

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

Two-hose Stressing Jacks

30 kN, 60 kN

140 kN, 200 kN

Light-duty construction

180 kN, 250 kN

Heavy-duty construction



Fields of application

30 kN, 60 kN, 140 kN, 200 kN

These widely-proven stressing jacks are mainly used in the production of factory-made prestressed concrete elements. They are robust, elegant, light and equipped with a hydraulic wedge-seating device for anchoring the prestressing steel without pull-in loss.

The prestressing steel is gripped by means of an internal spring-operated stressing grip. Several designs are available for various applications.

In addition, these stressing jacks can also be used for post-tensioning on construction sites. They are chiefly connected to electrically operated large pump units as per brochure B 141.20/2 (77-043.00). They are also used with NG 50 units (B 131.19/1), as well as with mini pump units (B 131.11/1). They can also be connected to pump units for four-hose stressing jacks by means of special coupling pieces.

Functions

- Mechanical spring-operated **gripping** of the prestressing steel
- Hydraulic **stressing** operation
- Hydraulic **lock-off** of wedges within their tapered holes
- Hydraulic **retraction** of the stressing piston

Internal stressing grip 30 kN + 60 kN

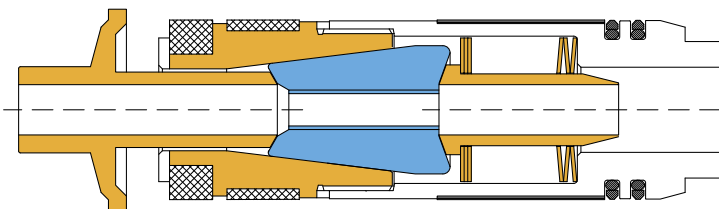


Fig. 1

Round jaw stressing grip type 34P

Standard design for solid round wire and 2 to 7-wire strands

Clamping range: 1.5–2 mm

Lubricating interval: approx. 200 stressing operations

Flat jaw stressing grip

Flat clamping jaws with flat teeth

- For solid round wire up to approx. 8 mm, large clamping range: 4 mm
- For stronger 2-wire and 3-wire strands, single wire diameter min. 2.8 mm, max. 60% of strand breaking load

Flat clamping jaws with round teeth

- For 2-wire and 3-wire strands up to approx. 3 x 3 mm, for stressing to over 60% of strand breaking load
- Clamping range: 0.5–1 mm

Lubricating interval: approx. 800 stressing operations

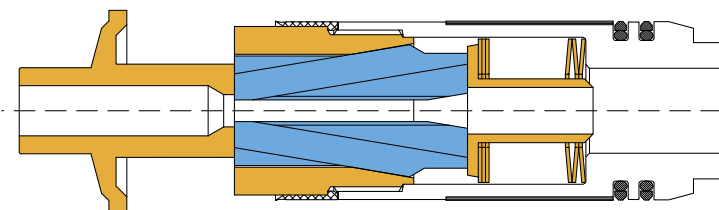


Fig. 2

Internal stressing grip 140 kN + 200 kN

Stressing grip type 38P

Standard design for solid round wire and strand up to approx. 1300 N/mm²

Clamping range: 1.5–2 mm

Suitable clamping jaws:

- Type 38P (for Ø6–16.5 mm round wire, i.e. 1/4"–0.6" strand) and
- Type 38PK (special design for post-tensioning, e.g. for 0.5" or 0.6" strand)

Lubricating interval: approx. 200 stressing operations

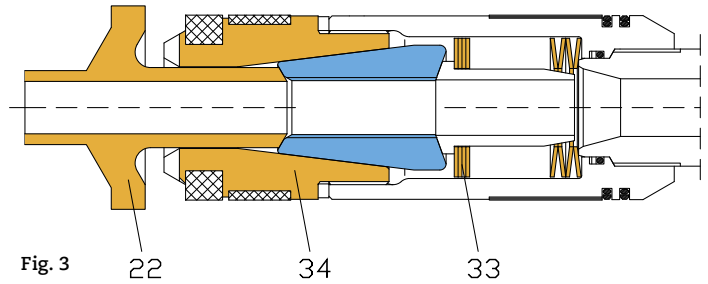


Fig. 3 22 34 33

Item 22: bore Ø 11/14/16.5 mm

Item 33: 28 off on type 38P clamping jaws,
25 off on type 38PK clamping jaws

Stressing grip type 38PL

Extended clamping jaws, mostly for up to 1/2" strand, for stressing to over 1300 N/mm²

Clamping range: 1.5 mm

Lubricating interval: approx. 200 stressing operations

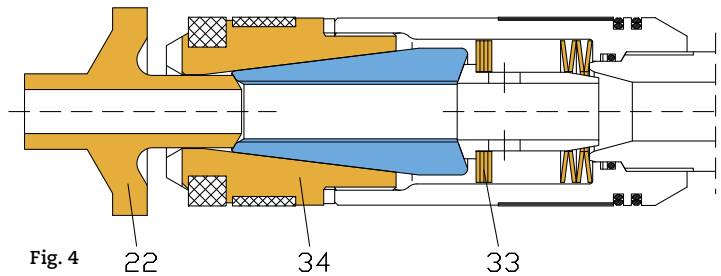


Fig. 4 22 34 33

Item 22: bore Ø 11/14 mm

Item 33: 25 off

Stressing grip type 39PM

Max. prestressing force 120 kN

For solid round wire and strand of Ø 6–16.5 mm, large clamping range: 4 mm

Lubricating interval: approx. 800–1000 stressing operations

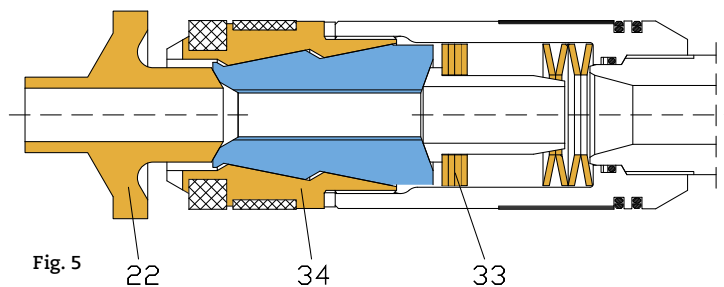


Fig. 5 22 34 33

Item 22: bore Ø 11/14/17 mm

Item 33: 23 off

Stressing head

30 kN and 60 kN stressing jacks are available with 70 mm and 180 mm long stressing heads with 33 mm outside diameter.

140 kN and 200 kN stressing jacks are available with 40 mm and 120 mm long stressing heads with 50 mm outside diameter.

All stressing heads are provided with the same M54x2 outside thread and are therefore interchangeable.

Fields of application 180 kN, 250 kN

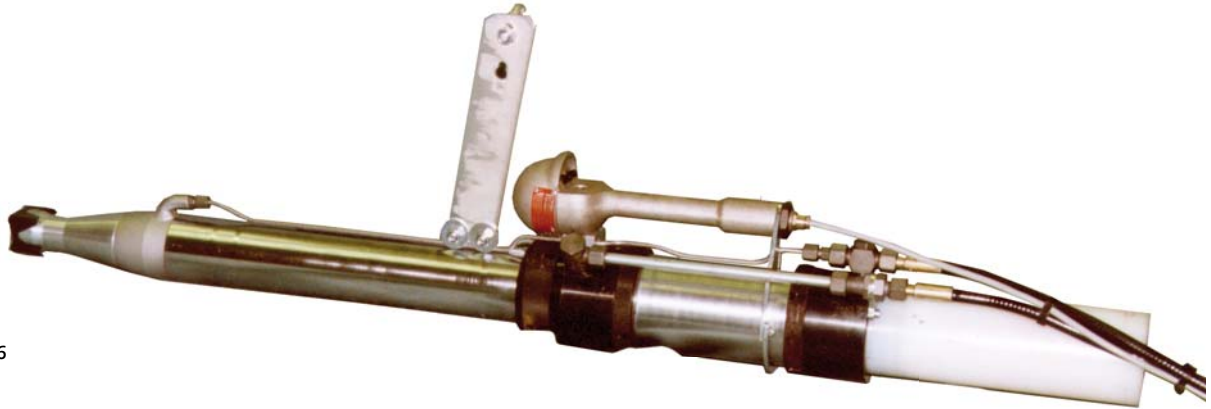


Fig. 6

The 180 kN and 250 kN two-hose stressing jacks are likewise mainly used for pretensioning in precast concrete factories. Of course, they can also be used for post-tensioning on construction sites.

These stressing jacks round up the two-hose stressing jack product range; so the 250 kN stressing jack can be used for both 0.6" strands and 0.7" strand. Both the 180 kN and the 250 kN stressing jacks can be 10% overloaded, so that

they can be used for stressing forces up to 200 kN and 280 kN respectively.

Instead of a built-in lock-off piston, as is used in the lighter two-hose stressing jacks, in this case a separate lock-off piston is mounted on the stressing cylinder, connected to the stressing cylinder by a hydraulic line.

The hydraulic function of these stressing jacks is the same as that of the lighter design, so that the same hydraulic pump units are used.

Several jack head designs and internal stressing grips can be selected for various applications.



Fig. 7 200 kN two-hose stressing jack, 500 mm stroke at Bayshore Corp., Cape Charles, VA / USA

Push-button control

The push-button control comprises the jack handle, electrical control and hydraulic hoses in different lengths for a nominal pressure of 450 (optional 700) bar.

There are also hydraulic hoses without handle and electrical control available. In this case the stressing jack is operated via a remote control or a hand-operated pump unit.

Internal stressing grip 180 kN

As for the 140 kN and 200 kN two-hose stressing jacks, type 38P, 38PL and 39PM stressing grips are used (see page 3).

As opposed to the light-duty design, a stressing force greater than 120 kN, specifically 180 kN, can be transmitted with stressing grip model 39PM.

Internal stressing grip 250 kN

Stressing grip type 45P/80

Robust standard construction for all normal solid round wires and strands for stresses over 1300 N/mm².

Clamping range: 1.5–2.0 mm

Lubricating interval: 200–250 stressing operations

Stressing grip type 45P/70

For large diameter round wires and strands, e.g. 0.7" strand, for stresses over 1300 N/mm².

Clamping range: 1.5–2.0 mm

Lubricating interval: 200–250 stressing operations

Stressing grip type 39PM

Maximum stressing force 220 kN

For round wires and strands

Large clamping range: 4 mm

Lubricating interval: approx. 800–1000 stressing operations

Stressing head

The stressing jacks are equipped with a stressing head with 50 mm outside diameter suiting the stressing grip used.

For the 180 kN and 250 kN stressing jacks there are hydraulically operated short heads approx. 120–130 mm in length and hydraulically operated long heads approx. 210–220 mm in length

available for selection.

There are mechanical short stressing heads with a length of approx. 65 mm for the 250 kN stressing jack and mechanically operated long heads approx. 140 mm in length for the 180 kN and 250 kN stressing jacks.

Head adapter

The head adapter is placed on the stressing head to suit the stressing jack to the anchor grip used.

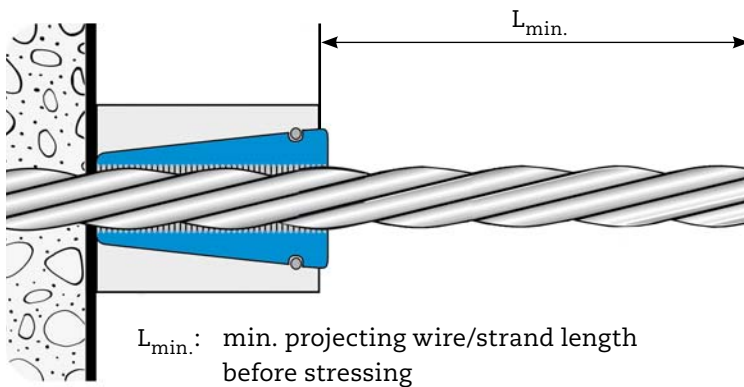
The outside diameter of the anchor grip centres

the stressing jack via the head adapter. Head adapters with inside diameters of 33 mm and 50 mm are contained in the brochure PAUL-Info 10–790 Bl. 5.

Technical Data

Stressing head length J (in mm)

Stressing head	30/60/140/200 kN	180 kN	250 kN
hydr. short	45 (nominal size: 40)	128	121
hydr. short	69 (nominal size: 70)	-	-
hydr. long	123 (nominal size: 120)	219	211
hydr. long	181 (nominal size: 180)	-	-
mech. short		-	65
mech. long		144	137



$L_{min.}$: min. projecting wire/strand length before stressing

$L_{min.}$ (in mm)	
30/60/180 kN	115 + J
140/200/250 kN	135 + J

Fig. 8

Stressing jack Type	Piston area cm^2	Stressing force without friction kN	Wedge-seating force kN	Retracting force kN	Theoretical piston speed in cm/s			
					8.4 l/min.		5.8 l/min.	
		at 450 bar	at 150 bar	at 150 bar	Stressing	Retraction	Stressing	Retraction
30 kN	8.29	37.30	15.82	12.43	16.8	16.8	11.66	11.66
60 kN	15.08	67.86	15.82	12.43	9.2	16.8	6.41	11.66
140 kN	32.83	147.73	42.70	25.39	4.2	8.2	2.94	5.70
200 kN	45.40	204.30	42.70	25.39	3.0	8.2	2.12	5.70
		at 450 bar*	at 200 bar	at 200 bar				
180 kN	40.00	180	29.46	51.26	3.4	5.4	2.41	3.77
250 kN	57.00	256.50	38.72	75.34	2.4	3.6	1.69	2.56

* Permissible max. stressing pressure on 180 kN and 250 kN: 500 bar

30/60/140/200 kN

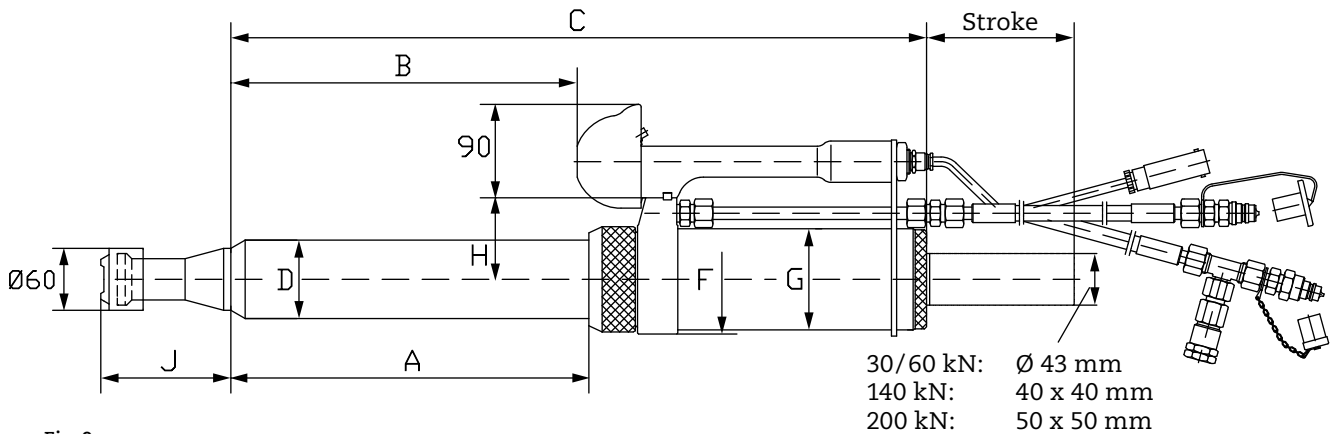


Fig. 9

180/250 kN

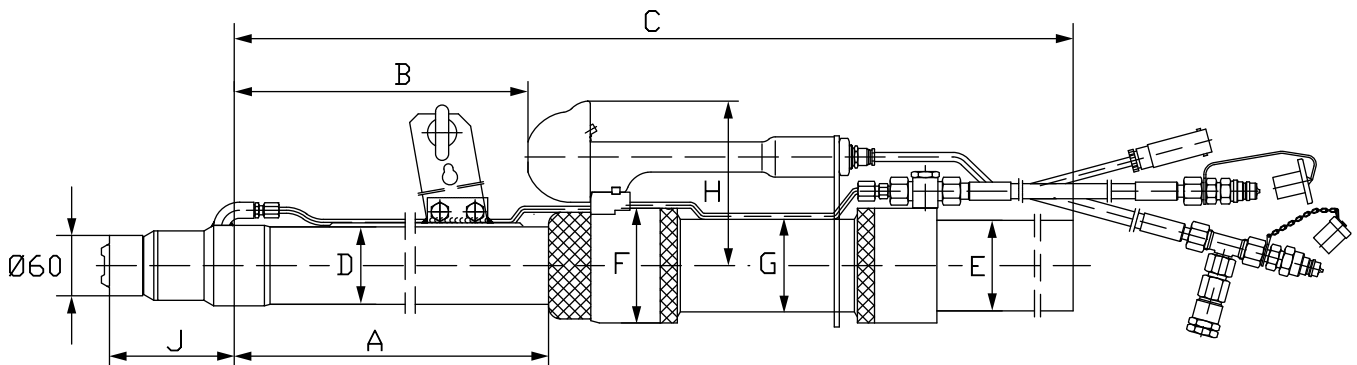


Fig. 10

Stressing jack Type	Stroke mm	External dimensions in mm								Internal dimensions in mm				Weight ¹⁾ kg
		A	B	C	D	E	F	G	H	Cyl. Ø	Piston rod Ø			
											Front Ø	Rear Ø	Center hole	
30 kN	200	332	310	655	66	-	80	60	71	50	38	-	14	17
30 kN	600	702	680	1455	66	-	80	60	71	50	38	-	14	27
60 kN	200	332	310	655	66	-	80	68	71	58	38	-	14	18
60 kN	400	532	510	1055	66	-	80	68	71	58	38	-	14	23
60 kN	600	702	680	1455	66	-	80	68	71	58	38	-	14	28
140 kN	200	347	335	697	76	-	106	87	79	75	38	-	18	24
200 kN	200	347	335	677	76	-	106	98	79	85	38	-	18	26
200 kN	500	617	605	1247	76	-	106	98	79	85	38	-	18	36
200 kN	800	917	905	1847	76	-	106	98	79	85	38	-	18	47
180 kN	250	409	387	1085	80	90	114	92	161	80	36	56	16.5	36
180 kN	500	659	637	1835	80	90	114	92	161	80	36	56	16.5	43
250 kN	250	440	426	1130	82	100	124	110	166	95	42	65	19	44
250 kN	350	540	526	1430	82	100	124	110	166	95	42	65	19	49
250 kN	500	690	676	1880	82	100	124	110	166	95	42	65	19	56

¹⁾ Weight complete with stressing head, internal stressing grip, push-button control and hydraulic oil

A complete stressing jack is composed of the following components:

30 kN + 60 kN

- Stressing cylinder
- Push-button control
- Complete stressing grip
- Stressing head
- Head adapter
- Clamping jaws

140 kN + 200 kN

- Stressing cylinder
- Push-button control
- Stressing grip components, item 22, 33, 34
- Stressing head
- Head adapter
- Clamping jaws

180 kN + 250 kN

- Stressing cylinder
- Push-button control
- Complete stressing grip
- Stressing head
- Head adapter
- Clamping jaws

Head adapter selection charts:
PAUL-Info 10-790 Bl. 5

Clamping jaw selection charts:
PAUL-Info 83-601 Bl. 1
PAUL-Info 10-790 Bl. 15
PAUL-Info B 241.14/1
PAUL-Info B 141.22/1
etc.

Re type 39PM clamping jaws:

When stressing 3/8" and 1/2" strand with the same clamping jaw set, the prestressing steel stress must be limited to 1200 N/mm².

Order numbers: see price list