

Check the compensator valve setting and replace the defective valve

Does this solve the problem?

1] Yes

2] No

3] I don't know

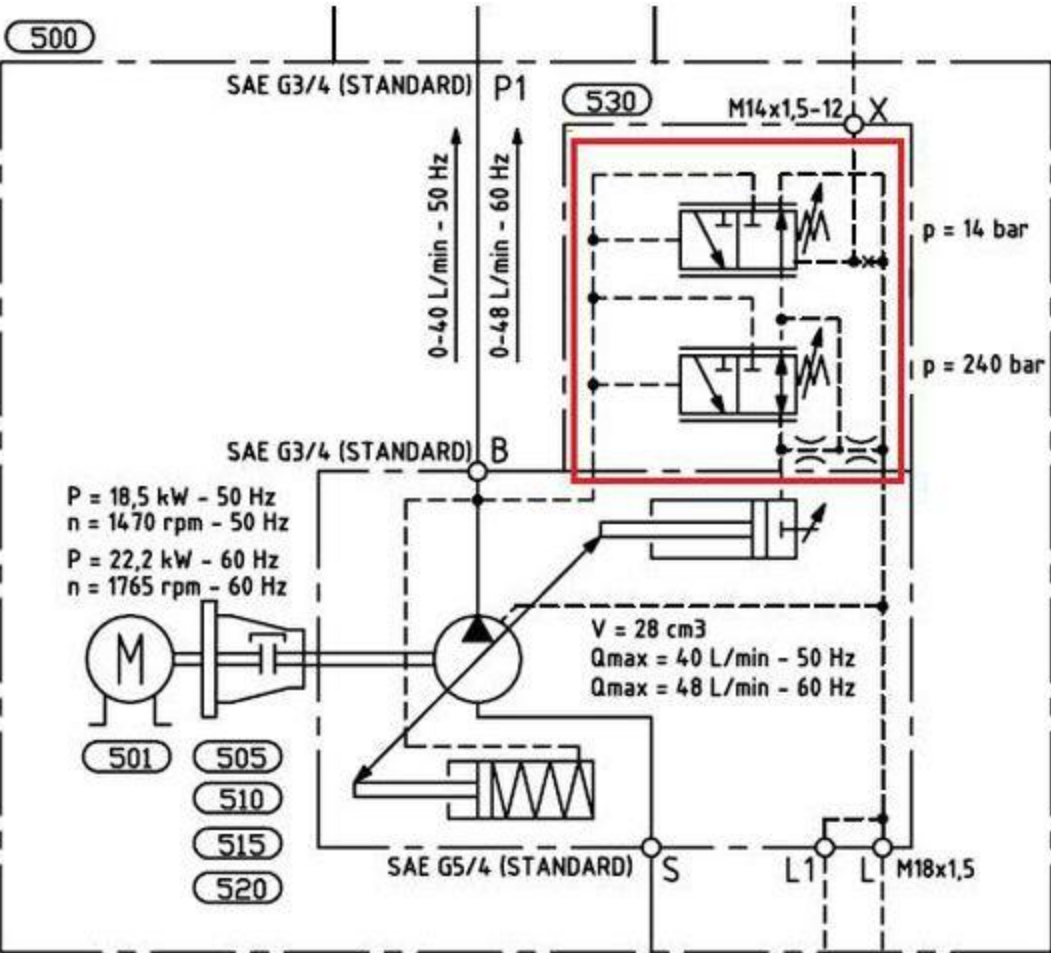
- **Explanation**
IN THE HUB:

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	0006-8149

REXROTH SYSTEM:

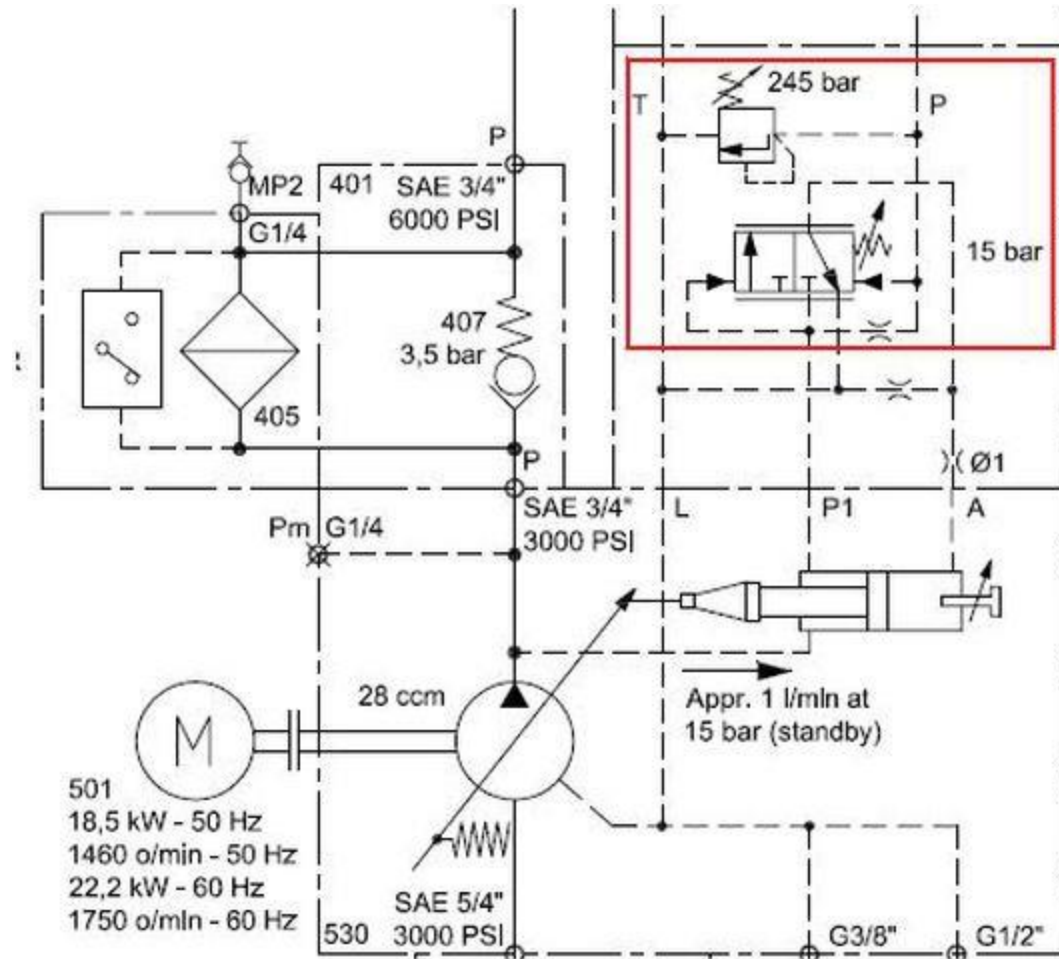


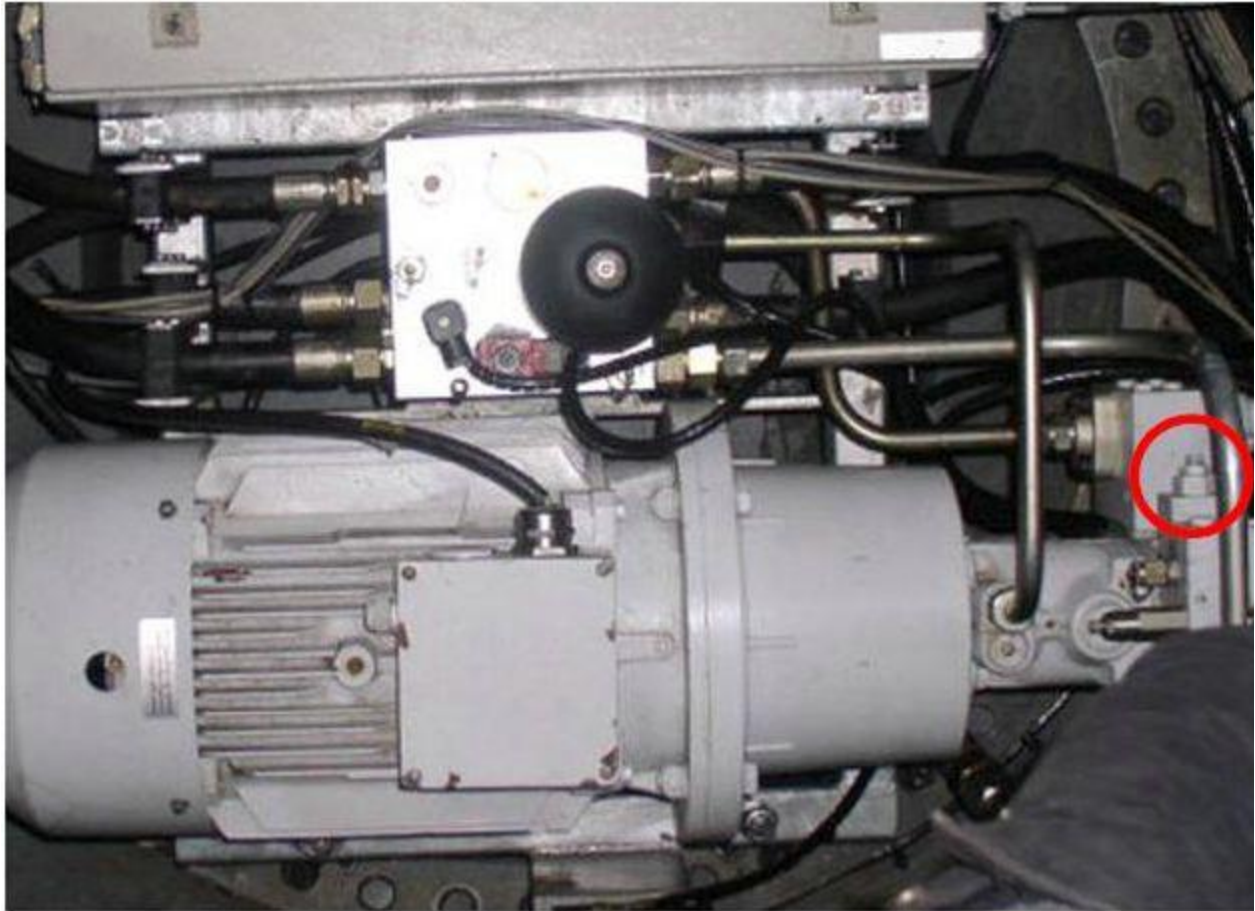


Part number for Rexroth compensator valve:

Relevant spare parts	
Description	Item No.
VALVE DFR1 RAL7032 240/14 BAR	60113742

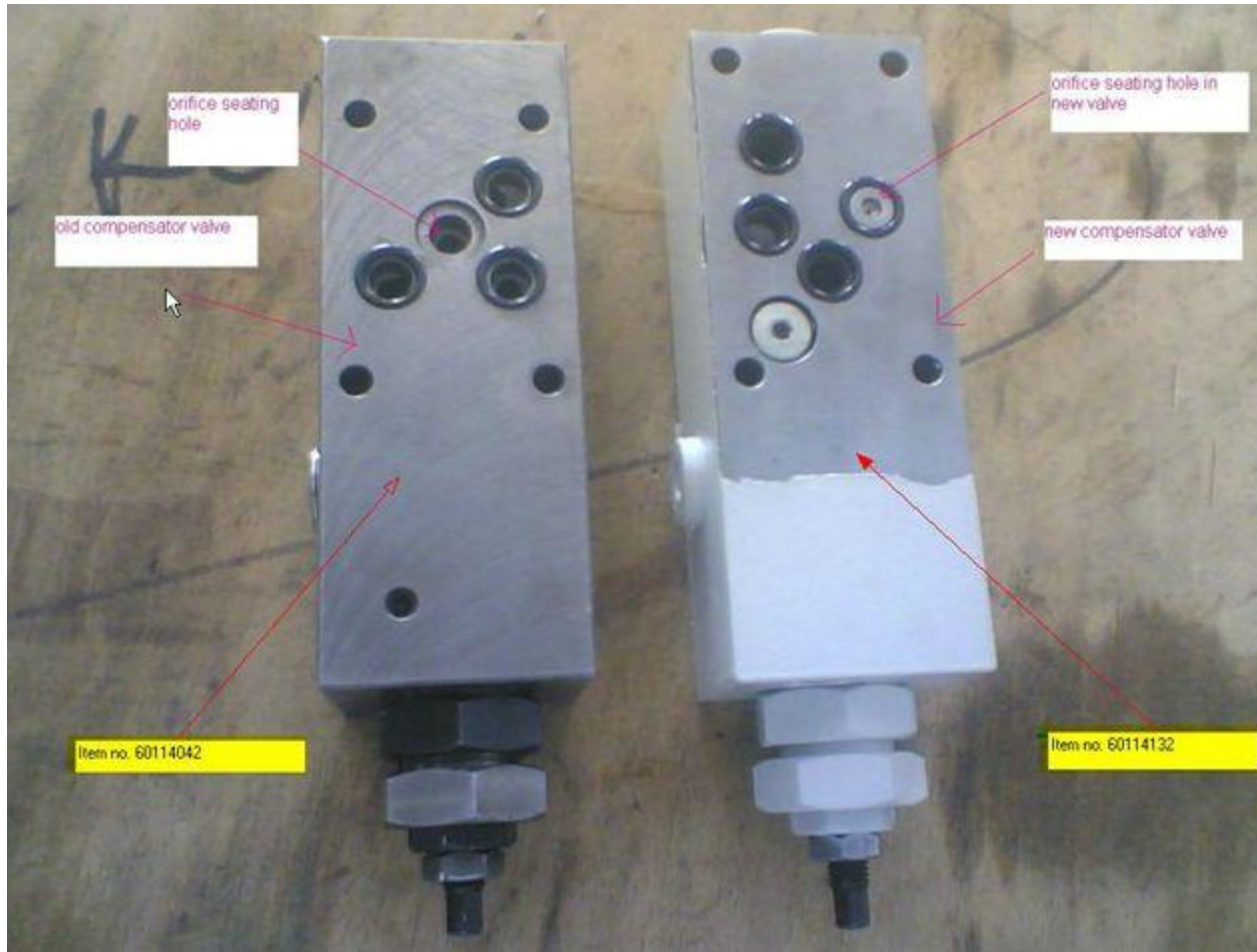
PARKER SYSTEM:





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	60114042

HYDR PRES. COMP. VALVE 245/15	60114132

Replace the defective proportional valve and/or defect cables

Does this solve the problem?

1] Yes

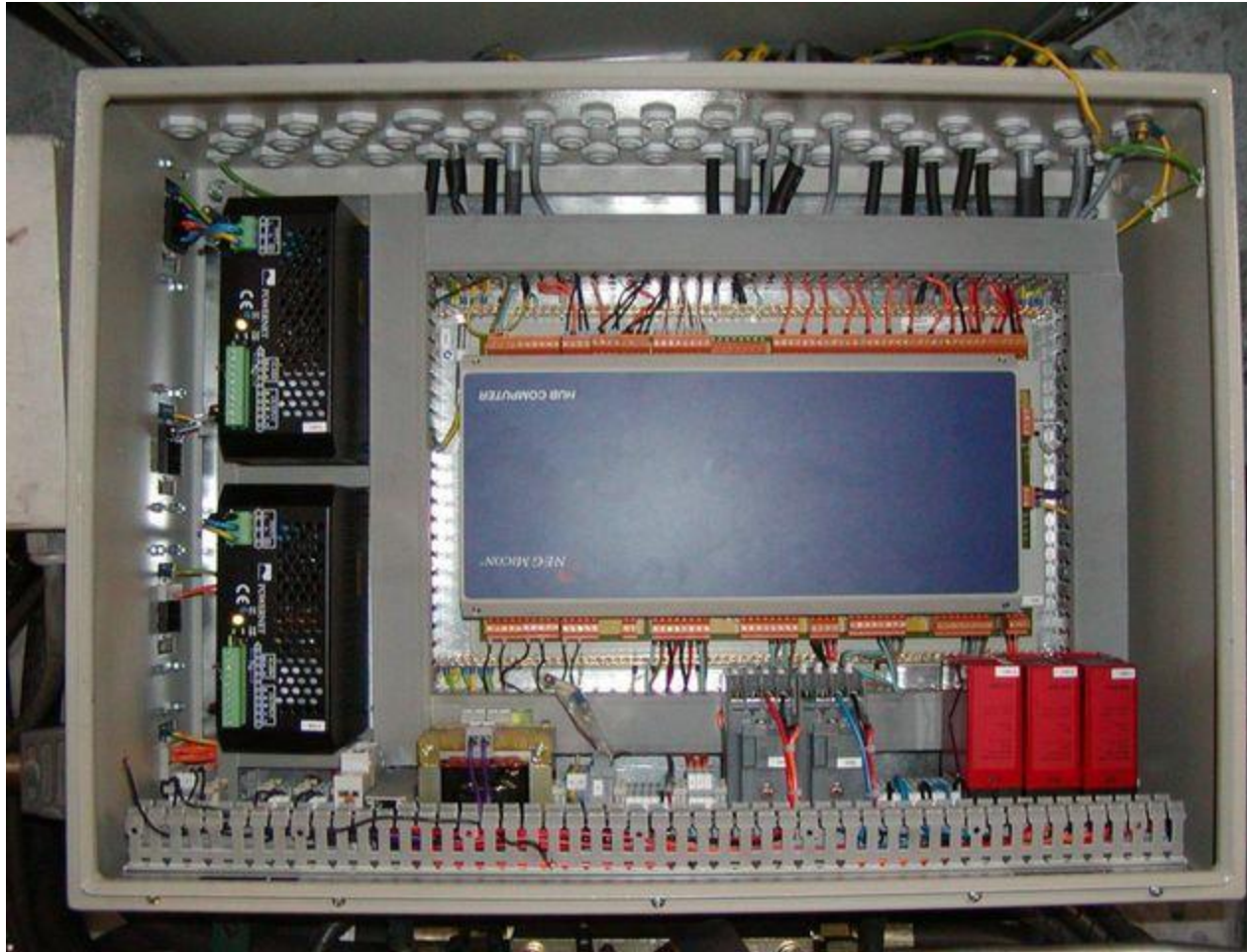
2] No

3] I don't know

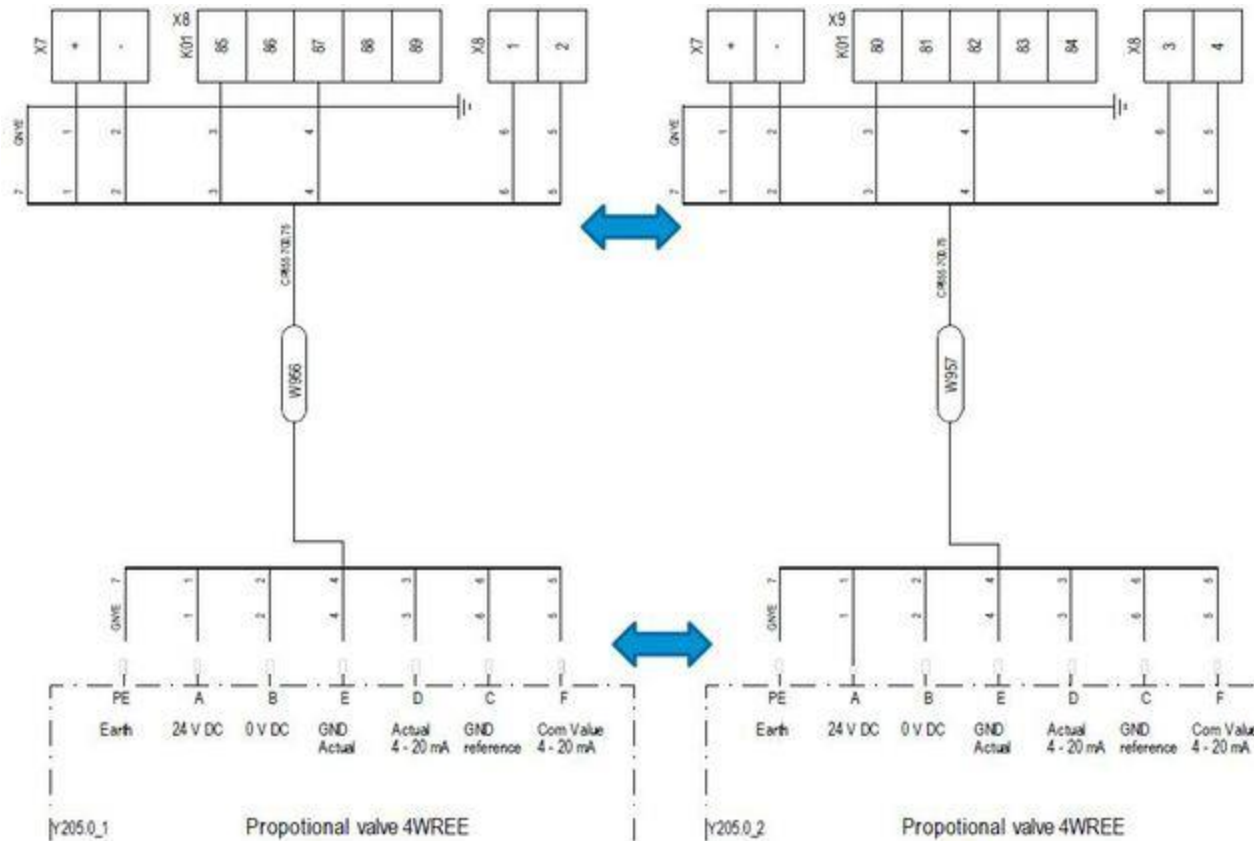
- **Explanation**
IN THE HUB:

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.

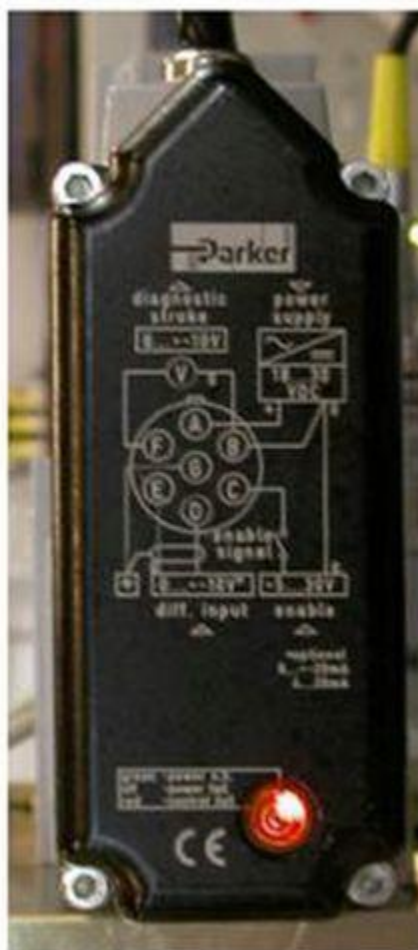
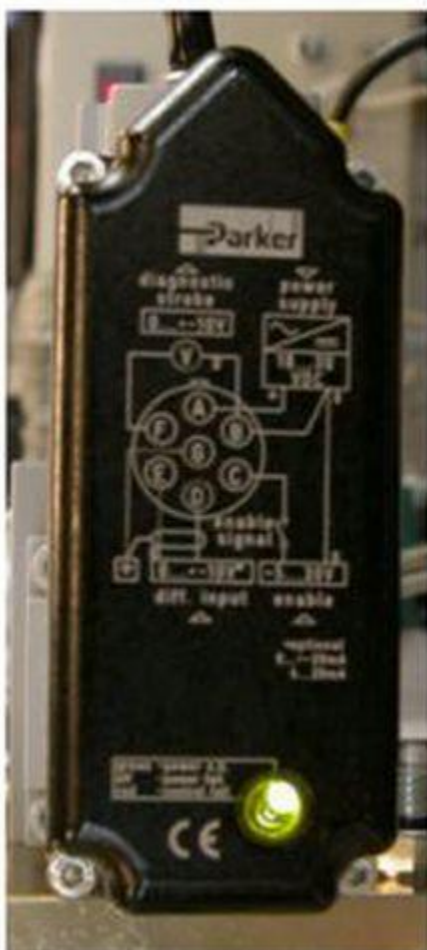
For Parker proportional valves check to see the color of the LED on the valve circuit board.

Parker hydraulics below SWI

Relevant documentation	
Description	DMS No.
V82 Hydraulic pitch control system	0001-3199

The LED should be green with the pitch system pressurized.

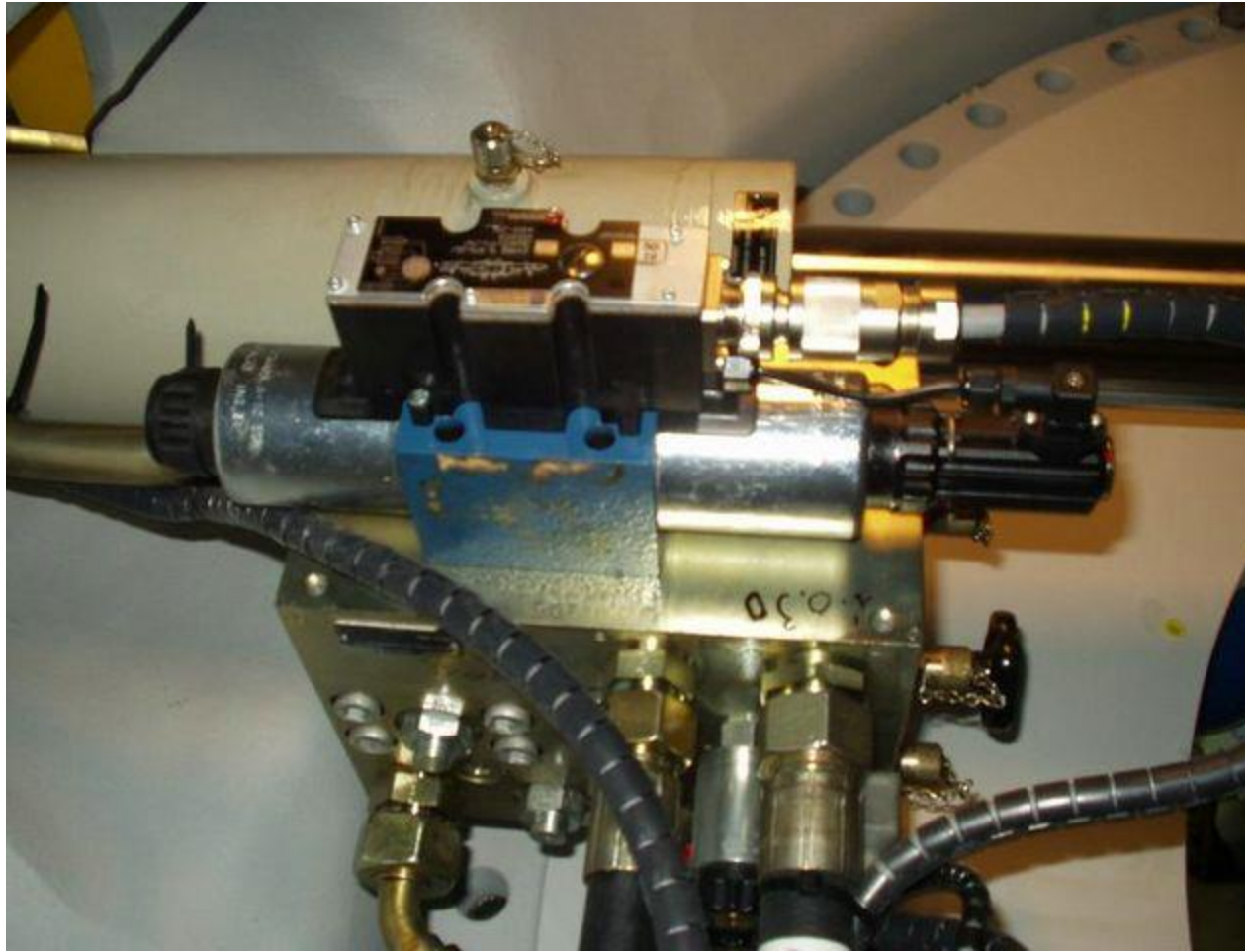
If it is red and there is pressure verified on test port MP, then the valve may also be defective.



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	0016-1690





Parker Proportional Valve

Relevant CIM case		
CIM case	Task list	SWI
2303	14333	

Relevant spare parts

Description	Item No.
PROP. VALVE D31FHE01C	60112621

Relevant CIM case		
CIM case	Task list	SWI
1914	14334	

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

Part number for Proportional valve Cable

Relevant spare parts	
Description	Item No.
Cable W 956 Proportional valve Y0205.0-1	60021544

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	5003018
Hydr. circuit, V82 pitch axis, Parker	5003013
Hyd. Supply Unit Circuit, Rexroth	5003347
V82 Pitch control manifold	5003025
Pump-manifold for Hub frame. Rexroth	5002046

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	0001-3199

Main distribution block when pump pressurizing mode:

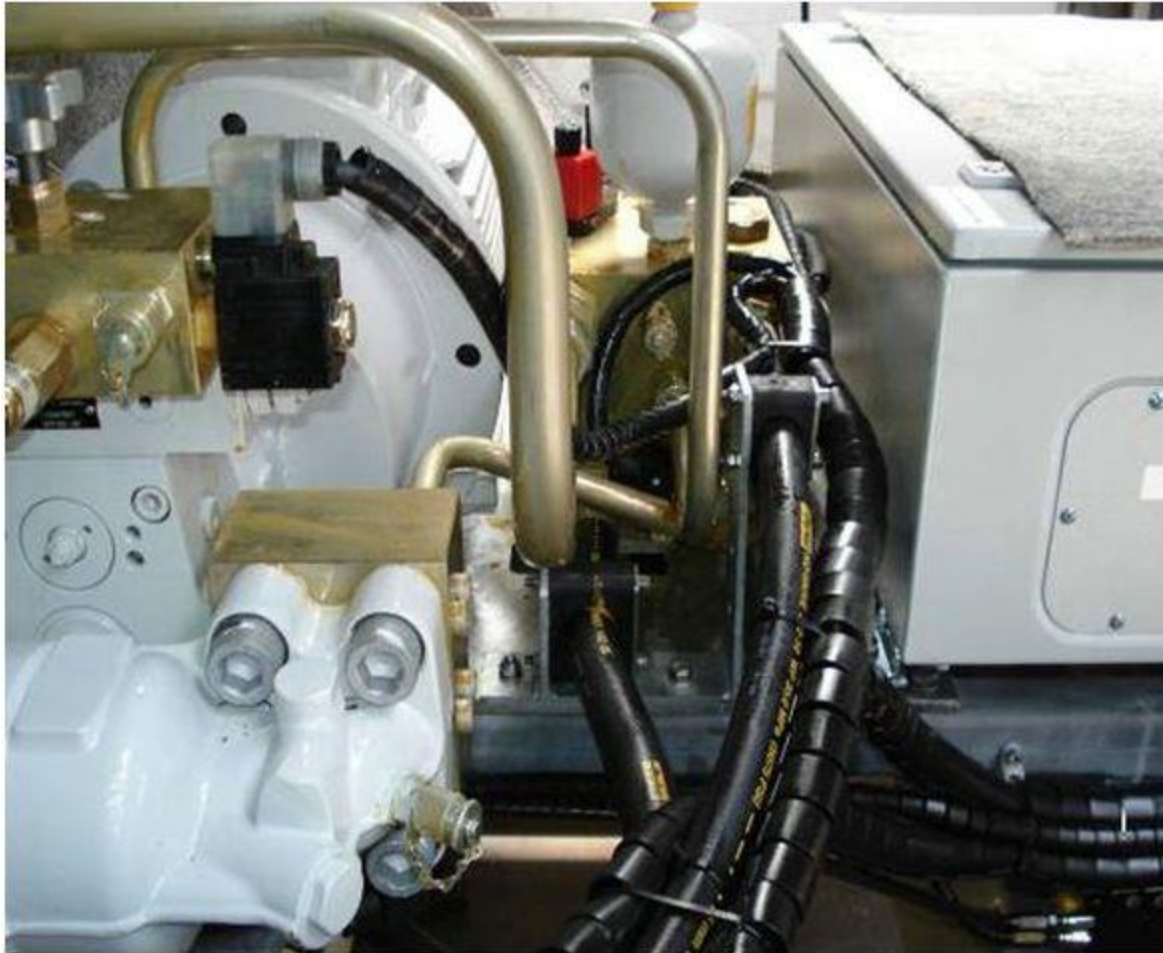
Hub Manual Mode: Press "R" then pitch to run, stop, pulse or charge.



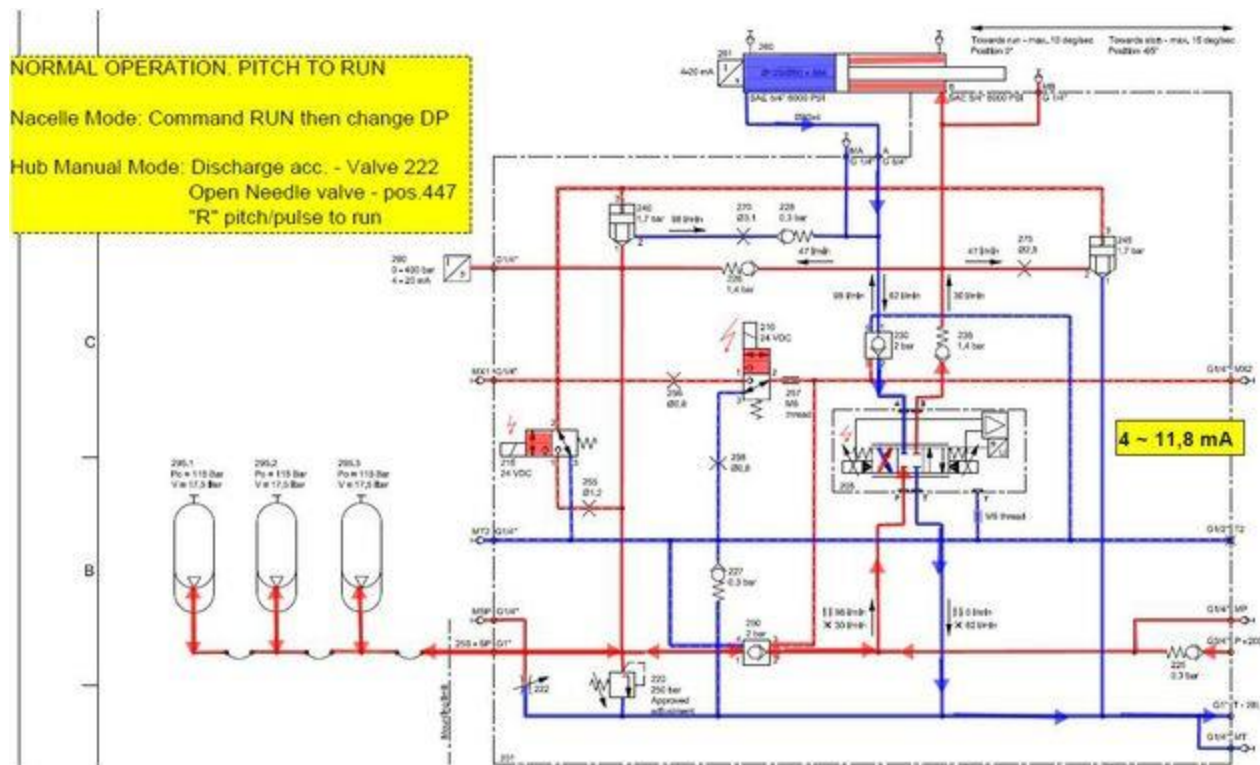
Check the valve operation. If any of the valves are defective, replace with new.

Relevant spare parts		
Description	Item No.	Location
CHECK VALVE, 0,3 BAR, 375L	60111616	410

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

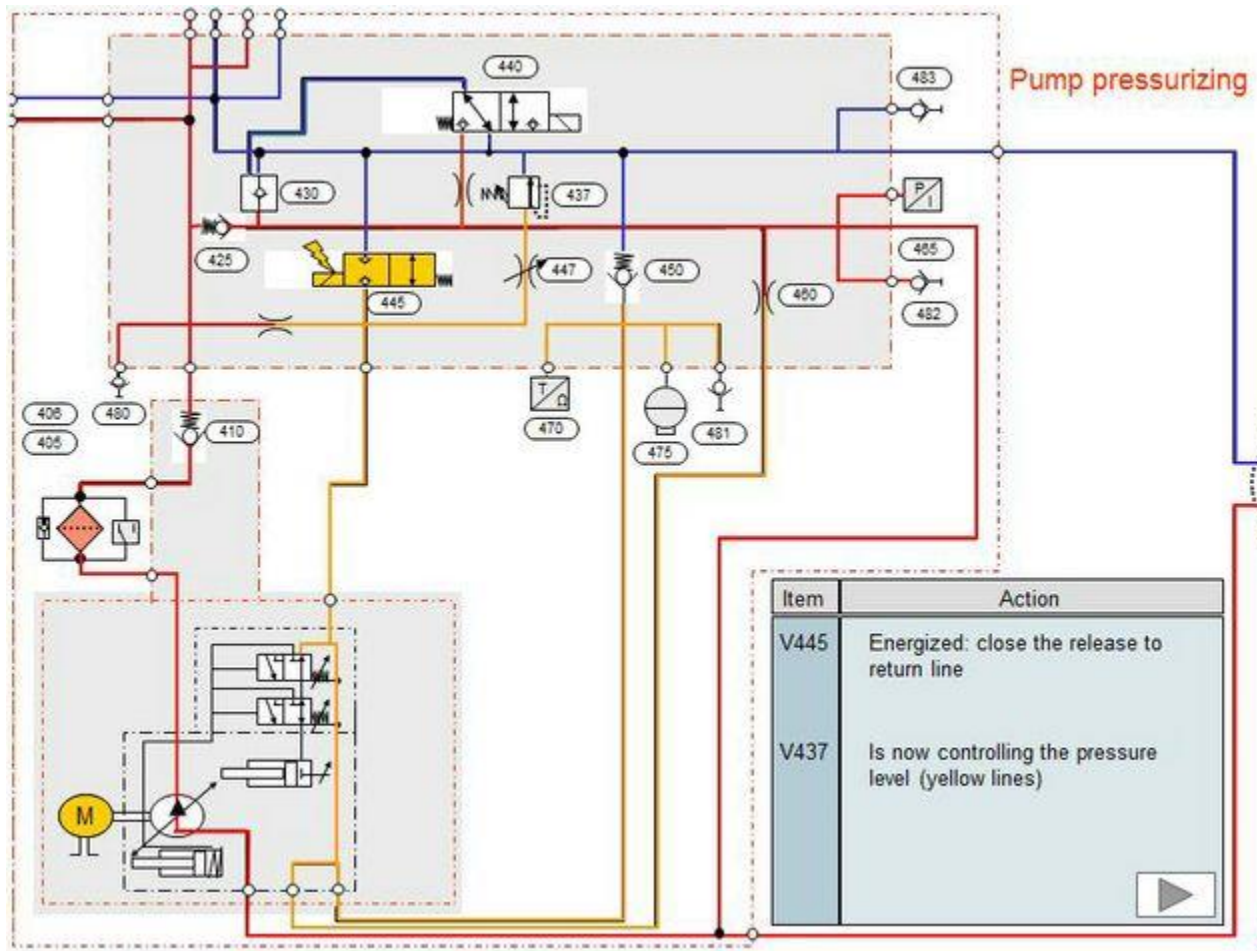
Relevant spare parts		
Description	Item No.	Location
CHECK VALVE PILOT:CVEV-XCN A30	60096481	230 , 250 -
NEEDLE VALVE, NVH-2201	60104032	222
KNOB FOR NEEDLE VALVE	60112623	222A

3/2 DIRECTIONAL VALVE	60111617	210, 215 -
LOGIC ELEMENT PIL. OPERATED	60111630	240, 245 -
PRESSURE CONTROL VALVE: RDDT-QWN	60096477	220 -
CHECK VALVE CVH103P20	60112628	235 -
PROP. VALVE D31FHE01C	60112621	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	103805	475
CHECK VALVE: M-SR 15 KE02-1X/	60096479	410, 425
PRESSURE CONTROL VALVE: KBD2HO	60096503	437
VLV SOLENOI KSDER1PA/HG24N9K4M	60098803 (phased out)	445
CHECK VALVE COFA-XBN	60099554	430

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

Relevant spare parts		
Description	Item No.	Status
VLV SOLENOI KSDER1PA/HG24N9K4M	60098803	Phased out
KSDER1PB/HN9V F BRAKE UNIT 3MW	780430	Available

Part Number for Solenoid Valve

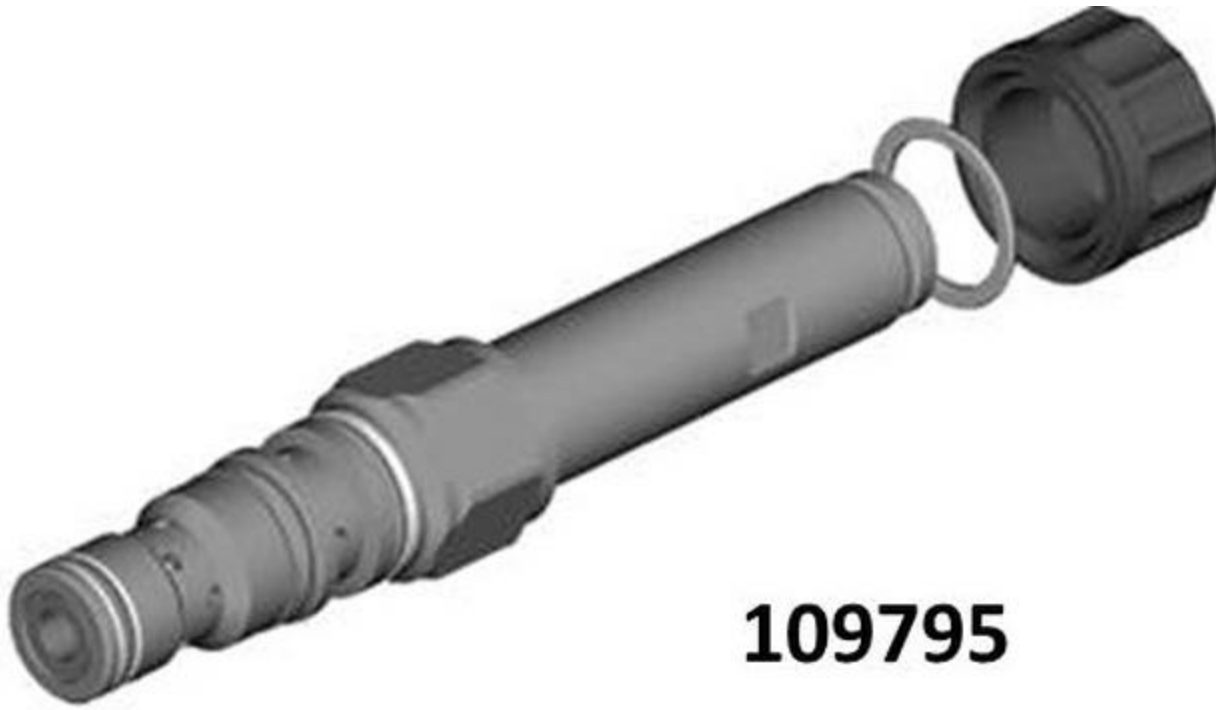
The part No.60096475 is phased out and henceforth replaced by 109795 & 60106201.

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

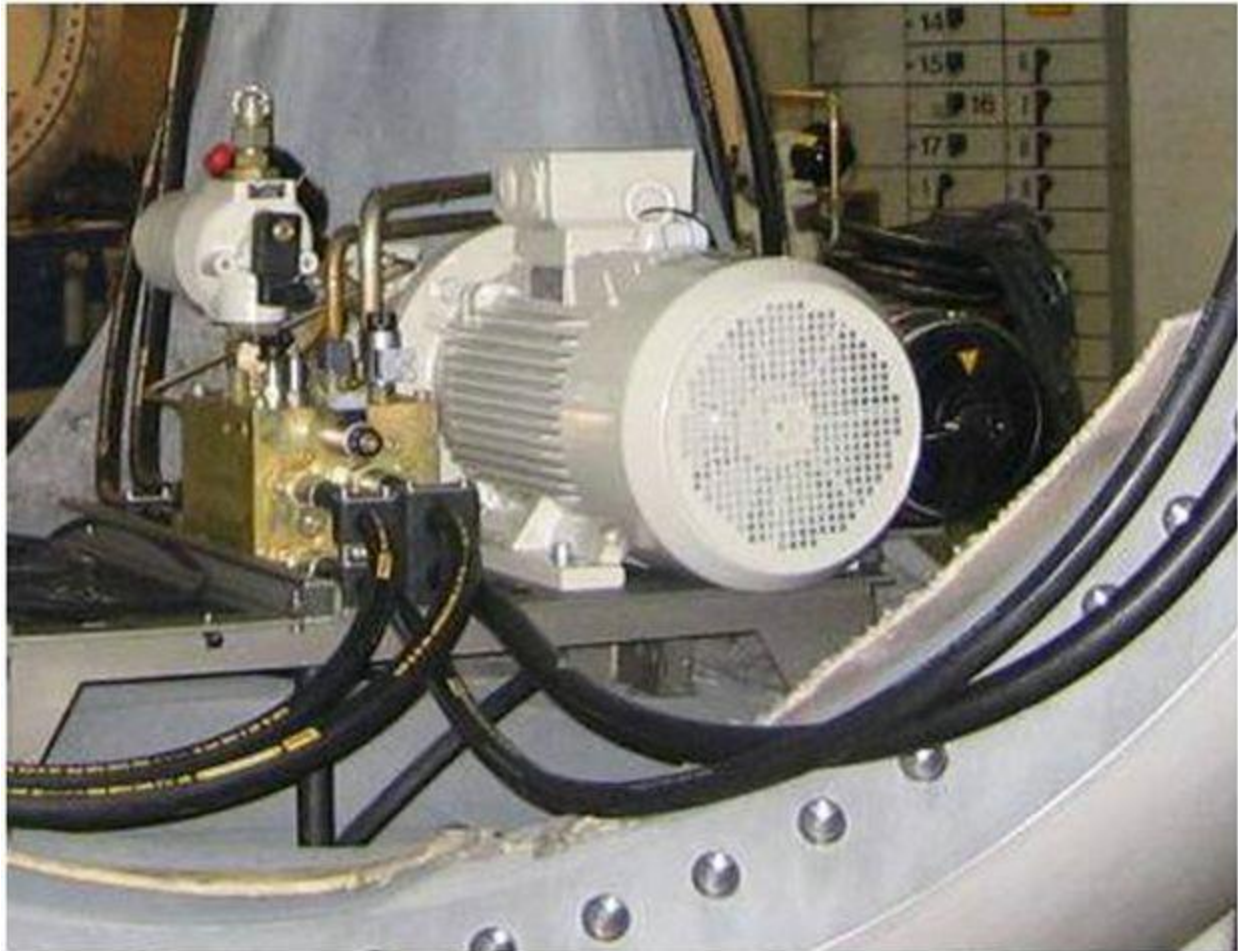
Relevant spare parts		
Description	Item No.	Status
SOL VAL KSDEU1CA/HCG24N0K4M	60096475	Phased out

ELECTRIC SEAT VALVE	109795	Available
COIL GZ37-4 24VDC 19W	60106201	Available





109795



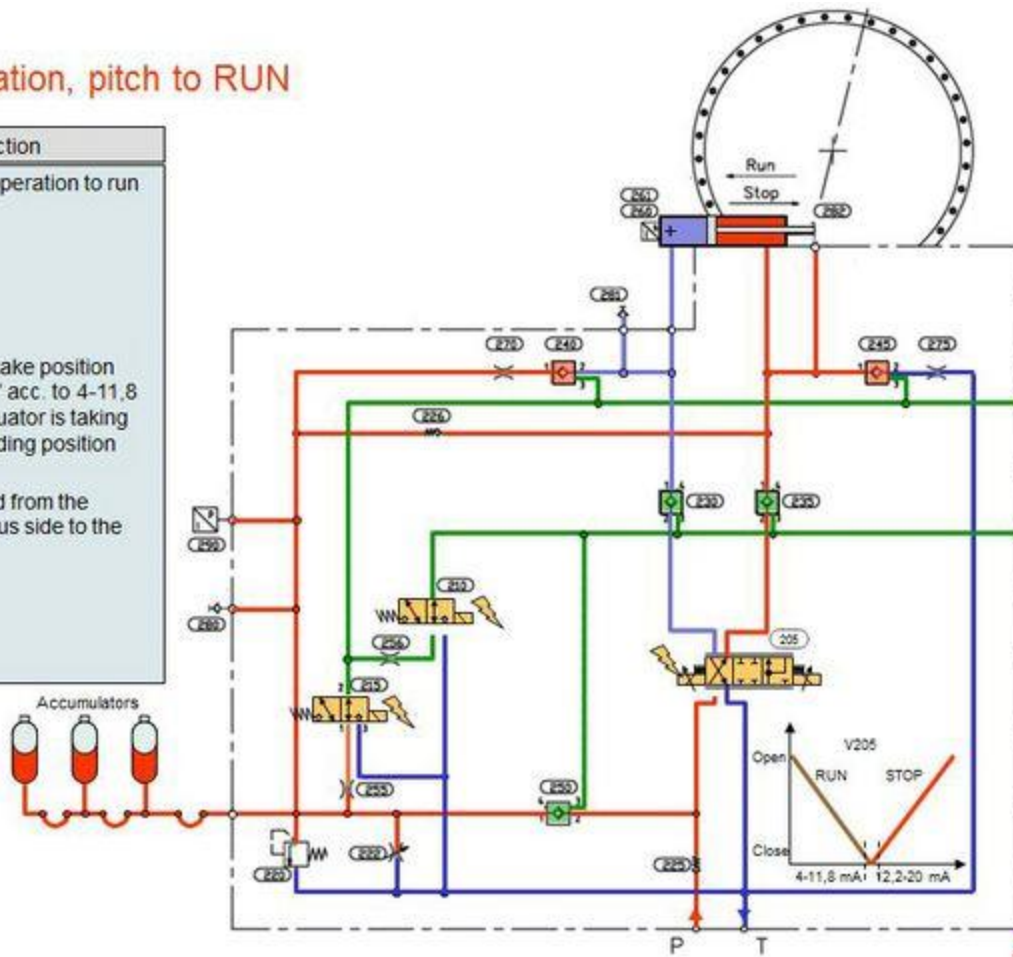
REXROTH SYSTEM -PITCH MANIFOLD:

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	Oil is drained from the actuator's plus side to the return line.
V205	

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	105103	222

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

Part Number for Solenoid Valve

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

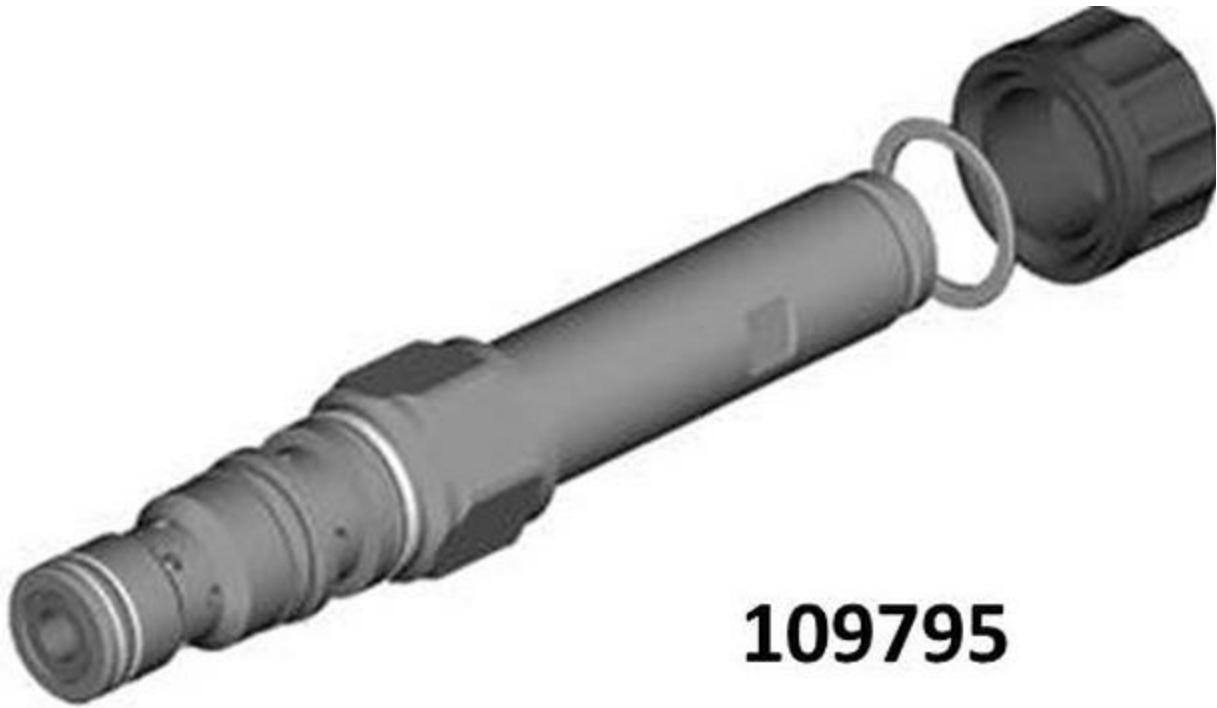
(Rexroth) Valve/Solenoid (POS 210 & 215)

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

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



60106201



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

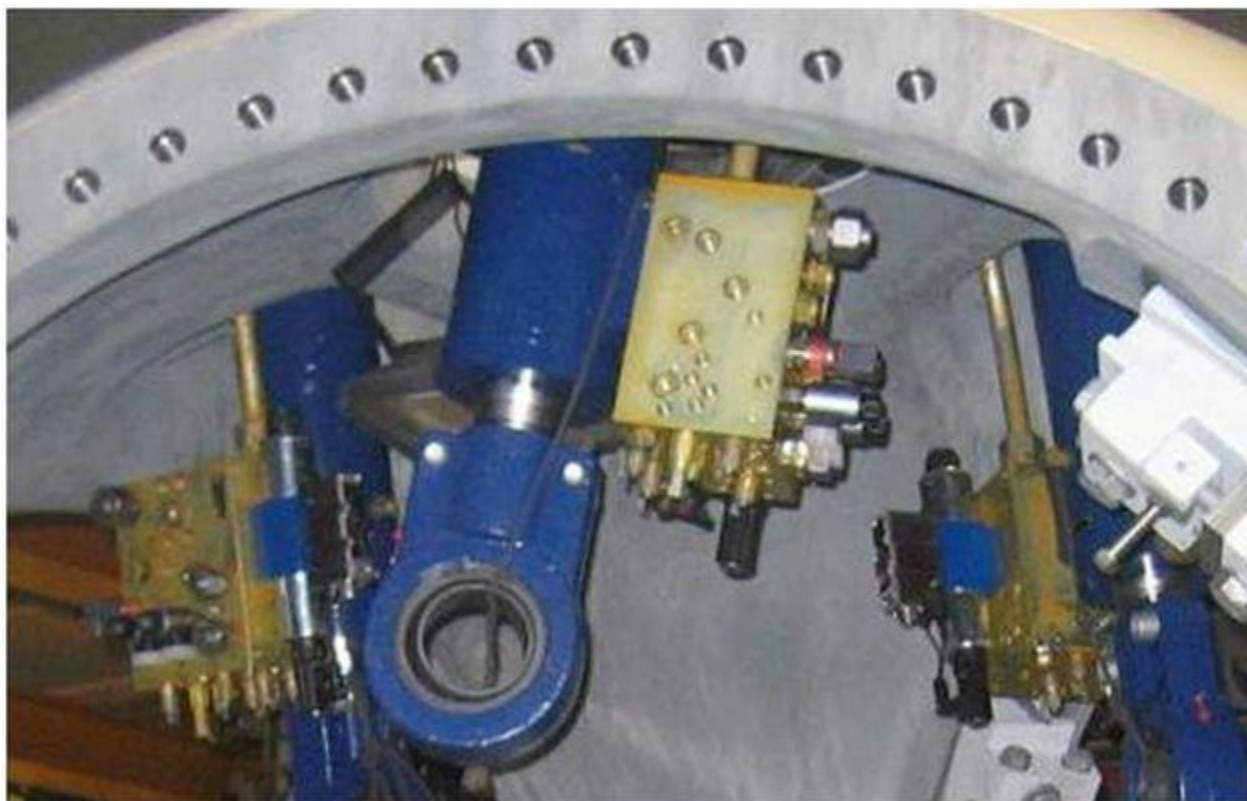
Relevant spare parts	
Description	Item No.
THROTTLE VALVE: NFBC-KCN A3031	60096478
HANDLE FOR NFBC-KCN A30316JG01	60109005

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

Relevant spare parts	
Description	Item No.
THROTTEL VAVLE NFCC-LCN A40122	105103

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	0002-4365
Distribution Manifold Replacement	0021-3758
Fast Active Stall Hydraulics Valve replacement	1000778
Fast Active Stall System	0001-1672

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	941918

If any accumulators are failed, replace with new:

Relevant spare parts	
Description	Item No.
HYDR ACCU 20 L 115 BAR DUAL (NM72)	60113096
HYDR ACCU 24.5 L 115 BAR DUAL (V82 other than Australia)	60113097
HYDR ACCU 24.5 L 115 BAR AS1210 (V82 Australia)	60113098

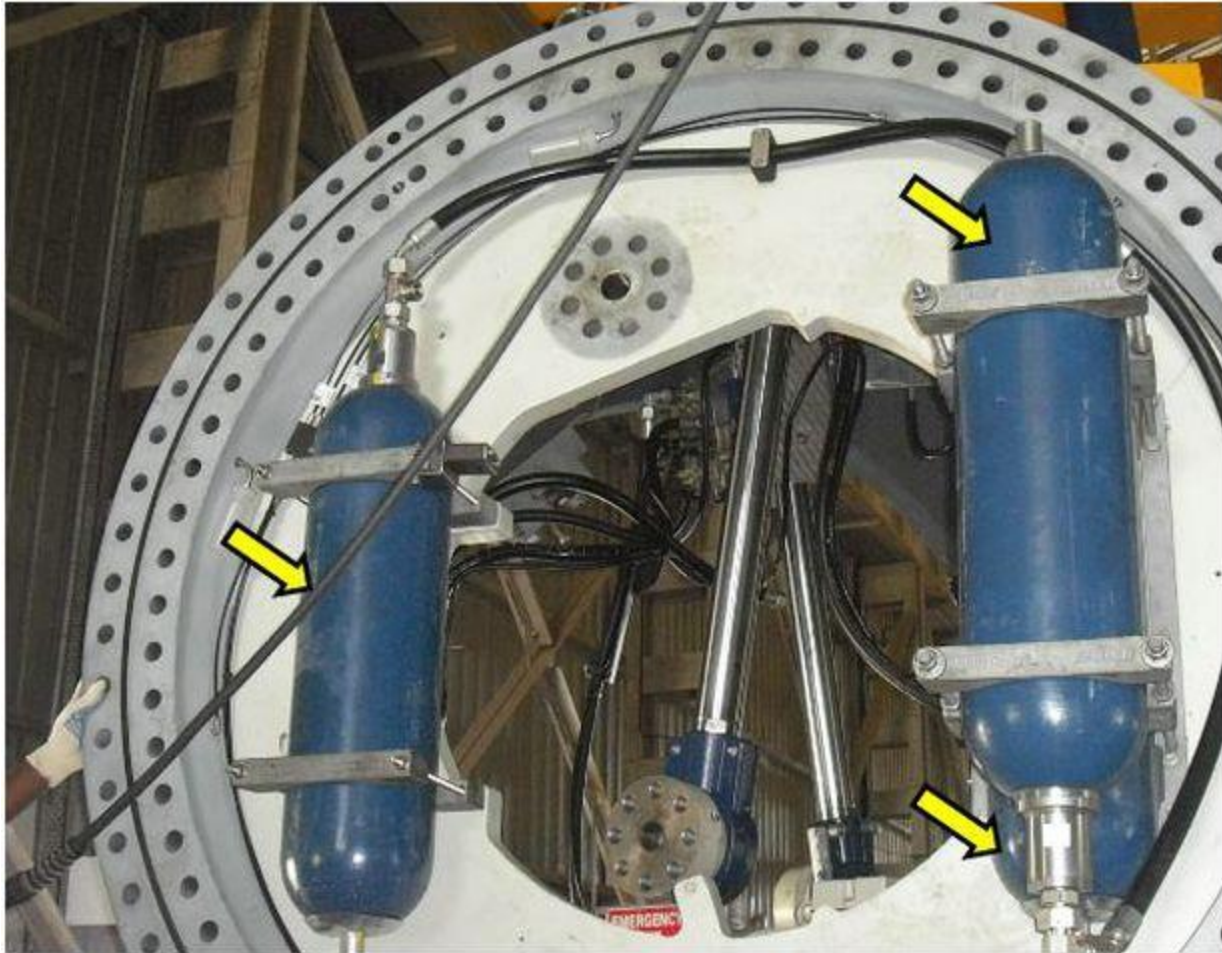
Relevant CIM case

CIM case	Task list	SWI
1168		0002-0199

Relevant documentation	
Description	DMS No.
Blade Accumulator Exchange	0001-2871

Check accumulator retrofit installation:

Relevant documentation	
Description	DMS No.
Accumulator Retrofit Installation	0000-9402



Replace the defective actuator or replace the defective seal

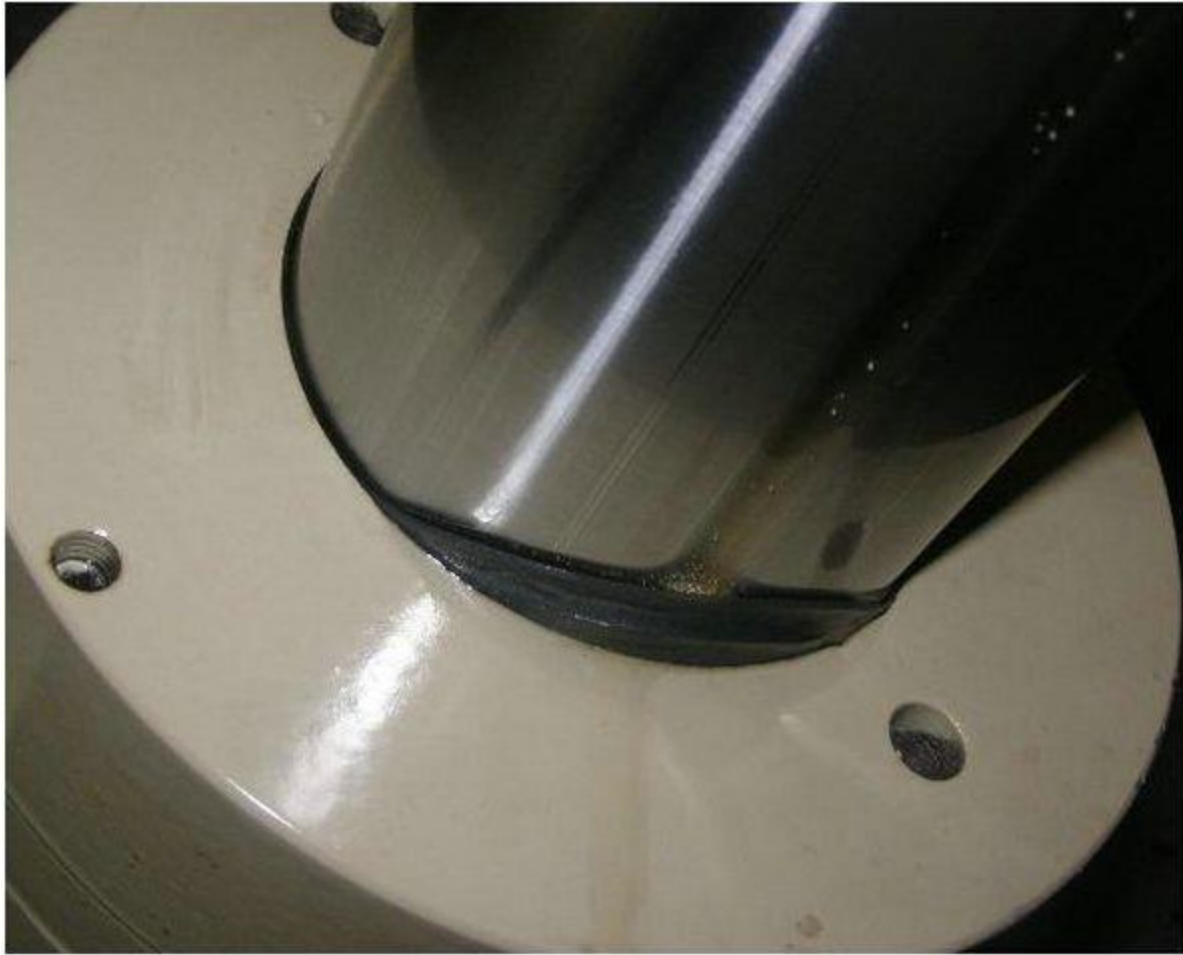
Does this solve the problem?

- 1] Yes
- 2] No
- 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).	60120439
HYDR CYL BUSHING W. SEALS ø90 (seal with Bush).	60114033



REXROTH System:

Relevant spare parts	
Description	Item No.
ACTUATOR Ø140 WITH Ø100 TRUN.((Actuator with manifold)	60096442
ACTUATOR SEAL KIT (Seal kit alone)	60110956



Relevant documentation	
Description	DMS No.
V82 Pitch Actuator Exchange	0021-4366
Pitch Actuator Piston Rod Replacement	0023-2047