

TECHNICAL INSTRUCTIONS	186 (e)
Revision	E

PUMPS AF - AK - AL - AM - AR
AK HP - AL HP - AM HP
Compensated bypass

INSTALLATION

OPERATION

MAINTENANCE

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blackmer

PUMPS
TYPE

AF AK AL AM AR

COMPENSATED
BY-PASS

TECHNICAL
FORM

N° 186

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OPERATION

Acting as a relief valve, the MOUVEX compensated by-pass protects pump and auxiliary equipment from damage due to excessive pressures that may be built up when the pump runs against some obstruction in the discharge piping. When discharge pressure reaches the pressure limit for which the by-pass is set, valve 823 opens and thus allows the liquid to be circulated from the discharge side back to the suction side.

Used when the pump has to work frequently against shut off discharge pipe, the compensated by-pass creates a very low overpressure, thus enabling the standard motor to meet economically the corresponding power increase.

As the by-pass protects the pump only, electric motors should be equipped with their own protection device.
(Unless they are powerful enough not to be endangered by overloads).

ORIENTATION

With the exception of the double by-pass developed to protect the pump in either direction of rotation, the standard by-pass protects the pump in one direction of rotation only.

Therefore make sure it is rightly installed by checking that cap 833 - or handwheel 835 - is on the suction side and reverse by-pass if necessary.

REVERSING

To reverse by-pass remove nuts 814 and rotate by-pass body by 180°. Check gaskets 877. Tighten nuts 814 taking care to keep by-pass on end.

PRESSURE SETTING

To set by-pass, remove 833.
To increase pressure setting, turn adjusting screw clockwise.
To reduce pressure setting, turn the screw counter clockwise.
Replace cap 833.
Pressure setting on by-pass fitted with handwheel is achieved the same way.

By-pass setting is satisfactory when the correct capacity is reached without motor stalling or excessive power consumption when discharge pipe is shut off. All by-pass are set that way in our factory according to data supplied by customers.

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PUMPS
TYPE

AF AK AL AM AR

COMPENSATED
BY-PASS

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FORM

N° 186

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DELIVERY ADJUSTMENT

When the pump does not deliver the proper flow rate, the trouble may come from by-pass spring not being adjusted at the correct pressure setting. After making sure that the rotation speed is correct tighten adjusting nut 834 - or handwheel 835 -.

Should the spring be completely tightened or the motor operation disturbed, without getting the delivery wanted, it would mean that the unit should operate at a higher pressure than the pressure for which it has been designed.

Please report to our Technical Department.

When reaching capacity, check by slowly shutting off the discharge pipe that the motor meets without stalling the power increase due to overpressure building up.

If necessary turn counterclockwise adjusting screw or handwheel.

POWER CONSUMPTION

A faulty by-pass setting may be the cause of a too high power consumption. Shut off discharge piping and turn counterclockwise adjusting screw or handwheel until a satisfactory consumption level is reached.

LIFTING DEVICE

Valve lifting devices are used to reduce pump delivery or to relieve engine driven unit at the start.

Lifting device allows return of liquid to the suction side without changing by-pass setting.

Lifting screw 844 actuated by handwheel 843 lifts valve 803 thus circulating liquid back to suction side.

Replace lifting screw into initial position when not in use.

P R E S S U R E R A N G E			
PUMP TYPE	SPRING	P R E S S U R E I N B A R - V A L V E C L O S E D - A T D E L I V E R Y	
		LOOSE	TIGHT
AF	1	1,2	1,7
	2	1,7	2,5
	3	2,4	3,5
	4	3,6	5,5
AK	1	0,9	1,4
	2	1,6	2,4
	3	2,1	3,7
	4	2,7	5,1
AL	1	0,9	1,2
	2	1,4	1,9
	3	1,5	2,7
	4	2,3	4,4
AM	1	0,9	1,6
	2	1,4	2,3
	3	1,7	3,3
	4	2,3	5,7
AR	1	0,6	1,1
	2	1,1	2,1
	3	1,8	3,2
	4	2,1	5,4

Letter C is stamped on by-pass body

KEY : ° = Assemblies and parts available for supply

REF.	N°	PART NAME
° 820		COMPENSATED BY-PASS, COMPLETE
812	1	By-pass plug
814	2	Fixing stud and nut (+ 815)
815	2	Stud washer
° 821	1	Compensated by-pass body (+ 856 + 857)
° 824	1	Spring n° See 'Pressure Range' table
° 833	1	By-pass cap
856*	6	Stud and nut *(in AM and AR only)
857*	6	Lock washer *(in AM and AR only)
° 876	2	Centering
° 898		ADJUSTING SCREW VALVE SET
822	1	Compensated seat
823	1	Valve
825	1	Spring guide
826	1	Adjusting screw
828	1	Adaptor nut
829	1	Lockwasher
830*	1	Stopper *(in AM and AR only)
831	1	Nut pin
834	1	Adjusting nut
837	1	Seal
° 899		BY-PASS GASKETS SET
807	1	Nut gasket
829	1	Lockwasher
831	1	Nut pin
832	1	Cap gasket
837	1	Seal
848	1	Plug gasket
877	2	Centering gasket



PUMPS	AF	AK	AL	AM	AR	PART
TYPE						LIST
TECHNICAL FORM						N° 186:

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REF.	N°	PART NAME
°		COMPENSATED BY-PASS WITH ADJUSTING HANDWHEEL The parts installed in this type of by-pass are similar to those of the simple standard by-pass except for parts 831, 833, 834 which are replaced by the following :
835	1	Adjusting handwheel (+ 836)
836	1	Handwheel pin
°		COMPENSATED BY-PASS WITH LIFTING DEVICE The parts for this type of by-pass are similar to those installation in the compensated by-pass except for part 812 which is replaced by unit 839a.
° 839a		LIFTING DEVICE, COMPLETE
843	1	Lifting handwheel
844	1	Lifting screw
845	1	Lifting screw nut
° 846	1	Lifting gasket
847	1	Handwheel pin
848	1	Plug gasket
°		DOUBLE COMPENSATED BY-PASS The parts are similar to those installation in the compensated by-pass except for part 821 which is replaced by unit 821a.
° 820		DOUBLE COMPENSATED BY-PASS, COMPLETE (except 814 - 815)
° 821	1	Double compensated by-pass body (+ 856 + 857)
		Nut 828 should be secured with studs in AM and AR type only.

NOTE - When ordering replacement parts, mention :

- the TYPE and SERIAL NUMBER of the pump (stamped on the pump plate)
- the Technical Form N° 186a
- the REFERENCE and NAME of the part required (remembering that only complete assemblies or individual parts whose index number is preceded by a circle (°) can be supplied).

