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WORK HOLDING RANGE

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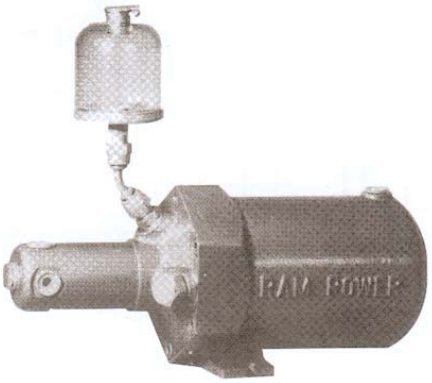
WORK HOLDING RANGE

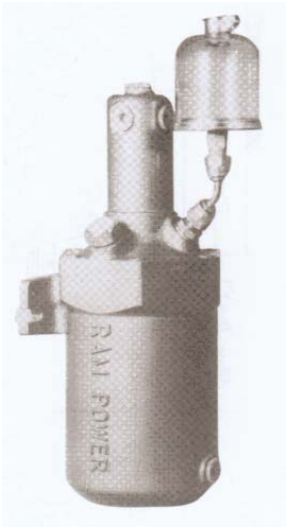
METRIC MICRO BOOSTER

Suitable for horizontal or vertical mounting. Available in spring return version only. With two alternative boost ratios.

The Metric Micro Booster has improved flow to and from the recuperator port.



Horizontal Mounting



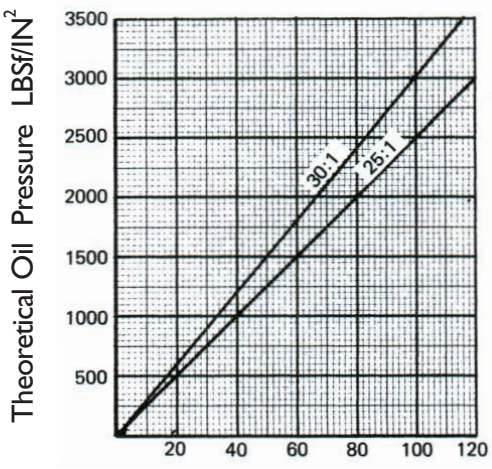
Vertical Mounting

Maximum Air Pressure	8.4kgf/cm² (120lbf/in²)
Weight	4.42kg (9lb 12oz)
Air Cylinder Stroke	107mm (4.21¨)
Maximum Oil Pressure	250 Bar (3600lbf/in²)

Model No.	Intensification	Max. Oil Output
100-20	25/1	31.5cm³ (1.92in³)
100-18	30/1	25.4cm³ (1.55in³)

See page 3 for more details

Theoretical Performance



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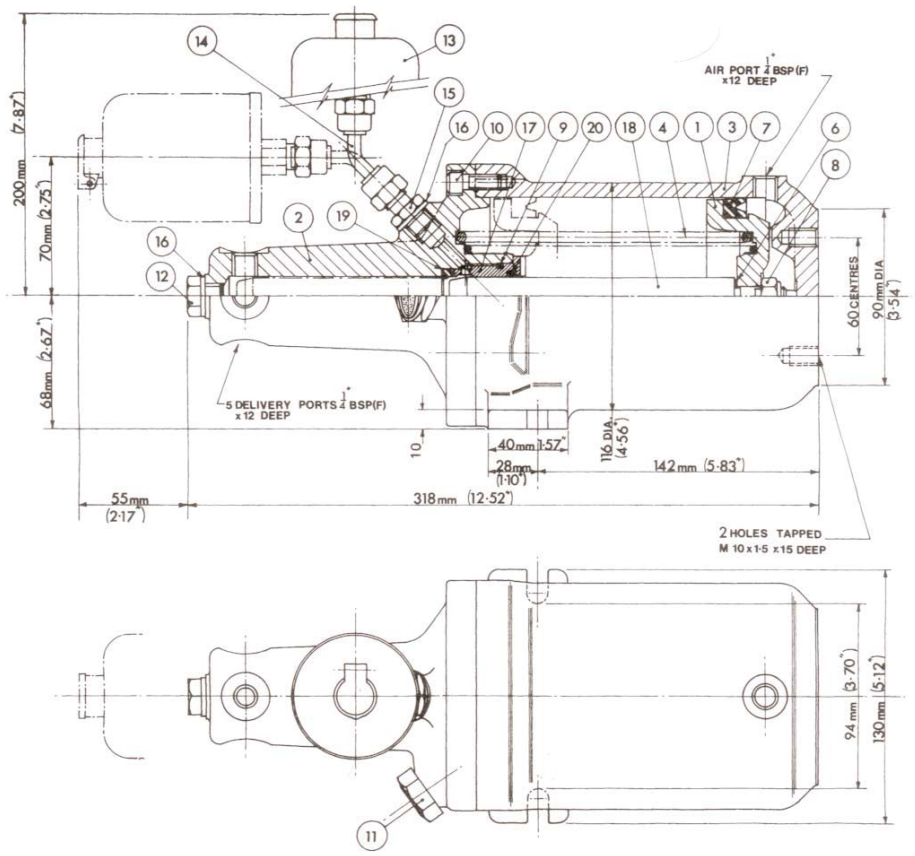
WORK HOLDING RANGE

METRIC MICRO BOOSTER



Item No.	Description	Part No.
1	Piston	SP 100-18-1
2	Head Casting	SP 100-18-2
3	Pneumatic Cylinder Casting	SP 100-18-3
4	Return Spring (Outer)	SP 100-18-4
5	Return Spring (Inner)	SP 100-18-5
6	Piston Gasket	SP 100-18-6
7	Piston Seal	SP 100-18-7
8	Self Locking Nut	SP 100-18-8
9	'O' Ring (Gland Bush-Head)	SP 100-18-9
10	Socket Head Screw	SP 100-18-10
11	1/4" Breather Plug Assy.	SP 100-18-11
12	Std 1/4" B.S.P. Plug	SP 100-18-12

Item No.	Description	Part No.
13	Reservoir Bottle Assy.	SP 100-18-13
14	45" Elbow Adaptor	SP 100-18-14
15	1/4" B.S.P. Equal Union	SP 100-18-15
16	Dowty Washer 1/4" B.S.P.	SP 100-18-16
17	Gland Bush	SP 100-18-17 SP 100-20-17
18	Piston Rod	SP 100-18-18 SP 100-20-18
19	Gland Seal	SP 100-18-19 SP 100-20-19
20	'O' Ring (Gland Bush Piston)	SP 100-18-20 SP 100-18-20

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WORK HOLDING RANGE

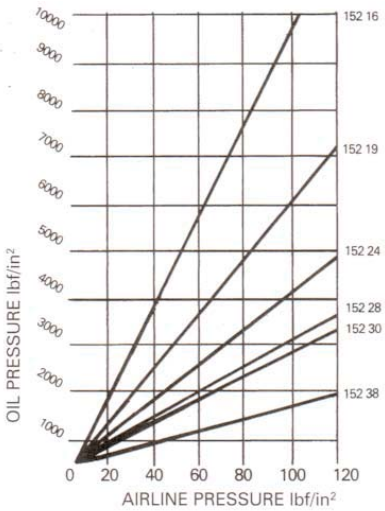
AIRO-MATIC MINOR BOOSTER

Suitable for vertical mounting only and available only in spring returned version.

Hydraulic ports can be rotated, relative to air inlet.

To improve output the recuperator port can be pressure fed up to 1000lbf/in² to enable clamps or tools to be brought into contact with the work prior to booster applying the final pressure.

Theoretical Performance



Maximum Air Pressure (except 152 16)	8.4 kgf/cm² (120lbf/in²)
Maximum Air Pressure (152 16 only)	7 kgf/cm² (100lbf/in²)
Maximum Oil Pressure	648 kgf/cm² (9216lbf/in²)
Air Cylinder Stroke	123.8mm (4.875")
Weight	10kg (22lb)

Model No.	Intensification	Max. Oil Output	Colour Code
152 16	92.2/1	24.6cc 1.5in³	Black
152 19	64.0/1	35.2cc 2.15in³	White
152 24	41.0/1	55.1cc 3.36in³	Yellow
152 28	29.6/1	76.2cc 4.65in³	Blue
152 30	25.5/1	88.5cc 5.4in³	Red
152 38	16.0/1	141.3cc 8.62in³	Green

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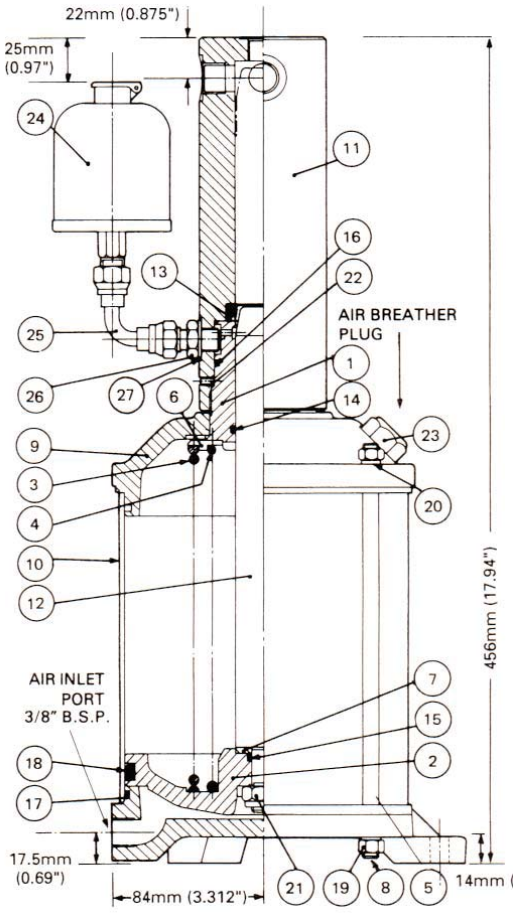
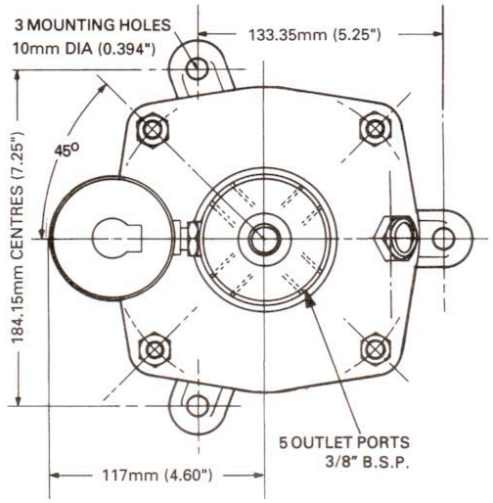
WORK HOLDING RANGE

AIRO-MATIC MINOR BOOSTER





Item No.	Description	Part No.
1	Gland Bush	SP 152-16-1 SP 152-19-1 SP 152-24-1 SP 152-28-1 SP 152-30-1 SP 152-38-1
2	Piston Head	SP 152-38-2
3	Spring Outer	SP 152-38-3
4	Spring Inner	SP 152-38-4
5	Tie Rod	SP 152-38-5
6	Spring Washer	SP 152-38-6
7	Piston Washer	SP 152-38-7
8	Base Casting	SP 152-38-8
9	Head Casting	SP 152-38-9
10	Pneumatic Cylinder	SP 152-38-10
11	Hydraulic Cylinder	SP 152-16-11 SP 152-19-11 SP 152-24-11 SP 152-28-11 SP 152-30-11 SP 152-38-11
12	Piston Rod	SP 152-16-12 SP 152-19-12 SP 152-24-12 SP 152-28-12 SP 152-30-12 SP 152-38-12
13	Gland Seal	SP 152-16-13 SP 152-19-13 SP 152-24-13 SP 152-28-13 SP 152-30-13 SP 152-38-13
14	"O" Ring	SP 152-16-14 SP 152-19-14 SP 152-24-14 SP 152-28-14 SP 152-30-14 SP 152-38-14
15	"O" Ring	SP 152-38-15
16	"O" Ring	SP 152-38-16
17	"O" Ring	SP 152-38-17
18	"O" Ring	SP 152-38-18
19	Nut	SP 152-38-19
20	Washer	SP 152-38-20
21	Lock Nut	SP 152-38-21
22	Lock Screw	SP 152-38-22
23	Air Breather	SP 152-38-23
24	Reservior Assembly	SP 152-38-24
25	Elbow	SP 152-38-25
26	Adaptor	SP 152-38-26
27	Sealing Washer	SP 152-38-27

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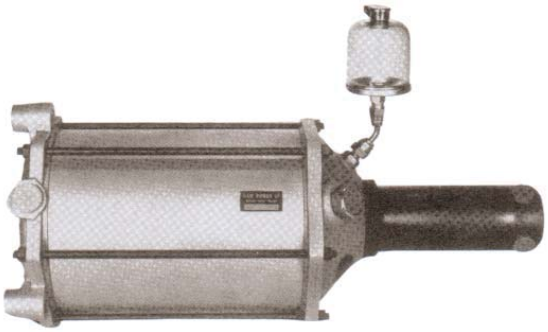
WORK HOLDING RANGE

AIRO-MATIC BOOSTER

Suitable for horizontal or vertical mounting available in either spring or air returned versions with five alternative boost ratios. Hydraulic ports can be rotated, relative to air inlet (slacken ring nut and rotate clockwise).

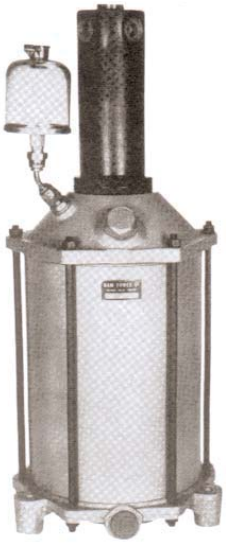
The Airo-Matic Booster has improved flow to and from the recuperator port.

To improve output the recuperator port can be pressure fed up to 1000lbf/in² to enable clamps or tools to be brought into contact with the work prior to the booster applying the final pressure.



Horizontal Mounting

see page 7 for mounting details



Vertical Mounting

Model No.	Intensification	Max. Oil Output	Colour Code
178 22	64.0/1	59cc 3.6in³	White
178 25	49.0/1	77cc 4.7in³	Yellow
178 32	31.4/1	120cc 7.3in³	Blue
178 38	21.8/1	174cc 10.6in³	Red
178 51	12.2/1	308cc 18.8in³	Green

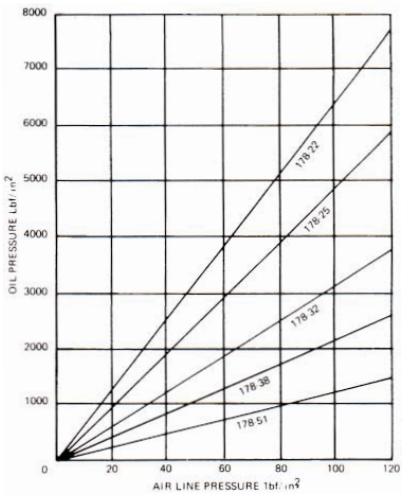
Maximum Air Pressure	8.4 kgf/cm² (120lbf/in²)
Maximum Oil Pressure	579.5 kgf/cm² (7680lbf/in²)
Air Cylinder Stroke	152.4mm (6")
Weight	18.4kg (40lb 6oz)

Ordering

State model No. and whether required spring or air returned. Unless otherwise stated boosters will be supplied spring returned.

See page 7 for mounting details

Theoretical Performance



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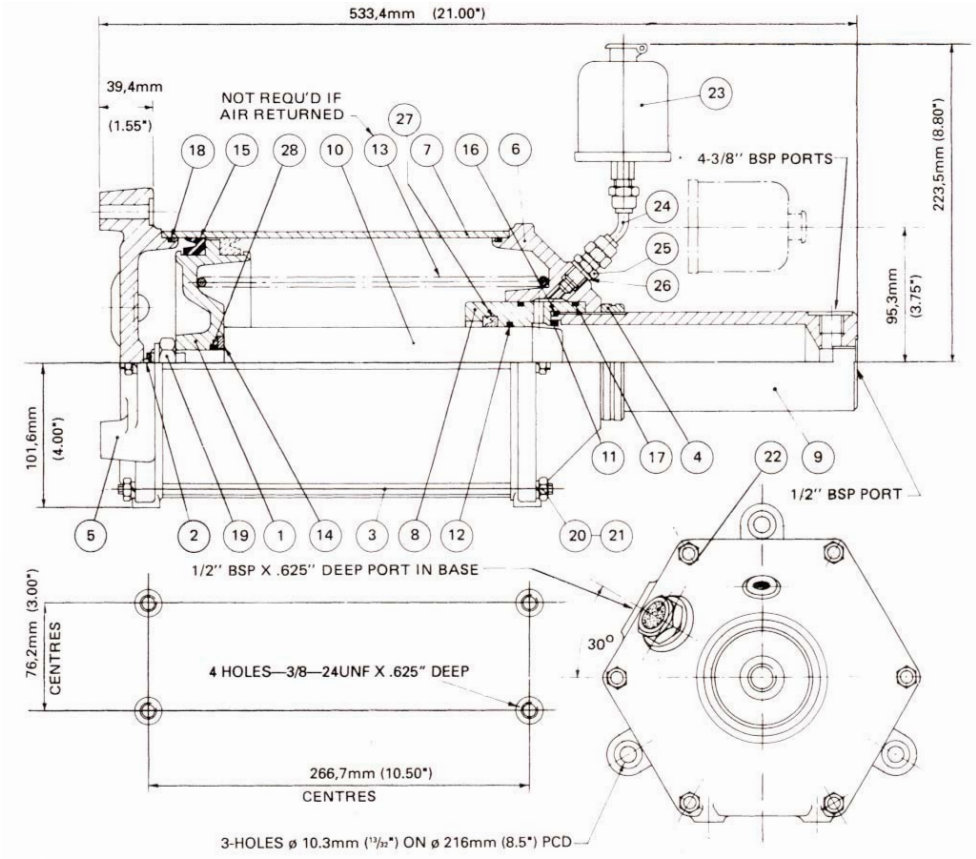
WORK HOLDING RANGE

AIRO-MATIC BOOSTER



Item No.	Description	Part No.
1	Piston Head	SP 178-51-1
2	Nylon Slug	SP 178-51-2
3	Tie Rod	SP 178-51-3
4	Ring Nut	SP 178-51-4
5	Base Casting	SP 178-51-5
6	Head Casting	SP 178-51-6
7	Pneumatic Cylinder	SP 178-51-7
8	Gland Bush	SP 178-22-8 SP 178-25-8 SP 178-32-8 SP 178-38-8 SP 178-51-8
9	Hydraulic Cylinder	SP 178-22-9 SP 178-25-9 SP 178-32-9 SP 178-38-9 SP 178-51-9
10	Piston Rod	SP 178-22-10 SP 178-25-10 SP 178-32-10 SP 178-38-10 SP 178-51-10

Item No.	Description	Part No.
11	Rod Seal	SP 178-22-11 SP 178-25-11 SP 178-32-11 SP 178-38-11 SP 178-51-11
12	"O" Ring	SP 178-22-12 SP 178-25-12 SP 178-32-12 SP 178-38-12 SP 178-51-12
13	Return Spring	SP 178-51-13
14	Piston Washer	SP 178-51-14
15	Piston Head Seal (2 off if air returned)	SP 178-51-15
16	"O" Ring	SP 178-51-16
17	"O" Ring	SP 178-51-17
18	"O" Ring (2 off if air returned)	SP 178-51-18
19	Locknut	SP 178-51-19
20	Nut	SP 178-51-20
21	Washer	SP 178-51-21
22	Air Breather	SP 178-51-22

Item No.	Description	Part No.
23	Reservior Assembly	SP 178-51-23
24	Elbow	SP 178-51-24
25	Adaptor	SP 178-51-25
26	Sealing Washer	SP 178-51-26
27	Air Return "U" Ring (only used if air returned)	SP 178-22-27 SP 178-25-27 SP 178-32-27 SP 178-38-27 SP 178-51-27
28	"O" Ring	SP 178-51-28

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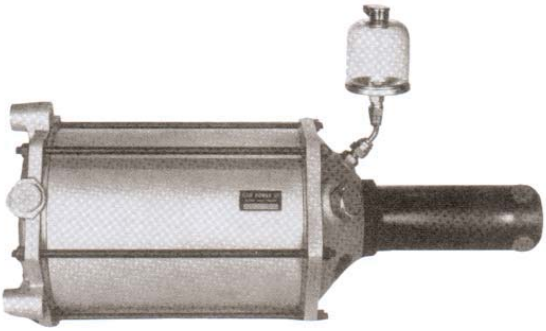
WORK HOLDING RANGE

AIRO-MATIC MAJOR BOOSTER

Suitable for horizontal or vertical mounting available in either spring or air returned versions with five alternative boost ratios. Hydraulic ports can be rotated, relative to air inlet (slacken ring nut and rotate clockwise).

The Airo-Matic Booster has improved flow to and from the recuperator port.

To improve output the recuperator port can be pressure fed up to 1000lbf/in² to enable clamps or tools to be brought into contact with the work prior to the booster applying the final pressure.



Horizontal Mounting

see page 9 for mounting details

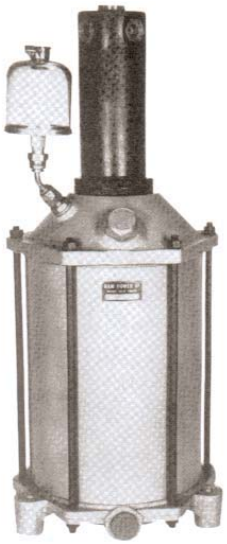
Model No.	Intensification	Max. Oil Output	Colour Code
178 22-7	64.0/1	82cc 5in³	White
178 25-7	49.0/1	108cc 6.6in³	Yellow
178 32-7	31.4/1	169cc 10.3in³	Blue
178 38-7	21.8/1	245cc 14.9in³	Red
178 51-7	12.2/1	437cc 26.6in³	Green

Maximum Air Pressure	8.4 kgf/cm² (120lbf/in²)
Maximum Oil Pressure	579.5 kgf/cm² (7680lbf/in²)
Air Cylinder Stroke	228mm (9")
Weight	21.5kg

Ordering

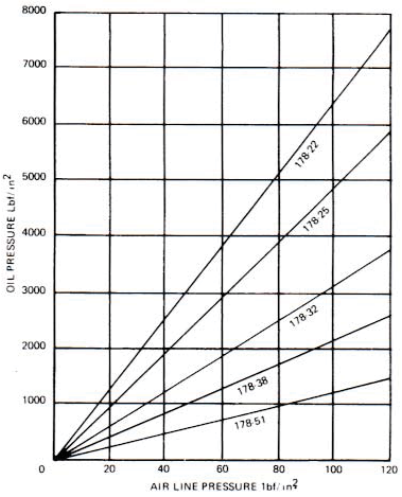
State model No. and whether required spring or air returned. Unless otherwise stated boosters will be supplied spring returned.

See page 9 for mounting details



Vertical Mounting

Theoretical Performance



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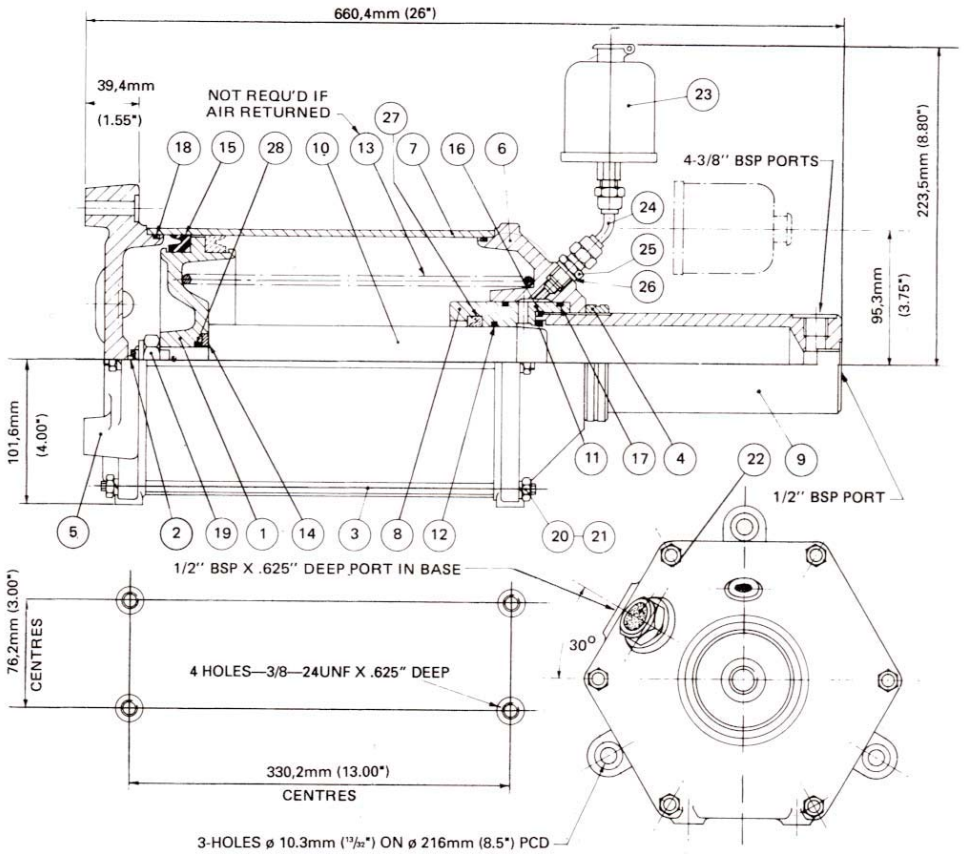
WORK HOLDING RANGE

AIRO-MATIC MAJOR BOOSTER



Item No.	Description	Part No.
1	Piston Head	SP 178-51-1
2	Nylon Slug	SP 178-51-2
3	Tie Rod	SP 178-51-3
4	Ring Nut	SP 178-51-4
5	Base Casting	SP 178-51-5
6	Head Casting	SP 178-51-6
7	Pneumatic Cylinder	SP 178-51-7
8	Gland Bush	SP 178-22-8 SP 178-25-8 SP 178-32-8 SP 178-38-8 SP 178-51-8
9	Hydraulic Cylinder	SP 178-22-9 SP 178-25-9 SP 178-32-9 SP 178-38-9 SP 178-51-9
10	Piston Rod	SP 178-22-10 SP 178-25-10 SP 178-32-10 SP 178-38-10 SP 178-51-10

Item No.	Description	Part No.
11	Rod Seal	SP 178-22-11 SP 178-25-11 SP 178-32-11 SP 178-38-11 SP 178-51-11
12	"O" Ring	SP 178-22-12 SP 178-25-12 SP 178-32-12 SP 178-38-12 SP 178-51-12
13	Return Spring	SP 178-51-13
14	Piston Washer	SP 178-51-14
15	Piston Head Seal (2 off if air returned)	SP 178-51-15
16	"O" Ring	SP 178-51-16
17	"O" Ring	SP 178-51-17
18	"O" Ring (2 off if air returned)	SP 178-51-18
19	Locknut	SP 178-51-19
20	Nut	SP 178-51-20
21	Washer	SP 178-51-21
22	Air Breather	SP 178-51-22

Item No.	Description	Part No.
23	Reservior Assembly	SP 178-51-23
24	Elbow	SP 178-51-24
25	Adaptor	SP 178-51-25
26	Sealing Washer	SP 178-51-26
27	Air Return "U" Ring (only used if air returned)	SP 178-22-27 SP 178-25-27 SP 178-32-27 SP 178-38-27 SP 178-51-27
28	"O" Ring	SP 178-51-28

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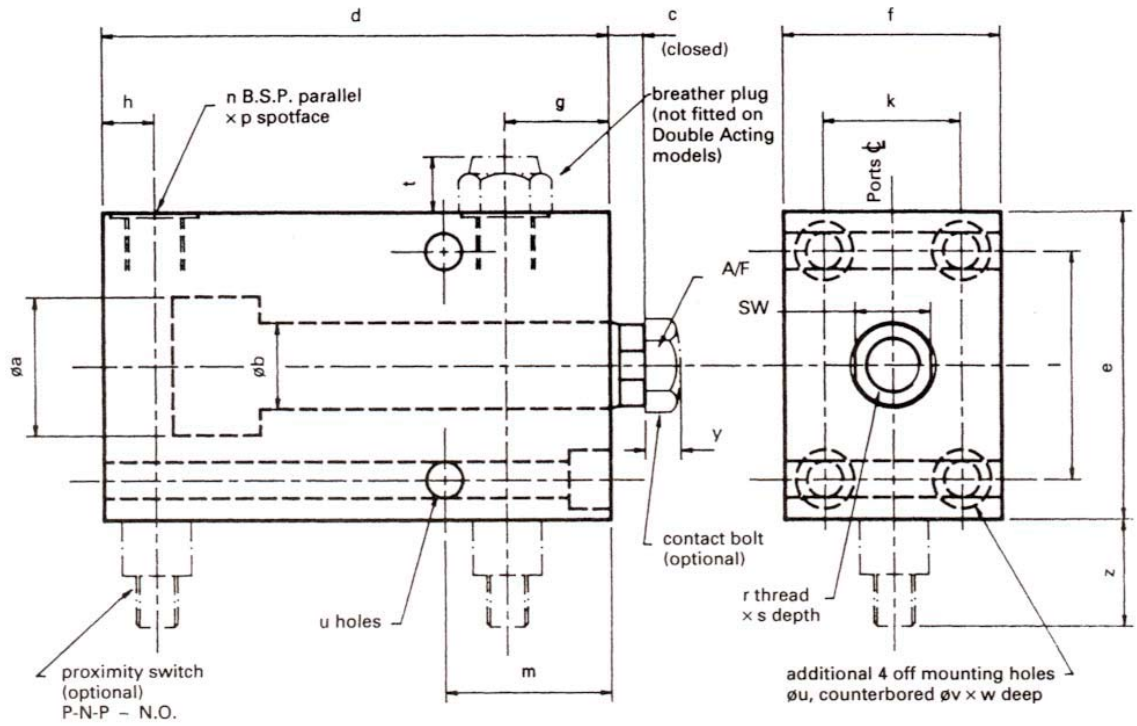
WORK HOLDING RANGE

METRIC BLOCK CYLINDER



All dimensions in mm.

Piston Ø	a	18	25	32	40	50	63	80
Rod Ø	b	10	16	20	25	32	40	50
	c	6	7	10	10	10	14	14
	d	110	125	128	146	168	194	224
	e	63.5	63.5	76	89	101.6	114	152
	f	32	38	51	63.5	76	89	120
	g	23	23	27	30	33	38	42
	h	13	13	13	15	16	20	27
	k			30	40	50	60	80
	l	48	44	56	66	76	86	110
	m	36	38	42	48	54	65	70
	n B.S.P.	1/4”	1/4”	1/4”	3/8”	3/8”	1/2”	1/2”
	Øp	22	22	22	25	25	30	30
	r	M6x1	M10x1.5	M12x1.75	M16x2	M20x2.5	M27x3	M30x3.5
	s	12	15	15	25	30	40	40
	t	14	14	14	16	16	14	14
	u	6.5	8.5	10.5	10.5	13	17	21
	v			17	17	19	25	32
	w			13	13	15	20	25
	y	3.5	6	7	9	12	16	18
	z	32	36	34	31	30	30	20
	SW	8	13	17	22	27	32	41
	A/F	10	17	19	24	30	41	46

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WORK HOLDING RANGE

METRIC BLOCK CYLINDER

40 - 25 - B 2 - D - O - N - 0050 PART NUMBER EXAMPLE

Bore		Rod
18	x	10
25	x	16
32	x	20
40	x	25
50	x	32
63	x	40
80	x	50

Block cylinder

2 mounting holes = 2 (standard)
6 mounting holes = 6
Not available on 18 or 25 bore

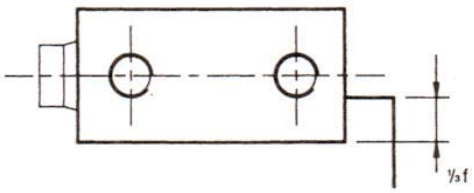
Type
D = Double Acting
S = Single Acting
E = Extension - no spring

Bore	Min. Stroke	Max. Stroke with Spring	Max Stroke no Spring
18	8	22	50
25	8	35	65
32	10	35	65
40	10	35	75
50	12	40	92
63	12	50	106
80	12	55	125

Seal Material
N = Nitrile (standard)
V = Viton
E = Ethylene Propylene

Proximity Switch
O = Omit (none)
B = Both ends
F = Front only
R = Rear only

The above part number example calls for a 40mm bore Double Acting block cylinder with 25mm Rod - 2 mounting holes - no proximity switches - nitrile seals and 50mm stroke.



Cylinders must be backed up for operating pressures above 140 bar (2000 psi).

Max operating pressure = 350 bar (5000 psi). Pressure tested to 525 bar (7500 psi).

Piston case hardened to 58 Rockwell ‘C’.

Min. back pressure created by return spring = 1.15 Bar

CONTACT BOLTS

Part No.	To suit cylinder bore
18-10-0760	Ø18
25-16-0760	Ø25
32-20-0760	Ø32
40-25-0760	Ø40
50-32-0760	Ø50
63-40-0760	Ø63
80-50-0760	Ø80

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WORK HOLDING RANGE

OPEN RAM MINOR

Code No. 29-13-0

(for full size drawing see CAD drawings)

These rams are designed to fit over a 0.3125in Ø or Ø8mm bolt or stud.

Theoretical thrust equals:- oil pressure x effective area

General Specification	Imperial	Metric
Stroke with Spring	0.25in	6.35mm
Stroke without Spring	0.61in	15.49mm
Effective Area	0.80in^2	5.16cm^2
Swept volume with spring	0.20in^3	3.28cm^3
Swept volume without spring	0.49in^3	8.03cm^3
Weight with spring		
Weight without spring		
Max working pressure	4000psi	275bar

External stop must be used with spring return version

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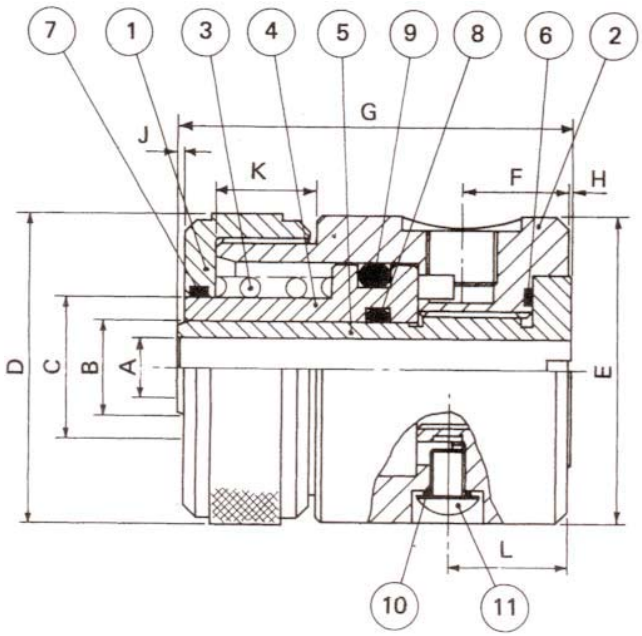
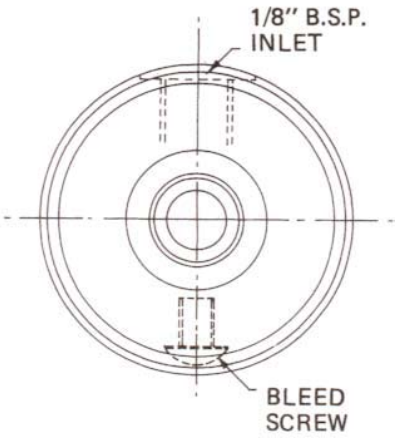
WORK HOLDING RANGE

OPEN RAM MINOR





Item No.	Description	Part No.
1	Gland Nut	SP 29-13-0010
2	Cylinder	SP 29-13-0016ECO
3	Return Spring	SP 29-13-0420
4	Piston	SP 29-13-0040
5	Screwed Rod	SP 29-13-0016ERAO
6	Rod 'O' Ring (static)	SP 29-13/6
7	Rod 'O' Ring (wiper)	SP 29-13/7
8	Piston 'O' Ring (internal)	SP 29-13/8
9	Piston 'O' Ring (external)	SP 29-13/9
10	Sealing Washer	SP 29-13/10
11	Bleed Screw	SP 29-13/11

Dimension	Imperial (inches)	Metric (mm)
ØA	0.328	8.33
ØB	0.500	12.70
ØC	0.750	19.05
ØD	1.640	41.66
ØE	1.662	41.19
F	0.562	14.27
G	2.062	52.37
H	0.010	0.25
J	0.030	0.76
K	0.531	13.49
L	0.615	15.62

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WORK HOLDING RANGE

HOLLOW RAM JUNIOR

Code No. 48-25-1F

Flanged version

Code No. 48-25-1

Standard version

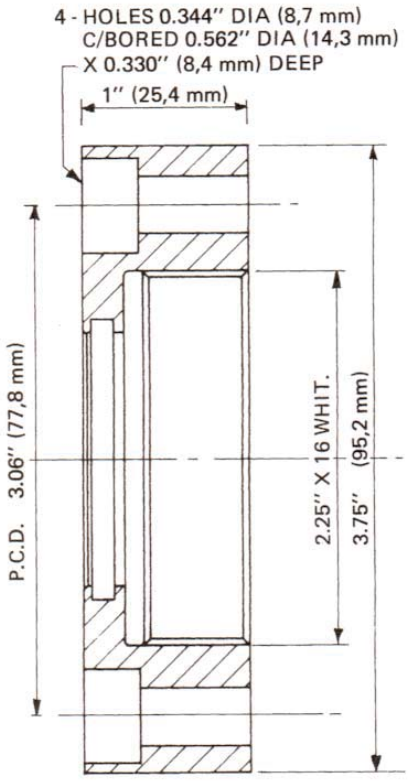
(for full size drawing see CAD drawings)

These rams are designed to fit over a 0.625in Ø or Ø16mm bolt or stud.

General Specification	Imperial	Metric
Stroke with Spring	0.31in	7.87mm
Stroke without Spring	0.71in	18.03mm
Effective Area	1.98in^2	12.77cm^2
Swept volume with spring	0.64in^3	10.49cm^3
Swept volume without spring	1.40in^3	22.94cm^3
Weight with spring	2.0lb	0.91kg
Weight without spring	1.9lb	0.86kg
Max working pressure	4000psi	275bar

External stop must be used with spring return version

Theoretical thrust equals:-
oil pressure x effective area



Flange Gland Nut Detail

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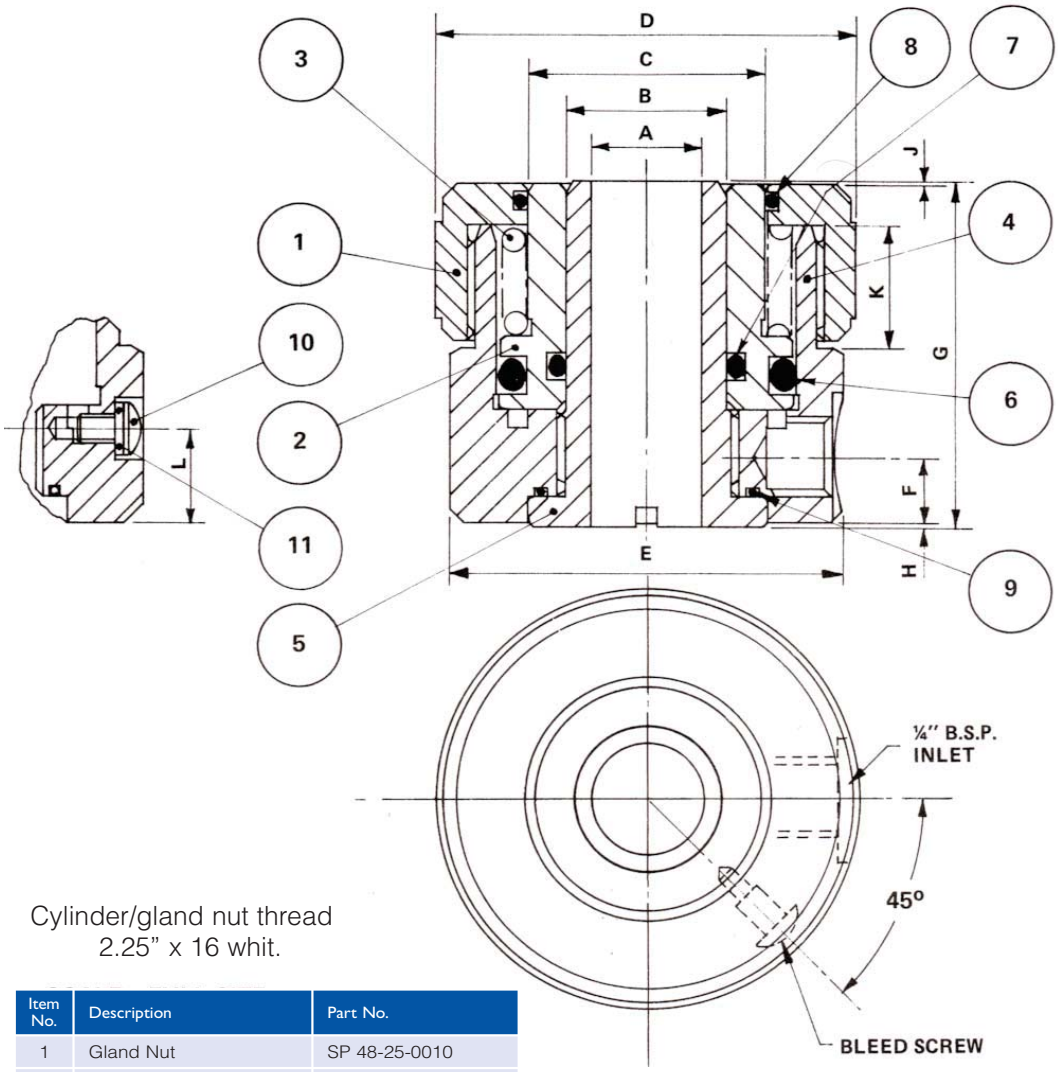
WORK HOLDING RANGE

HOLLOW RAM JUNIOR



Cylinder/gland nut thread
2.25" x 16 whit.

Item No.	Description	Part No.
1	Gland Nut	SP 48-25-0010
2	Piston	SP 48-25-0040
3	Return Spring	SP 48-25-0420
4	Cylinder	SP 48-25-0018 EC
5	Screwed Rod	SP 48-25-0018 ER
6	Piston 'O' Ring (ext)	SP 48-25/6
7	Piston 'O' Ring (int)	SP 48-25/7
8	Rod 'O' Ring (wiper)	SP 48-25/8
9	Rod 'O' Ring (static)	SP 48-25/9
10	Bleed Screw	SP 48-25/10
11	Sealing Washer	SP 48-25/11
12	Flange Gland Nut	SP 48-25-0311

Dimension	Imperial (inches)	Metric (mm)
ØA	0.687	17.45
ØB	1.00	25.40
ØC	1.50	38.10
ØD	2.625	66.67
ØE	2.50	63.50
F	0.420	10.67
G	2.187	55.55
H	0.010	0.25
J	0.030	0.76
K	0.775	19.69
L	0.590	14.98

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WORK HOLDING RANGE

HOLLOW RAM SENIOR

Code No. 48-25-0F

Flanged version

Code No. 48-25-0

Standard version

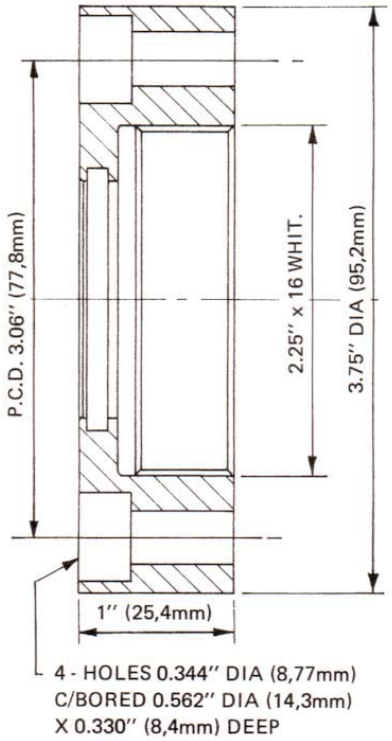
(for full size drawing see CAD drawings)

These rams are designed to fit over a 0.625in Ø or Ø16mm bolt or stud.

General Specification	Imperial	Metric
Stroke with Spring	0.62 in	15.75 mm
Stroke without Spring	1.23 in	31.24 mm
Effective Area	1.98 in^2	12.77 cm^2
Swept volume with spring	1.25 in^3	20.48 cm^3
Swept volume without spring	2.44 in^3	39.98 cm^3
Weight with spring	3.3 lbs	1.50 kgs
Weight without spring	3.2 lbs	1.45 kgs
Max working pressure	4000 psi	275 bar

External stop must be used with spring return version

Theoretical thrust equals:-
oil pressure x effective area



Flange Gland Nut Detail

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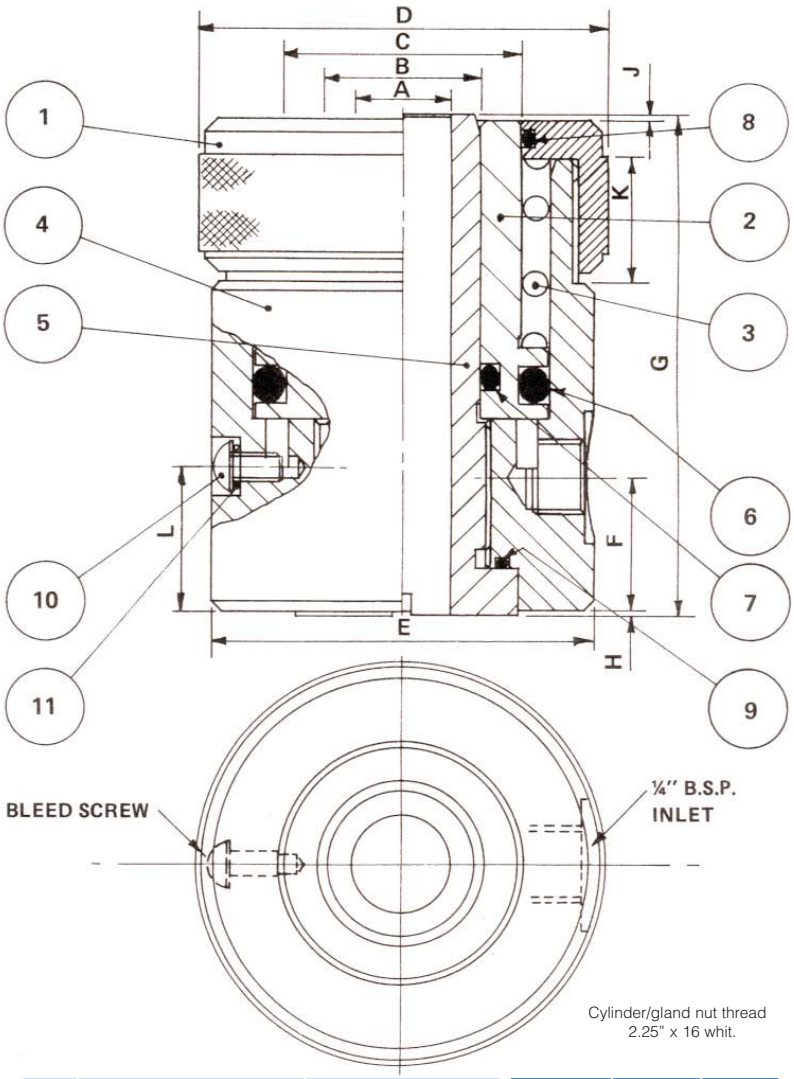
WORK HOLDING RANGE

HOLLOW RAM SENIOR



Cylinder/gland nut thread
2.25" x 16 whit.

Item No.	Description	Part No.
1	Gland Nut	SP 48-25-0010
2	Piston	SP 48-25-0041
3	Return Spring	SP 48-25-0421
4	Cylinder	SP 48-25-0031 ECO
5	Screwed Rod	SP 48-25-0031 ERO
6	Piston 'O' Ring (ext)	SP 48-25/6
7	Piston 'O' Ring (int)	SP 48-25/7
8	Rod 'O' Ring (wiper)	SP 48-25/8
9	Rod 'O' Ring (static)	SP 48-25/9
10	Bleed Screw	SP 48-25/10
11	Sealing Washer	SP 48-25/11
12	Flange Gland Nut	SP 48-25-0311

Dimension	Imperial (inches)	Metric (mm)
ØA	0.687	17.45
ØB	1.00	25.40
ØC	1.50	38.10
ØD	2.625	66.67
ØE	2.50	63.50
F	0.875	22.23
G	3.250	82.55
H	0.010	0.25
J	0.030	0.76
K	0.775	19.69
L	0.960	24.39

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WORK HOLDING RANGE

HOLLOW RAM MAJOR

Code No. 48-25-2F

Flanged version

Code No. 48-25-2

Standard version

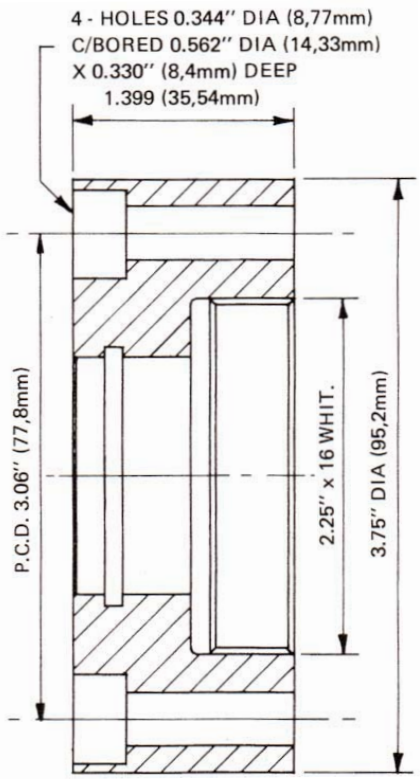
(for full size drawing see CAD drawings)

These rams are designed to fit over a 0.625in Ø or Ø16mm bolt or stud.

General Specification	Imperial	Metric
Stroke with Spring	1.50 in	38.10 mm
Stroke without Spring	2.50 in	63.50 mm
Effective Area	1.98 in^2	12.77 cm^2
Swept volume with spring	2.97 in^3	48.67 cm^3
Swept volume without spring	4.95 in^3	81.12 cm^3
Weight with spring	5.75 lbs	2.61 kgs
Weight without spring	5.50 lbs	2.50 kgs
Max working pressure	4000 psi	275 bar

External stop must be used with spring return version

Theoretical thrust equals:-
oil pressure x effective area



Flange Gland Nut Detail

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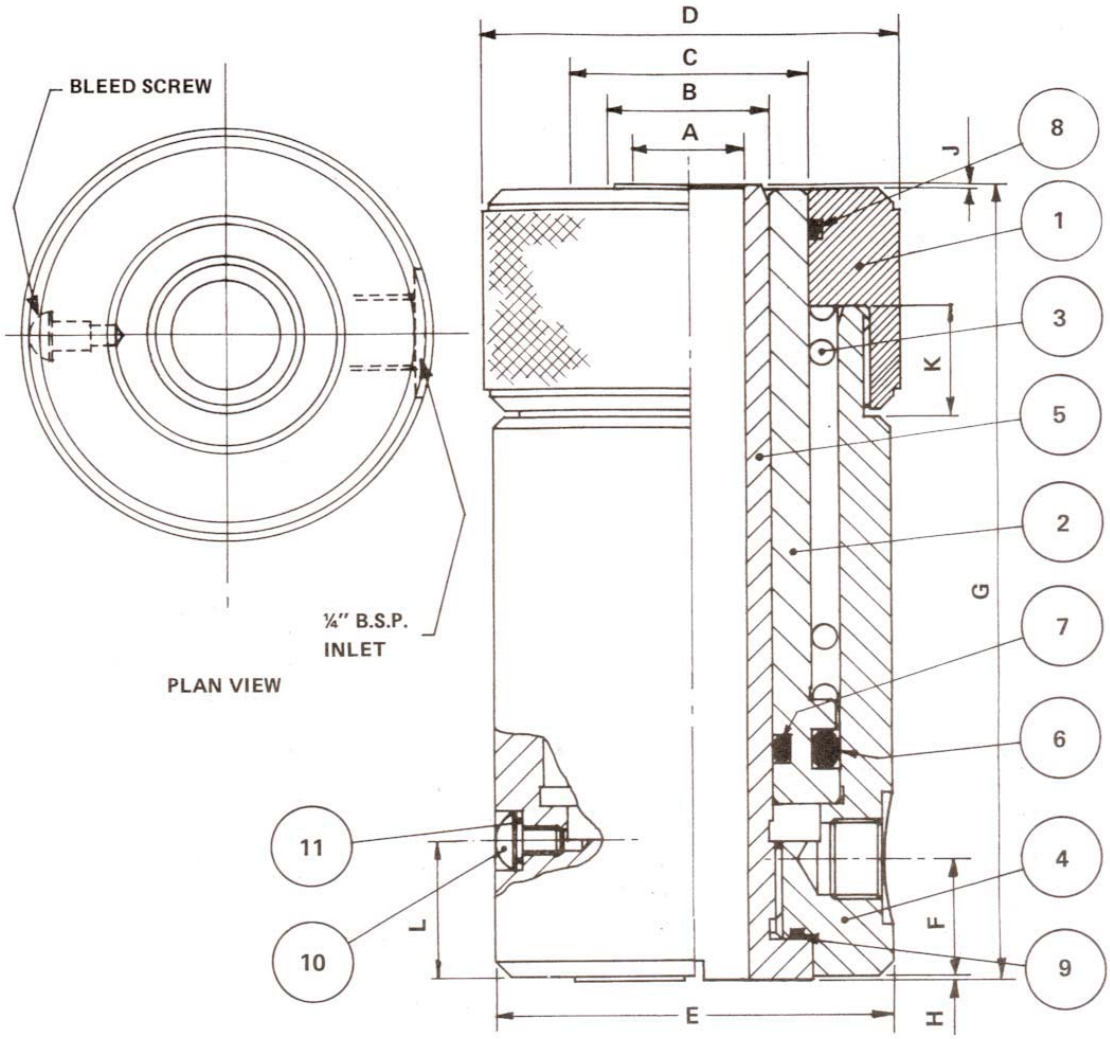
WORK HOLDING RANGE

HOLLOW RAM MAJOR



Item No.	Description	Part No.
1	Gland Nut	SP 48-25-0011
2	Piston	SP 48-25-0042
3	Return Spring	SP 48-25-0422
4	Cylinder	SP 48-25-0063 ECO
5	Screwed Rod	SP 48-25-0063 ERO
6	Piston 'O' Ring (ext)	SP 48-25/6
7	Piston 'O' Ring (int)	SP 48-25/7
8	Rod 'O' Ring (wiper)	SP 48-25/8
9	Rod 'O' Ring (static)	SP 48-25/9
10	Bleed Screw	SP 48-25/10
11	Sealing Washer	SP 48-25/11
12	Flange Gland Nut	SP 48-25-0310

Dimension	Imperial (inches)	Metric (mm)
ØA	0.687	17.45
ØB	1.00	25.40
ØC	1.50	38.10
ØD	2.625	66.67
ØE	2.50	63.50
F	0.750	19.05
G	5.030	127.76
H	0.010	0.25
J	0.030	0.76
K	0.688	17.48
L	0.867	22.00

Cylinder/gland nut thread 2.25" x 16 whit.

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WORK HOLDING RANGE

HOLLOW RAM FIVE TON

Code No. 64-37-0F

Flanged version

Code No. 64-37-0

Standard version

(for full size drawing see CAD drawings)

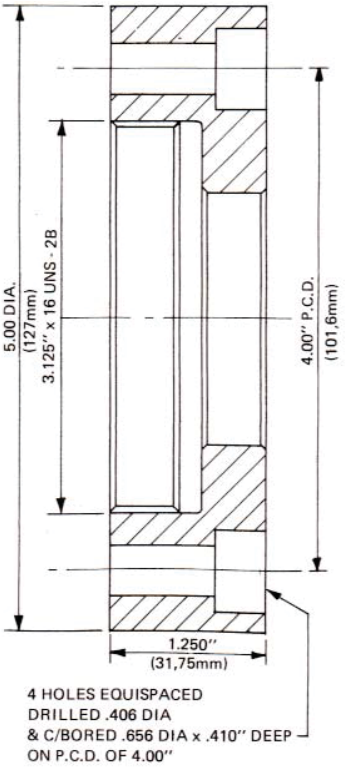
These rams are designed to fit over a 1" in Ø or Ø25mm bolt or stud.

General Specification	Imperial	Metric
Stroke with Spring	0.67 in	17.02 mm
Stroke without Spring	1.25 in	31.75 mm
Effective Area	3.29 in^2	21.23 cm^2
Swept volume with spring	2.20 in^3	33.44 cm^3
Swept volume without spring	4.11 in^3	67.35 cm^3
Weight without spring	7.0 lbs	3.18 kgs
Weight with spring	6.9 lbs	3.13 kgs
Max working pressure	4000 psi	275 bar

For weight of flanged version add 3.5 lbs or 1.59 kg

External stop must be used with spring return version

Theoretical thrust equals:-
oil pressure x effective area



Flange Gland Nut Detail

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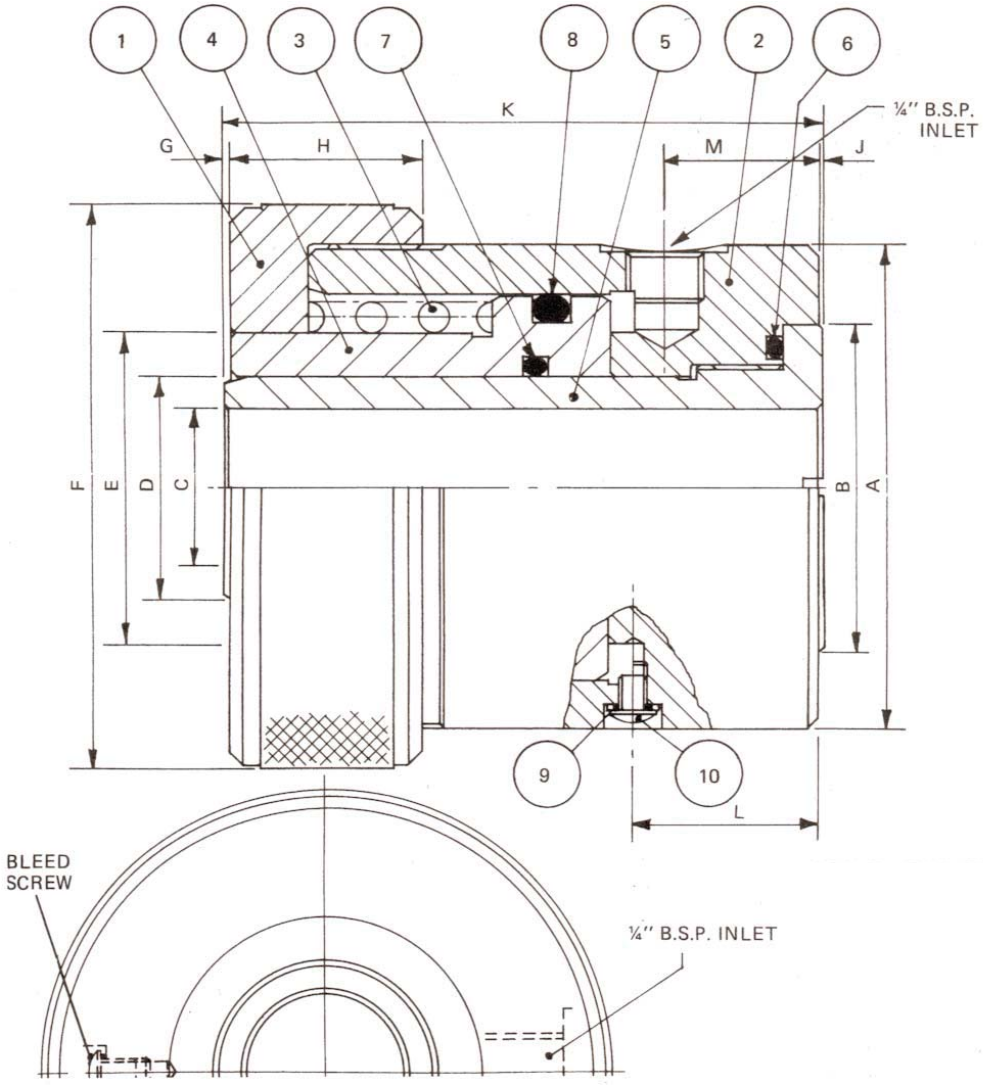
WORK HOLDING RANGE

HOLLOW RAM FIVE TON



Item No.	Description	Part No.
1	Gland Nut	SP 64-37-0010
2	Cylinder	SP 64-37-0032ECO
3	Return Spring	SP 64-37-0420
4	Piston	SP 64-37-0040
5	Screwed Rod	SP 64-37-0032ERO
6	Rod 'O' Ring (cylinder)	SP 64-37/6
7	Rod 'O' Ring (piston)	SP 64-37/7
8	'O' Ring (piston/cylinder)	SP 64-37/8
9	Sealing Washer	SP 64-37/9
10	Bleed Screw	SP 64-37/10

Dimension	Imperial (inches)	Metric (mm)
ØA	3.125	79.38
ØB	2.125	54.00
ØC	1.015	25.78
ØD	1.437	36.50
ØE	2.00	50.80
ØF	3.625	92.08
G	0.030	0.76
H	1.25	31.75
J	0.010	0.25
K	3.852	97.76
L	1.201	30.51
M	1.00	25.4

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WORK HOLDING RANGE

HOLLOW RAM SEVEN TON

Code No. 73-37-0F

Flanged version

Code No. 73-37-0

Standard version

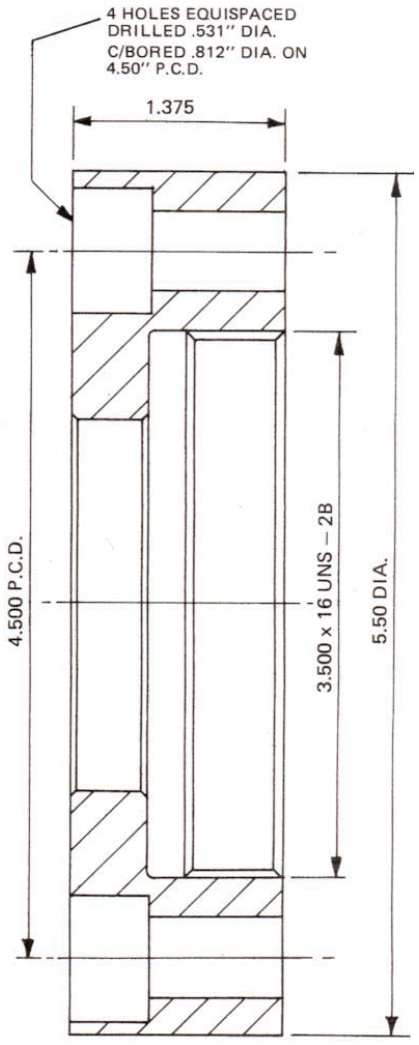
(for full size drawing see CAD drawings)

These rams are designed to fit over a 1 in Ø or Ø25mm bolt or stud.

General Specification	Imperial	Metric
Stroke with Spring	0.53 in	13.46mm
Stroke without Spring	1.19 in	29.97mm
Effective Area	4.87 in^2	31.42mm
Swept volume with spring	2.58 in^3	42.29mm
Swept volume without spring	5.76 in^3	94.39mm
Weight with spring	8.5 lbs	3.86mm
Weight without spring	8.25 lbs	3.74mm
Max working pressure	4000 psi	275 bar

External stop must be used with spring return version

Theoretical thrust equals:-
oil pressure x effective area



Flange Gland Nut Detail

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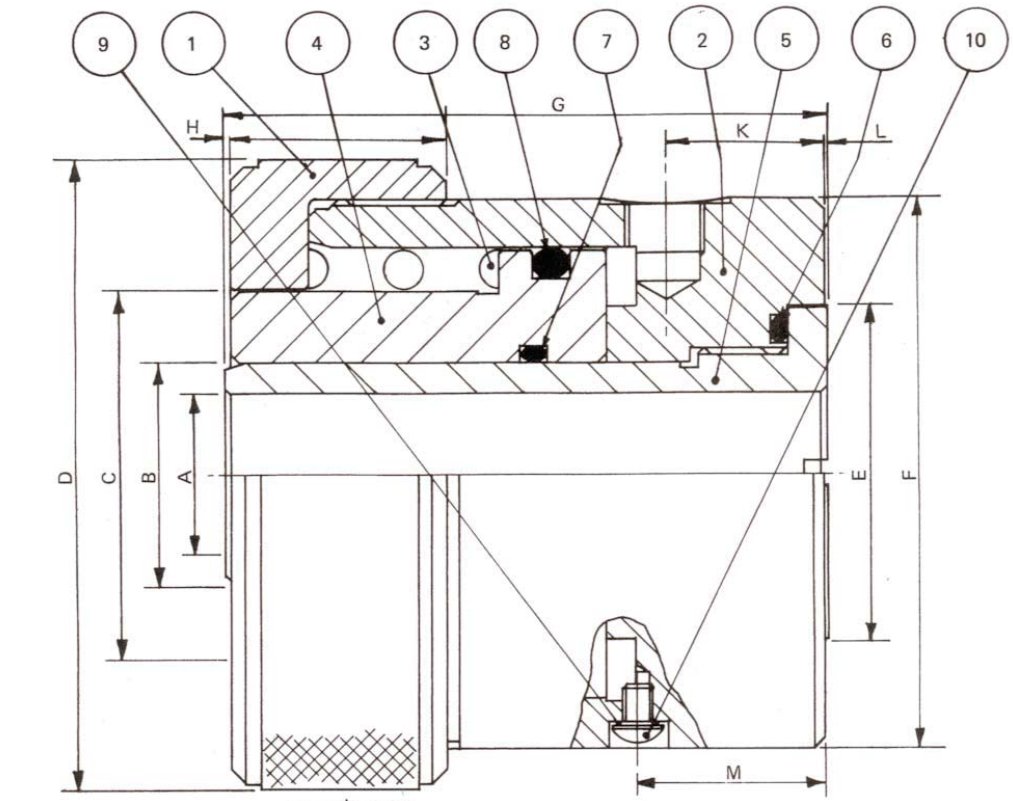
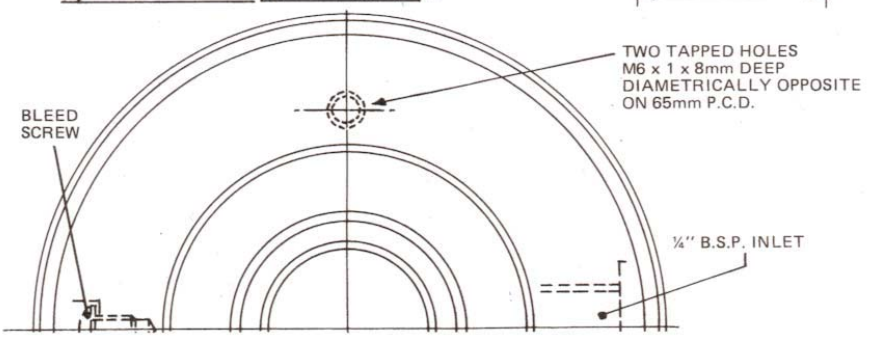
WORK HOLDING RANGE

HOLLOW RAM SEVEN TON





Item No.	Description	Part No.
1	Gland Nut	SP 73-37-0011
2	Cylinder	SP 73-37-0030ECO
3	Return Spring	SP 73-37-0420
4	Piston	SP 73-37-0041
5	Screwed Rod	SP 73-37-0020ERO
6	'O' Ring	SP 73-37/6
7	Rod 'O' Ring	SP 73-37/7
8	Piston 'O' Ring	SP 73-37/8
9	Dowty Washer	SP 73-37/9
10	Bleed Screw	SP 73-37/10

Dimension	Imperial (inches)	Metric (mm)
ØA	1.015	25.78
ØB	1.437	36.5
ØC	2.375	60.33
ØD	4.000	101.6
ØE	2.125	53.98
ØF	3.500	88.9
G	3.790	96.19
H	0.030	0.762
J	1.375	34.925
K	1.00	25.40
L	0.01	0.254
M	1.20	30.48

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WORK HOLDING RANGE

HOLLOW RAM EIGHT TON

Code No. 80-45-2F

Flanged version

Code No. 80-45-2

Standard version

(for full size drawing see CAD drawings)

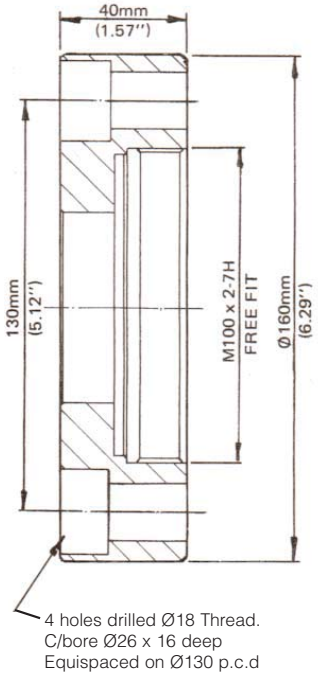
These rams are designed to fit over a 1.181" Ø or Ø30mm bolt or stud.

General Specification	Imperial	Metric
Stroke with Spring	0.748	19mm
Stroke without Spring	2.362 in	60mm
Effective Area	5.3 in^2	34.36cm^2
Swept volume with spring	3.34 in^3	54.97cm^3
Swept volume without spring	12.6 in^3	206.2cm^3
Weight with spring	19 lbs	8.65 kg
Weight without spring	18.62 lbs	8.48 kg
Max working pressure	4000 psi	275 bar

For weight of flanged version add 3.19 lbs or 1.45 kg

External stop must be used with spring return version

Theoretical thrust equals:-
oil pressure x effective area



Flange Gland Nut Detail

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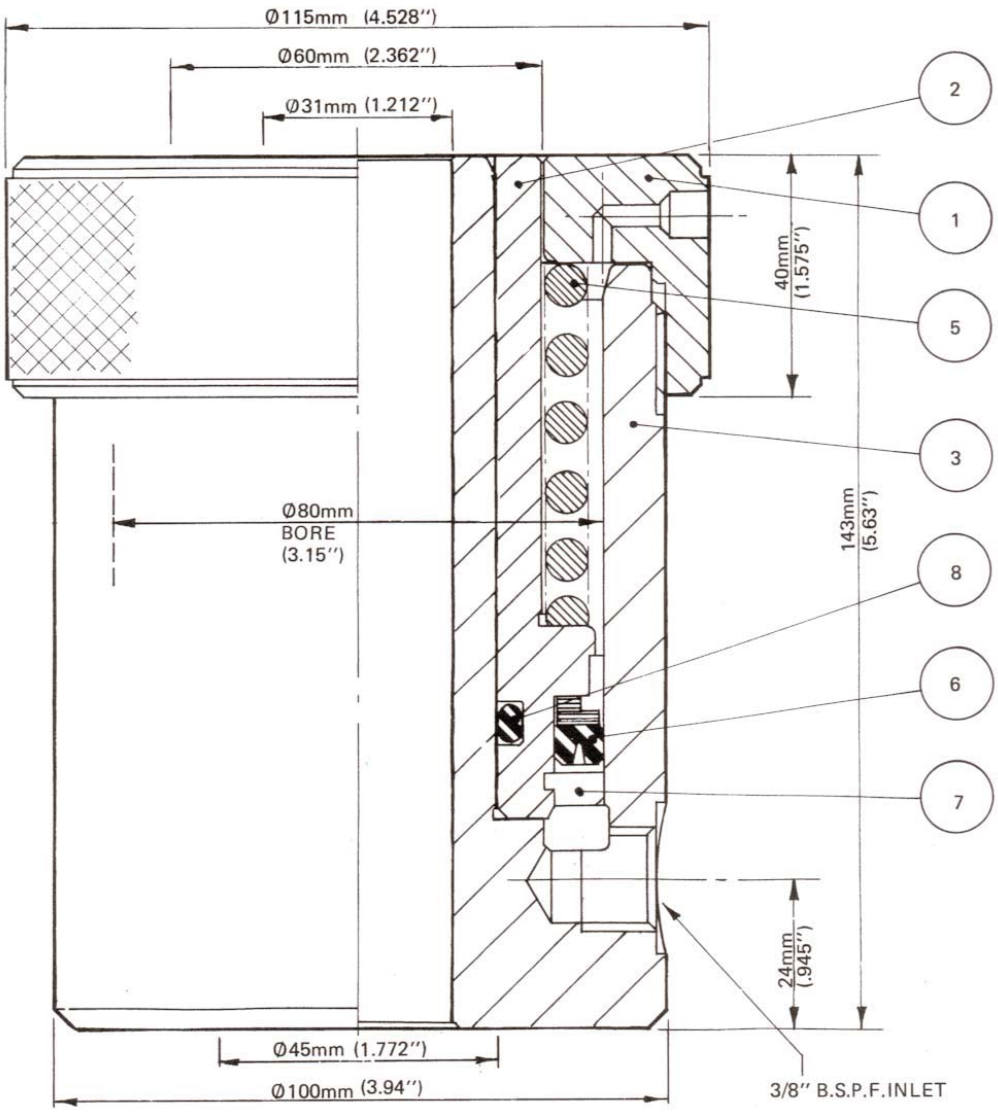
WORK HOLDING RANGE

HOLLOW RAM EIGHT TON



Item No.	Description	Part No.
1	Gland Nut	SP 80-45-0010
2	Piston	SP 80-45-0042
3	Cylinder	SP 80-45-0060EC4
5	Retrun Spring	SP 80-45-0420
6	Piston Seal	SP 80-45/6
7	Keeper Ring	SP 80-45/7
8	'O' Ring Piston (Rod)	SP 80-45/8

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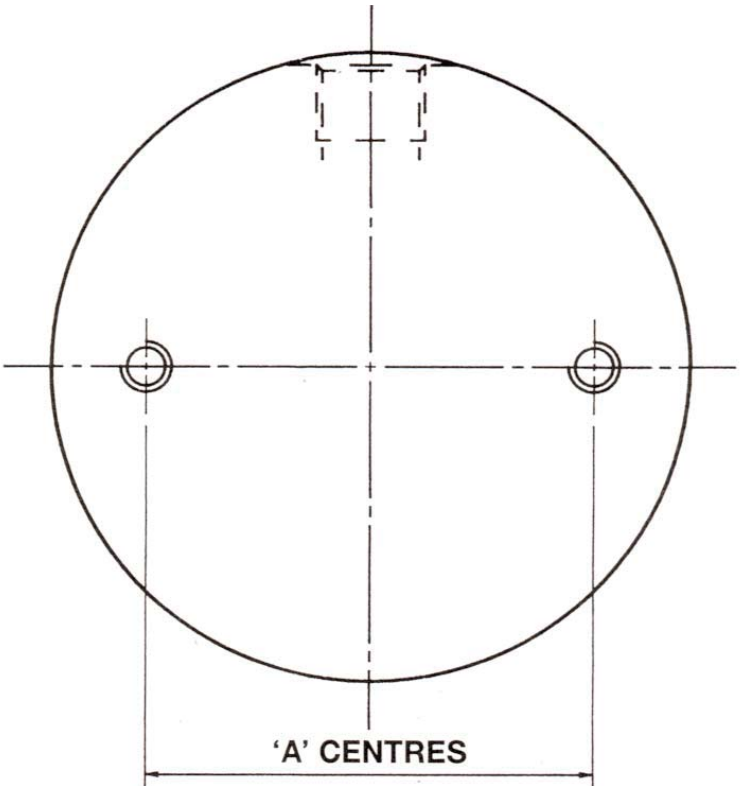
WORK HOLDING RANGE

Additional mountings on clamping rams have been added to the rear end as detailed below



Part No.	Dimension 'A'	Thread	Thread Depth
29-13-0	32 mm	M5 x 0.8	8 mm
48-25-1	50 mm	M6 x 1	8 mm
48-25-0	50 mm	M6 x 1	8 mm
48-25-2	50 mm	M6 x 1	8 mm
64-37-0	65 mm	M6 x 1	8 mm
73-37-0	65 mm	M6 x 1	8 mm
80-45-2	70 mm	M6 x 1	8 mm

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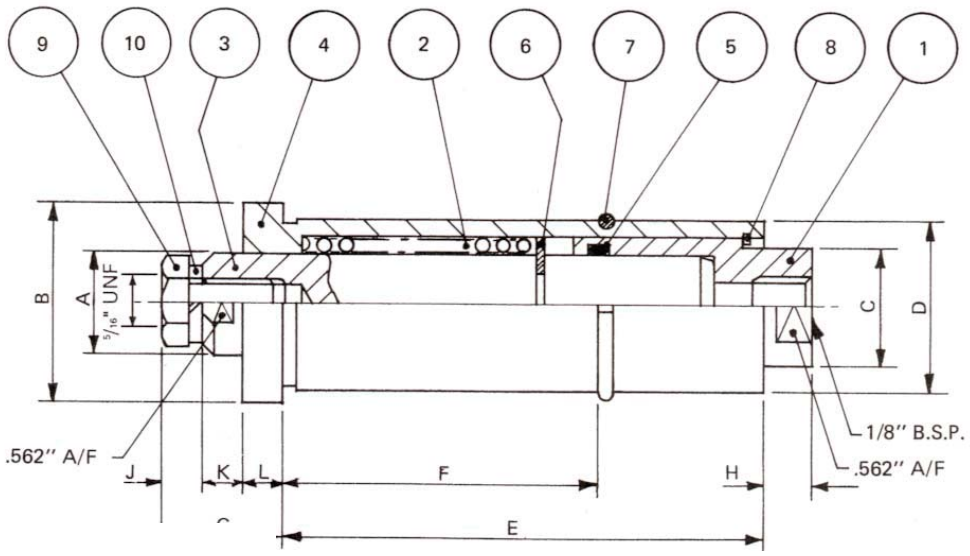
WORK HOLDING RANGE

297 DISPLACEMENT RAM



Item No.	Description	Part No.
1	Gland Housing	SP 16-16-0260
2	Return Spring	SP 16-16-0420
3	Piston Rod	SP 16-16-0013ER
4	Cylinder	SP 16-16-0013EC
5	'O' Ring	SP 16-16/5
6	Circlip	SP 16-16/6
7	Circlip	SP 16-16/7
8	Circlip Spirolox	SP 16-16/8
9	Hardened Button	SP 16-16/9
10	Spring Washer	SP 16-16/10

Dimension	Imperial (inches)	Metric (mm)
ØA	0.615	15.62
ØB	1.250	31.75
ØC	0.750	19.05
ØD	1.060	26.92
E	3.000	76.20
F	2.000	50.80
G	0.768	19.51
H	0.312	7.92
J	0.268	6.81
K	0.250	6.35
L	0.250	6.35

Code No: 16-1

General Specification	Imperial	Metric
Stroke	0.50	12.7 mm
Effective Area	0.297 in^2	1.92 cm^2
Swept volume	0.148 in^3	2.43 cm^3
Weight	0.80 lbs	0.36 kg
Normal working pressure	1500 psi	105 bar

External stop must be used

Theoretical thrust equals:-
oil pressure x effective area

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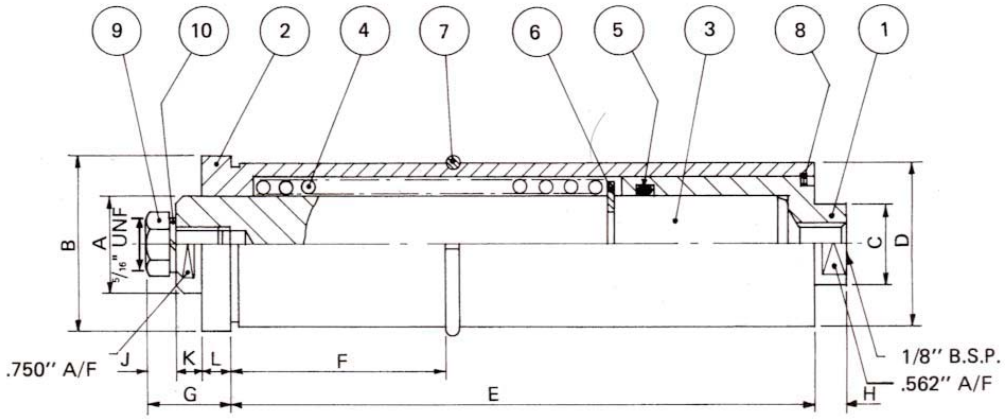
WORK HOLDING RANGE

590 DISPLACEMENT RAM



Item No.	Description	Part No.
1	Gland Housing	SP 22-22-0260
2	Cylinder	SP 22-22-0025EC4
3	Piston Rod	SP 22-22-0025ER4
4	Return Spring	SP 22-22-0420
5	'O' Ring	SP 22-22/5
6	Circlip	SP 22-22/6
7	Circlip	SP 22-22/7
8	Circlip	SP 22-22/8
9	Hardened Button	SP 22-22/9
10	5/16 Spring Washer	SP 22-22/10

Dimension	Imperial (inches)	Metric (mm)
ØA	0.866	21.99
ØB	1.625	41.28
ØC	0.750	19.05
ØD	1.500	38.10
E	5.437	138.10
F	2.000	50.80
G	0.768	19.51
H	0.312	7.92
J	0.268	6.81
K	0.250	6.35
L	0.250	6.35

Code No: 22-3

General Specification	Imperial	Metric
Stroke	1"	25.4
Effective Area	0.59 in^2	3.80cm^2
Swept volume	0.59 in^3	9.65cm^3
Weight	2.53 lbs	1.15 kg
Normal working pressure	1500 psi	105 bar

External stop must be used

Theoretical thrust equals:-
oil pressure x effective area

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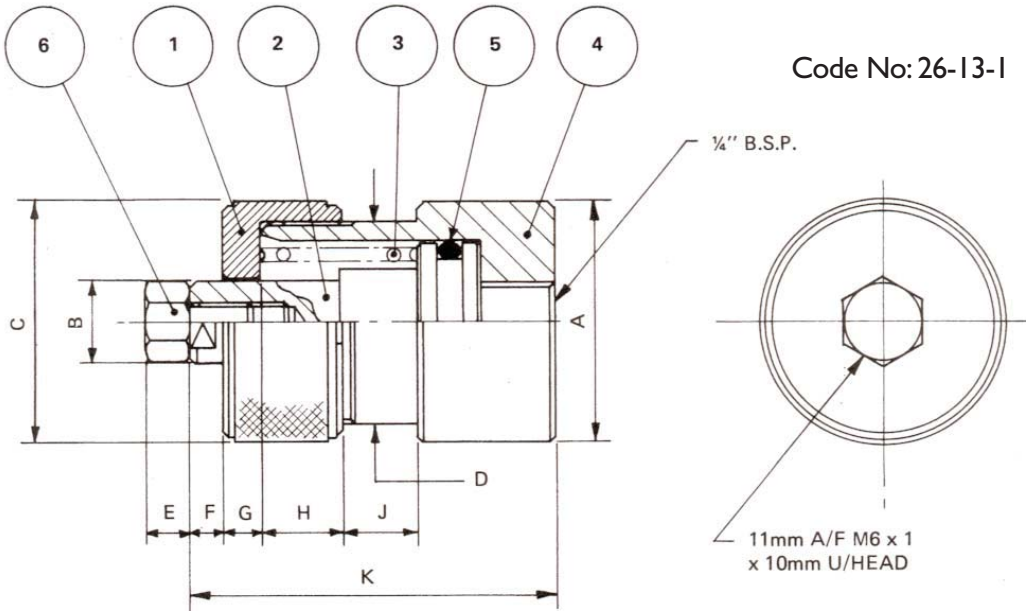
WORK HOLDING RANGE

MINOR RAM (SHORT)



Code No: 26-13-1

Item No.	Description	Part No.
1	Gland Nut	26-13-0010
2	Piston	26-13-0013ERI
3	Return Spring	26-13-0421
4	Cylinder	26-13-0013ECI
5	Piston 'O' Ring	SP 26-13-1/5
6	Contact Bolt	26-13-0100

Dimension	Imperial (inches)	Metric (mm)
ØA	1.50	38
ØB	0.51	13
ØC	1.50	38
ØD	1.26	32
E	0.27	7
F	0.20	5
G	0.24	6
H	0.51	13
J	0.43	11
K	2.28	58

General Specification	Imperial	Metric
Stroke	0.49 in	12.5 mm
Effective Area	0.82 in^2	5.31 cm^2
Swept volume	0.41 in^3	6.64 cm^3
Weight	13 oz	0.36 kg
Max. working pressure	4000 psi	275 bar

Theoretical thrust equals:-
oil pressure x effective area

Body cap thread M32 x 1.5

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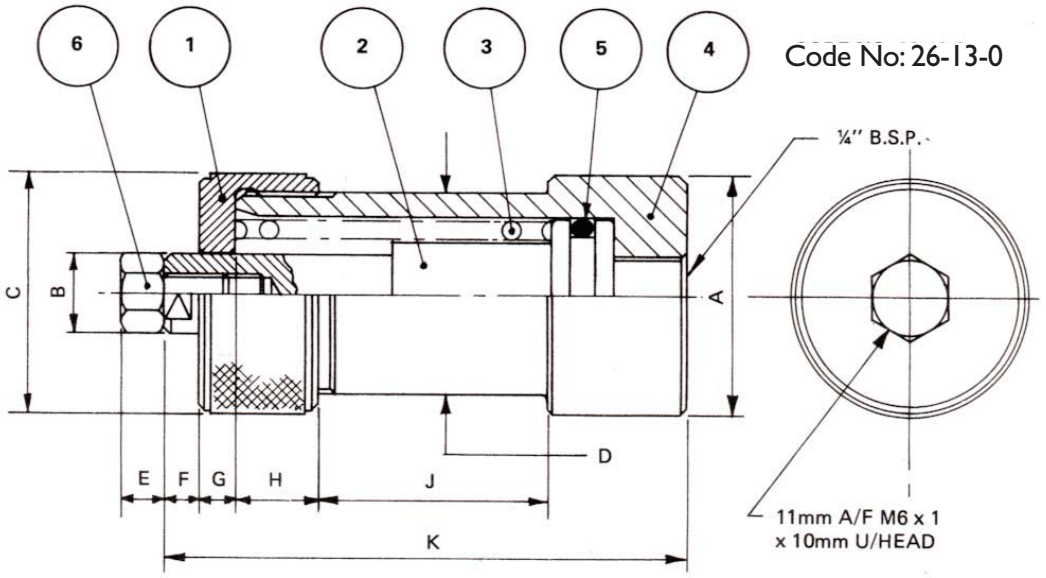
WORK HOLDING RANGE

MINOR RAM (LONG)



Item No.	Description	Part No.
1	Gland Nut	26-13-0010
2	Piston	26-13-0025ERO
3	Return Spring	323 820 SP
4	Cylinder	26-13-0025ECO
5	Piston 'O' Ring	SP 26-13-0/5
6	Contact Bolt	26-13-0100

General Specification	Imperial	Metric
Stroke	0.98 in	25 mm
Effective Area	0.82 in^2	5.31 cm^2
Swept volume	0.81 in^3	13.28 cm^3
Weight	1.0 lbs	0.45 kg
Max. working pressure	4000 psi	275 bar

Theoretical thrust equals:-
oil pressure x effective area

Dimension	Imperial (inches)	Metric (mm)
ØA	1.50	38
ØB	0.51	13
ØC	1.50	38
ØD	1.26	32
E	0.27	7
F	0.20	5
G	0.24	6
H	0.51	13
J	1.46	37
K	3.27	83

Body cap thread M32 x 1.5

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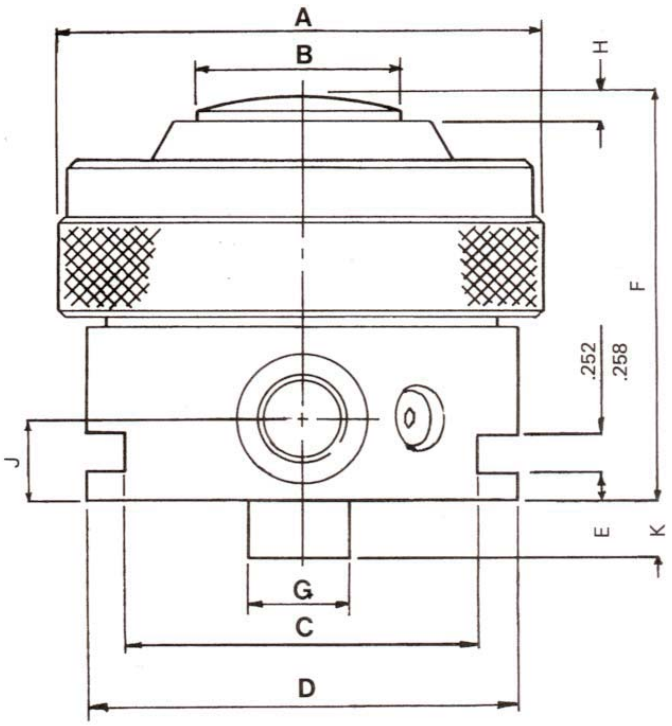
WORK HOLDING RANGE

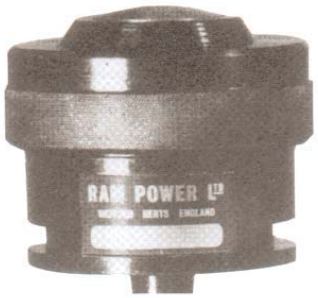
RAMPOWER HEAD JUNIOR



Dimension	Imperial (inches)	Metric (mm)
ØA	3.00	76.2
ØB	1.250	31.75
C A/F	2.188	55.57
ØD	2.625	66.68
E	0.170	4.32
F	2.50	63.50
ØG	0.624	15.85
H	0.125	3.17
J	0.50	12.70
K	0.375	9.52

General Specification	Imperial	Metric
Stroke	0.56 in	14.22 mm
Effective Area	3.55 in^2	22.90 cm^2
Swept volume	1.99 in^3	32.61 cm^3
Weight	3.25 lbs	1.32 kg
Max. working pressure	4000 psi	275 bar

Theoretical thrust equals:-
oil pressure x effective area



Code No: 54-32-5

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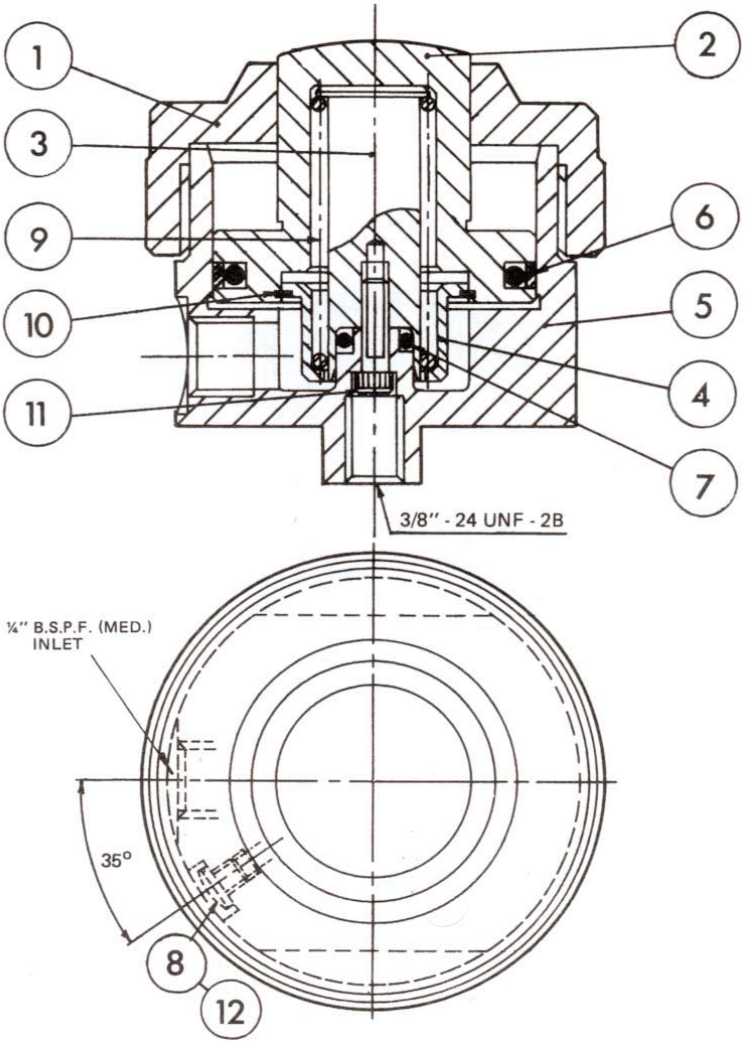
WORK HOLDING RANGE

RAMPOWER HEAD JUNIOR



Item No.	Description	Part No.
1	Gland Nut	SP 54-32-0010
2	Piston	SP 54-32-0040
3	Spring Guide	SP 54-32-0520
4	Spring Retainer	SP 54-32-0590
5	Cylinder	SP 54-32-0015EC2
6	Piston Seal 2.1/8" Ø	SP 54-32-6
7	'O' Ring (Spring Guide)	SP 54-32-7
8	Bonded Seal	SP 54-32-8
9	Spring	SP 54-32-9
10	Circlip 'S' internal	SP 54-32-10
11	M4. SOC. Cap HD. Screw	SP 54-32-11
12	2BA Button HD. Soc.Screw	SP 54-32-12

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WORK HOLDING RANGE

RAMPOWER HEAD SENIOR

Code No: 54-32-3

Theoretical thrust equals:-
oil pressure x effective area

For full dimensions see CAD drawings

General Specification	Imperial	Metric
Stroke	1 in	25.4 mm
Effective Area	5.55 in^2	22.90 cm^2
Swept volume	3.55 in^3	58.17 cm^3
Weight	5.125 lbs	2.32 kg
Max. working pressure	4000 psi	275 Bar

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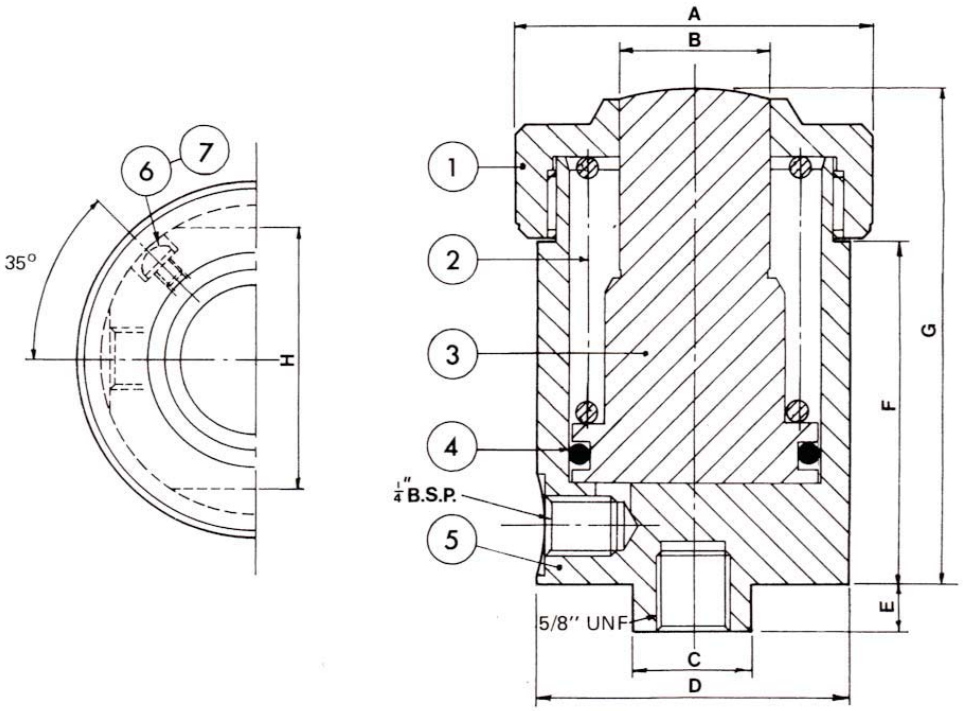
WORK HOLDING RANGE

RAMPOWER HEAD SENIOR



Item No.	Description	Part No.
1	Gland Nut	SP 54-32-0010
2	Return Spring	SP 54-32-0422
3	Piston	SP 54-32-0026 ER1
4	Piston 'O' Ring	SP 54-32-4
5	Cylinder	SP 54-32-0026 ER3
6	Dowty Washer	SP 54-32-6
7	Bleed Screw	SP 54-32-7

Dimension	Imperial (inches)	Metric (mm)
ØA	3.00 "	76.3 mm
ØB	1.25"	31.75 mm
ØC	1.0"	25.4 mm
ØD	2.625"	66.68 mm
E	0.375"	9.53 mm
F	2.875"	73.03 mm
G	4.250"	108 mm
H	2.187"	55.56 mm

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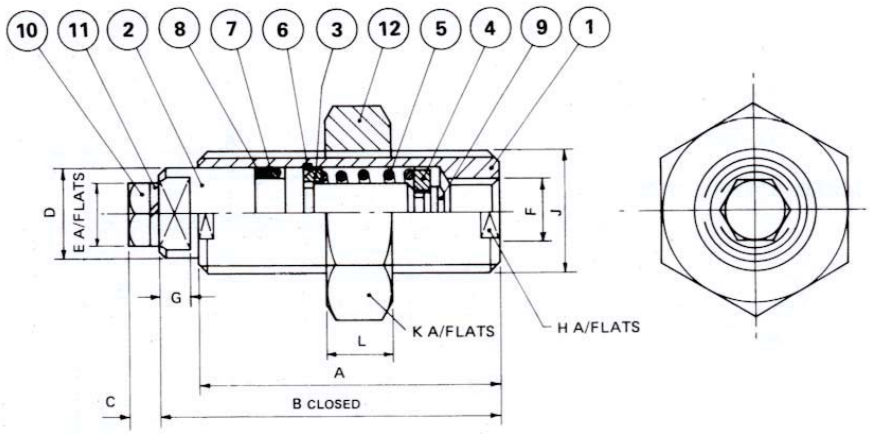
WORK HOLDING RANGE

THREADED RAM MINI



Piston rod tapped M6 x 1
10 deep to suit contact bolt which can be removed to fit alternative attachments

Item No.	Description	Part No.
1	Gland Nut	14-14-0006EC*
2	Piston Rod	14-14-0006ER1
3	Retainer Ring	14-14-0470
4	Washer	14-14-0471
5	Spring	14-14-0420
6	Circlip	SP 14-14-3/6
7	'O' Ring	SP 14-14-3/7
8	Anti Extrusion Ring	SP 14-14-3/8
9	Retaining Screw	SP 14-14-3/9
10	Thrust Screw	SP 14-14-3/10
11	Spring Washer	SP 14-14-3/11
12	Lock Nut	SP 14-14-3/12*

* when ordering state thread size

Dimension	Imperial (inches)	Metric (mm)
A	1.87	47.5
B	2.13	54
C	0.20	5
ØD	0.55	14
E	0.37	9.5
F	1/8 B.S.P	G1/8
G	0.20	5
H	0.63	16
J UNF	3/4 x 16	-
J Metric coarse	-	M20 x 2.5
J metric fine	-	M20 x 1.5
K UNF	1.125	-
K Metric coarse	-	30
K Metric fine	-	29
L UNF	0.413	-
L Metric coarse	-	9
L Metric fine	-	8.5

General Specification	Imperial	Metric
Stroke	0.20 in	5.00 mm
Effective Area	0.24 in^2	1.53 cm^2
Swept volume	0.05 in^3	0.78 cm^3
Weight	0.38 lbs	0.17 kg
Max. working pressure	1500 psi	105 bar

External stop must be used

Theoretical thrust equals:-
oil pressure x effective area

Can be supplied with ring nut in place of hex. lock nut if required

Code No:
14-14-3 U.N.F.
14-14-4 Metric Coarse
14-14-5 Metric Fine

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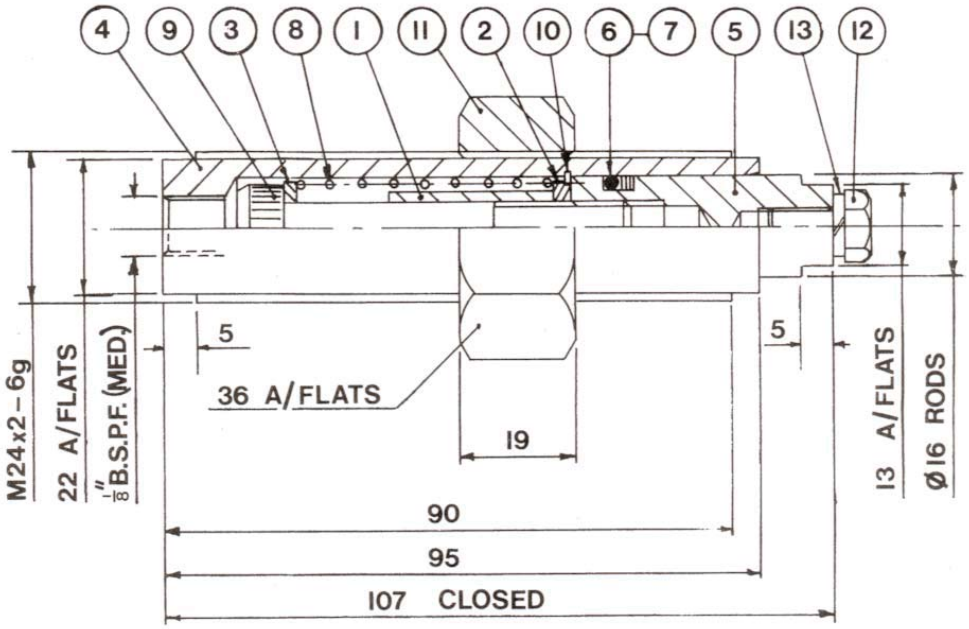
WORK HOLDING RANGE

THREADED RAM MINOR



Item No.	Description	Part No.
1	Spacer	SP16-16-0160
2	Stepped Washer	SP16-16-0470
3	Modified 8mm Washer	SP16-16-0471
4	Cylinder	SP16-16-015EC0
5	Piston Rod	SP16-16-015ER1
6	'O' Ring	SP16-16-6
7	Anti Extrusion Ring	SP16-16-7
8	Spring	SP16-16-8
9	Soc. Cap Head Bolt	SP16-16-9
10	Spirolox Retaining Ring	SP16-16-10
11	Full Nut (Metric Fine)	SP16-16-11
12	Hex Head Screw	SP16-16-12
13	Spring Washer	SP16-16-13

General Specification	Imperial	Metric
Stroke	0.59 in	15 mm
Effective Area	0.31 in^2	2 cm^2
Swept volume	0.18 in^3	3 cm^3
Weight	0.89 lbs	0.4 kg
Max. working pressure	1500 psi	105 bar

Theoretical thrust equals:-
oil pressure x effective area

Piston rod tapped M6 x 1
10 deep to suit contact bolt
which can be removed to fit
alternative attachments

Code No: 16-16-4

Can be supplied
with ring nut in
place of hex. lock
nut if required

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WORK HOLDING RANGE

FOUR TON SCREWED BODIED RAM

Code No. 50-30-0

(for full dimensions see CAD drawings)

Theoretical thrust equals:-
oil pressure x effective area

External stop must be used with spring return versions

General Specification	Imperial	Metric
Stroke with Spring	0.394 in	10 mm
Stroke without Spring	1.181 in	30 mm
Effective Area	3.04 in^2	19.6 cm^2
Swept volume with spring	1.20 in^3	19.6 cm^3
Swept volume without spring	3.59 in^3	58.8 cm^3
Weight with spring	6.875 lbs	3.12 kg
Max working pressure	4000 psi	275 bar

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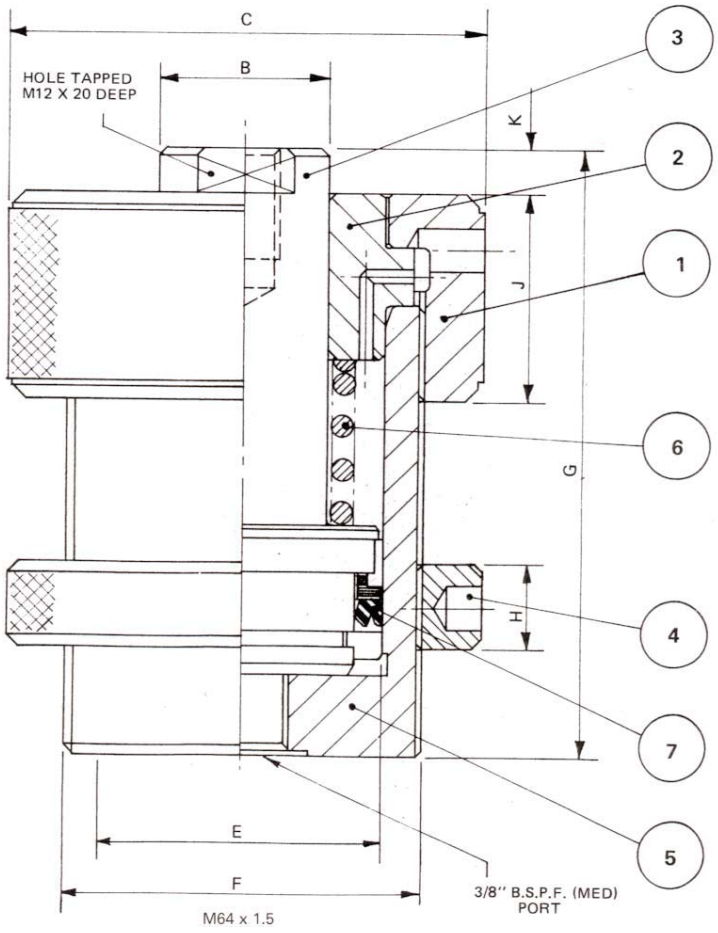
WORK HOLDING RANGE

FOUR TON SCREWED BODIED RAM



Item No.	Description	Part No.
1	Gland Nut	SP 50-30-0010
2	Gland Bush	SP 50-30-0030
3	Piston	SP 50-30-0040
4	Ring Nut	SP 50-30-0450
5	Cylinder	SP 50-30-0030ECO
6	Return Spring	SP 50-30-0420
7	Piston Seal	SP 50-30/7

Dimension	Imperial (inches)	Metric (mm)
ØB	1.18	30.0
ØC	3.35	85.0
ØE	1.97	50.0
ØF	2.52	64.0
G	4.33	110.0
H	0.59	15.0
J	1.5	38.0
K	0.33	8.5

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WORK HOLDING RANGE

FOUR TON LONG SCREWED RAM

Code No. 50-30-1

(for full dimensions see CAD drawings)

Theoretical thrust equals:-
oil pressure x effective area

External stop must be used with spring return versions

General Specification	Imperial	Metric
Stroke with Spring	1.18 in	30 mm
Stroke without Spring	3.14 in	80 mm
Effective Area	3.04 in^2	19.6 cm^2
Swept volume with spring	3.10 in^3	58.8 cm^3
Swept volume without spring	9.56 in^3	157 cm^3
Weight with spring	10.52 lbs	4.77 kg
Max working pressure	4000 psi	275 bar

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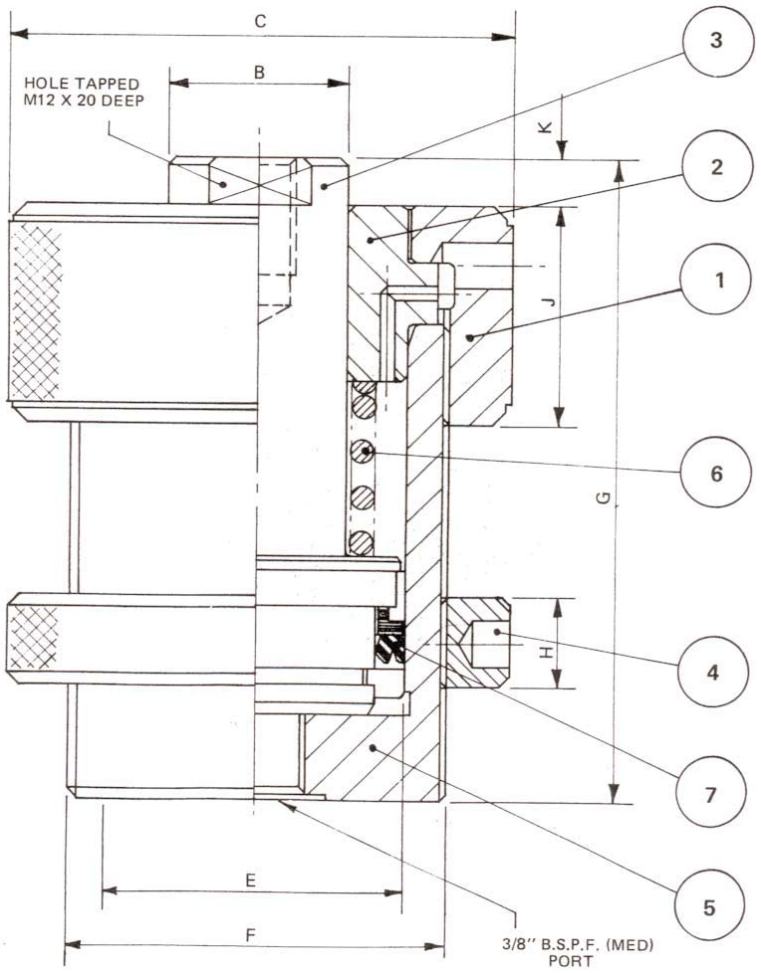
WORK HOLDING RANGE

FOUR TON LONG SCREWED RAM



Item No.	Description	Part No.
1	Gland Nut	SP 50-30-0010
2	Gland Bush	SP 50-30-0030
3	Piston	SP 50-30-0042
4	Ring Nut	SP 50-30-0450
5	Cylinder	SP 50-30-0080EC2
6	Return Spring	SP 50-30-0421
7	Piston Seal	SP 50-30/7

Dimension	Imperial (inches)	Metric (mm)
ØB	1.18	30.0
ØC	3.35	85.0
ØE	1.97	50.0
ØF	2.52	64.0
G	6.30	160.0
H	0.59	15.0
J	1.50	38.0
K	0.33	8.5

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WORK HOLDING RANGE

ELEVEN TON SCREWED BODIED RAM

Code No. 80-30-0

(for full dimensions see CAD drawings)

Theoretical thrust equals:-
oil pressure x effective area

External stop must be used with spring return versions

General Specification	Imperial	Metric
Stroke with Spring	0.78"	20 mm
Stroke without Spring	1.96"	50 mm
Effective Area	7.78 in^2	50.2 cm^2
Swept volume with spring	6.13 in^3	100.4 cm^3
Swept volume without spring	15.32 in^3	251 cm^3
Weight	15.5 lbs	7.03 kg
Max working pressure	4000 psi	275 bar

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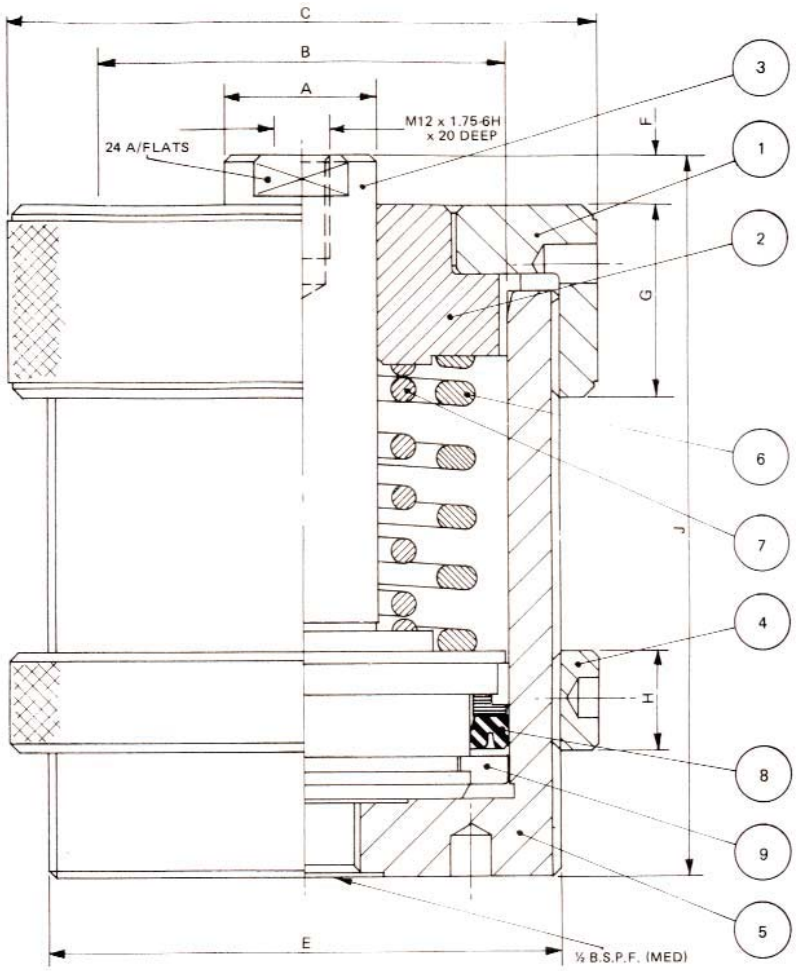
WORK HOLDING RANGE

ELEVEN TON SCREWED BODIED RAM



Item No.	Description	Part No.
1	Gland Nut	SP 80-30-0010
2	Gland Bush	SP 80-30-0030
3	Piston	SP 80-30-0040
4	Ring Nut	SP 80-30-0450
5	Cylinder Assy	SP 80-30-0052ECAO
6	Return Spring	SP 80-30-0420
7	Return Spring	SP 80-30-0421
8	Piston Seal	SP 80-30-8
9	Keeper Ring	SP 80-30-9

Dimension	Imperial (inches)	Metric (mm)
ØA	1.18	30
ØB	3.15	80
ØC	4.53	115
ØD	-	-
ØE	-	M100 x2.6g
F	0.39	10
G	1.50	38
H	0.79	20
J	5.63	143