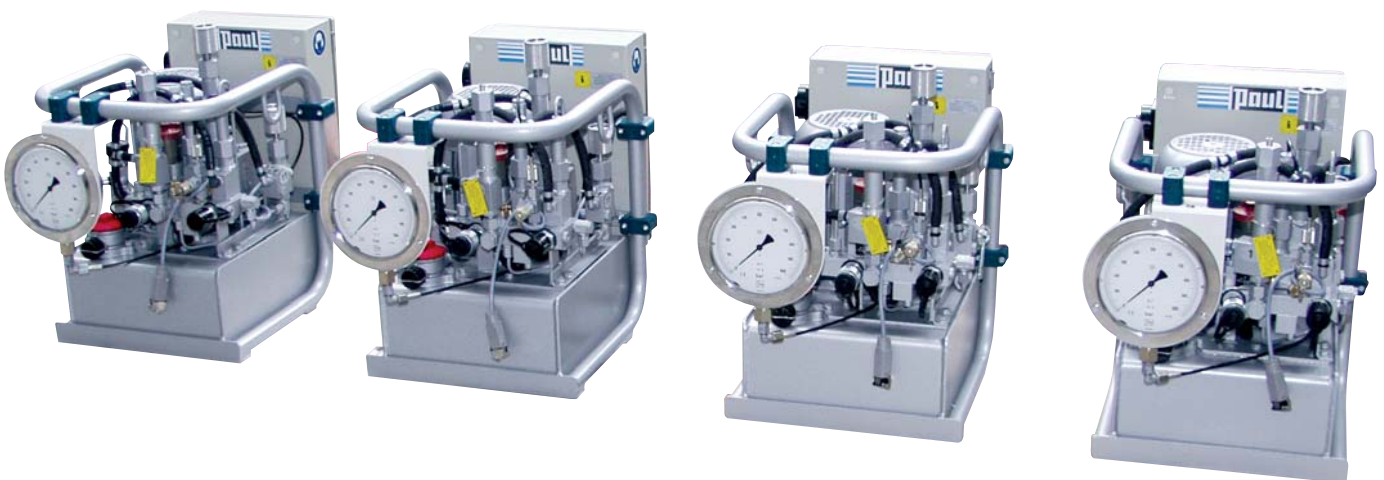


P R E S T R E S S E D
C O N C R E T E
T E C H N O L O G Y



Type NG15 Mini Pump Units



PAUL portable mini pump units are mainly used for the operation of the hydraulic equipment used in the production of pre-stressed concrete elements.

The pump units are normally equipped with a three-phase motor but can also be supplied with an AC motor, an air motor or a petrol engine.

Control is generally effected by means of a robust manually operated directional control valve that is characterized by low flow losses. Optional electrical controls are also available for any desired switching functions.

When used for the operation of stressing jacks, the pump unit is fitted with an adjust-able pressure relief valve with a

Portable Mini Pump Units - Basic Unit				
Order No.	77-122.00	77-148.00	77-159.00	77-146.00
Delivery flow (l/min.)	3.2	3.0	3.0	3.0
Number x Ø of radial pistons	3 x Ø9	3 x Ø8	3 x Ø8	3 x Ø8
Oil tank - useful capacity (l)	2.7	10	10	10
Control valve (Order No.)	-	-	4/3 (13-085.00) manual	4/4 (13-084.00) manual
Pressure relief valves ¹⁾				
Stressing "SP" (bar)	400	0-420	0-620	0-620
Wedge-seating "V" (bar)	-	-	-	150 (V+R)
Retraction "R" (bar)	-	-	200	-
Main safety valve	-	-	-	-
Precision drain valve	-	-	in "SP"	in "SP"
Hydraulic circuit diagram	77-211Bl.23	77-001Bl.76	77-211Bl.24	77-001Bl.55
Electric circuit diagram	-	-	-	-
Functions	SP	SP	SP, 0, R	SP, 0, V+R
Motor group	incl. 1.4 kW 3 x 400V, 50Hz	additional as table A	additional as table A	additional as table A
Pressure gauge ²⁾	Ø63, 600 bar	Ø100, 700 bar 10000 psi	Ø100, 700 bar Ø160, 600 bar (optionally 1000 bar)	Ø100, 700 bar Ø160, 600 bar (optionally 1000 bar)
Order No.	77-180.02	77-180.00	77-180.04 77-180.11	77-180.04 77-180.11
Hydraulic couplings PN 450 bar Order No. ³⁾	SP, V included	SP 13-069.31 V 13-069.14	SP, V, KM: M 16 x 2 77-134.34	SP, V, KM: M 16 x 2 77-134.34
Hydraulic couplings PN 700 bar Order No. ³⁾	-	-	SP, V, KM: M 16 x 2 77-134.35	SP, V, KM: M 16 x 2 77-134.35
Electric connection cable Order No. (optionally 32 A plug)	0.7 m included 16 A connector	0.7 m included 10 m 77-168.42 16 A connector	0.7 m included 10 m 77-168.42 16 A connector	0.7 m included 10 m 77-168.42 16 A connector
Approx. overall dim. (LxWxH) mm	300 x 217 x 490	420 x 390 x 480	420 x 390 x 480	420 x 390 x 480
Approx. weight without oil kg	22	36	44	54
Main application	Steel cutter (Mini stressing jack)	Mini stressing jack (Steel cutter)	Double-acting cylinders	2-hose stressing jack Twin stressing jack TENSA SM jack

Explanations

P	Pump, pump unit	1)	E.g. "0-420 bar" adjustable by turning a hand wheel, max. pressure 420 bar.
PN	Rated pressure		E.g. "200 bar", set to 200 bar, adjustable with a wrench.
SP	Stressing	2)	Pressure gauge class 0.6-1.6, glycerine filled, double scale PSI
0	Zero position, SP (stressing) line closed off	3)	Connection thread in valve block G 3/8
V	Wedge-seating (lock-off)	4)	Additional manual control
V+R	Wedge-seating and retraction		for steel cutter, 2.5 m cable, order no. 72-565.05
	For 2-hose stressing jacks: In the "V" function, SP is shut off, in the "R" function, SP is open.		for mini stressing jack, 2.5 m cable, order no. 72-547.00
R	Retraction		-see price list-
K	Gripping	5)	including remote control, 5 m
KM	Test pressure gauge, preferably use M 16x2	6)	including remote control, 15 m and maintained "R"
		7)	including remote control, 8 m



Caution!

Pressure relief valves must be set to suit the technical data of the equipment that is connected.

hand wheel to set the stressing pressure. Adjustable valves are also provided for the “retract” and “wedge-seating” functions and a precision drain valve facilitates releasing the stressing pressure. The electric motors are provided with motor protective switches with thermal overload trips, by means of which the motor is started and protected.

A radial-piston pump is flange mounted to the motor. A return-flow filter filters the oil flowing back into the tank.

A complete mini pump unit comprises a basic unit, a motor group, a pressure gauge, hydraulic couplings and a connection cable. These are assembled to suit the application concerned.

77-190.00	77-193.00	77-193.25	77-209.15	77-223.00	77-223.10
2,1 (up to 320 bar) / 0,9	3.0	3.0	5.3	3.0	3.0
1 x Ø 12 / 3 x Ø 0.6	3 x Ø8	3 x Ø8	5 x Ø8	3 x Ø8	5 x Ø6
10	10	10	10	10	10
5/4 (13-095.00) manual	5/4 (13-095.00) manual	3/2-solenoid valve electrically actuated	3/2-solenoid valve electrically actuated	3/2-solenoid valve electrically actuated	3/2-solenoid valve electrically actuated
0-700	0-700	0-700	0-420	0-700	0-700
0-500	0-500	0-500	-	-	-
200	200	200	-	200	0-500
-	-	-	-	-	in “P” 650
in “SP”	in “SP”	in “SP” (electrical)	-	in “SP”	-
77-235Bl.07	77-211Bl.25	-	77-213Bl.01	77-211Bl.43	77-213Bl.02
-	-	-	77-212Bl.98	77-211Bl.56	77-213Bl.03
SP, 0, V, R	SP, 0, V, R	SP, 0, V, R	SP, 0	SP, 0, R	SP, 0, V+R
additional as table A	additional as table A	77-123.40 ⁷⁾ 3 kW / 3 x 400V, 50Hz	incl. 3 kW ⁴⁾ 3 x 400V, 50Hz	77-123.39 ⁵⁾ 77-123.45 ⁶⁾ 3 kW / 3 x 400V, 50Hz	77-123.38 3 kW / 3 x 400V, 50Hz
Ø 100, 700 bar 10000 psi	Ø 100, 700 bar Ø 160, 600 bar (optionally 1000 bar)	Ø 100, 700 bar 10000 psi	Ø 100, 700 bar 10000 psi	Ø 100, 700 bar Ø 160, 600 bar (optionally 1000 bar)	Ø 100, 700 bar Ø 160, 600 bar (optionally 1000 bar)
77-180.04	77-180.04 77-180.11	77-180.04	77-180.04	77-180.04 77-180.11	77-180.04 77-180.11
-	SP, V, R, KM: M 16x2 77-134.37	SP, V, R, KM: M 16x2 77-134.37	SP 13-069.31	SP, V, KM: M 16x2 77-134.34	SP, V, KM: M 16x2 77-134.34
SP, V, R, KM: M 16x2 77-134.30	SP, V, R, KM: M 16x2 77-134.30	SP, V, R, KM: M 16x2 77-134.30	-	SP, V, KM: M 16x2 77-134.35	SP, V, KM: M 16x2 77-134.35
0,7 m included	0.7 m included 10 m 77-168.42	0.7 m included 10 m 77-168.42	0.7 m included 10 m 77-168.42	0,7 m included 10 m 77-168.42	0.7 m included 10 m 77-168.42
16 A connector	16 A connector	16 A connector	16 A connector	16 A connector	16 A connector
420x390x600 50	420x390x480 47	420x390x600 65	420x390x480 37	420x390x480 60	560x390x480 60
2-hose stressing jack Twin stressing jack TENZA SM jack CFRP stressing jacks	2-hose stressing jack Twin stressing jack TENZA SM jack CFRP stressing jacks	2-hose stressing jack Twin stressing jack TENZA SM jack CFRP stressing jacks	Mini stressing jack, electrically actuated Wedging device Steel cutter	Double-acting cylinders	2-hose stressing jack Twin stressing jack TENZA SM jack



Fig. 1: 77-209.15



Fig. 2: 77-193.00



Fig. 3: 77-223.10



Fig. 4: 77-122.00

Operating pressures

Depending on the radial pistons:

Continuous operating pressure 500 bar
Intermittent operating pressure 750 bar

Depending on the motor power and delivery flow:

Motor power (kW)	2.2	3.0	3.0	
Delivery flow (l/min.)	3.0	3.0	5.3	
Contin. operat. pressure (bar)	360	500	280	
Intermitt. operat. pressure (bar) 50% duty cycle, 10 min. cycles	550	750	420	
Max. operating pressure (bar) for not exceeding 10 sec.	700	750	500	











Fig. 5: Mini pump unit 77-223.00 with a 60 kN, 200 mm stroke stressing jack for initial force application to 1/2"

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Error and modification reserved.

Table A, Motor Groups ⁵⁾

Order No.	77-123.20	77-123.22	77-123.21	77-123.23	77-123.24 ¹⁾
Motor 100 % duty cycle Order No.	3.0 kW, 230/400 V, 3000 min ⁻¹ ³⁾ 24-314.10		3.6 kW, 230/460 V +/- 10%, 3000 min ⁻¹ ³⁾ 24-314.13		2.2 kW 24-337.06
Motor connection	 	 	 	 	Alternating current
Suitable for mains voltage (motor current)	3 x 400 V, 50 Hz (6.5 A) 3 x 400 V, 60 Hz (7.8 A) 3 x 460 V, 60 Hz (6.5 A)	3 x 230 V, 50 Hz (11.3 A) 3 x 230 V, 60 Hz (13.6 A) 3 x 230 V, 60 Hz (13.0 A) 3 x 260 V, 60 Hz (11.5 A)	3 x 400 V, 50 Hz (6.8 A) 3 x 400 V, 60 Hz (8.2 A) 3 x 460 V, 60 Hz (6.8 A) 3 x 480 V, 60 Hz (6.5 A)	3 x 230 V, 50 Hz (11.8 A) 3 x 230 V, 60 Hz (14.2 A) 3 x 230 V, 60 Hz (13.6 A) 3 x 260 V, 60 Hz (12.0 A)	1 x 230 V, 50 Hz (11.0 A)
Motor protective switch Order No.	6.5-10 A 24-263.15	10-16 A ²⁾ 24-265.05	6.5-10 A 24-263.15	10-16 A ²⁾ 24-265.05	10-16 A 24-265.05

- 1) Motor group 77-123.24 should only be used in exceptional cases. Starting under pressure is only possible up to max. 250-300 bar.
- 2) Switch insert also available separately (Order No. 24-265.12).
- 3) Output 3.0 kW at 50 Hz; 3.6 kW at 60 Hz.
- 4) Greater voltage fluctuations possible (+/- 10%); Chiefly for use in the USA.
- 5) Instead of the above electric motor groups a 2.6 kW air motor group, 3000 rpm can be supplied (Order-No. 77-123.26). Diesel or petrol engines are available on inquiry.