

DIFFUSER OPERATING
INSTRUCTIONS

SLOPE

609

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PROBLEM

PROBABLE CAUSES

CHECKS

REMEDY

Main PVA pumps will not run or stop without apparent reason.

PVA pump selector switch not in correct position.

Examine switch lever (Box is on west end of control panel).

Throw switch up for Blue unit down for Green unit.
CAUTION Do Not Change This Switch With Circuit Energized. Throw Diffuser Pump Circuit Breaker To Be Sure Line is Open.

Diffuser stall switch set too HIGH

Examine Diffuser Stall Indicator

SET RED HAND AT ABOUT 10 RPM FOR NORMAL OPERATION

Oil level too LOW

LOW OIL LEVEL LIGHT ON CONTROL PANEL LIGHTED

ADD OIL

Oil Temperature too HIGH

Oil temperature switch stops machine at 72° C Warning light at panel lights at 68° C .

1. Turn on oil cooling water.
2. Open valves to or from oil coolers.
3. Change valving to Alternate screen. Clean dirty screen.
4. Vickers relief valve in supercharge circuit set too high. (Do Not Change Setting Unless Certain This is The Problem)

Cavitation switches not closed.

Lights on Panel shows cavitation switch stopped machine.

1. Supercharger relief valve may be too low. Increase pressure if below 150 psi.
2. Valve to cavitation switch must be open.
3. Accumulator may need charging-charge to 120 psi with no oil pressure on accumulator.

PROBLEM	PROBABLE CAUSES	CHECKS	REMEDY
Main PVA pumps will not run or stop without apparent reason. (continued)	Discharge Scrolls not running.	Examine control Panel or look at Scroll Drive	Start Discharge Scrolls
Motor Starter disengaged.	Examine motor starter	Examine motor starter	Re-engage. If starter will not stay in call plant electrician.
Line blocked or relief valve stuck closed.	Very high pressure in the pump discharge line.		Remove obstruction. Repair or replace relief valve. (Do not tamper with relief valve unless certain this is cause of trouble)
Trunion limit switches actuated.	Warning light on panel.		1. Re-adjust trunions if not at proper elevation. 2. Adjust trunion limit switches if they are throwing out below lower limit is reached.

PROBLEM	PROBABLE CAUSES	CHECKS	REMEDY
Supercharge Pump Will Not Run.	Motor starter disengaged.	Examine motor starter.	Re-engage, if starter will not stay in call plant electrician.
	Discharge Scrolls not running.	Examine control panel or look at scroll drive.	Start discharge scrolls.
Yoke Shift Pump Will Not Run.	Neither of the yoke shift pumps connected into circuit.	Examine switch lever. (Box is on east end of control panel.)	Throw switch to one of two "ON" positions. <u>CAUTION</u> Do Not change this switch with circuit energised.
Neither Push Cylinder Will Move.	PVA Pump shutoff valves closed.	Bars on valve wheel must be parallel to line when valve is open.	Open valves on working unit. Close valves on standby unit.
	Both "DWELL" valves on control circuit extended.	Both drive cylinders completely down.	Override Dwell action by depressing Devil Valve Spring located on out- side edge of each pusher rod cross head. Hold depressed while cross head rises approximately 6".
	Control Circuit Malfunction	YOKE Position pointer on PVA Pumps not moving to position required.	See Control Circuit Malfunction to follow.

PROBLEM	PROBABLE CAUSES	CHECKS	REMEDY
Push Cylinder Jumps and Jerks on return stroke	Dump Valve Pressure set too HIGH	Pressure in "ROD END" line should measure about 700 PSI during "PISTON RETURN" portion of cycle.	Reduce Dump valve setting.
Drive Piston Extends too far and hits top head of cylinder	Reverse Cam Set too High	Thump occurs just before piston starts back down.	This is a <u>Dangerous</u> situation. Cylinder may be damaged, -- Lower top control cam.
One Push Cylinder will not move.	Improper Control Setting.	Same as Above.	See control circuit malfunction "D", or "F"
	One or more shutoff valves closed.	Bars on valve wheel must be parallel to line when valve is open.	Open valves on working unit. Close valves on standby unit.
	Relief Valve Stuck Open.	Pressure in line will not exceed supercharge pressure.	Replace or adjust relief valve. (Do not tamper with relief valve unless certain it is faulty.)
	Dump valve set too low.	Pressure in "Rod End" line should measure about 700 PSI during "Piston Return" Portion of cycle	Increase Pressure setting of Dump Valve.

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PROBLEM	PROBABLE CAUSES	CHECKS	REMEDY
One Push Cylinder will not move. (continued)	Counterbalance valve not opening	Very High Pressure in head end line low pressure in rod end line (Both measurements made at pump)	Counterbalance poppet stuck. Replace or repair valve.
	Control Circuit Malfunction.	Yoke position pointer on PVA pump not moving to position required.	See control circuit malfunction to follow.
One Push Cylinder Starts Up Before Engaging Drive Pin.	Improper Dwell	See control circuit improper dwell.	See control circuit improper dwell.
Control Circuit			
(A) Neither Control Cylinder will move.	Control Circuit valves not open.	Examine valve positions.	Open control valves to working unit. Close valves to standby unit.
	Control supply oil filters clogged.	No visible checks.	Change valve setting to provide flow through alternate filter. Clean dirty filter.
	Yoke shift pump not running.	See above.	See above.

PROBLEM

PROBABLE CAUSE

CHECKS

REMEDY

Control Circuit
(continued)

(A) Neither Control
Cylinder will
move.
(continued)

Relief valve stuck
open or set wrong.

Low pressure in control
cylinder supply line.

Repair or replace. (There are
two relief valves. The one
on the tower should be set higher
than the one down on the reservoir.)

(B) Yoke Does Not
Shift When Control
Cylinder Moves.

Valve from pump to yoke
shift cylinder not open.

Yoke position pointer on
both pumps pointing down.
Valve closed.

Open valve to working unit.
Close valve to standby unit.

Yoke shift supply relief
valve not holding 800PSI
pressure.

Both drive cylinders are
in up position. Poppet on
hydromechanical valves fall
away from control piston.
No pressure in supply line.

Repair or adjust. Set to
Relieve at 800 PSI.

Yoke shift pump not
running.

Yoke position pointer on
both pumps pointing Down.

See above.

Pump hydromechanical
servo valve stuck,
clogged or broken.

Yoke position pointer on
one pump not following
control cylinder.

Close and open valve from
yoke shift cylinder pump to
dislodge contaminate.
Disassemble and clean if
necessary.

PROBLEM

Control Circuit
(continued)

(C) Improper
Dwell

PROBABLE CAUSE

No down bias on servo
valve when control
cylinder is in DWELL.

CHECKS

Yoke position pointer
must be slightly up
from neutral when con-
trol cylinder is in
DWELL.

REMEDY

Adjust cap screw that pushes
on servo valve poppet to
give more bias.

Dwell valve not actuat-
ing properly.

Inspect to see if DWELL
valve (one of two inside
control valves on stand)
moves when drive cylinder
reaches bottom.

1. Check linkage adjustment.
2. Check for excessive spring
tension of bell crank return
spring.
3. Examine spring pod on linkage
to see that internal spring
holds linkage to fixed length.

Drive cylinder too slow
on return stroke.

Drive pin passes drive
head before cylinder is
at bottom of stroke.

Increase speed of return stroke
by screwing out set screw on the
very top of the control device.

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PROBLEM	PROBABLE CAUSES	CHECKS	REMEDY
Control Circuit (continued)			
(D) Controls Will Not Reverse Properly	Control cylinder binding.	Control cylinder not moving as directed.	Clean and adjust to give free movement.
	Directional valve (one of two outside control valves on stand) not moving properly.	Inspect for proper movement.	1. Check linkage adjustment. 2. Check adjustment of cam on drive head. 3. Examine spring pod on linkage to see that internal spring holds linkage to fixed length.
	Air in system.	Slow, spongy action.	Bleed air from system.
	Regulator in control cylinder line out of adjustment.	Slow or erratic movement of control cylinder.	Adjust flow control valve. Turn adjusting screw in to increase flow rate.
(E) Excessive Down Speed Very Slow Up Speed	Override poppet in control cylinder sticking.	Override poppet can be forced farther down when control cylinder is in down position. More than usual bias at DWELL.	Remove obstruction and free override poppet.

PROBLEM	PROBABLE CAUSE	CHECKS	REMEDY
Control Circuit (continued)			
(F) Pump Yoke Will Not Shift From Power Stroke To Return Stroke (or moves too slowly)	Restrictor valve set for too much restriction.	Slow reversal drive piston may travel up too far causing pis- ton to hit top head. This must not happen.	Screw set screw in to decrease amount of restriction.
(G) Pump Yoke Shifting too Fast From Power Stroke to Return Stroke.	Restrictor valve on yoke shift cylinder has too little restriction.	Rough transfer from one drive cylinder to the other.	Increase restriction - screw set screw out to increase restriction - <u>CAUTION</u> too much restriction can be dangerous. See "F" above.