

3801 (E)

3802 (E)

3811 (E)

3812 (E)

3813 (E)

3814 (E)

RIDGID®

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RIDGE TOOL COMPANY

GB

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Operating Instructions



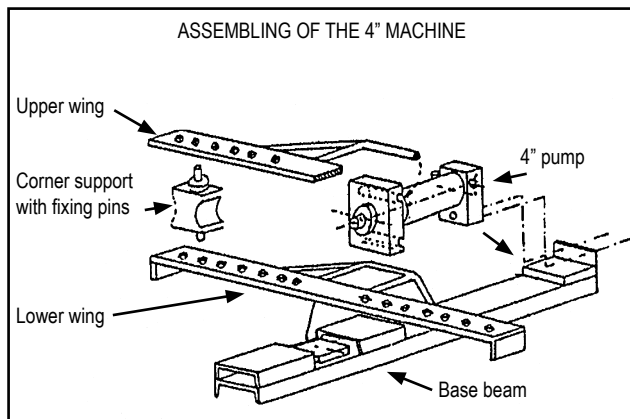
WARNING! Read these instructions and the accompanying safety booklet carefully before using this equipment. If you are uncertain about any aspect of using this tool, contact your **RIDGID** distributor for more information.

Failure to understand and follow all instructions may result in electric shock, fire, and/or serious personal injury.

SAVE THESE INSTRUCTIONS!

Assembling

1. a. 1 1/4", 2" and 3" machines.
 - Place the bending frame with its supports on the floor and slip the ring over the front of the pump cylinder.
 - Place the U-bracket through the holes in the ring block of the bending frame. The pump cylinder and pipe bending frame are now fixed in the correct position.
1. b. 4" machine.
 - Place the base beam on the floor.
 - Place the lower wing on the base beam.
 - Place the bending-pump on the base beam, hook the lower wing into the pump and secure the pump at the rear with two M10 bolts.
 - Place the corner-supports and where applicable the bending-former that you will be using, on the lower wing.
 - Place the upper wing on the corner-supports and hook it into the pump.
 - Insert the fixing-pins through the wings and the corner-supports.



2. Mount a bending former according to the diameter of the pipe to be bent, on the ram top. The corner supports must be placed between, or on the bending frame. They are fastened by means of the fixing-pins. The holes in the frame allow the corner supports to be adjusted to the desired outside diameters. The holes are marked accordingly. Ensure that the fixing pins for corner supports are properly fitted through both wings or through the bending frame to prevent damage.

Bending

1. The filling cap is pierced for air release. Whenever the bending machine is transported this filling cap must be tightly closed, but released a little when in use.
2. Before bending, the pipe should be slightly greased. The pipe is then slipped between the corner supports and bending former. The relief spindle must be locked tightly. By moving the handle up and down the pump is put into operation. The ram moves out and the pipe is bent. The bending operation should be continued until the desired curve is reached but not further than the bending former curve. It should be remembered that the pipe will spring back a little according to the quality of the pipe. This must be established by experience.
3. As soon as the pipe reaches its required shape, loosen the relief spindle and the ram withdraws automatically. Disconnect one of the corner supports and the pipe can be removed. The models equipped with an open frame have the advantage that the bent tube can be removed easier, especially long pieces of tubes with several bends, thus saving a lot of time.
4. If a bend has been bent too far this can be corrected by means of the straightener. The ram must be reversed and the tube turned over against the corner supports. The straightener is placed on the ram top and the bend can now be pushed back to its desired shape. On the 1 1/4" bending machine a bend of 90° cannot normally be corrected. This also applies to the 3" machine for 2 1/2" and 3", for the 4" machine for 3" and 4" pipes.
5. For 3" and 4" model only.
 - When bending 2 1/2", 3" and 4" pipes an extension piston should be applied to the ram when the tube has been bent past 75°. The stroke of the ram is not enough to bend a 90° bend in one operation.
6. 1 1/4", 2", 3", 4" electro-hydraulic pipe bending machines.
 - The electro-hydraulic pipe bending machines are equipped with a single phase 115 V, 220 V, AC or 380 V 3 phase motor. The motor has a special safety switch. Once the motor is running the movement of the ram is controlled by means of a relief spindle which can be either opened or closed. The motor does not have to be switched off. The machine also features a pressure safety valve. This is factory set so that heavy wall pipe (steam pipe) can be bent without any problem. The pressure safety valve is situated in the pump housing and can only be set by means of a manometer.

Bending of Hairpin Shapes of 180°

For this, additional accessories are required which can be delivered on request.

Assembling

1. See under assembling bending machine.
2. The bending former (180°) according to the size of the pipe to be bent, is placed on the ram. Next, the plates (spare frames) with 3 rolls (diabolos) are adjusted between or in the frame. The fixing-pins for corner supports must be put in the holes 1 1/4" through the center lock; the removable diabolos must be removed and the pipe to be bent run through. The pipe must now touch the center diabolos with one side and the 180° bending form with the other side. Bending can now be started.

Bending

1. See under bending.
2. If the bending is more than 90°, the ram must be reversed, by releasing the relief spindle. Adjust the removable diabolos and bend up to 180°. To remove the bent pipe, see Bending.

Maintenance

The bender is delivered with a filled oil container. However, the oil level must be checked regularly as otherwise the stroke of the ram will become too short. Oil must always be level with the bottom of the filling cap. If oil needs to be added, use only hydraulic oil.

Caution

1. Ensure that corner supports are always adjusted symmetrically in the holes, according to the size of the pipe to be bent. If not placed properly, the ram instead of the pipe may be bent and the machine badly damaged.
2. Also take care that fixing-pins for corner supports are properly fitted through the holes in the upper and under wing of the bending frame, and all the way through on the open bending frame.
3. The ram must not be moved out beyond the groove mark.

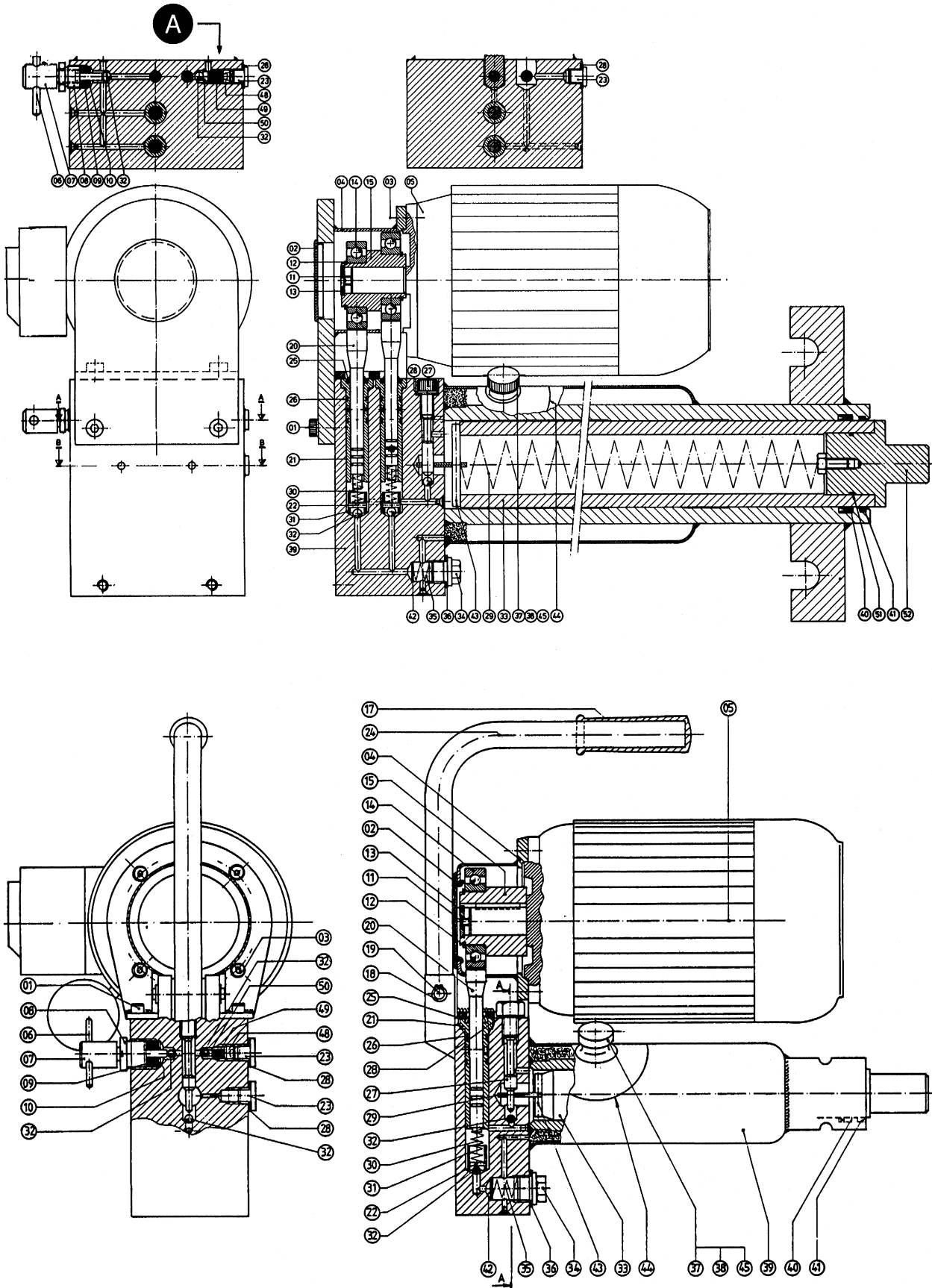
Faults which may occur and how they can be corrected

Numbers in brackets refer to electric machines.

FAULT	POSSIBLE CAUSE	HOW TO CORRECT
1. The ram (33) will not move out far enough.	a. The filling cap (37) is not loosened sufficiently.	a. Release filling cap (37) about 1 or 1 1/2 turns. When removing the machine take care that filling cap is closed tightly.
	b. The oil container is not filled sufficiently.	b. Refill oil container until oil is level with bottom of filling cap. The ram should not be pumped out beyond the groove mark on the ram.
	c. Air vent in filling cap (37) is blocked.	c. Clean air vent hole.
2. The ram (33) will not move out at all.	a. The relief spindle (7) is not tightened enough.	a. Tighten the relief spindle.
	b. Ball (32) does not lock when pressing; possibly dirt on ball cone.	b1. Clean ball cone under ball (32). Eventually knock ball on cone for tighter fit. b2. Please contact supplier.
	c. Filter (42) and/or oil supply channel is clogged.	c. Remove lock pin (34). Clean filter and oil supply channel.
3. The ram (33) gives only little or no pressure at all.	a. Relief spindle (7) is not tightened.	a. Tighten the relief spindle.
	b. Because of dirt between cone and ball (32) of the relief spindle (7), oil is leaking back to the oil container.	b. Detach relief spindle (7), ring nut (8), packing (9) and bottom rings (10). Clean cone for ball (31). See 2b1. (If necessary contact supplier).
	c. Ball (32) does not lock because of dirty cone.	c. Detach safety screw for pull spring (27) and pull out the ram about 2 cm (1"). See 2b1.
	d. Packing under safety screw for pull spring (27) is leaking.	d. Tighten this screw and if necessary replace joint ring (28).
	e. Packing (40) is leaking.	e. Replace packing. Take care that it is properly locked. For detaching ram see 3c.
	f. Press packing (46) is leaking.	f. Replace packing.
4. The pump handle (16) will not come up again.	a. Press spring (30) is damaged.	a. Replace press spring.
5. The ram (33) will not reverse when relief spindle is loosened.	a. Pull spring (29) is damaged.	a. Replace pull spring. Please contact supplier.
	b. Ram (33) is bent. This can only happen because of unsymmetrically placed corner supports.	b. Please contact supplier.
6. Oil leaks from press ram (20).	a. Scraper packing (41) is leaking.	a. Replace scraper packing. If necessary also replace packing (46).

	Pos. no.	Model 3801/3811	QTY	Model 3802/3812	QTY	Model 3813	QTY	Model 3814	QTY	Model 3801 E	QTY	Model 3802 E 3812 E	QTY	Model 3813 E	QTY	Model 3814 E	QTY	Pos. no.
Screw	01									21256	4	21256	4	21256	4	28256	4	01
Covering cap	02									21266	1	21266	1	21266	1	21266	1	02
Screw	03									21276	4	21276	4	21276	4	21276	4	03
Driving case	04									21286	1	21286	1	21286	1	28736	1	04
Electro motor	05									See table	1	See table	1	See table	1	See table	1	05
Notch pin for relief spindle	06	21126	1	21126	1	21126	1	21126	1	21126	1	21126	1	21126	1	21126	1	06
Relief spindle	07	21116	1	21116	1	21116	1	21116	1	21116	1	21116	1	21116	1	21116	1	07
Ringnut for relief spindle	08	21106	1	21106	1	21106	1	21106	1	21106	1	21106	1	21106	1	21106	1	08
Rubber packing	09*		1		1		1		1		1		1		1		1	09
Copper bottom ring	10*		2		2		2		2		2		2		2		2	10
Screw	11									21376	1	21376	2	21376	2	21376	2	11
Safety ring	12									21386	1	21386	1	21386	1	21386	1	12
Lock nut	13									21396	1	21396	1	21396	1	21396	1	13
Ball bearing	14									21406	1	21406	1	21406	1	21406	1	14
Excentric	15									21416	1	21416	1	21416	1	28606	1	15
Hand lever	16	20846	1	20846	1	20846	1	28726	1									16
Handle	17*		1		1		1		1		1		1					17
Safety ring	18	21076	2	21076	2	21076	2	28746	2	21076	2	21076	2	21976	2			18
Notch pin	19	21066	1	21066	1	21066	1	28516	1	21066	1	21066	1	21066	1			19
Press ram	20	20866	1	20866	1	20866	1	28596	1	21466	1	21466	1	21466	1	21466	2	20
Press ram housing	21									21476	1	21476	1	21476	1	21476	2	21
Notch pin dia 4 x16	22									21486	1	21486	1	21486	1	21486	2	22
Terminal plug G 1/4"	23	20926	1	20926	1	20926	1	20926	1	20926	1	20926	1	20926	1	20926	2	23
Carrying yoke	24									21426	1	21426	1	21426	1			24
Scraper packing for press ram	25*		1		1		1		1		1		1					25
O-Ring	26*										2		2				4	26
Safety screw for pull spring	27	20916	1	20916	1	20916	1	28636	1	21526	1	21526	1	21526	1	28866	2	27
Joint ring PP 45 B	28*		2		2		2		2		3		3				4	28
Pull spring 1 1/4"	29	21166	1	21176	1	21176	1	28496	1	21166	1	21176	1	21176	1	28496	1	29
Push spring	30	20896	1	20896	1	20896	1	28476	1	21536	1	21536	1	21536	1	21536	2	30
Ball cone	31									21546	1	21546	1	21546	1	21546	2	31
Ball 5/16"	32*		3		3		3		3		4		4				6	32
Ram 1 1/4"	33	21186	1	21196	1	21206	1	28586	1	21186	1	21196	1	21206	1	28586	1	33
Plug G 1/2"	34	21026	1	21026	1	21126	1	21026	1	21026	1	21026	1	21026	1	21026	1	34
Push spring for filter	35	21576	1	21576	1	21576	1	21576	1	21576	1	21576	1	21576	1	21576	1	35
Joint ring PP 45 D	36*		1		1		1		1		1		1				1	36
Filling cap	37	20946	1	20946	1	20946	1	20946	1	20946	1	20946	1	20946	1	20946	1	37
Cork packing for filling cap	38*		1		1		1		1		1		1				1	38
Pump body	39		1		1		1		1		1		1				1	39
Packing 1 1/4"	40*	20996	1	21006	1	21016	1	28466	1	20996	1	21006	1	21016	1	28466	1	40
Scraper packing	41*		1		1		1		1		1		1				1	41
Filter	42*		1		1		1		1		1		1				1	42
Pin for pull spring	43	21136	1	21146	1	21156	1	28556	1	21136	1	21146	1	21156	1	28556	1	43
Disc	44	21246	1	21246	1	21246	1	21246	1	21246	1	21246	1	21246	1	21246	1	44
Hydraulic fluid (2,5 l)	45	14061	1	14061	1	14061	1	14061	1	14061	1	14061	1	14061	1	14061	1	45
Press packing	46*		1		1		1		1									46
Pin for press packing	47	20886	1	20866	1	20866	1	20886	1									47
Plug for safety valve	48									28576	1	28576	1	28576	1	28576	1	48
Spring	49									28486	24	28486	24	28486	24	28486	24	49
Ballcone	50									28626	1	28626	1	28626	1	28626	1	50
O-ring	51*							28426	1							28426	1	51
Plug for ram 4"	52							28616	1							28616	1	52
Seal kits (includes items with*)		21906		21916		21926		33226		21936		21946		21956		33236		

Motor	110V 1Ø	28276	Capacitor	230V = 40µ F	34306	Switch	110V	} 1Ø	57786
	230V 1Ø	21316		110V = 110µ F	34316		230V		57776
	400V 3Ø	21306					400V		57766



Accessories

	3802	3812	3813
180° Attachment	22366	22346	22356
40 x 8 mm Bar attachment	22446	22436	22456

See bending formers

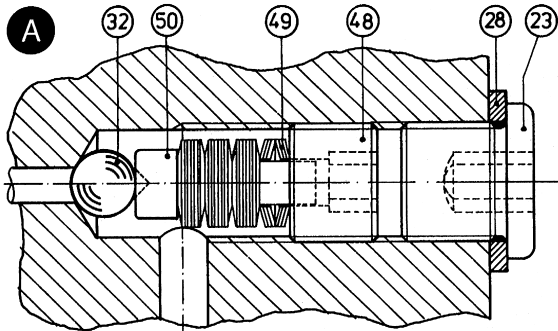
See below for formers

	3801 E / 3811 E2	3802 E / 12 E / 13 E	3814 E
Stroke adjustment	220 V	26896	29126
	360 V	26906	29116
	115 V	35116	35726

Radius (mm)	60	70	80	90	100	110	120	130
40 x 8 mm Bar formers	22466	22476	22486	22496	22506	22516	22526	22536

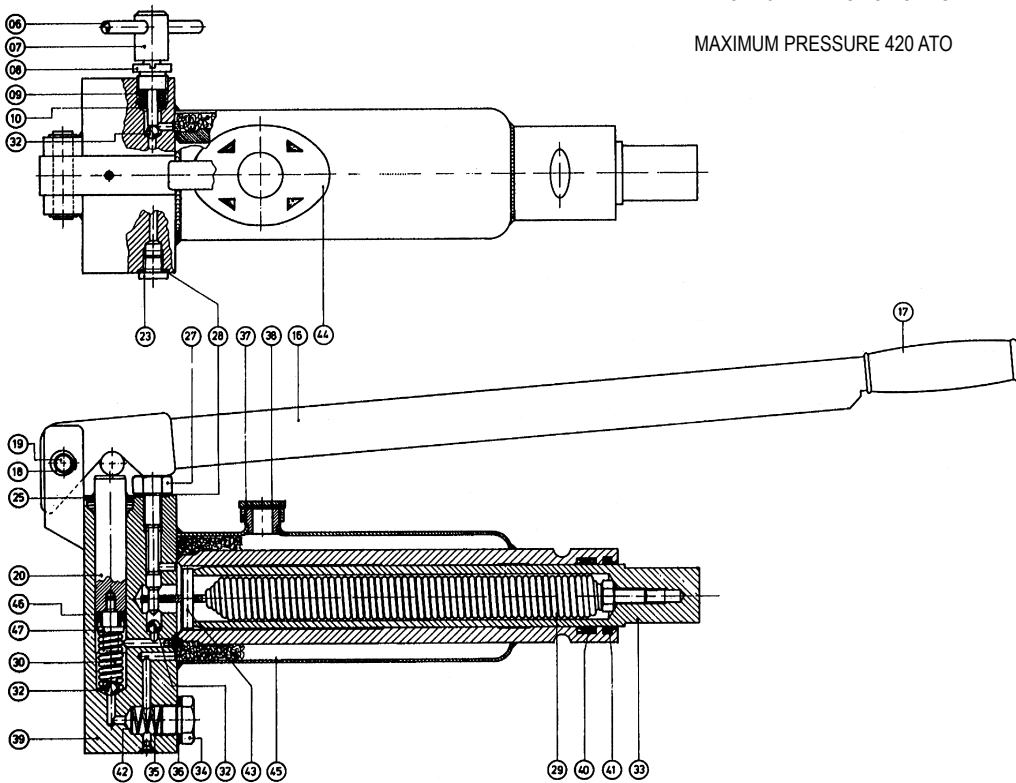
Bending Formers

Nominal Size	Outside \varnothing mm	Standard formers		Boiler tube		180 Deg. bends	
		Radius	Cat. No.	Radius	Cat. No.	Radius	Cat. No.
1/4	13.5	60	28286				
3/8	17.2	45	21806				
18	18	60	27816				
20	20	70	27826				
1/2	21.3	50	21816	110	22236	130	22386
22	22	80	27836				
25	25	115	22116				
3/4"	26.9	65	21826	137	22246	130	22396
28	28	70	35066				
30	30	140	22126				
32	32	140	22136				
1	33.7	100	21836	190	22256	130	22406
35	35	100	35076				
38	38	170	22146				
40	40	125	35086				
42	42	125	35096				
1 1/4"	42.4	130	21846	220	22266	130	22416
44.5	44.5	190	22156				
1 1/2"	48.3	160	21856	220	22166	140	22426
50	50	140	35106				
51	51	220	22176				
57	57	250	22186				
2	60.3	220	21866	270	22196	190	28766
63.5	63.5	270	22206				
70	70	315	22216				
2 1/2"	76.1	320	21876	420	22226		
3	88.9	380	21886				
4	114.3	600	28756				



DETAIL OF MAXIMUM PRESSURE VALVE ELECTRO-HYDRAULIC PUMPS

MAXIMUM PRESSURE 420 ATO



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