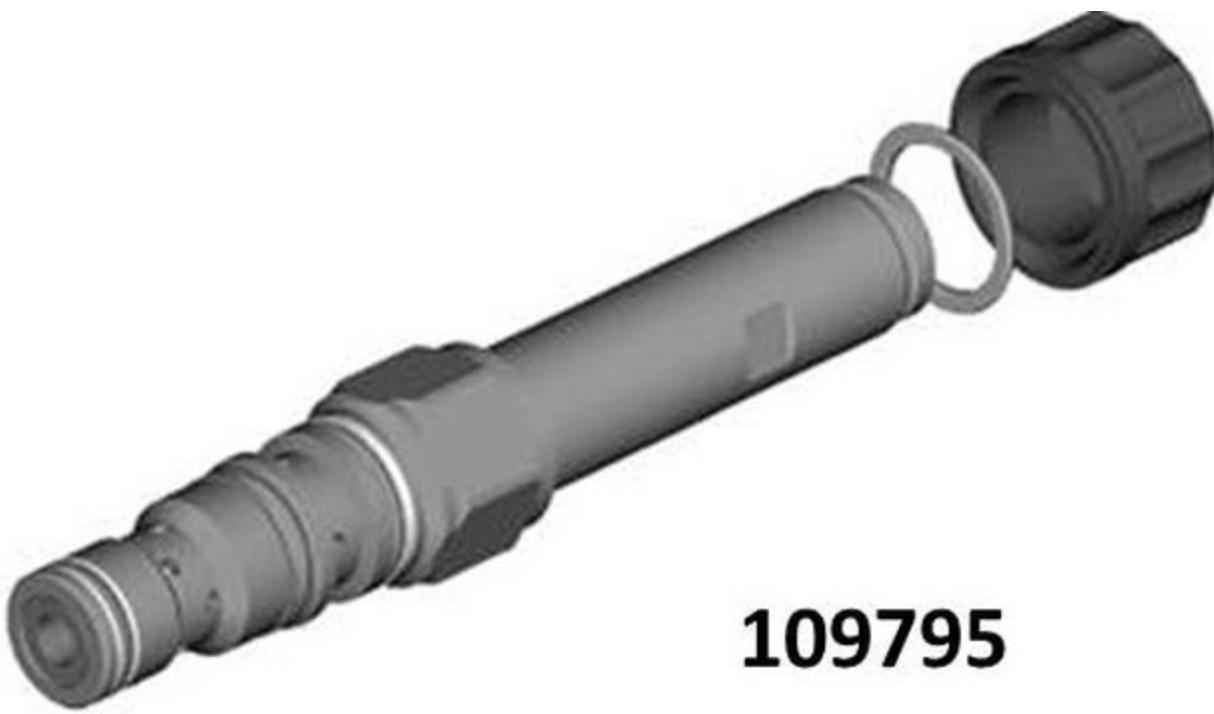
#### (Rexroth) Valve/Solenoid (POS 210 & 215)

#### REXROTH NEEDLE VALVE TYPE-1 (POS: 447, 222)

Relevant spare parts		
Description	Item No.	Status
SOL VAL KSDU1CA/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**



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**109795**

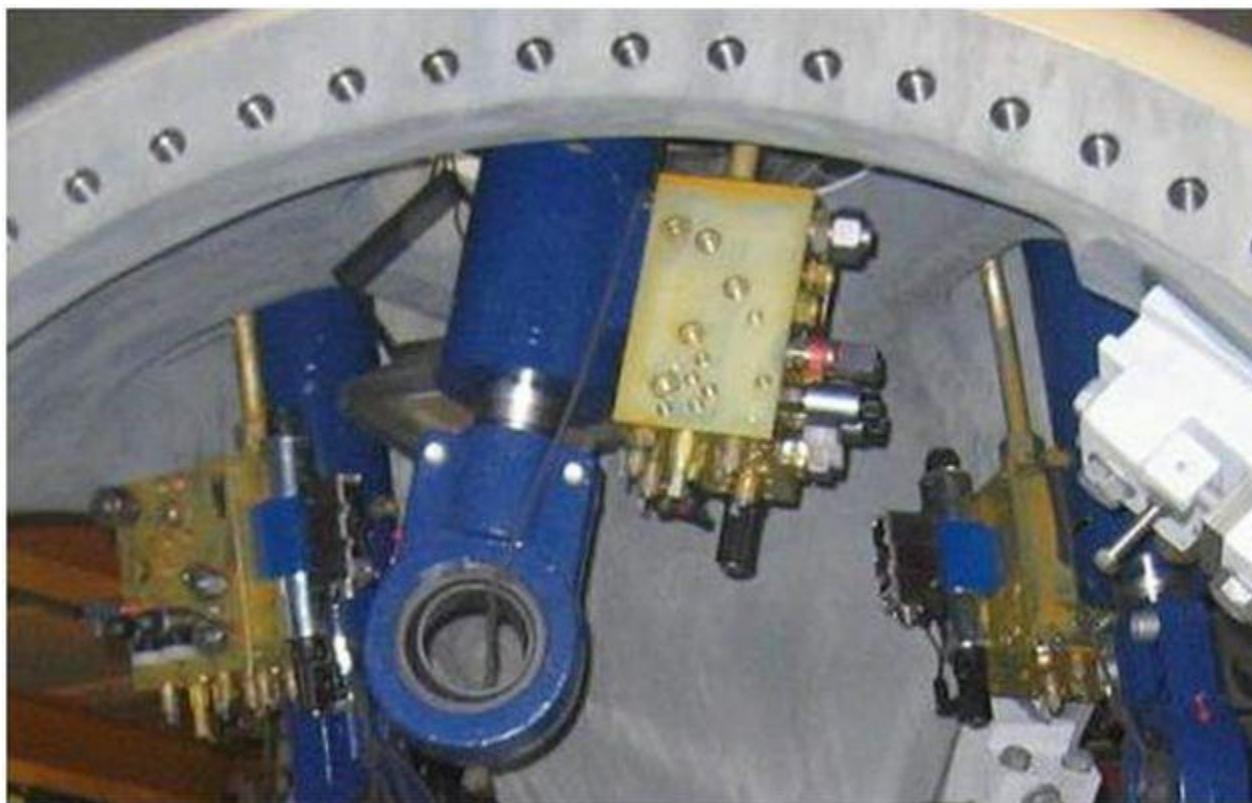
**REXROTH NEEDLE VALVE TYPE-1 (POS: 447, 222)**

Relevant spare parts	
Description	Item No.
THROTTLE VALVE: NFBC-KCN A3031	<a href="#">60096478</a>
HANDLE FOR NFBC-KCN A30316JG01	<a href="#">60109005</a>

**REXROTH NEEDLE VALVE TYPE-2 (POS: 447, 222)**

Relevant spare parts	
Description	Item No.
THROTTLE VAVLE NFCC-LCN A40122	<a href="#">105103</a>

HANDLE FOR THROTTLE VALVE NFCC [60112482](#)



Refer to the service work instructions for more details.

Relevant documentation	
Description	DMS No.
Change of Valve in Parker Pitch Manifold	<a href="#"><u>0002-4365</u></a>
Distribution Manifold Replacement	<a href="#"><u>0021-3758</u></a>
Fast Active Stall Hydraulics Valve replacement	<a href="#"><u>1000778</u></a>
Fast Active Stall System	<a href="#"><u>0001-1672</u></a>

## Check the accumulator pre-charge pressure and recharge the accumulators

### Does this solve the problem?

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

- **Explanation**  
**IN THE HUB:**

Check all pitch accumulator pre-charge pressures.

Low pre charge pressure in the accumulators can also cause this alarm.

If any low pressure is measured in the accumulators recharge per SWI.

Relevant documentation	
Description	DMS No.
CHARGING OF NITROGEN ACCUMULATORS	<a href="#">941918</a>

If any accumulators are failed, replace with new:

Relevant spare parts	
Description	Item No.
HYDR ACCU 20 L 115 BAR DUAL (NM72)	<a href="#">60113096</a>
HYDR ACCU 24.5 L 115 BAR DUAL (V82 other than Australia)	<a href="#">60113097</a>
HYDR ACCU 24.5 L 115 BAR AS1210 (V82 Australia)	<a href="#">60113098</a>

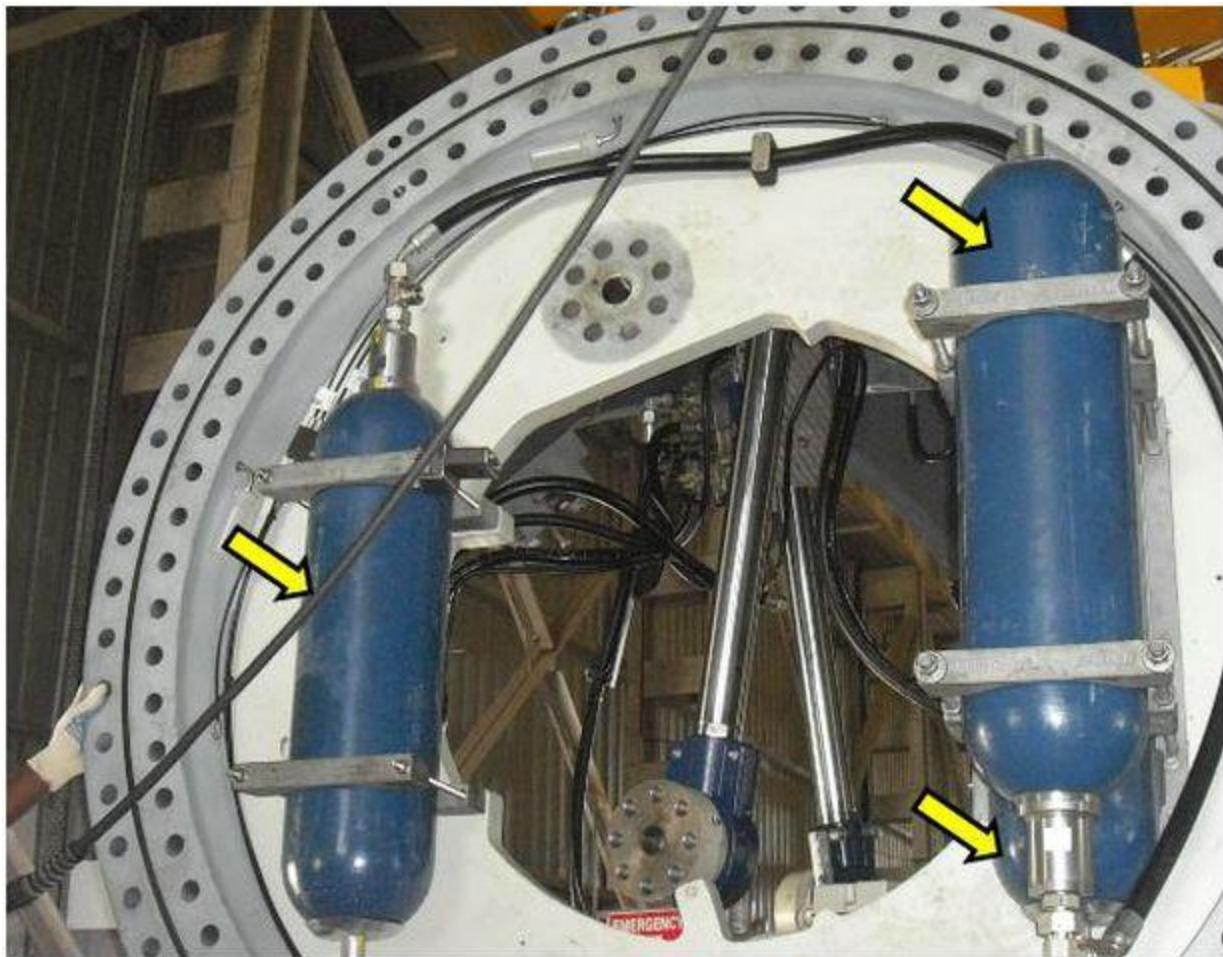
### Relevant CIM case

CIM case	Task list	SWI
<a href="#"><u>1168</u></a>		0002-0199

Relevant documentation	
Description	DMS No.
Blade Accumulator Exchange	<a href="#"><u>0001-2871</u></a>

Check accumulator retrofit installation:

Relevant documentation	
Description	DMS No.
Accumulator Retrofit Installation	<a href="#"><u>0000-9402</u></a>



**Replace the defective actuator or replace the defective seal**

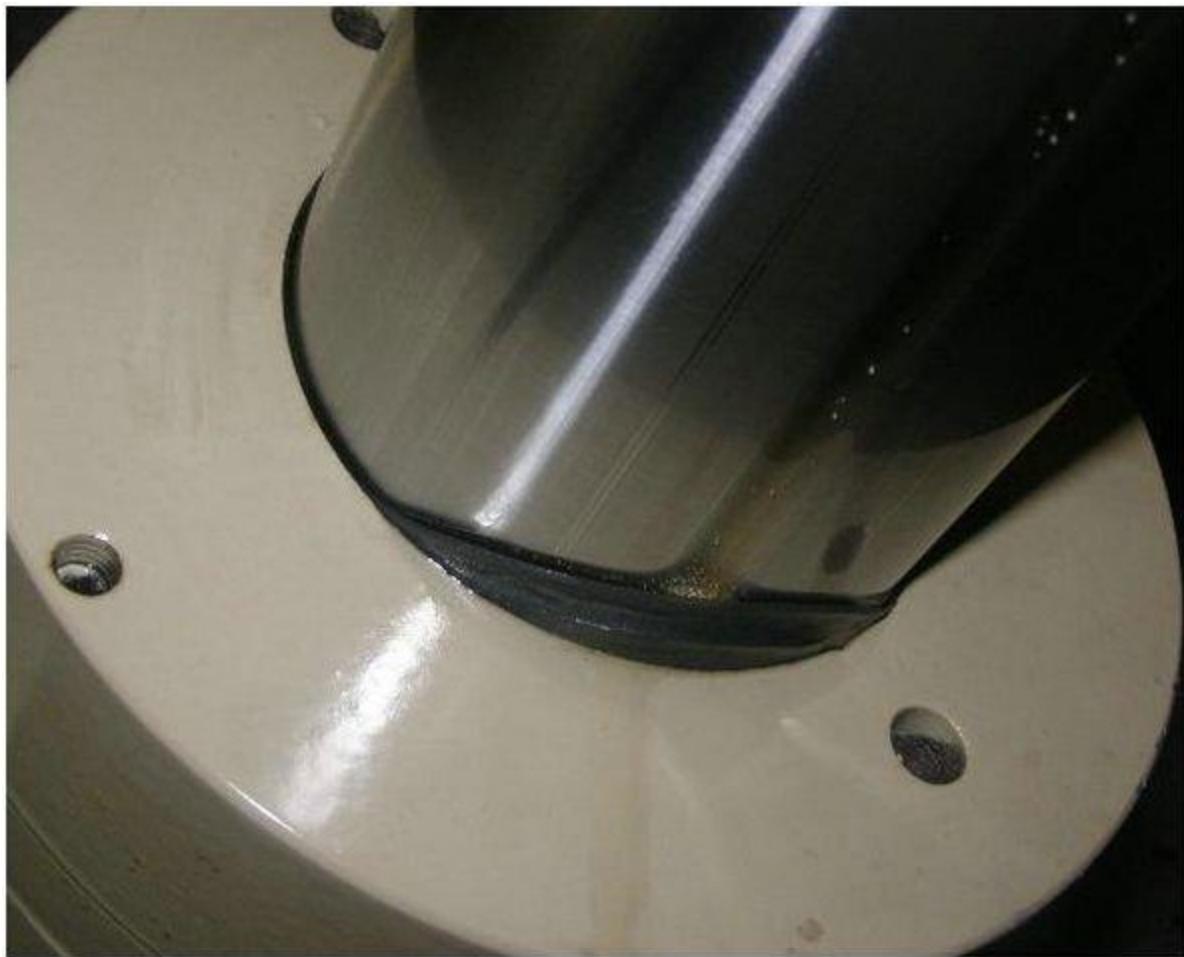
**Does this solve the problem?**

- 1] Yes
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- 3] I don't know

- **Explanation**  
**IN THE HUB:**

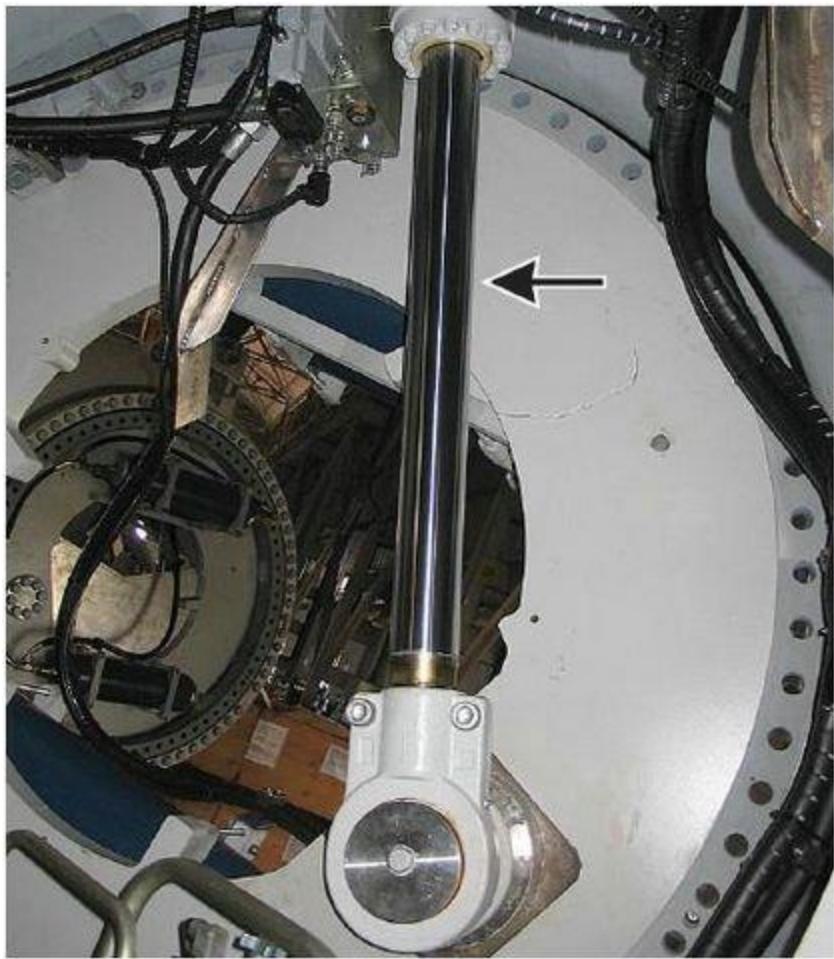
Check the actuator rod surface thoroughly for any punch mark or damage.

Check the actuator seal for any damage or seal parts pressing out between the rod and rod bushing.



Check for oil leak when actuators are in operation with system pressurized.

Replace the seals or bushing/seals if there are any leaks or pressed out seals.



**PARKER System:**

Relevant spare parts	
Description	Item No.
HYDR CYL 125/90x884 COMPLETE (actuator with manifold).	<a href="#">60120439</a>
HYDR CYL BUSHING W. SEALS ø90 (seal with Bush).	<a href="#">60114033</a>



**REXROTH System:**

Relevant spare parts	
Description	Item No.
ACTUATOR Ø140 WITH Ø100 TRUN.( (Actuator with manifold)	<a href="#">60096442</a>
ACTUATOR SEAL KIT ( Seal kit alone)	<a href="#">60110956</a>



Relevant documentation	
Description	DMS No.
V82 Pitch Actuator Exchange	<a href="#"><u>0021-4366</u></a>
Pitch Actuator Piston Rod Replacement	<a href="#"><u>0023-2047</u></a>