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5. Use in special case of speed regulation for an hydrostatically driven fan

On our hydraulic excavators, the variable displacement pump A10V ED is generally used to drive, via a constant flow hydraulic motor, the fan of the coolers assembly.

The pressure P_{hp} which is maintained at pump exit depends on the regulation current I flowing to the solenoid valve Y347. (This current is elaborated by the Bst regulation unit depending on several parameters such as hydraulic oil temperature, engine oil temperature, running of air conditioner compressor, ..., see also the technical data of the Bst regulation unit for the concerned machine).

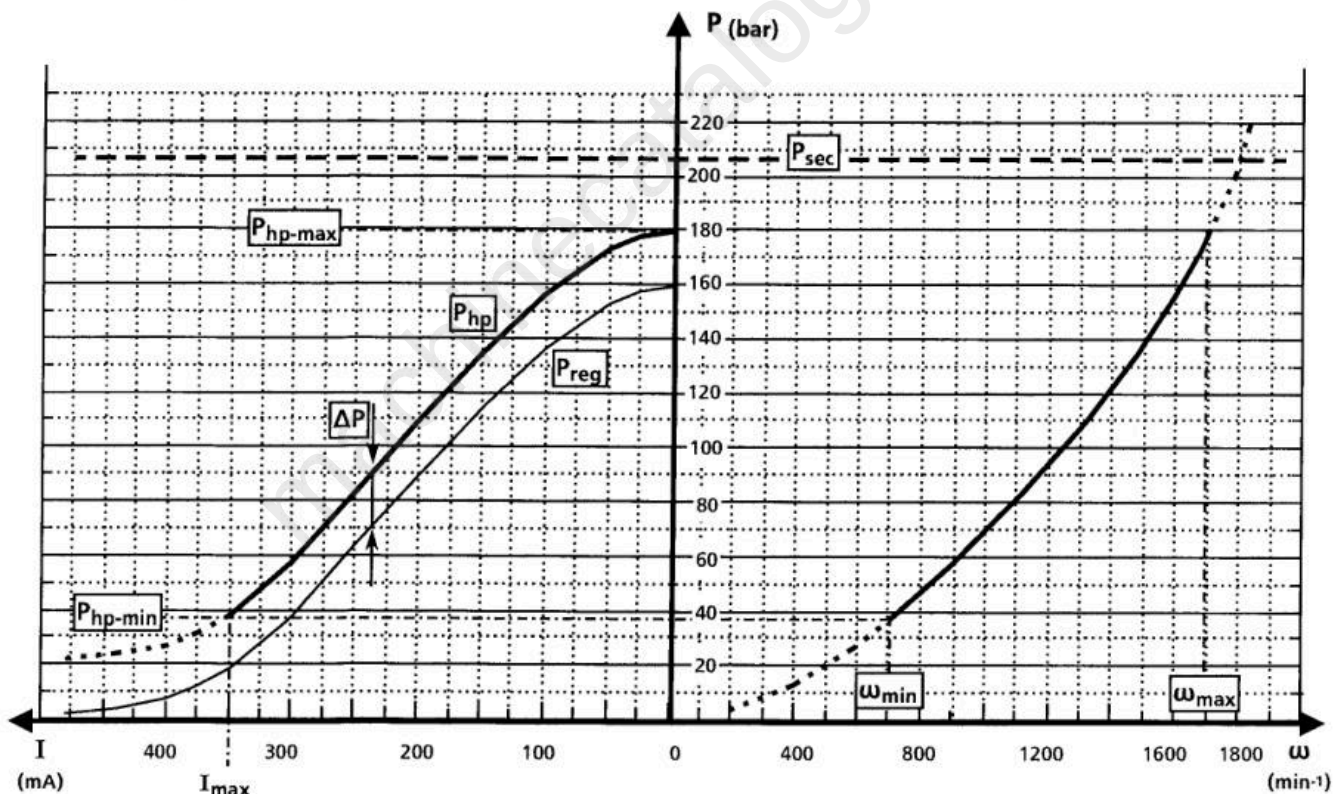
At low temperatures, the regulation current I is equal to I_{max} , the pressure maintained at pump exit is minimum (P_{hp-min}) and the inclination angle of the pump swash plate can increase only until this minimum pressure has been reached inside the fan drive circuit.

The fan is then driven at corresponding RPM ω_{min} .

When the current I to solenoid valve decreases, the pressure value P_{hp} maintained at pump exit by the regulator is increased and the pump angle can raise until this increased pressure has build up inside the circuit.

For each value of current I a new equilibrium is generated for which the pump pressure and the fan RPM are defined by the characteristic curves $P_{hp} = f(I)$ and $\omega = f(P_{hp})$.

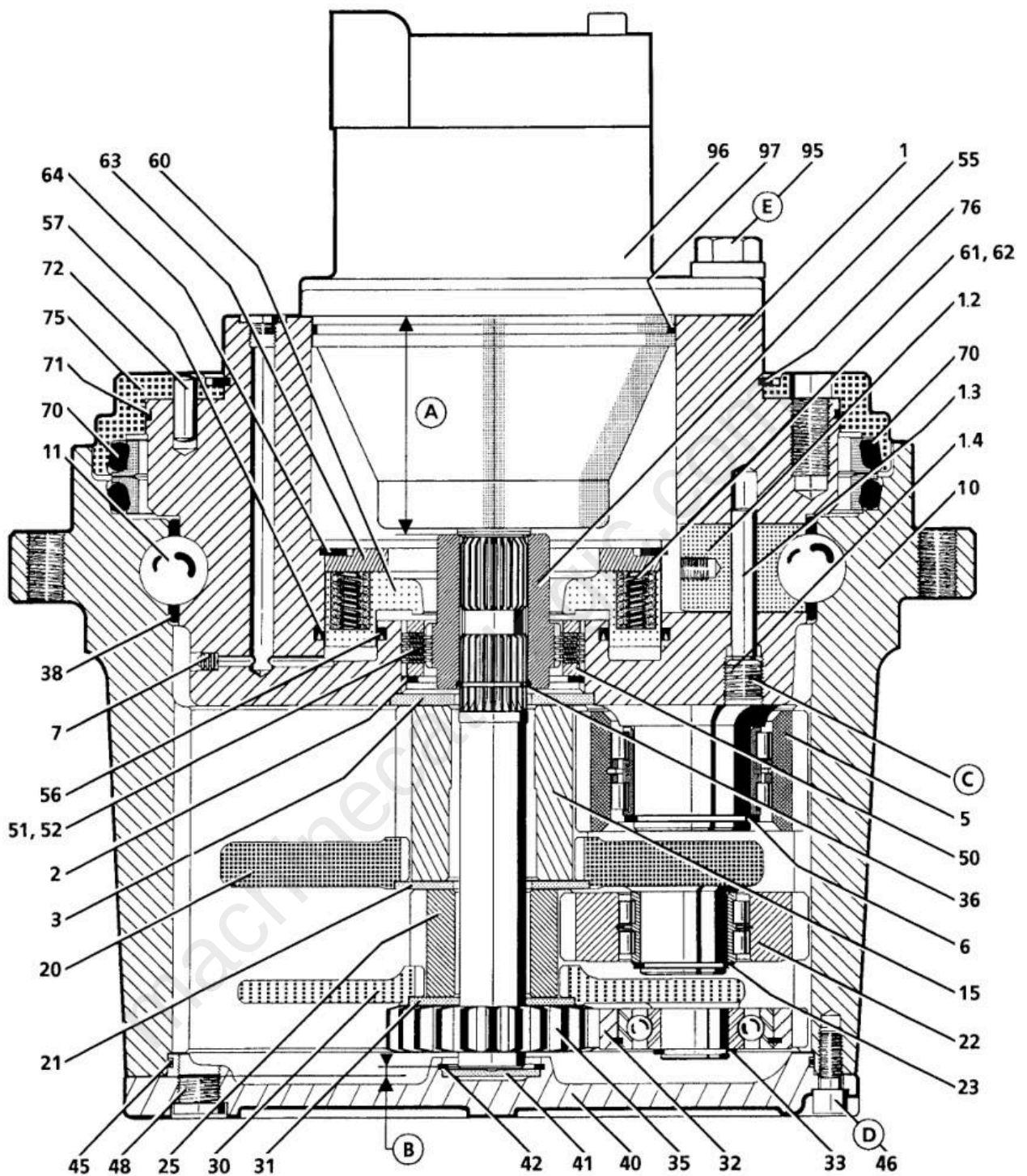
At high temperatures, the regulation current I is $= 0$, and the maximum values P_{hp-max} for pump pressure and ω_{max} for fan RPM are reached.



I	Regulation current to Y 347
ω	Fan RPM
P_{hp}	Pump high pressure
P_{reg}	Pump regulation pressure
ΔP	Standby pressure ($= P_{hp} - P_{reg}$)
P_{sec}	Secondary pressure (with separate pressure relief valve)

No. wire	Color /Section	Connection
6101	.	X9/2 → X196/3
6102	.	X10/1 → X197/1
6103	.	X10/2 → X197/3
6104	.	X156/13 → X74/1
6105	.	X156/14 → X74/2
6110	.	X6-1/4 → X158/8
6111	.	X6-1/3 → X158/7
6114	.	X6-1/12 → X158/6
6115	.	X5-1/5 → X158/3
6116	.	X8-2/4 → X157/10
6117	.	X8-2/5 → X157/11
6118	.	X12/2 → E8
6119	.	S1/58 → X65/2
6120	.	S1/17 → X12/4
6121	.	S1/19 → X12/3
6122	rt	X156/3 → S1/30
6123	.	X158/15 → X5-1/2
6124	.	X21/3 → X15-1/2
6125	.	X21/2 → X15-1/1
6126	.	X21/1 → X15-1/3
6127	.	X14/2 → X14-1/3
6128	.	X14/3 → X14-1/1
6129	.	X66/2 → X67-1/2
6130	.	X66/1 → X67-1/1
6131	.	X67-2/+ → X3-2/1
6132	.	X67-2/- → X3-2/2
6133	.	X67-2/+ → X3-2/3
6134	.	X67-2/- → X3-2/4
6135	.	X49/1 → H10
6136	.	X157/4 → X189/3
6137	.	X157/6 → X181
6138	.	S1/50 → X156/12
6139	.	S1/15 → X156/9
6143	.	X15-3/3 → X15-2/1
6144	.	X15-3/2 → X15-2/2
6145	.	X15-3/3 → X29-1/1
6146	.	X154/12 → X192 → P5
6147	.	F32 → X69/11 → X84-3/1

No. wire	Color /Section	Connection
6148	.	F31 → X69/12 → X84-2/1
6149	.	X3-3/1 → X167/1
6150	.	X3-3/3 → X168/2
6151	.	X3-4/1 → X166/1
7000	.	X160/3 → Y3/1
7001	.	X160/2 → Y7/1
7002	.	X161/3 → X125/1
7003	.	X161/7 → Y22/1
7004	.	X155/8 → Y53
7005	.	X161.8 → Y23/1
7006	.	X155/6 → Y52
7007	.	X155/1 → Y51
7008	.	X234/3 → Y78
7009	.	X155/3 → Y50
7010	.	X6-1/1 → X246/8
7012	.	X6-1/5 → X246/2
7014	.	X161/4 → X83/2
7015	.	X160/7 → X83/1
7016	.	X155/11 → Y52
7017	.	X160/11 → X129/1
7018	.	X155/7 → Y50
7019	.	X161/6 → X129/4
7020	.	X161/15 → X125/3 → H9
7021	.	X155/4 → X134/3
7022	.	X161/10 → X122/1
7023	.	X161/11 → X122/2
7025	.	X155/2 → Y53
7027	.	X155/10 → Y51
7030	.	X20/5 → E3
7031	.	X155/9 → X134/1
7032	.	X160/1 → X128/1
7034	.	X160/14 → X130/1
7035	.	X160/13 → X130/3
7038	.	X125/4 → X122/3
7040	.	X160/11 → X129/1
7041	.	X161/6 → X129/4



NOTE ADJUSTMENTS AND TORQUES A, B, C, D and E !!

See "General Data" on page no. 11.67.03

LIEBHERR

Datum
Edition
Date

11.98

Benennung/Description/Dénomination

Travel gear "FAT"

Typ
Model
Type

R 900 B ... R 944

Ab
From
Depuis

5001 / 6001

Blatt
Page
Feuille

11.67.07

Figure B

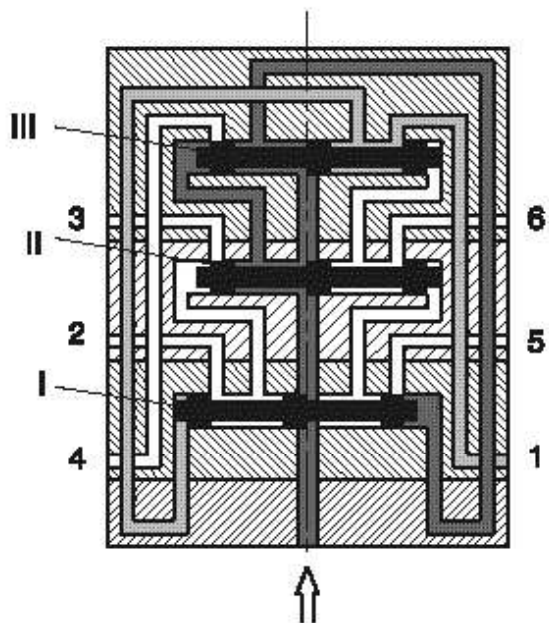


Figure B :

The piston (I) is shifted to the left and the lubricant is pressed from the left pressure range of the delivery piston to the outlet 1.

After that, the proportioning pistons (II) and (III) are progressively shifted and the lubricant is primed to the outlets 2 and 3.

Figure C

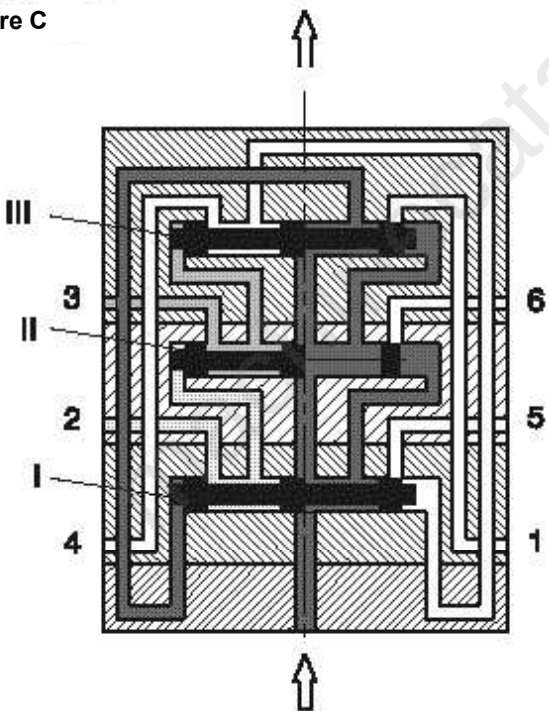


Figure C :

After the piston (III) has been shifted, the lubricant is directed to the left side of the delivery piston (I) (figure C) and primed from the right pressure range of the delivery piston to the outlet 4.

Subsequently, the delivery pistons (II) and (III) are shifted and the lubricant is pressed to the outlets 5 and 6.

After the delivery piston (III) has been shifted, the lubricant is once more directed to the right side of the delivery piston (figure A) and a new cycle of the progressive piston distributor is initiated. The described function is repeated as long as lubricant is fed to the progressive distributor.

Full Version Available

Liebherr R 900 B Excavator Service Manual

Liebherr R 900 B excavator service manual with repair procedures, adjustments and troubleshooting for the main systems. Instant PDF download.

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