



SPENCER FRANKLIN HYDRACLAMP, HYDRAULICS AND PNEUMATICS

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SF-1200M

Hydraclamps Miniclamp Woodworking

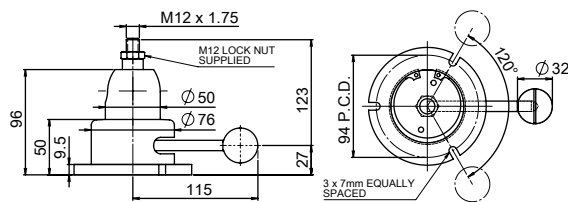
Technical Information

Mechanical Operation Maximum loading 6kg
300mm from Ball Centre at 45' degrees

The SF-1200M HydraClamp is ideal as a wood working and wood carving clamp

One motion of the operating lever locks the work in any desired position. It is the ideal tool for the assembly of all light components and will hold any fitment or jig which can be drilled and tapped for mounting direct on the thread.

To reset preload, or adjust handle position, it is only necessary to slacken the adjustment lock screw in the side of the body, reposition the nut plate and lock in required new position.



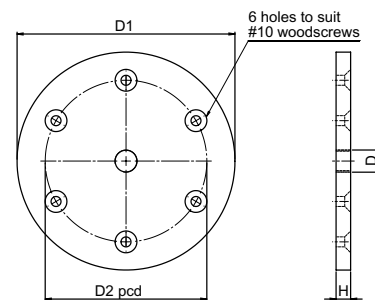
Related Products: SF-1242 Suction Pad Base & SF-1208M Lockgrip Pliers

A	B	C	Description	WDS No.
125	108	97	BASE UNIT ONLY	SF-1200M
125	108	97	BASE UNIT fitted with 50mm Face Plate (SF-1279A)	SF-1200A
125	108	97	BASE UNIT fitted with 75mm Face Plate (SF-1279B)	SF-1200B
125	108	97	BASE UNIT fitted with 100mm Face Plate (SF-1279C)	SF-1200C
125	108	97	BASE UNIT fitted with 120mm Face Plate (SF-1276)	SF-1200D

SF-1276

Face Plate for SF-1200M, SF-1310M

MATERIAL -
220M07 Chemical Black Finish
Ideal for Woodworking applications



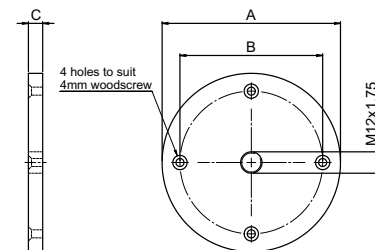
Related Products: SF-1200M/SF-1310M Hydraclamps

D	D1	D2	H	⚖️ (g)	WDS No.
M12	120	89	8	684	SF-1276

SF-1279

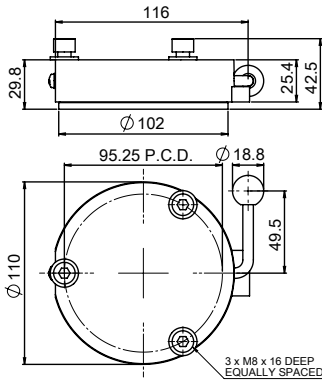
Face Plate for SF-1200M, SF-1310M

MATERIAL -
Aluminium
Ideal for Woodworking applications



Related Products: SF-1200M/SF-1310M Hydraclamps

A	C	B	⚖️ (g)	WDS No.
50	8	32	38	SF-1279A
75	8	55	91	SF-1279B
100	8	80	165	SF-1279C



SF-1242

PowRock Suction Pad Base

Allows the Miniclamp to be fixed rigidly wherever required without drilling and to be moved instantly to any position. Height 29mm.

Related Products: SF-1200M Hydraclamp

Description	 (kg)	WDS No.
Suction Base Pad	0.5	SF-1242



SF-1208M

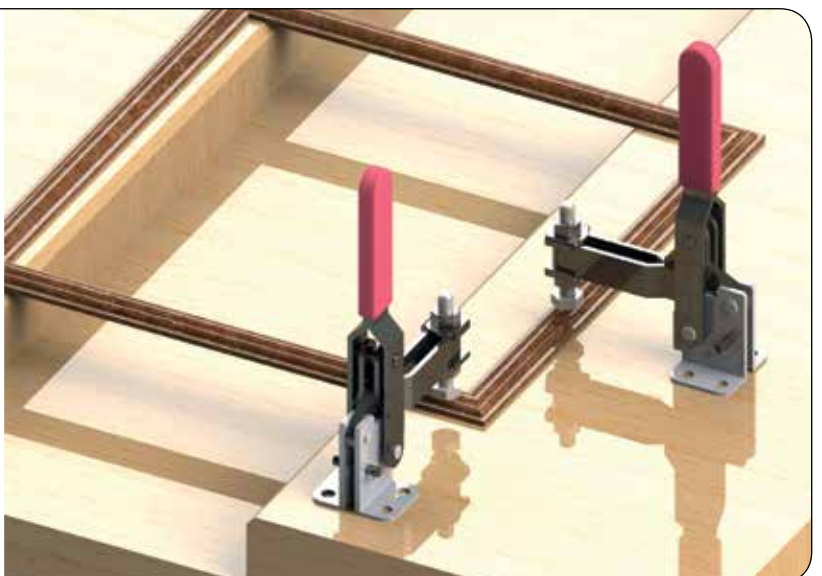
Lock Grip Pliers

Instantaneous self-locking pliers making a convenient light vice for small assemblies.

Related Products: SF-1200M/SF-1310M Hydraclamps

Description	 (kg)	WDS No.
Lock Grip Pliers	0.5	SF-1208M

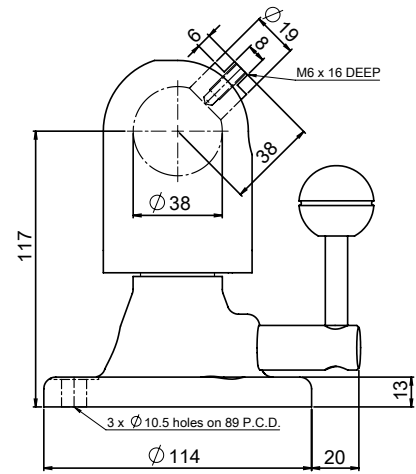
Woodworking Application?
Also Available
Toggle Clamps
and Accessories
See Section 2.



SF-1300M

PowRlock Hydraclamps

TECHNICAL INFORMATION -
 Maxi Type 1300M Mechanical
 Operation Maximum loading 13kg
 300mm from Ball Centre at 45'
 degrees

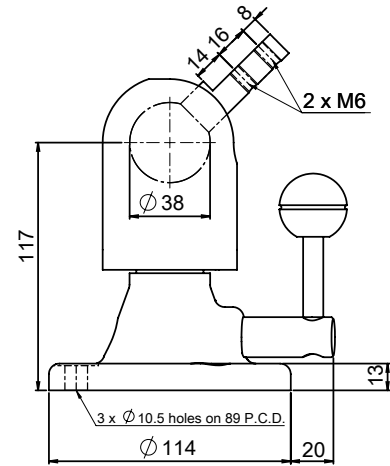


A	B	C	Arm type	⚖️ (kg)	WDS No.
117.5	114	38	Short	3.4	SF-1300M

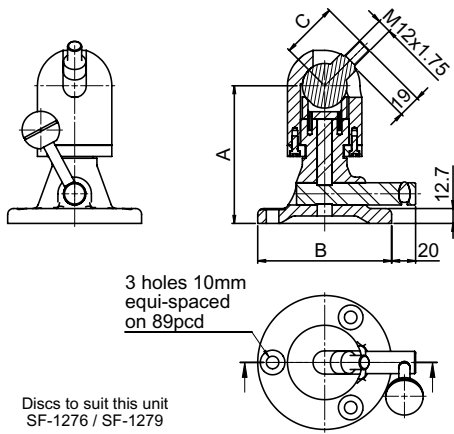
SF-1320M

PowRlock Hydraclamps

TECHNICAL INFORMATION -
 Maxi Type 1320M Mechanical Opera-
 tion Maximum loading 13kg 300mm
 from Ball Centre at 45' degrees



A	B	C	Arm type	⚖️ (kg)	WDS No.
117.5	114	70	Long	3.4	SF-1320M




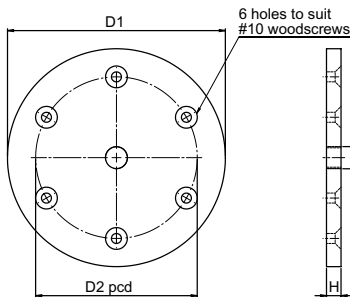
SF-1310M

PowRlock Hydraclamps

TECHNICAL INFORMATION -
 Maxi Type 1310M Mechanical Operation
 Maximum loading 13kg 300mm from Ball Centre at 45 degrees.

Related Products: SF-1276/SF-1279 Faceplates, SF-1208M Locking Pliers

A	B	C	Arm type	 (kg)	WDS No.
117.5	114	48	M8 Short	3.4	SF-1310M

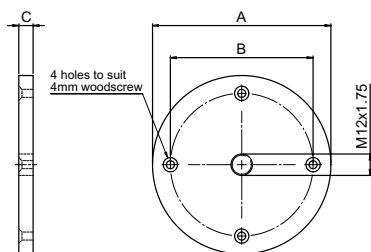


SF-1276

Face Plate for SF-1200M, SF-1310M

MATERIAL -
 220M07 Chemical Black Finish
 Ideal for Woodworking applications


D	D1	D2	H	 (g)	WDS No.
M12	120	89	8	684	SF-1276



SF-1279

Face Plate for SF-1200M, SF-1310M

MATERIAL -
 Aluminium
 Ideal for Woodworking applications

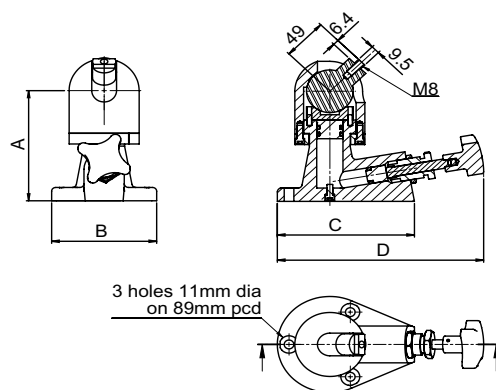
A	B	C	 (g)	WDS No.
50	8	32	38	SF-1279A
75	8	55	91	SF-1279B
100	8	80	165	SF-1279C

SF-1400M

Hydraclamps

TECHNICAL INFORMATION -
Senior Type Hydraulic Operation
Maximum loading 45kg 300mm from
Ball Centre at 45°
For heavier loading see SF-1440M
For 178mm Dia Face Plate
please see SF-1405

A pre-load sleeve is provided which controls the pressure release and enables any desired degree of sustained pressure to be maintained to form a permanent partial lock if required.



Refer to page 26-51 for Oil Grades

Related Products: SF-1405M Faceplate

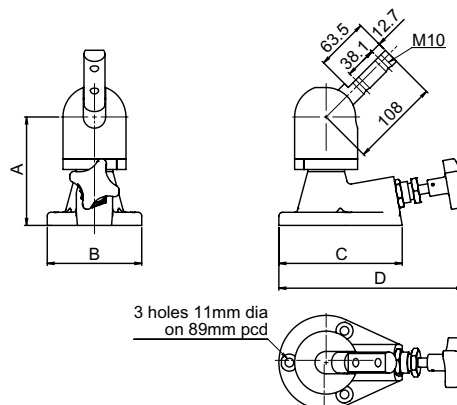
A	B	C	D	Seal Kit	⚖️ (kg)	WDS No.
131	114	149	223	SF-4776	5.5	SF-1400M

SF-1420M

Hydraclamps

TECHNICAL INFORMATION -
Senior Type Hydraulic Operation
Maximum loading 45kg 300mm from
Ball Centre at 45°
For heavier loading see SF-1440M
For 178mm Dia Face Plate
please see SF-1405

A pre-load sleeve is provided which controls the pressure release and enables any desired degree of sustained pressure to be maintained to form a permanent partial lock if required.



Refer to page 26-51 for Oil Grades

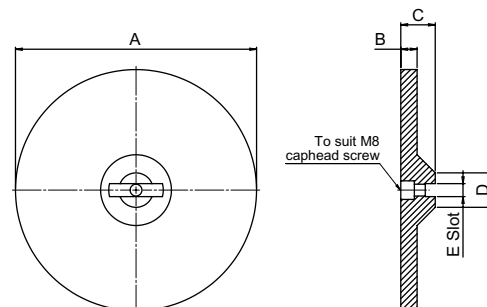
A	B	C	D	Seal Kit	⚖️ (kg)	WDS No.
131	114	149	223	SF-4776	5.5	SF-1420M

SF-1405M

Face Plate for SF-1400M & SF-1401M

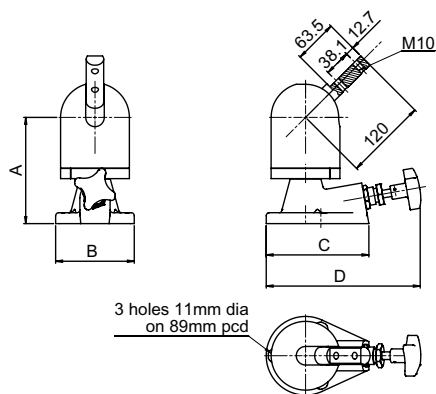
TECHNICAL INFORMATION -
178mm DIA FACE PLATE Type
SF1405M

This is the most useful general purpose adaptor for the use either as a direct holder for work or as a suitable base on which to mount an existing fixture



Related Products: SF-1400M/SF-1401M Hydraclamps

A	B	C	D	E	WDS No.
177.8	12.7	25.4	25.4	9.55	SF-1405M

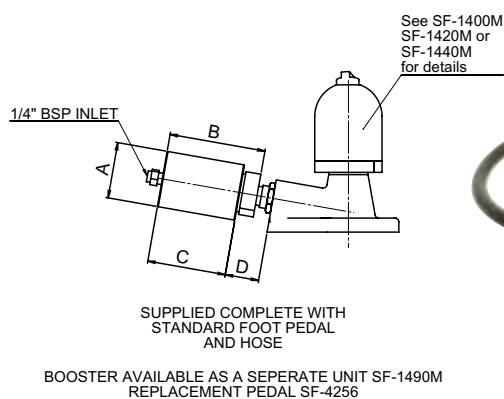


SF-1440M PowRlock Hydraclamp - Super Senior Type

TECHNICAL INFORMATION -
The super senior Hydraclamp is hand screw operated permitting pressure to be readily applied or released in accordance with the requirements of the load. A pre-load sleeve is provided which controls the pressure release and enables any desired degree of sustained pressure to be maintained to form a permanent partial lock if required. Max Loading - 150kg 300mm from ball centre at 45°

Refer to page 26-51 for Oil Grades

A	B	C	D	Seal Kit	(g)	WDS No.
154	114	149	224	SF-4776	9.9	SF-1440M



SF-1401M SF-1421M SF-1441M Hydraclamp Senior Type

TECHNICAL INFORMATION -
Hydraulic Operation Both hands are free to manipulate the work mounted on Senior Hydraclamp by the direct coupling of an air-hydraulic booster. This gives complete control from a foot pedal. Two independent safety factors are incorporated. They ensure that the work will stay locked in the event of sudden failure of the air supply or under a pre-determined degree of sustained pressure if the foot pedal is operated in error.

Refer to page 26-51 for Oil Grades

Related Products: SF-1405M Faceplate

A	B	C	D	Type	MAX Loading 300mm from ball centre	Clamp type	Seal Kit for Clamp	(kg)	WDS No.
63.5	109	89	38	Full Unit-Short Ball Arm	45kg	SF-1400M	SF-4776	8.5	SF-1401M
63.5	109	89	38	Full unit-Long Ball arm	45kg	SF-1420M	SF-4776	8.5	SF-1421M
63.5	109	89	38	Full unit-Long Ball arm	150kg	SF-1440M	SF-4776	12.5	SF-1441M

Conversion Kit to convert Manual to Foot Operated

Kit No.	From	To
SF-4801	SF-1400M	SF-1401M
SF-4801	SF-1420M	SF-1421M
SF-4801	SF-1440M	SF-1441M

Spare Parts

WDS No	Type	Seal Kit for Booster	(kg)
SF-1490	Booster Only	SF-4777	1.9
SF-4256	Foot Pedal	NA	1.5
SF-4923	Silencer For Pedal	NA	0.01
SF-4901/48	Hose Assy	NA	0.24

SF-1500M

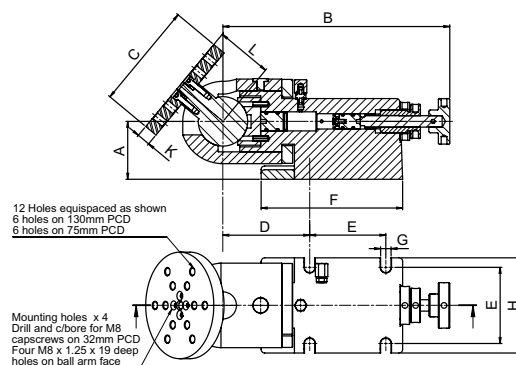
Hydraclamp Major Type

TECHNICAL INFORMATION - Hydraulic Operation MAJOR TYPE 1500M

Maximum loading 325kg 300mm from Ball Centre at 45 degrees
The Major model Hydraclamp provides a really robust positioner suitable for horizontal or vertical mounting.

Tightening is effected by a handwheel with final locking by tommy bar. A pre-load sleeve is fitted to enable any desired degree of sustained pressure to be applied and maintained.

Refer to page 26-51 for Oil Grades



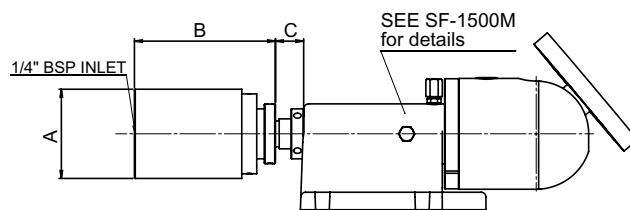
A	B	C	D	E	F	G	H	K	L	(kg)	Seal Kit	WDS No.
96.5	378	178	145	127	235	17.5	159	22	94	37.5	SF-4778	SF-1500M

SF-1501M

Major Hydraclamp Foot Operation

TECHNICAL INFORMATION - Type 1501M Major Foot Operation
Both hands are free to manipulate the work mounted on Major Hydraclamp by the direct coupling of an air-hydraulic booster. This gives complete control from a foot pedal which can be placed at any convenient position for right or left foot. Two independent safety factors are incorporated. They ensure that the work will stay locked in the event of sudden failure of the air supply or under a pre-determined degree of sustained pressure if the foot pedal is operated in error
Max air pressure 4 bar

Refer to page 26-51 for Oil Grades



SUPPLIED COMPLETE WITH STANDARD FOOT PEDAL AND HOSE

A	B	C	Pedal Type	Clamp type	Seal Kit for Clamp	(kg)	WDS No.
113.4	179	36	Standard	SF-1500M	SF-4778	37.5	SF-1501M
113.4	179	36	Covered	SF-1500M	SF-4778	37.5	SF-1502M

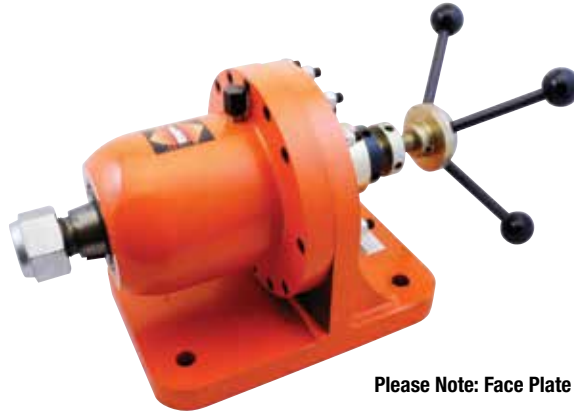
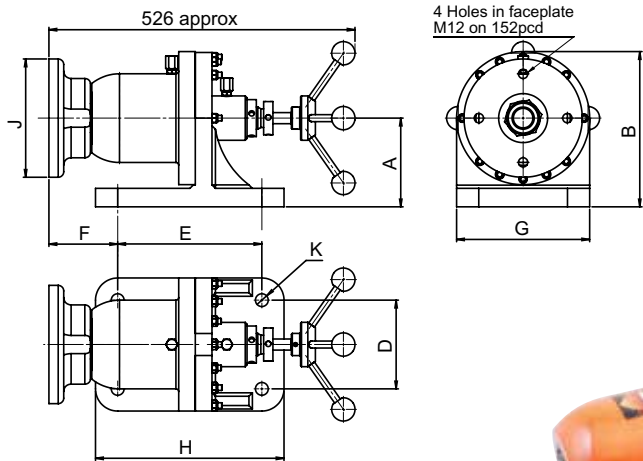
Spare Parts:

Type	Seal Kit	(kg)	WDS No.
Booster Only	SF-4779	7	SF-1590
Standard Foot Pedal	NA	1.5	SF-4256
Silencer for Standard Pedal	NA	0.01	SF-4923
Hose Assy	NA	0.24	SF-4901/48
Covered Foot Pedal	NA	1.5	SF-4260

SF-1600M

PowRlock Hydraclamp Super Major Type

TECHNICAL INFORMATION -
 Hydraulic Operation: MAJOR TYPE
 1600M
 Maximum loading: 750kg 300mm
 from Ball Centre at 45 degrees
 Refer to page 26-51 for Oil Grades




Please Note: Face Plate is not shown in the photo

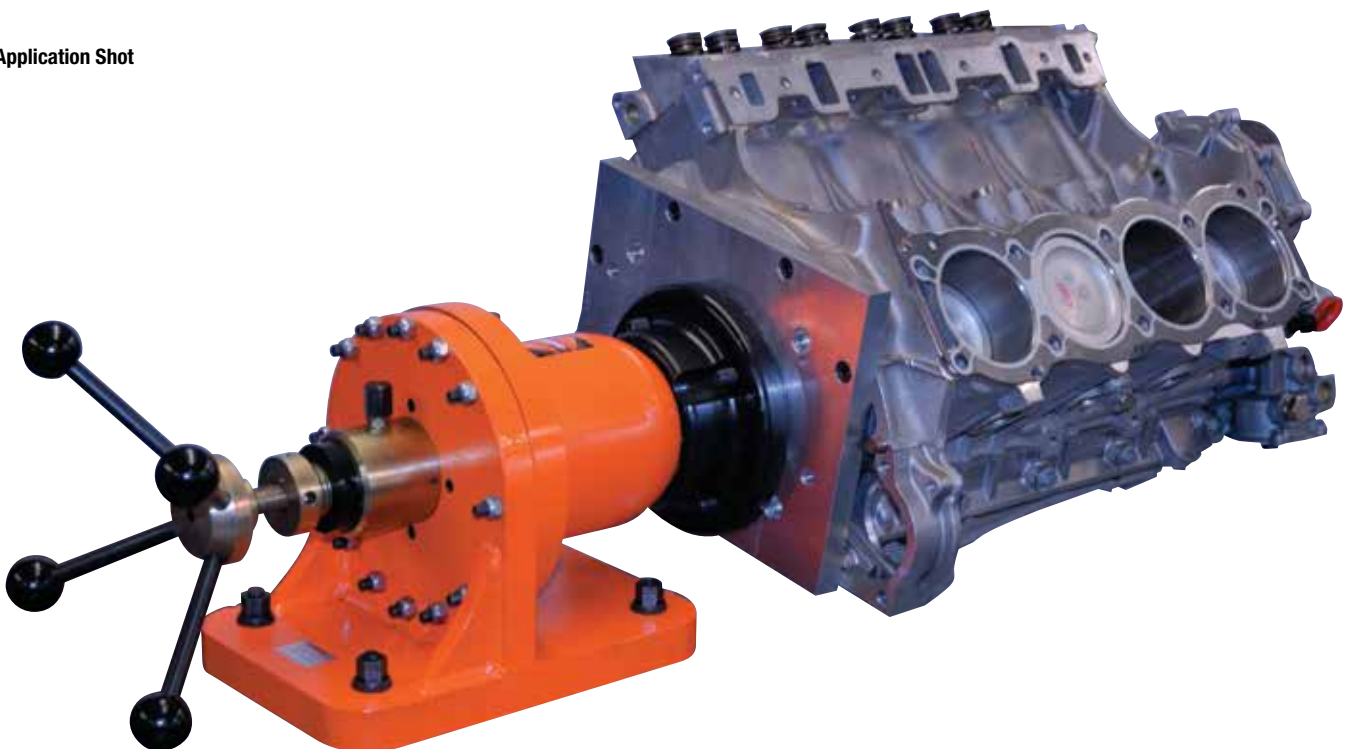
The largest model in the HYDRACLAMP range, the Super Major is capable of supporting work weighing up to three quarters of a ton. As the vertical movement of weights of this magnitude is beyond human capacity the slot machine in the turret of all other HYDRACLAMPS is eliminated. This enables the ball arm to rotate between two sets of roller bearings which ensures that the work can be moved slightly if required and at all times without friction between the ball arm and the turret. Hydraulic control of the movement in arc of the ball arm ensures that the ball arm and the turret become virtually as one. In consequence the workpiece remains immovable even under conditions of high leverage and maximum weight.

The pre-optive sleeve is still incorporated to enable any desired degree of sustained pressure to be applied and maintained. The basic unit is controlled by an angled Capstan.

Foot control is offered as an alternative and this is effected by the use of the same compact intensifier as for the Major HYDRACLAMP. Use plunger 6P28568 instead of 1663 with intensifier control.

A	B	D	E	F	G	H	J	K	 (g)	WDS No.
152	267	152	248	117	229	324	203	22	68	SF-1600M

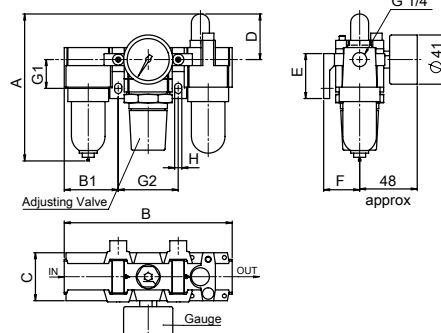
Application Shot



SF-15000

Air Filter Regulator & Lubricator Unit

TECHNICAL -
0.05 - 0.85 MPa (0.5 bar - 8.5 bar)
Operating Temperature: 5-60°C

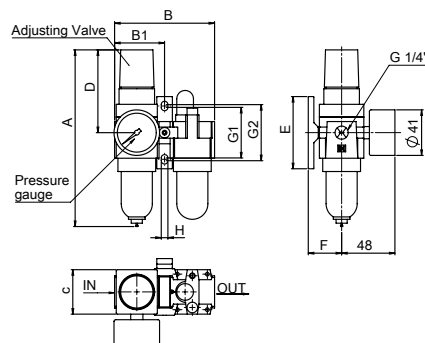


A	B	B1	C	D	E	F	G1	G2	H	Port Size	⚖️ (g)	WDS No.
123	140	45	40	38	37.5	30	24	50	6	G 1/4"	636	SF-15000-0202105

SF-15000

Compact Pneumatic Air Filter & Lubricator Unit

TECHNICAL -
0.05 - 0.85 MPa (0.5 bar - 8.5 bar)
Operating Temperature: 5-60°C
Uses SF-15020-100 or SF-15020-105 Mounting Bracket

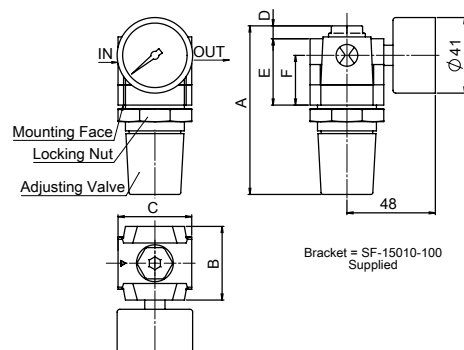


A	B	B1	C	D	E	F	G1	G2	H	Port Size	⚖️ (g)	WDS No.
91.5	90	45	40	74.5	65	30	45.5	50.5	6	G 1/4"	541	SF-15000-0202110

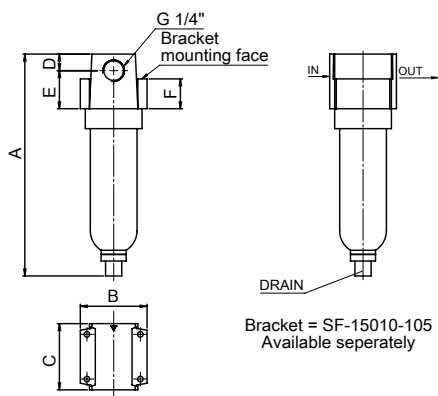
SF-15000

Pneumatic Air Regulators

TECHNICAL -
0.05 - 0.85 MPa (0.5 bar - 8.5 bar)
Operating Temperature: 5-60°C




A	B	C	D	E	F	Port Size	⚖️ (g)	WDS No.
91.5	40	40	7	36	27	G 1/4"	541	SF-15000-0202115

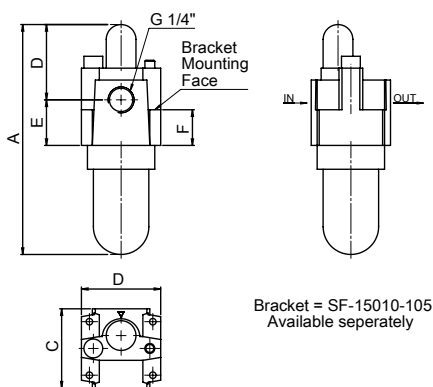


SF-15000

Pneumatic Air Prep Filter with Automatic Drain

TECHNICAL -
 0.05 - 0.85 MPa (0.5 bar - 8.5 bar)
 Operating Temp: 5-60°C
 Uses SF-15010-105 Mounting Bracket


A	B	C	D	E	F	Port Size	 (g)	WDS No.
134	40	40	10	23	18	G 1/4"	193	SF-15000-0202120

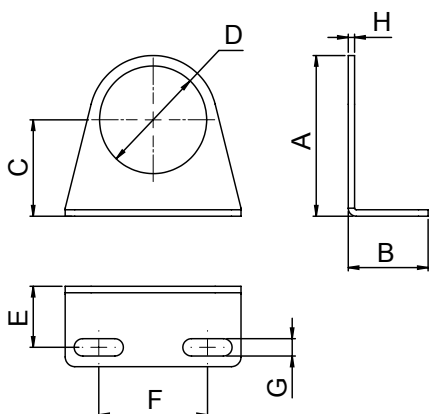


SF-15000

Pneumatic Lubricator

TECHNICAL -
 0.05 - 0.85 MPa (0.5 bar - 8.5 bar)
 Operating Temp: 5-60°C
 Uses SF-15010-105 Mounting Bracket


A	B	C	D	E	F	Port Size	 (g)	WDS No.
116	40	40	38	23	18	G 1/4"	160	SF-15000-0202125



SF-15010

Bracket For SF-15000-0202115

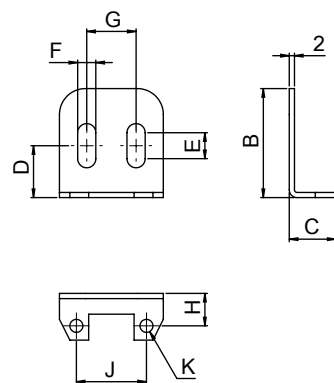
MATERIAL -
 Mild Steel-Zinc plated

A	B	C	D	E	F	G	H	 (g)	WDS No.
50	25	30	33.5	19	34	5.4	2	36	SF-15010-100

SF-15010

Bracket

MATERIAL -
Mild Steel-Zinc plated
Suits SF-15000-0202120 &
SF-15000-0202125

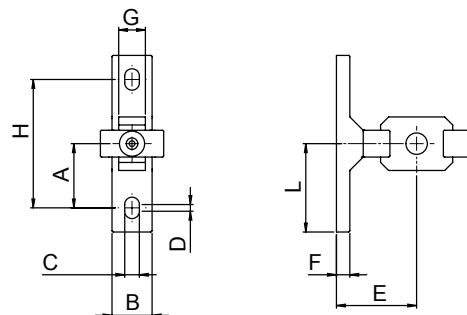


A	B	C	D	E	F	G	H	J	K	⚖️ (g)	WDS No.
40	42	18	20	10	7	19	12.5	27	5	29	SF-15010-105

SF-15020

Bracket & Spacer

Suits SF-15000-0202110

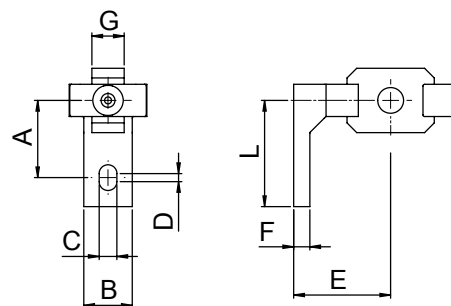


A	B	C	D	E	F	G	H	L	⚖️ (g)	WDS No.
24	15	5.5	3	30	5	10	47	33	44	SF-15020-100

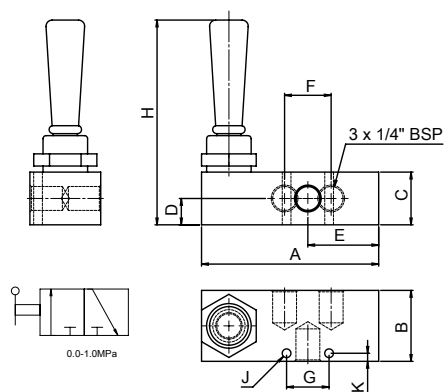
SF-15020

Bracket & Spacer

Suits SF-15000-0202110




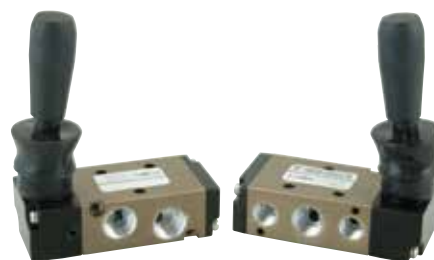
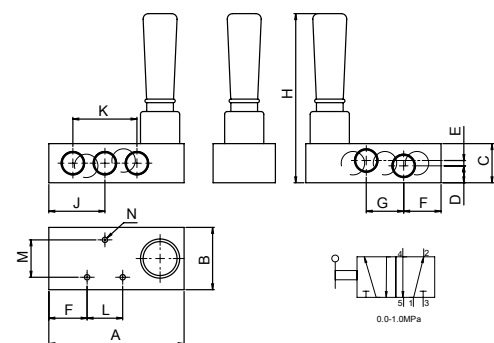
A	B	C	D	E	F	G	L	⚖️ (g)	WDS No.
24	15	5.5	3	30	5	10	47	49	SF-15020-105



SF-15030


Hand Valve 3-2
Without Spring

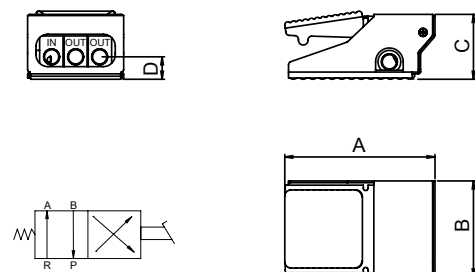
A	B	C	D	E	F	G	H	J	K	 (g)	WDS No.
87.5	35	26	13	35	23	21	101	4.3	4	224	SF-15030-0202205



SF-15030

Hand Valve 5-2 With Spring


A	B	C	D	E	F	G	H	J	K	L	M	N	 (g)	WDS No.
76	35	22	9.5	3	21	21	95	31.5	36	20	21	21	176	SF-15030-0202210



SF-15040

Foot Valve

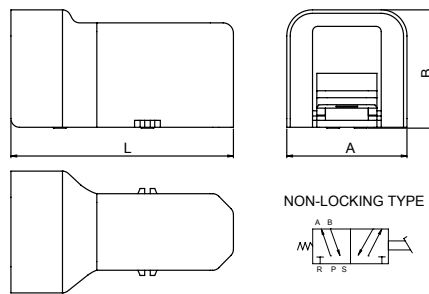
TECHNICAL -
2 Position/4 Way
1/4" BSP

A	B	C	D	 (g)	WDS No.
125	54	80	19	698	SF-15040-02100

SF-15040

Covered Foot Valve

TECHNICAL -
2 Position/5 Way
1/4" BSP

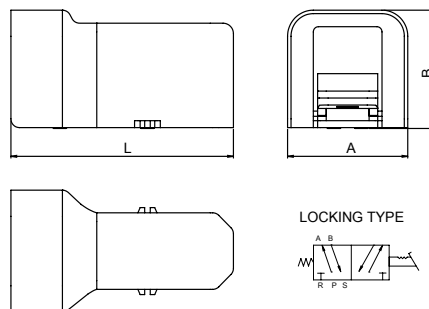


A	B	L	(g)	WDS No.
140	136	260	896	SF-15040-02115

SF-15040

Covered With Safety Catch Foot Valve

TECHNICAL -
2 Position/5 Way
1/4" BSP

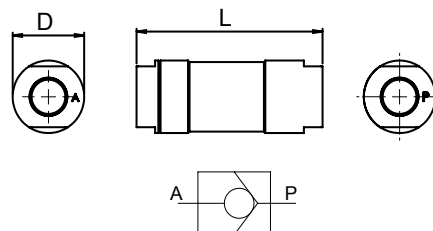


A	B	L	(g)	WDS No.
140	136	260	896	SF-15040-02120

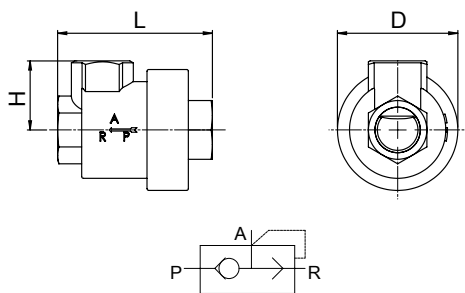
SF-15050

Check Valve - One Way Valve

TECHNICAL -
Restricts flow to one direction only
1/4" BSP




D	L	(g)	WDS No.
25	65	61	SF-15050-02100

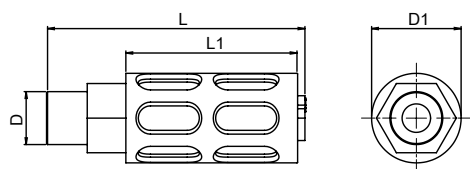


SF-15050

Pneumatic Quick Exhaust

TECHNICAL -
1/4" BSP


D	H	L	 (g)	WDS No.
33	20	43	98	SF-15050-02250

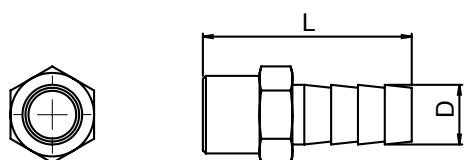


SF-15050

Silencer

TECHNICAL -
1/4" BSP

D	L	L1	D1	 (g)	WDS No.
1/4" BSP	63	42	22	13	SF-15050-02200



SF-15050

Barb Fitting

TECHNICAL -
1/4" BSP

D	L	 (g)	WDS No.
10	35	14	SF-15050-02300

SF-15060

Blanking Plug

TECHNICAL -
1/4" BSP



10

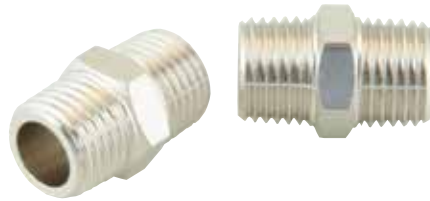
WDS No.

SF-15060-0100155

SF-15060

Male-Male Pneumatics Connectors

TECHNICAL -
1/4" BSP



13

WDS No.

SF-15060-0202145

SF-15060

Female-Female Pneumatic Connectors

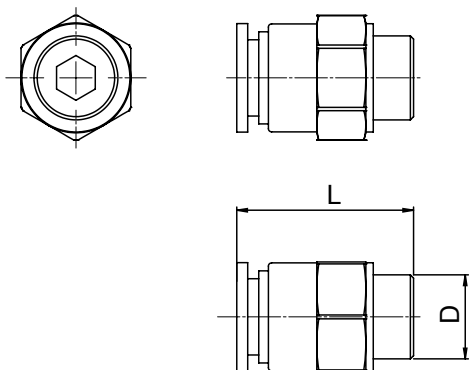
TECHNICAL -
1/4" BSP



17

WDS No.


SF-15060-0202150

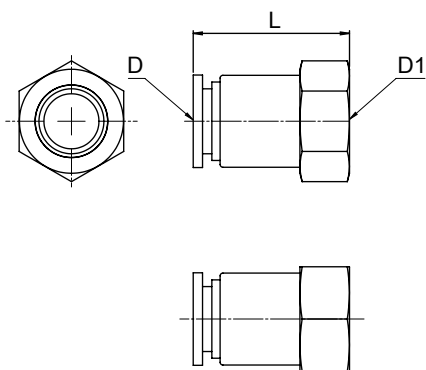


SF-15060

Straight Connector 1/4" BSP 10MM Tube

MATERIAL -
Steel - Zinc Plated
To suit 1/4" BSP and 10mm TUBE


D	L	 (g)	WDS No.
1/4" BSP	27.5	20	SF-15060-0210130

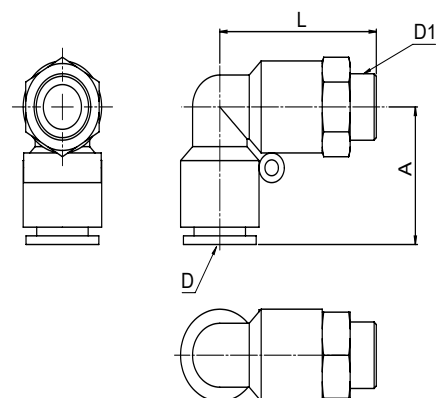


SF-15060

Straight Connectors 1/4" BSP 10MM Tube

MATERIAL -
Steel - Zinc Plated
To suit 1/4" BSP and 10mm TUBE


D	L	 (g)	WDS No.
1/4" BSP	28.5	25	SF-15060-0210135



SF-15060

Elbow Connector 1/4" BSP 10MM Tube

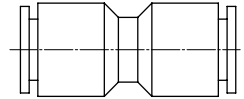
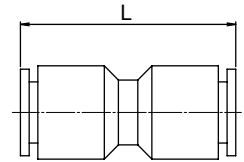
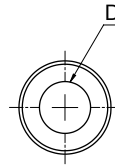
MATERIAL -
Plastic
To suit 1/4" BSP and 10mm TUBE

D	D1	A	L	 (g)	WDS No.
10	1/4" BSP	27	36	26	SF-15060-0210140

SF-15060

Straight Connector 10MM Tube

MATERIAL -
Plastic
To suit 10mm TUBE

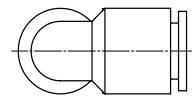
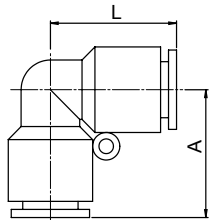
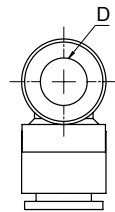


D	L	⚖️ (g)	WDS No.
10	42	14	SF-15060-1010100

SF-15060

Plastic Elbow Connector 10MM Tube

MATERIAL -
Plastic
To suit 10mm TUBE

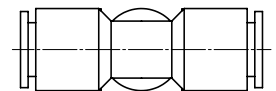
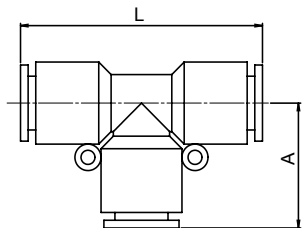
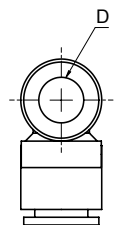


D	A	L	⚖️ (g)	WDS No.
10	27	27	14	SF-15060-1010105

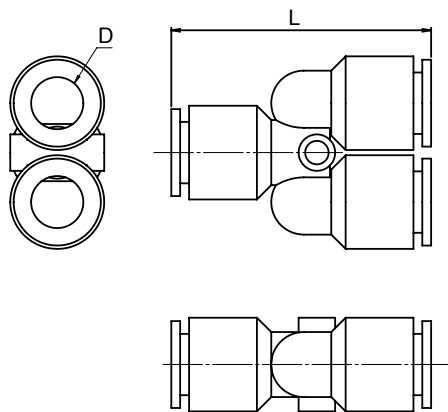
SF-15060

Tee Plastic Connector 10MM Tube

MATERIAL -
Plastic
To suit 10mm TUBE



D	A	L	⚖️ (g)	WDS No.
10	27.5	54	22	SF-15060-1010110

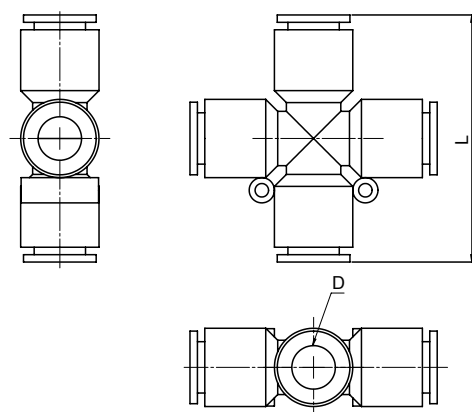


SF-15060

3 Way Connector 10MM Tube

MATERIAL -
Plastic
To suit 10mm TUBE


D	L	 (g)	WDS No.
10	50	23	SF-15060-1010115

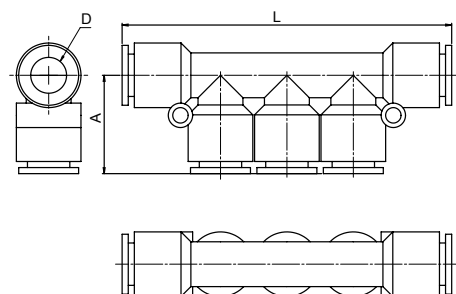


SF-15060

4 Way Connector 10MM Tube

MATERIAL -
Plastic
To suit 10mm TUBE


D	L	 (g)	WDS No.
10	57	33	SF-15060-1010120



SF-15060

5 Way Connector 10MM Tube

MATERIAL -
Plastic
To suit 10mm TUBE

D	A	L	 (g)	WDS No.
10	27.5	93	40	SF-15060-1010125

SF-15090

Tube Cutter

MATERIAL -
Plastic



35

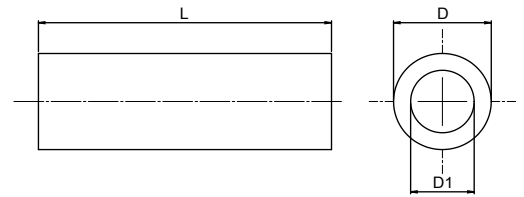
WDS No.

SF-15090-100

SF-15100

Pneumatic & Air Prep Tube

MATERIAL -
Tube, PU Blue



D

D1

L



WDS No.

10

6.5

10 Metre

59

SF-15100-10010

10

6.5

20 Metre

118

SF-15100-10020

10

6.5

40 Metre

236

SF-15100-10040

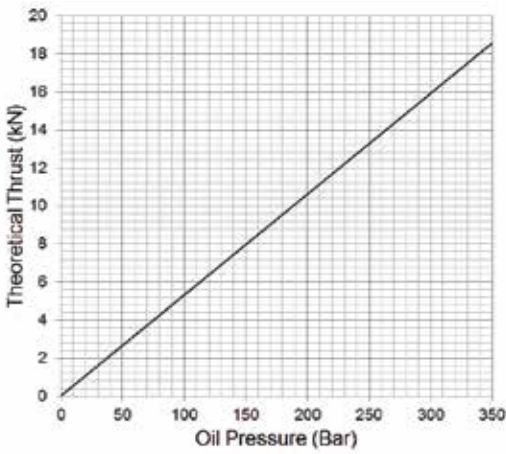
SF-5000A-5100A

PowRlock Mini Ram Head

TECHNICAL INFORMATION -

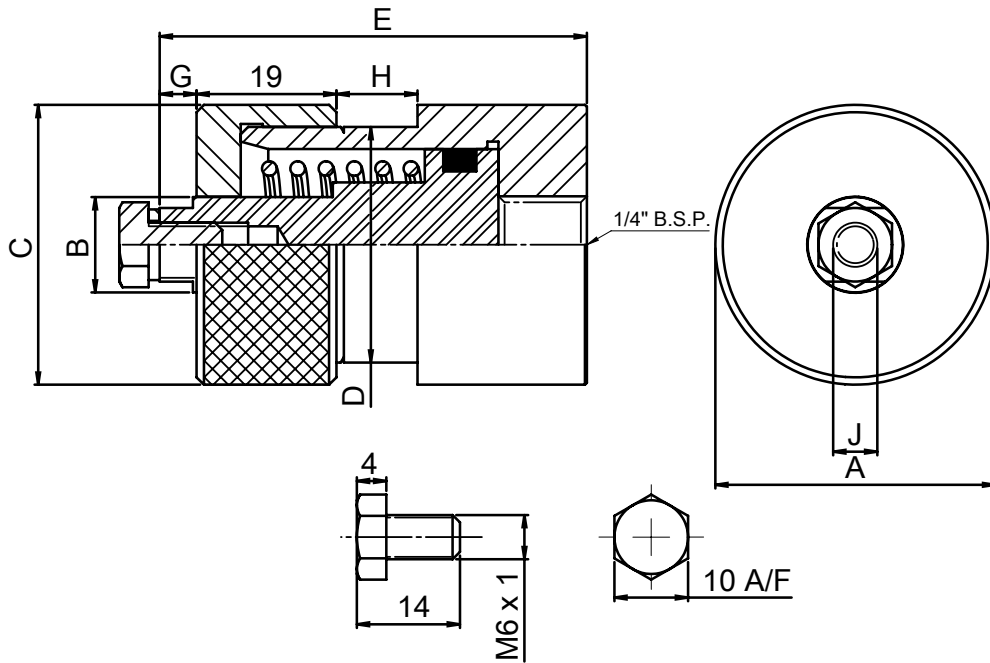
Max Operating Pressure =
350 BAR (5000 P.S.I.)
Theoretical Thrust (N) =
Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information




NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



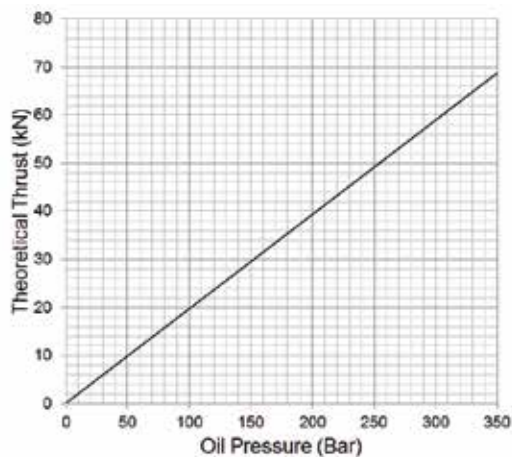
Body/Cap Thread M32 x 1.5

Stroke* mm	Effective Area cm ²	Swept Volume cm ³	Dimensions in mm									 (kg)	WDS No.	Seal Kit No.
			A	B	C	D	E	F	G	H	J			
12.5	5.31	6.64	38	13	38	32	58	13	5	11	M6x1	0.36	SF-5000A	SF-5099
25	5.31	13.28	38	13	38	32	83	13	5	36	M6x1	0.45	SF-5100A	SF-5099

* Do not exceed Maximum Stroke

SF-3520-3525

PowRlock PowRam Head



TECHNICAL INFORMATION -

Max Operating Pressure = 350 BAR (5000 P.S.I.)

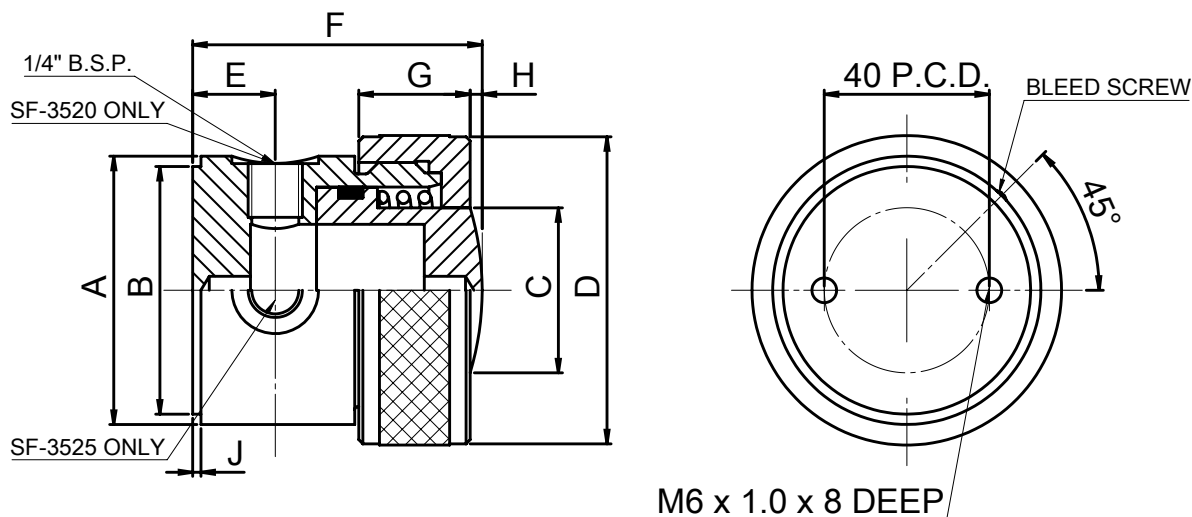
Theoretical Thrust (N) =

Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information

NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



Body/Cap Thread M32 x 1.5

Stroke* mm	Effective Area cm ²	Swept Volume cm ³	Dimensions in mm									Scales (kg)	WDS No.	Seal Kit No.
			A	B	C	D	E	F	G	H	I			
15	19.64	29.46	65	60	40	75	20	70	27	3	2	1.68	SF-3520	SF-4413

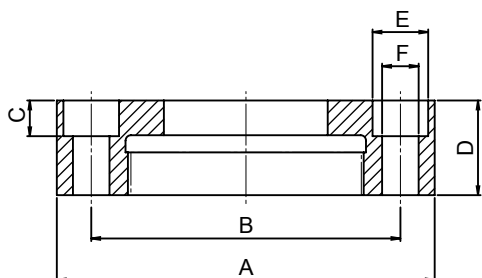
* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to retain them in position by the 2 tapped holes in the rear location, allowing the back face of each head to react against a rigid face.

Note: Unless otherwise stated assume there are four counter bored holes equi-spaced on ØB.

OPTIONAL VARIATIONS FOR STANDARD TYPE 3520 POWRAM

Part No SF-3520FL - Front flange mounted (circular) instead of screwed cap.



Dimensions in mm						Flange No.
A	B	C	D	E	F	
108	85.7	10.4	30.1	16.6	10.3	SF-3520

SF-3550B

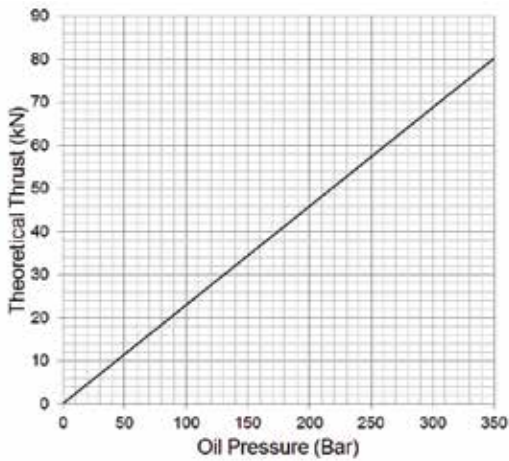
PowRlock PowRam Head Long-stroke

TECHNICAL INFORMATION -

Max Operating Pressure = 350 BAR (5000 P.S.I.)

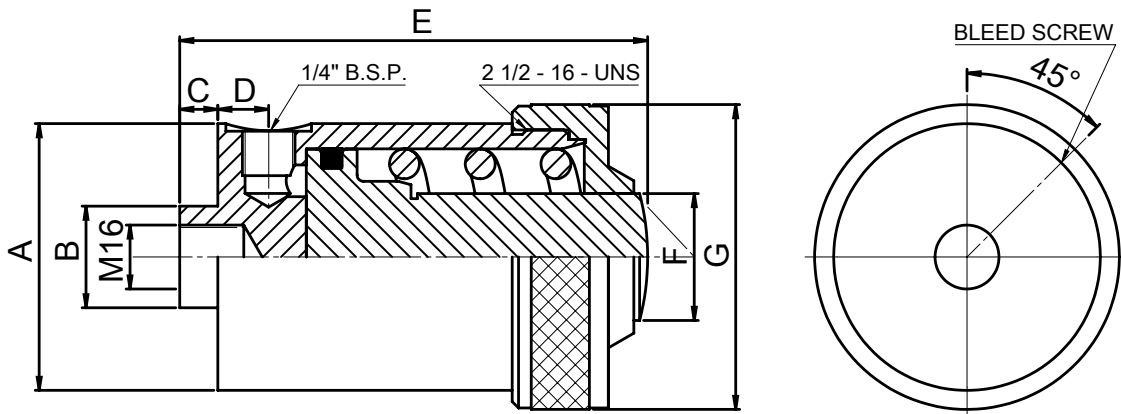
Theoretical Thrust (N) = Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information




NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



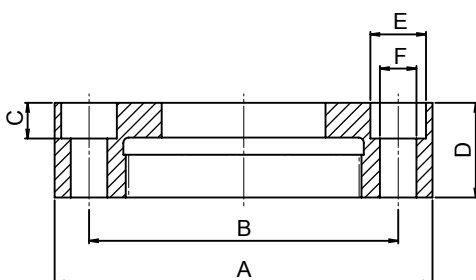
Body/Cap Thread 2 1/2 - 16 - UNS

Stroke* mm	Effective Area cm ²	Volume cm ³	Dimensions in mm							 (kg)	WDS No.	Seal Kit No.
			A	B	C	D	E	F	G			
25.4	22.9	58.17	66.58	25.4	9.53	12.7	119.06	31.75	76.2	2.27	SF-3550B	SF-4798

* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to retain them in position by the tapped hole in the rear spigot, allowing the back face of each head to react against a rigid face.

Note: Unless otherwise stated assume there are four counter bored holes equi-spaced on ØB.



OPTIONAL VARIATIONS FOR STANDARD TYPE 3550B POWRAM

Part No SF-3550BFL - Front flange mounted (circular) instead of screwed cap.

Dimensions in mm						Flange No.
A	B	C	D	E	F	
108	85.7	10.4	30.1	16.6	10.3	SF-3551FL

SF-6920A

PowRlock Double Acting Piercing Head



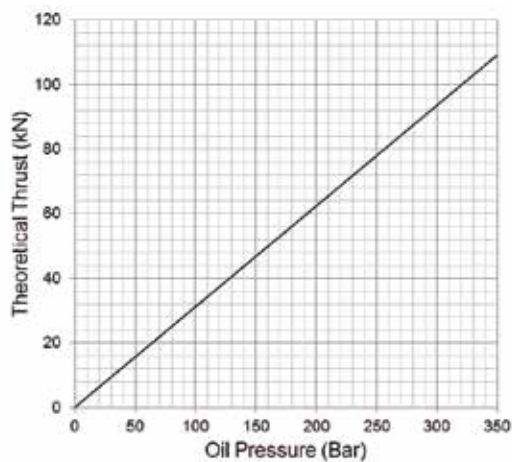
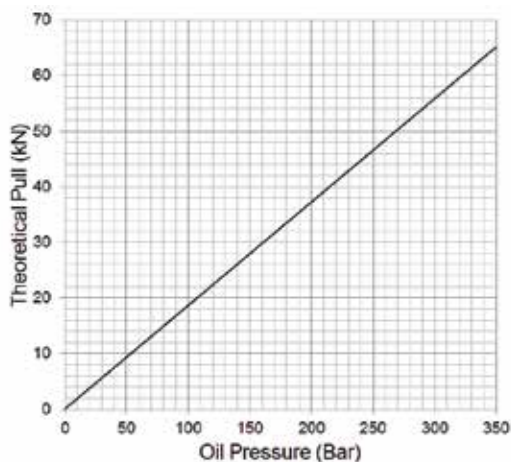
TECHNICAL INFORMATION -

Max Operating Pressure =
350 BAR (5000 P.S.I)

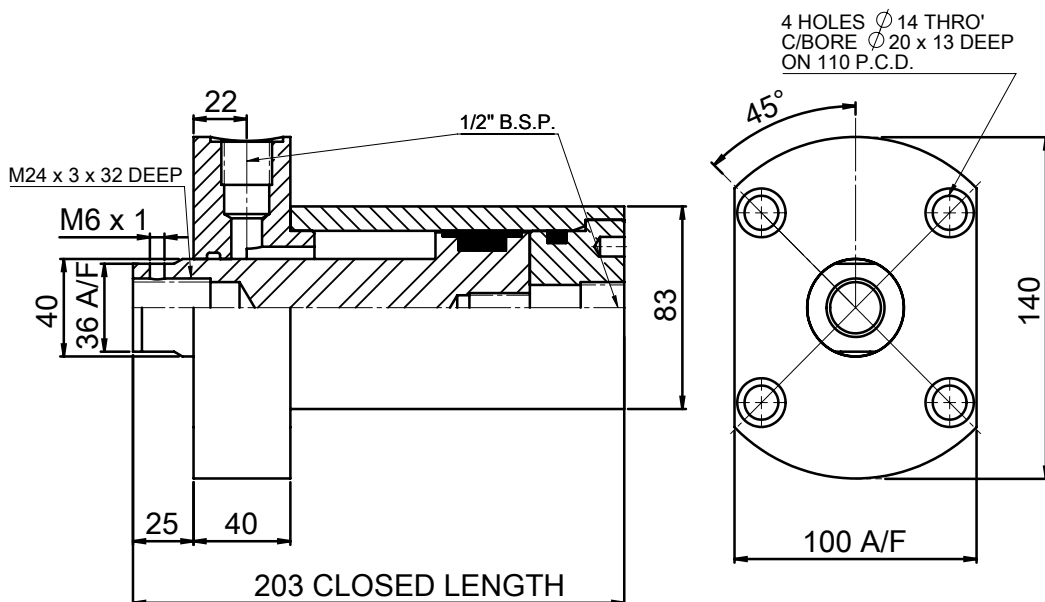
Theoretical Thrust (N) =
Oil Pressure (bar) x Effective Area (Full Bore Side) (cm²)

Theoretical Pull (N) =
Oil Pressure (bar) x Effective Area (Annulus Side) (cm²)

Refer to page 26-51 & 26-52 for more technical information



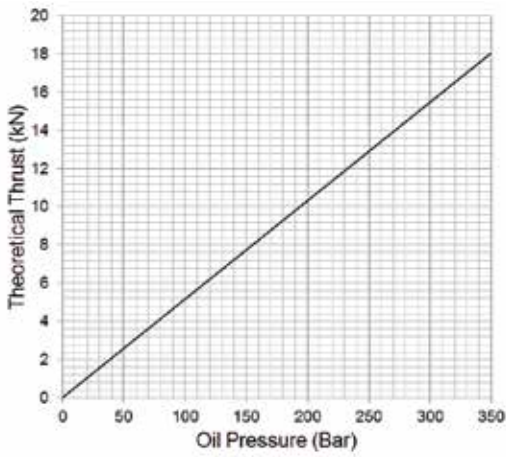
Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



Body/Cap Thread M32 x 1.5

Stroke*	Effective Area		Swept Volume		Max Operating Pressure bar	⚖️ (kg)	WDS No.	Seal Kit No.
	Full Bore Side cm ²	Annulus Side cm ²	Full Bore Side cm ³	Annulus Side cm ³				
50	31.17	18.61	155.85	93.05	350	8.2	SF-6920A	SF-4394

* Do not exceed Maximum Stroke



SF-3000MF

PowRlock OpenRam Midget Head

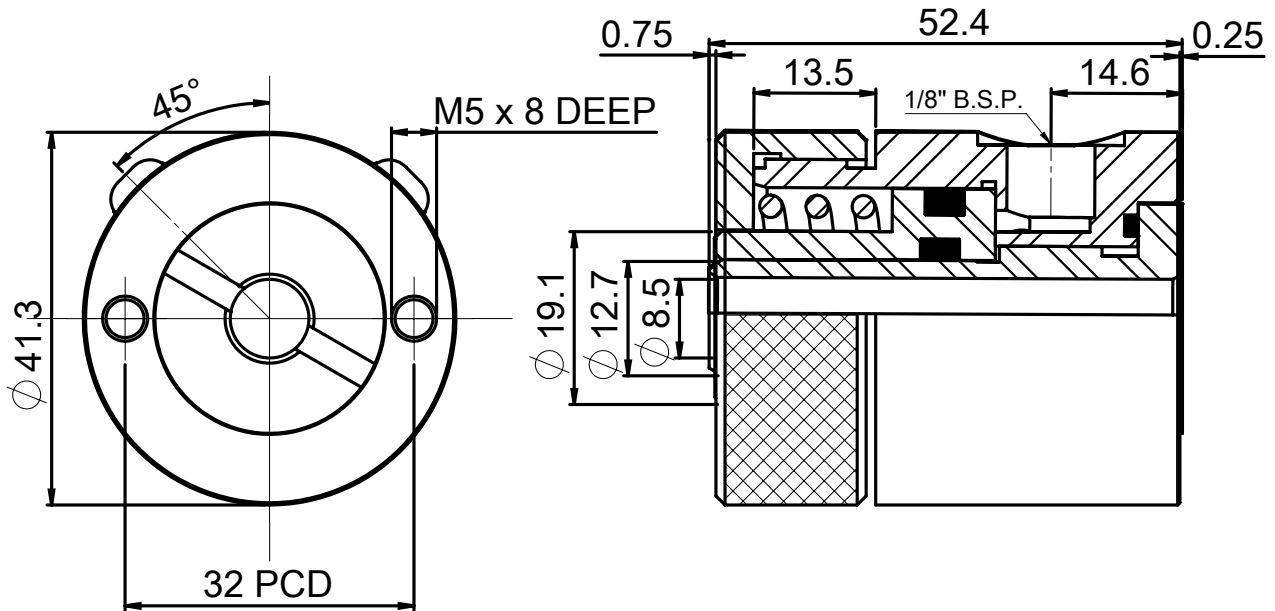
TECHNICAL INFORMATION -

Max Operating Pressure =
350 BAR (5000 P.S.I.)
Theoretical Thrust (N) =
Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information

NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



Body/Cap Thread 1 3/8 - 18 - UNEF

Stroke*		Effective Area cm ²	Swept Volume		Weight		WDS No.	Seal Kit No.
With Spring mm	Without Spring mm		With Spring cm ³	Without Spring cm ³	With Spring kg	Without Spring kg		
6.35	15.49	5.16	3.28	8.03	0.43	0.40	SF-3000MF	SF-3099

* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to mount them over 8mm dia. studs or bolts via the hole through the centre of each head.

SF-3100MF - 3300MF

PowRlock OpenRam Head

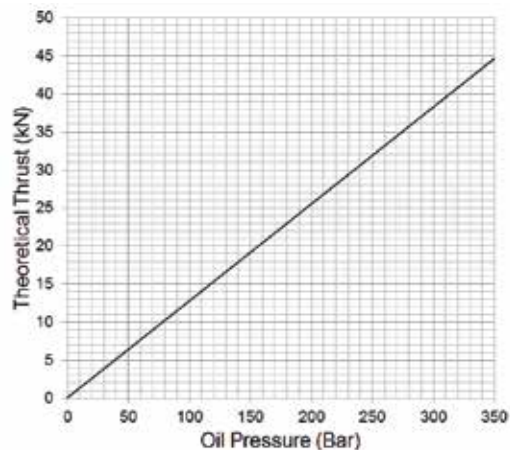
TECHNICAL INFORMATION -

Max Operating Pressure = 350 BAR (5000 P.S.I.)

Theoretical Thrust (N) =

Oil Pressure (bar) x Effective Area (cm²)

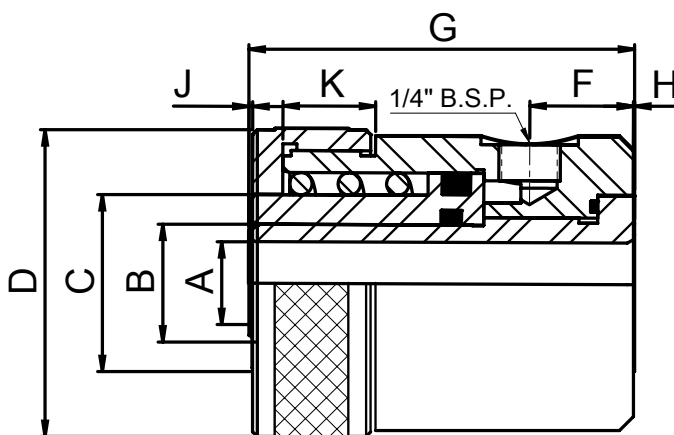
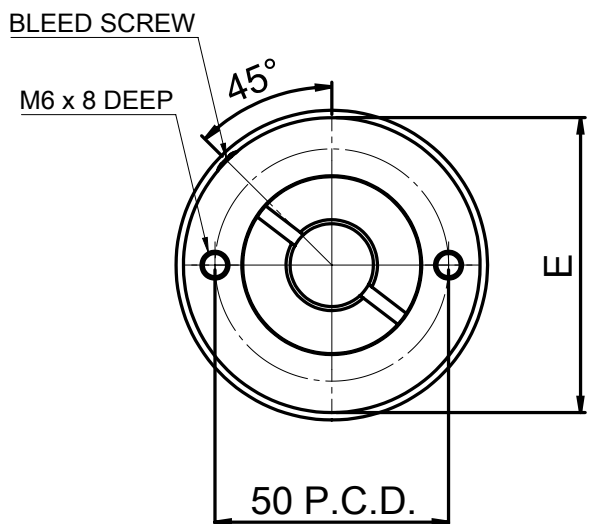
Refer to page 26-51 & 26-52 for more technical information



All ports are 1/4" BSP

NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.

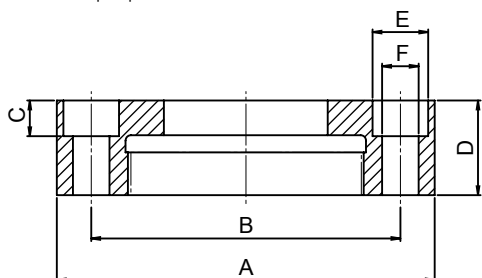


Stroke*		Effective Area cm ²	Swept Volume		Dimensions in mm										Weight		WDS No.	Seal Kit No.
With Spring mm	Without Spring mm		With Spring cm ³	Without Spring cm ³	A	B	C	D	E	F	G	H	J	K	With Spring kg	Without Spring kg		
7.9	18.0	12.8	10.5	22.9	17.5	25.4	38.1	66.7	63.5	11.1	55.6	0.3	0.8	19.8	0.9	0.9	SF-3100MF	SF-3199
15.8	31.2	12.8	20.5	40.0	17.5	25.4	38.1	66.7	63.5	22.2	82.6	0.3	0.8	19.8	1.5	1.5	SF-3200MF	SF-3199
38.1	63.5	12.8	48.7	81.1	17.5	25.4	38.1	66.7	63.5	19.1	128	0.3	0.8	17.5	2.6	2.5	SF-3300MF	SF-3199

* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to retain them over 16mm dia. studs or bolts via the hole through the centre of each head.

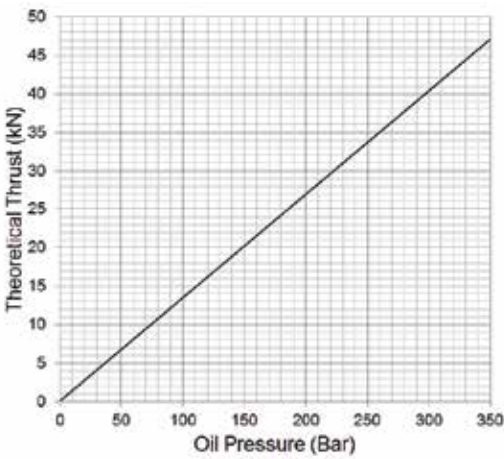
Note: Unless otherwise stated assume there are four counter bored holes equi-spaced on ØB.



OPTIONAL VARIATIONS FOR STANDARD TYPE 3520 POWRAM

Part No SF-3100FL/SF-3200FL/SF-3300FL - Front flange mounting (circular) instead of screwed cap.

Dimensions in mm							Flange No.
A	B	C	D	E	F		
95.2	77.8	8.4	25.4	14.3	8.7	SF-3101FL	
95.2	77.8	8.4	25.4	14.3	8.7	SF-3201FL	
95.2	77.8	8.4	35.6	14.3	8.7	SF-3301FL	



SF-6120A

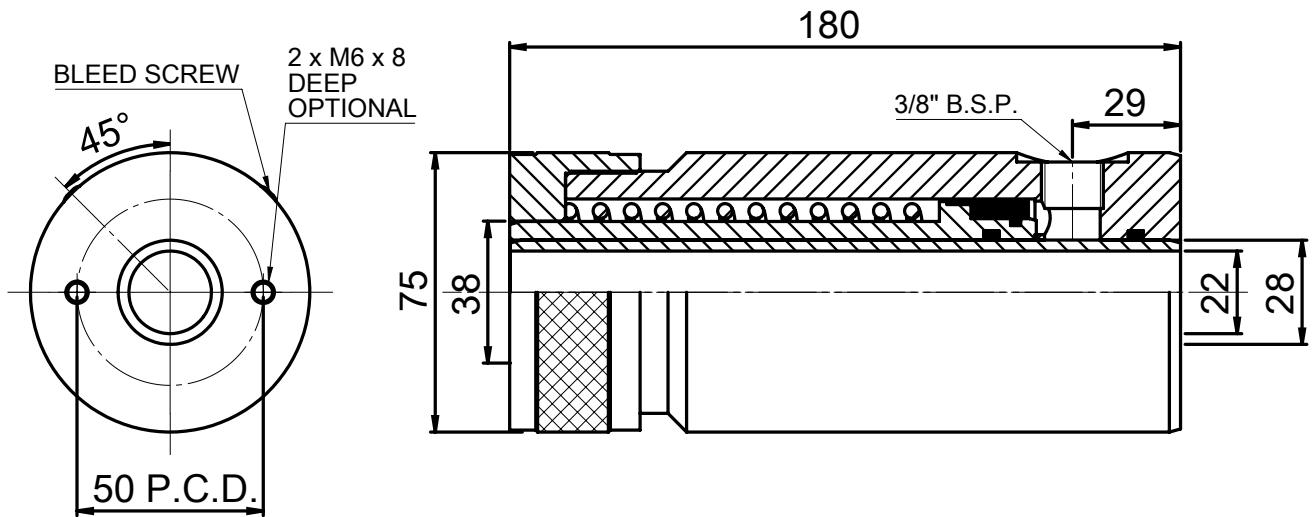
PowRlock OpenRam Superstroke Head

TECHNICAL INFORMATION -
 Max Operating Pressure = 350 BAR (5000 P.S.I.)
 Theoretical Thrust (N) = Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information

NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.

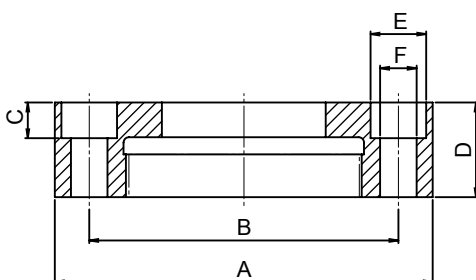


Stroke*		Effective Area cm ²	Swept Volume		⚖️ (kg)	WDS No.	Seal Kit No.
With Spring mm	Without Spring mm		With Spring cm ³	Without Spring cm ³			
44	100	13.47	59.27	134.7	4.84	SF-6120A	SF-4377

* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to mount them over 20mm dia. studs or bolts via the hole through the centre of each head.

Note: Unless otherwise stated assume there are four counter bored holes equi-spaced on ØB.



OPTIONAL VARIATIONS FOR STANDARD TYPE 6120A OPENRAM
 Part No. 6140A - Front flange mounting (circular) instead of screwed cap.

Dimensions in mm						Flange No.
A	B	C	D	E	F	
110	90	10	35	18	11	SF-6P26422

SF-5500

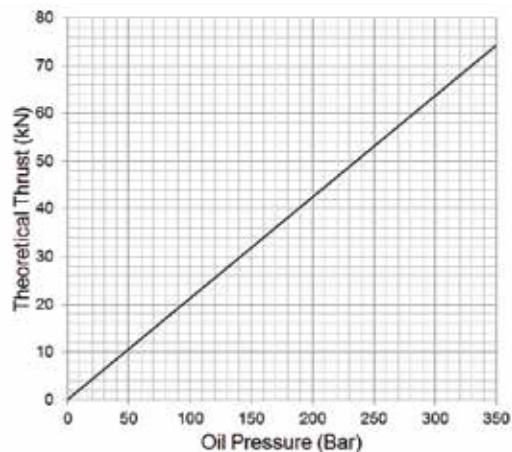
PowRock OpenRam Five-Ton Head

TECHNICAL INFORMATION -

Max Operating Pressure = 350 BAR (5000 P.S.I.)

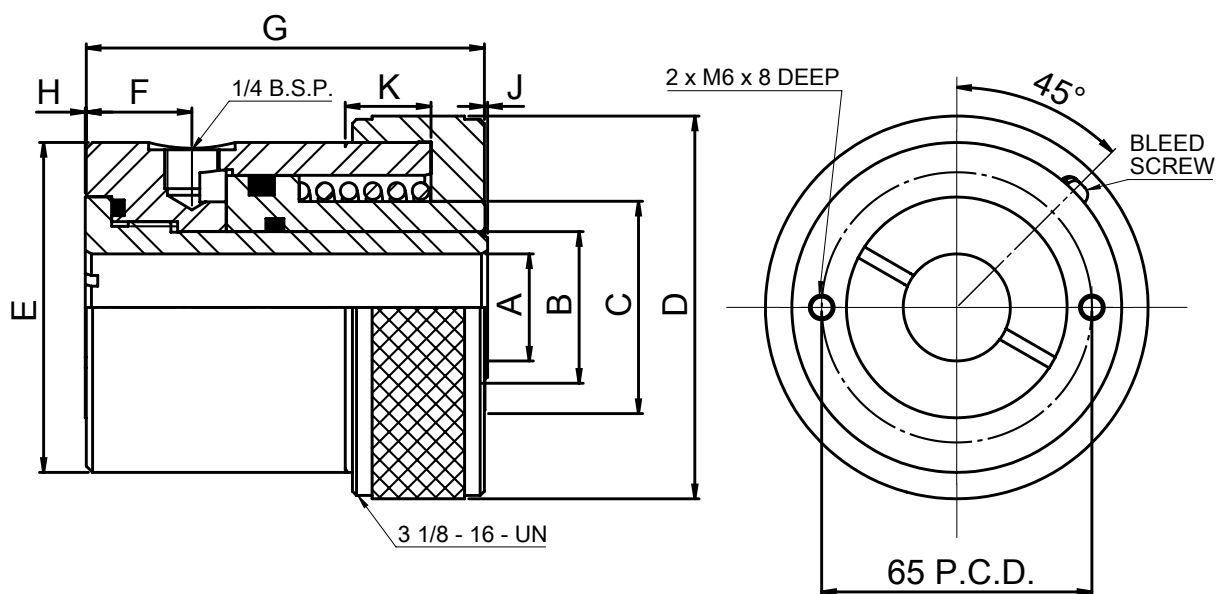
Theoretical Thrust (N) = Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information



NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



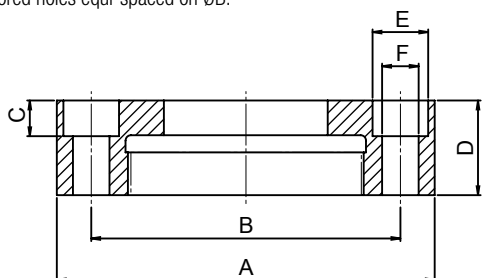
Body/Cap Thread 3 1/8 - 16 - UN

Stroke*		Effective Area cm ²	Swept Volume		Dimensions in mm									Weight		WDS No.	Seal Kit No.	
With Spring mm	Without Spring mm		With Spring cm ³	Without Spring cm ³	A	B	C	D	E	F	G	H	J	K	With Spring kg			Without Spring kg
17.02	31.75	21.23	33.44	67.35	25.8	36.5	50.8	92.1	79.4	25.4	96.8	0.3	0.8	20.6	3.18	3.13	SF-5500	SF-5599

* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to mount them over 25mm dia. studs or bolts via the hole through the centre of each head.

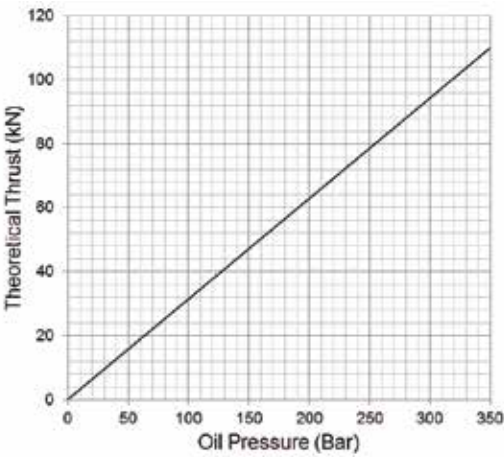
Note: Unless otherwise stated assume there are four counter bored holes equi-spaced on ØB.



OPTIONAL VARIATIONS FOR STANDARD TYPE 5500 OPENRAM

Part No SF-5500FL - Front flange mounting (circular) instead of screwed cap.

Dimensions in mm						Flange No.
A	B	C	D	E	F	
127	101.6	10.4	31.7	16.6	10.3	SF-5501FL



SF-5700

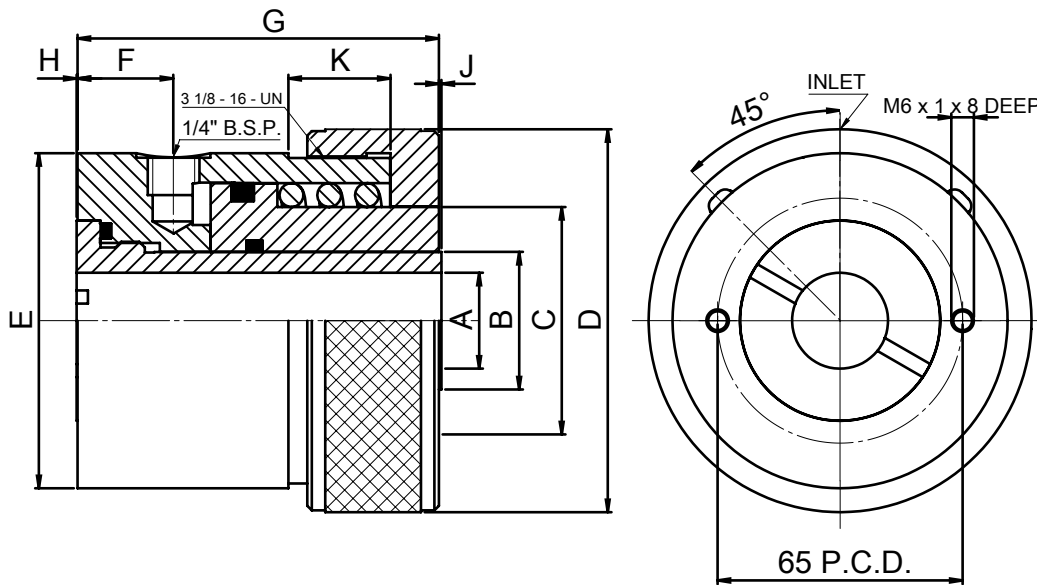
PowRlock OpenRam Seven-Ton Head

TECHNICAL INFORMATION -
 Max Operating Pressure = 350 BAR (5000 P.S.I)
 Theoretical Thrust (N) = Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information

NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



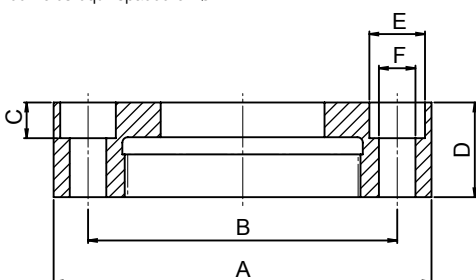
Body/Cap Thread 3 1/8 - 16 - UN

Stroke*			Swept Volume		Dimensions in mm									Weight		WDS No.	Seal Kit No.	
With Spring mm	Without Spring mm	Effective Area cm ²	With Spring cm ³	Without Spring cm ³	A	B	C	D	E	F	G	H	J	K	With Spring kg			Without Spring kg
13.46	29.97	31.42	42.29	94.39	25.8	36.5	50.8	101.6	88.9	25.4	95.25	0.25	0.76	23.81	3.86	3.74	SF-5700	SF-5799

* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to mount them over 25mm dia. studs or bolts via the hole through the centre of each head.

Note: Unless otherwise stated assume there are four counter bored holes equi-spaced on ØB.



OPTIONAL VARIATIONS FOR STANDARD TYPE 5700 OPENRAM

Part No SF-5700FL - Front flange mounting (circular) instead of screwed cap.

Dimensions in mm						Flange No.
A	B	C	D	E	F	
139.7	114.3	13.2	35	20.6	13.5	SF-5701FL

SF-6080A

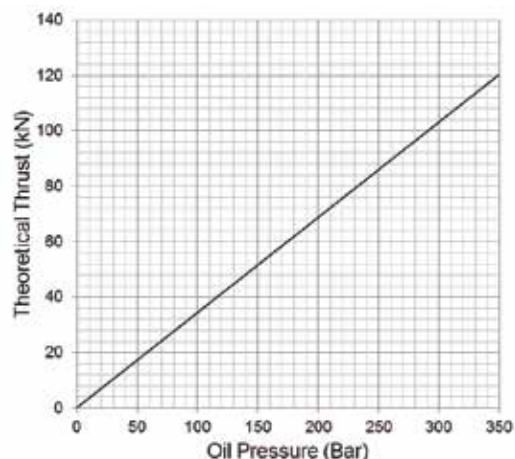
PowRlock OpenRam Head

TECHNICAL INFORMATION -

Max Operating Pressure =
350 BAR (5000 P.S.I.)

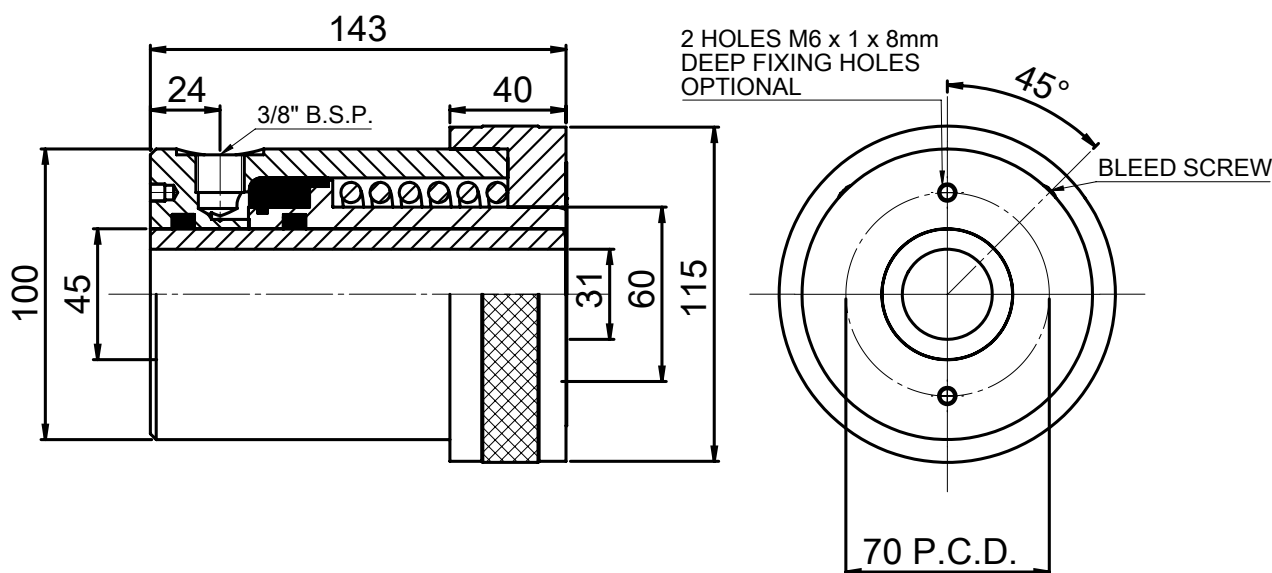
Theoretical Thrust (N) =
Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information



NOTE: All graphs are Rams with Springs fitted.

Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



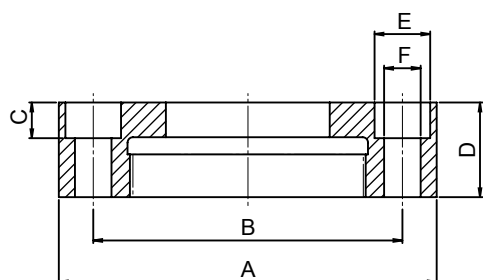
Stroke*		Effective Area cm ²	Swept Volume		Weight		WDS No.	Seal Kit No.
With Spring mm	Without Spring mm		With Spring cm ³	Without Spring cm ³	With Spring kg	Without Spring kg		
16	60	34.36	54.97	206.2	8.65	8.48	SF-6080A	SF-4376

* Do not exceed Maximum Stroke

Mounting: To include these heads in a fixture it is only necessary to mount them over 30mm dia. studs or bolts via the hole through the centre of each head.

Note: Unless otherwise stated assume there are four counter bored holes equi-spaced on ØB.

OPTIONAL VARIATIONS FOR STANDARD TYPE 6080 OPENRAM
Part No SF-6040FL - Front flange mounting (circular) instead of screwed cap.



Dimensions in mm							Flange No.
A	B	C	D	E	F		
160	130	16	40	26	18	SF-6P26432	



SF-3401-3408

Hollow Cylinders Single Acting and Single Acting Spring Return

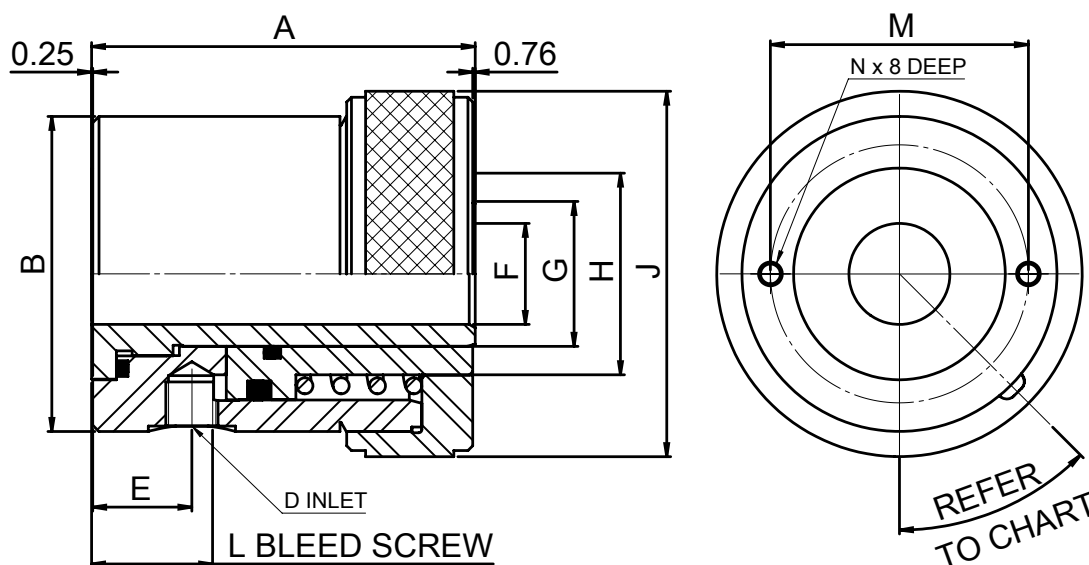
TECHNICAL INFORMATION -

Max Operating Pressure =
275 BAR (4000 P.S.I)

Theoretical Thrust (N) =
Oil Pressure (bar) x Effective Area (cm²)

External stop must be used with spring return version

**Refer to page 26-51 & 26-52 for
more technical information**



A	B	C	D B.S.P.	E	F	G	H	J	K	L	M	N	WDS No.
52.4	41.15	0.76	1/8"	14.27	8.33	12.7	19.1	41.66	0.25	15.62	32	M5x0.8	SF-3401
82.6	63.5	0.76	1/4"	22	17.45	25.4	38.1	66.7	0.25	24.4	50	M6x1.0	SF-3402
55.6	63.5	0.76	1/4"	22	17.45	25.4	38.1	66.7	0.25	15	50	M6x1.0	SF-3403
127.7	63.5	0.76	1/4"	22	17.45	25.4	38.1	66.7	0.25	22	50	M6x1.0	SF-3404
127.7	63.5	0.76	1/4"	11	17.45	25.4	38.1	66.7	0.25	15.8	44.5	M6x1.0	SF-3405
97.8	79.38	0.76	1/4"	25	25.78	36.5	50.8	92.1	0.25	30.5	65	M6x1.0	SF-3406
96.2	88.9	0.76	1/4"	25	25.78	36.5	60.3	101.6	0.25	30.5	65	M6x1.0	SF-3407
143	100		3/8"	24	31	45	60	115			70	M6x1.0	SF-3408

General Specification

Stroke with spring	Stroke without spring	Effective Area cm ²	Swept Volume with spring cm ³	Swept Volume without spring cm ³	Weight with spring kg	Weight without spring kg	Bleed Screw Position	WDS No.
6.35	15.49	5.16	3.28	8			180°	SF-3401
15.75	31.24	12.7	20.5	40	1.5	1.45	180°	SF-3402
7.87	18.03	12.7	10.5	22.9	0.91	0.86	45°	SF-3403
38.1	63.5	12.7	48.7	81.1	2.6	2.5	180°	SF-3404
39.4	82.5	12.7	50.3	105	3.91	3.75	180°	SF-3405
17.02	31.75	21.2	33.4	67.3	3.18	3.13	180°	SF-3406
13.46	29.97	31.4	42.3	94.4	3.86	3.74	180°	SF-3407
19	60	34.3	54.9	206	8.65	8.48	N/A	SF-3408

SF-3402F-3408F

Flange Mounted Hollow Cylinders Single Acting and Single Acting Spring Return



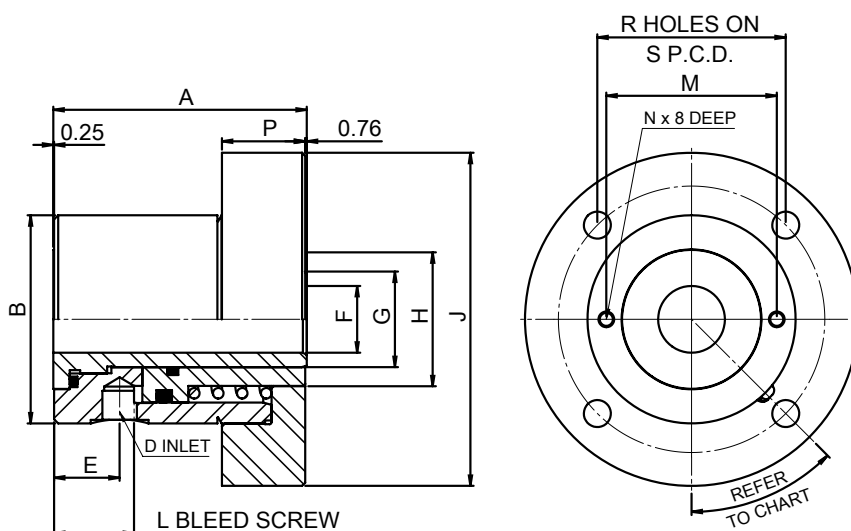
TECHNICAL INFORMATION -

Max Operating Pressure = 275 BAR (4000 P.S.I.)

Theoretical Thrust (N) = Oil Pressure (bar) x Effective Area (cm²)

External stop must be used with spring return version

Refer to page 26-51 & 26-52 for more technical information



A	B	C	D B.S.P.	E	F	G	H	J	K	L	M	N	WDS No.
82.55	63.5	0.76	¼"	22	17.45	25.4	38.1	95.2	0.25	24.4	50	M6x1.0	SF-3402F
55.55	63.5	0.76	¼"	22	17.45	25.4	38.1	95.2	0.25	15	50	M6x1.0	SF-3403F
127.7	63.5	0.76	¼"	22	17.45	25.4	38.1	95.2	0.25	22	50	M6x1.0	SF-3404F
127.7	63.5	0.76	¼"	11	17.45	25.4	38.1	95.2	0.25	15.8	44.5	M6x1.0	SF-3405F
97.76	79.38	0.76	¼"	25	25.78	36.5	50.8	127	0.25	30.5	65	M6x1.0	SF-3406F
96.19	88.9	0.76	¼"	25	25.78	36.5	60.3	139	0.25	30.5	65	M6x1.0	SF-3407F
143	100	-	⅜"	24	31	45	60	160	-	-	70	M6x1.0	SF-3408F

Dimensions in mm												
P	R	S	Stroke with spring	Stroke without spring	Effective Area cm ²	Swept Volume with Spring cm ³	Swept Volume without Spring cm ³	Weight with Spring kg	Weight without Spring kg	Bleed Screw Position	WDS No.	
25.4	8.7 DIA THRO' C/BORED 14.3 DIA x 8.4 DEEP	77.8	15.75	31.24	12.7	20.5	40	1.5	1.45	180°	SF-3402F	
25.4	8.7 DIA THRO' C/BORED 14.3 DIA x 8.4 DEEP	77.8	7.87	18.03	12.7	10.5	22.9	0.91	0.86	45°	SF-3403F	
35.54	8.7 DIA THRO' C/BORED 14.3 DIA x 8.4 DEEP	77.8	38.1	63.5	12.7	48.7	81.1	2.61	2.5	180°	SF-3404F	
25.4	8.7 DIA THRO' C/BORED 14.3 DIA x 8.4 DEEP	77.8	39.4	82.5	12.7	50.3	105	3.91	3.75	180°	SF-3405F	
31.75	10.3 DIA THRO' C/BORED 16.6 DIA x 10.5 DEEP	101.6	17.02	31.75	21.2	33.4	67.3	3.18	3.13	180°	SF-3406F	
34.92	13.5 DIA THRO' C/BORED 20.6 DIA x 13.2 DEEP	114.3	13.46	29.97	31.4	42.3	94.4	3.86	3.74	180°	SF-3407F	
40	18 DIA THRO' C/BORED 26 DIA x 16 DEEP	130	19	60	34.3	54.9	206	8.65	8.48	N/A	SF-3408F	



SF-3421-3425

Hollow Cylinders Double Acting

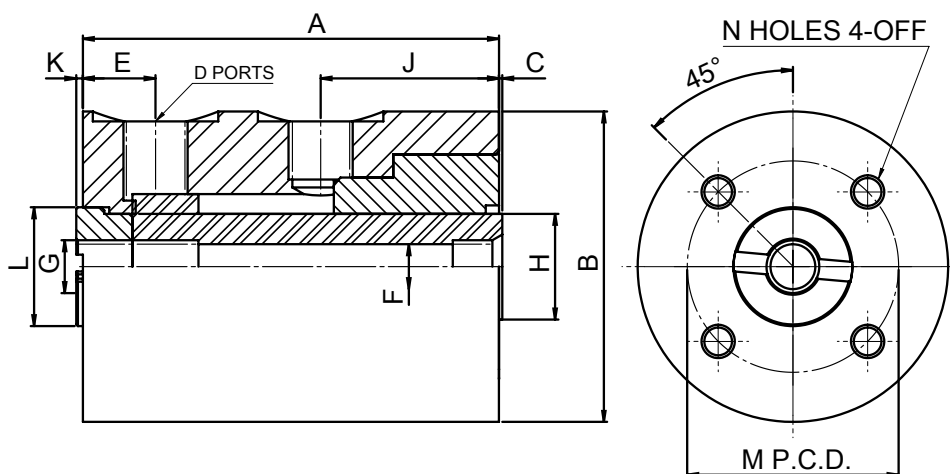
TECHNICAL INFORMATION -

Max Operating Pressure = 275 BAR

Theoretical Thrust (N) = Oil Pressure (bar) x Effective Area (cm²)

Other strokes available on request

Refer to page 26-51 & 26-52 for more technical information



A	B	C	D B.S.P.	E	F	G	H	J	K	L (f7)	M	WDS No.
63	47	0.5	1/8"	11	6.8	M8x1.25x15mm Deep	16	27	1	18	32	SF-3421
85	65	0.5	1/4"	13	10.2	M12x1.75x18mm Deep	25	34	1	33	50	SF-3422
94	80	0.5	1/4"	14	17.5	M20x2.25x18mm Deep	35	36	1	40	56	SF-3423
110	95	0.5	3/8"	17	21	M24x3.0x25mm Deep	45	40	1	50	78	SF-3424
144	114.3	0.5	3/8"	20	26.5	M30x3.5x28mm Deep	56	53	1	60	90	SF-3425

N	Stroke	Effective Push Area cm ²	Swept Push Volume cm ³	Effective Pull Area cm ²	Swept Pull Volume cm ³	WDS No.
M5x0.8x10mm Deep	8	4.12	3.3	2.9	2.3	SF-3421
M10x1.5x15mm Deep	15	9.39	14.08	6.43	9.6	SF-3422
M10x1.5x15mm Deep	20	14.72	29.44	10.01	20	SF-3423
M12x1.75x20mm Deep	25	23.12	57.8	15.27	37.2	SF-3424
M12x1.75x20mm Deep	50	37.69	188.4	25.64	128.2	SF-3425

SF-3421F-3425F

Hollow Cylinders Flange Mounted Double Acting



TECHNICAL INFORMATION -

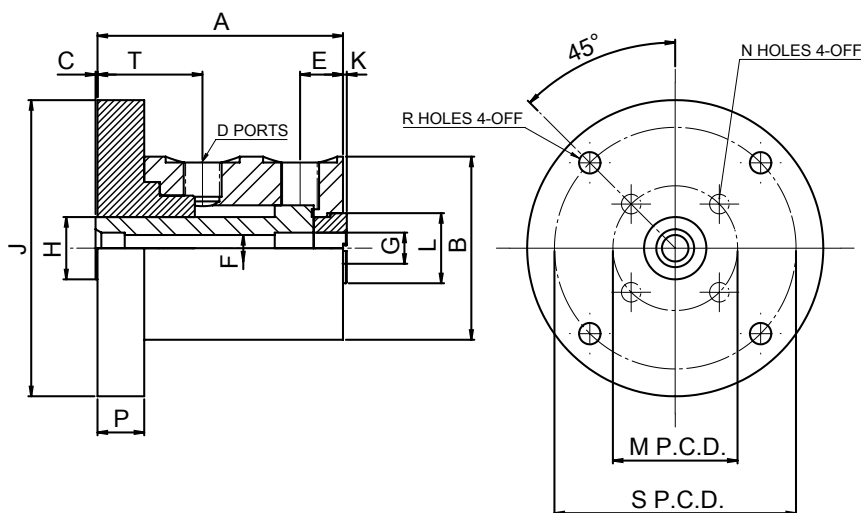
Max Operating Pressure = 275 BAR

Theoretical Thrust (N) =

Oil Pressure (bar) x Effective Area (cm²)

Other strokes available on request

Refer to page 26-51 & 26-52 for more technical information

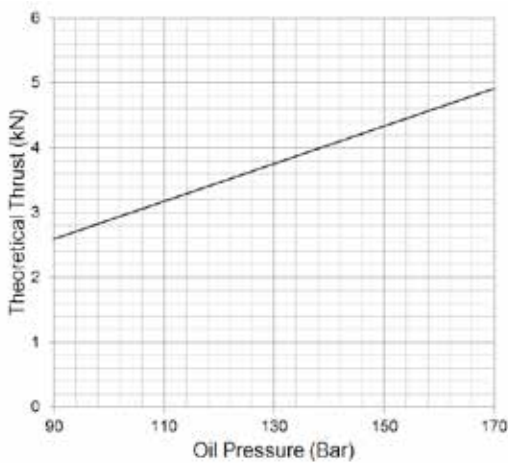


A	B	C	D B.S.P.	E	F	G	H	J	K	L (f7)	M	WDS No.
63	47	0.5	1/8"	11	6.8	M8x1.25x15mm Deep	16	76	1	18	32	SF-3421F
85	65	0.5	1/4"	13	10.2	M12x1.75x18mm Deep	25	110	1	33	50	SF-3422F
94	80	0.5	1/4"	14	17.5	M20x2.25x18mm Deep	35	140	1	40	56	SF-3423F
110	95	0.5	3/8"	17	21	M24x3.0x25mm Deep	45	152	1	50	78	SF-3424F
144	114.3	0.5	3/8"	20	26.5	M30x3.5x28mm Deep	56	170	1	60	90	SF-3425F

Dimensions in mm											
N	P	R	S	T	Stroke	Effective Push Area cm ²	Swept Push Volume cm ³	Effective Pull Area cm ²	Swept Pull Volume cm ³	WDS No.	
M5x0.8x10mm Deep	12	5.5mm DIA THRO' C/BORED 9mm DIA x 5mm DEEP	62	27	8	4.12	3.3	2.9	2.3	SF-3421F	
M10x1.5x15mm Deep	18	8mm DIA THRO' C/BORED 14 DIA x 8mm DEEP	90	34	15	9.39	14.08	6.43	9.6	SF-3422F	
M10x1.5x15mm Deep	20	11mm DIA THRO' C/BORED 17mm DIA x 10mm DEEP	110	38	20	14.72	29.44	10.01	20	SF-3423F	
M12x1.75x20mm Deep	24	13mm DIA THRO' C/BORED 19mm DIA x 12mm DEEP	125	40	25	23.12	57.8	15.27	37.2	SF-3424F	
M12x1.75x20mm Deep	27	13mm DIA THRO' C/BORED 19mm DIA x 12mm DEEP	140	43	50	37.69	188.4	25.64	128.2	SF-3425F	

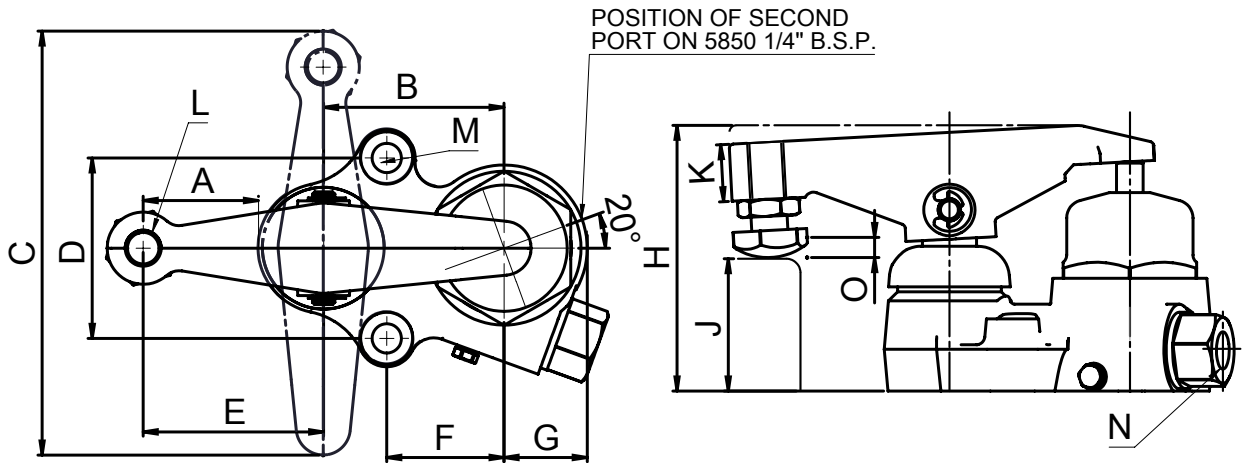
SF-5800, 5850

PowRlock Swing Clamp



TECHNICAL INFORMATION -
 Min Operating Pressure = 90 BAR
 Max Recommended Operating Pressure = 170 BAR
 Refer to page 26-51 & 26-52 for more technical information

NOTE: Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



The Swing Clamp can be adjusted to either clockwise or anti-clockwise movement. It is supplied to swing clockwise. The drawings in full line show swing clamp in the 'on' position. Arm automatically swings from dotted position to clamping position when pressure is applied to inlet port. When pressure is released the arm automatically returns.

A minimum working pressure of 90 bar is required to raise the clamping plunger after the arm is in position.

Vertical Stroke mm	Clamp Force at 138 bar	Swept Volume cm ³	Weight kg	Seal Kit No.	WDS No.
6.35	4.0kN	3.93	2.29	SF-4325	SF-5800
6.35	4.0kN	3.93	2.29	SF-4325	SF-5850

Dimensions in mm												
A	B	C	D	E	F	G	H	J	K	L	M	N
40.5	63.5	149.34	63.5	63.5	34.9	28.5	94	50.8	20.6	½ - 20 - UNF	10.32	¼" - BSP

Note: Single port versions should be used in conjunction with a Booster

SF-5900, 5950

PowRlock Swing Clamp

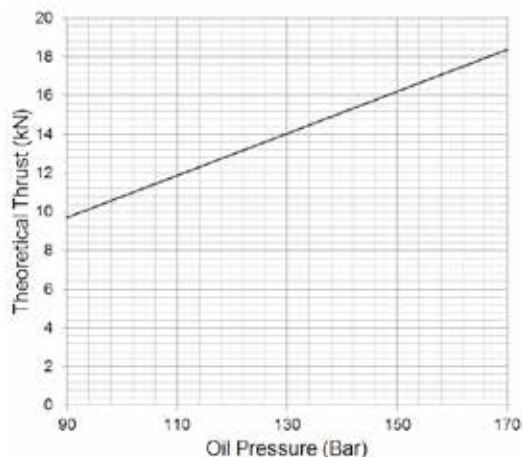


TECHNICAL INFORMATION -

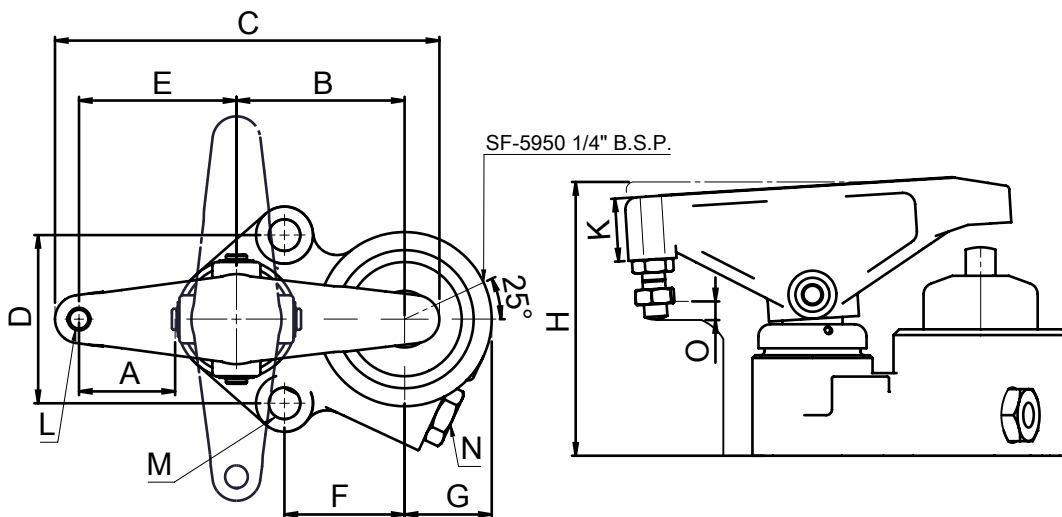
Min Operating Pressure = 90 BAR

Max Recommended Operating Pressure = 170 BAR

Refer to page 26-51 & 26-52 for more technical information



NOTE: Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



The Swing Clamp can be adjusted to either clockwise or anti-clockwise movement. It is supplied to swing clockwise. The drawings in full line show swing clamp in the 'on' position. Arm automatically swings from dotted position to clamping position when pressure is applied to inlet port. When pressure is released the arm automatically returns.

A minimum working pressure of 90 bar is required to raise the clamping plunger after the arm is in position.

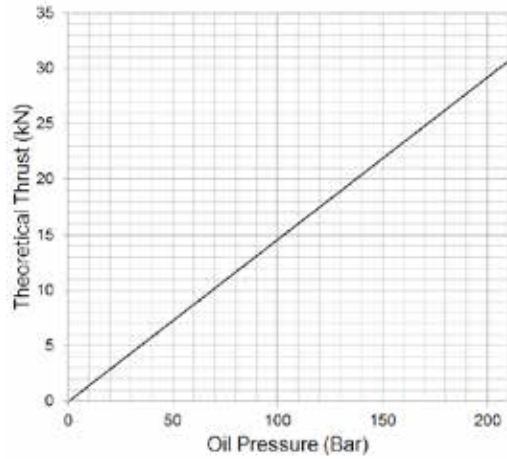
Vertical Stroke mm	Clamp Force at 138 bar	Swept Volume cm ³	Weight kg	WDS No.	Seal Kit No.
11	15kN	20	7.3	SF-5900	SF-4326
11	15kN	20	7.3	SF-5950	SF-4326

Dimensions in mm														
A	B	C	D	E	F	G	H	J Max	K	L	M	N	O	
57.15	88.9	203.2	88.9	88.9	63.5	46	138.11	71.05	38.1	½ - 20 - UNF	16.7	¼- BSPx12.7	11	

Note: Single port versions should be used in conjunction with a Booster

SF-3850A, 3960

PowRock PowRslide Clamp



Single Port Type 3850A

2 Port Type 3960 for external sequencing

TECHNICAL INFORMATION -

Min Operating Pressure = 0 BAR

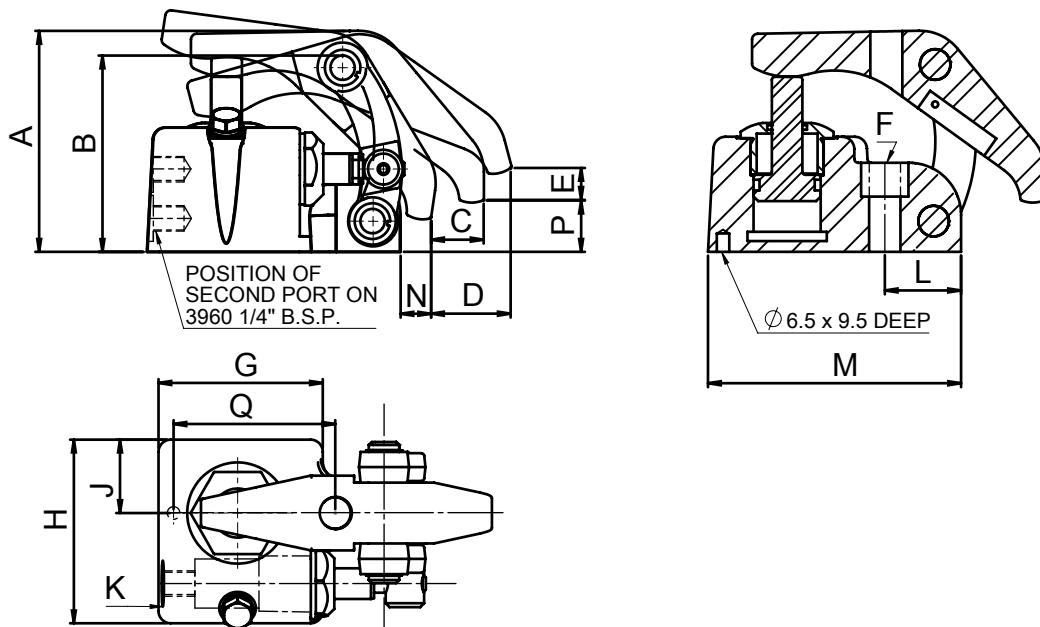
Max Recommended Operating Pressure = 210 BAR

Theoretical Thrust (N) =

Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information

NOTE: Graphs are calculated using theoretical pressures and actual values will be less due to loss in system pressure.



Vertical Stroke mm	Effective Area cm ²	Swept Volume cm ³	Weight kg	WDS No.	Seal Kit No.
15.88	9.55	23	5.9	SF-3850A	SF-3899
15.88	9.55	23	5.9	SF-3960	SF-3899

Dimensions in mm														
A	B	C	D	E	F Dia	G	H	J	K	L	M	N	P	Q
114.3	101.6	27.78	43.66	15.88	16.28	80.96	95.25	38.1	¼ BSP	39.69	131.76	15.88	26.99	84.14

Note: Single port versions should be used in conjunction with a Booster

SF-5389

PowRlock Low Line Clamp



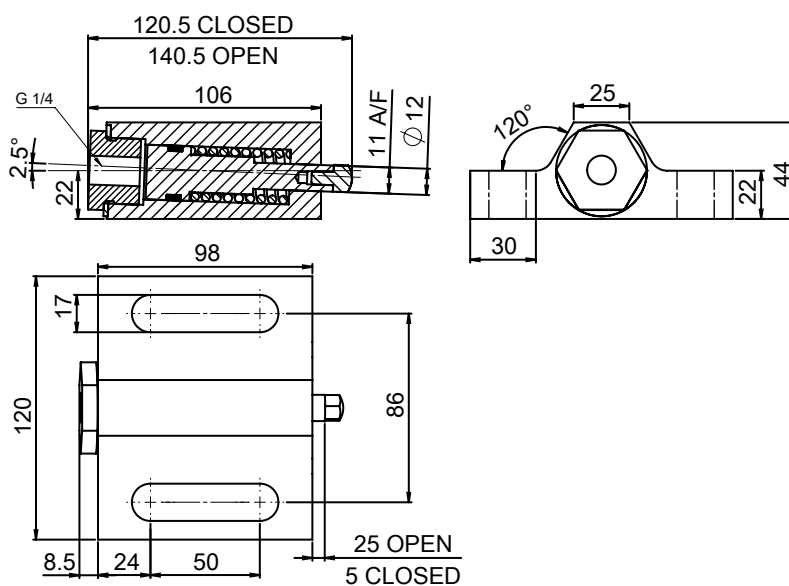
TECHNICAL INFORMATION -

Min Operating Pressure =
0 Bar

Max Recommended Operating Pressure =
500 Bar

Theoretical Thrust (N) =
Oil Pressure (bar) x Effective Area (cm²)

Refer to page 26-51 & 26-52 for more technical information

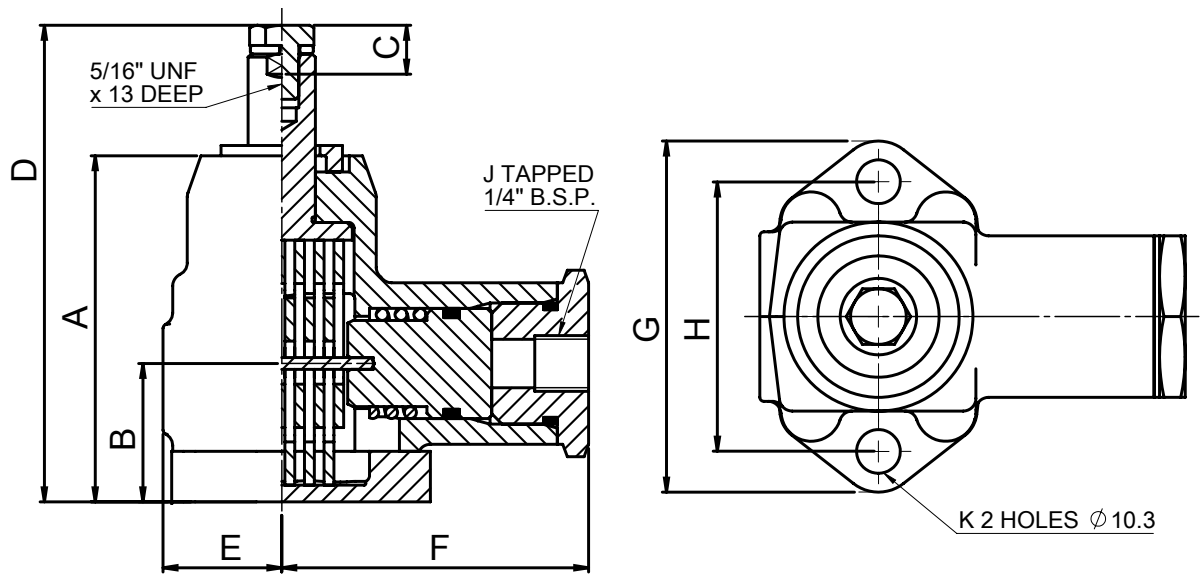


Stroke mm	Effective Area cm ²	Swept Volume cm ³	Max Operating Pressure bar	Thrust at 510 bar	Spring Load at fitted Height kg	Return Spring Rate kgf/mm	WDS No.	Seal Kit No.
20	4.9	9.8	510	25kN	9.88	0.52	SF-5389	SF-53899

SF-OE12929

PowRlock Work Support

Refer to page 26-51 & 26-52 for more technical information



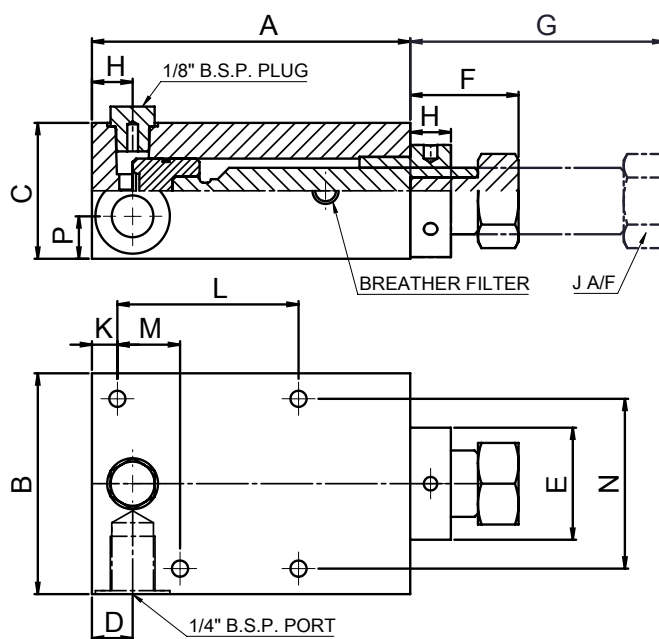
Vertical Stroke mm	Force to Depress Plunger kg	Load Supported at 130 bar	Weight kg	Max Pressure bar	Swept Volume cm ³	WDS No.	Seal Kit No.
12.7	6.35	900kg	1.47	211	0.82	SF-OE12929	SF-4328

Dimensions in mm									
A	B	C Max Stroke	D	E	F	G	H	J	K Dia
81.79	33.27	12.7	113.28	28.32	72.64	82.35	63.5	¼ BSP	10.31

SF-OE00401- OE00404

Screw Pump

Refer to page 26-51 & 26-52 for more technical information



Piston Dia	Stroke	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	WDS No.
25	43	94	65	40	12	33	32	75	12	24	7.5	53.5	18.5	50	12.5	17.5	8.5	SF-OE00401
25	86	137	65	40	12	33	32	118	12	24	7.5	96.5	18.5	50	12.5	17.5	8.5	SF-OE00402
25	43	98	36	M38 x 1.5	12	32	13	56	14	24	-	-	-	-	-	-	-	SF-OE00403
25	86	141	36	M38 x 1.5	12	32	13	141	14	24	-	-	-	-	-	-	-	SF-OE00404

Displacement cm ³	Displacement per turn of Handwheel cm ³	WDS No.
21	0.74	SF-OE00401
42	0.74	SF-OE00402
21	0.74	SF-OE00403
42	0.74	SF-OE00404

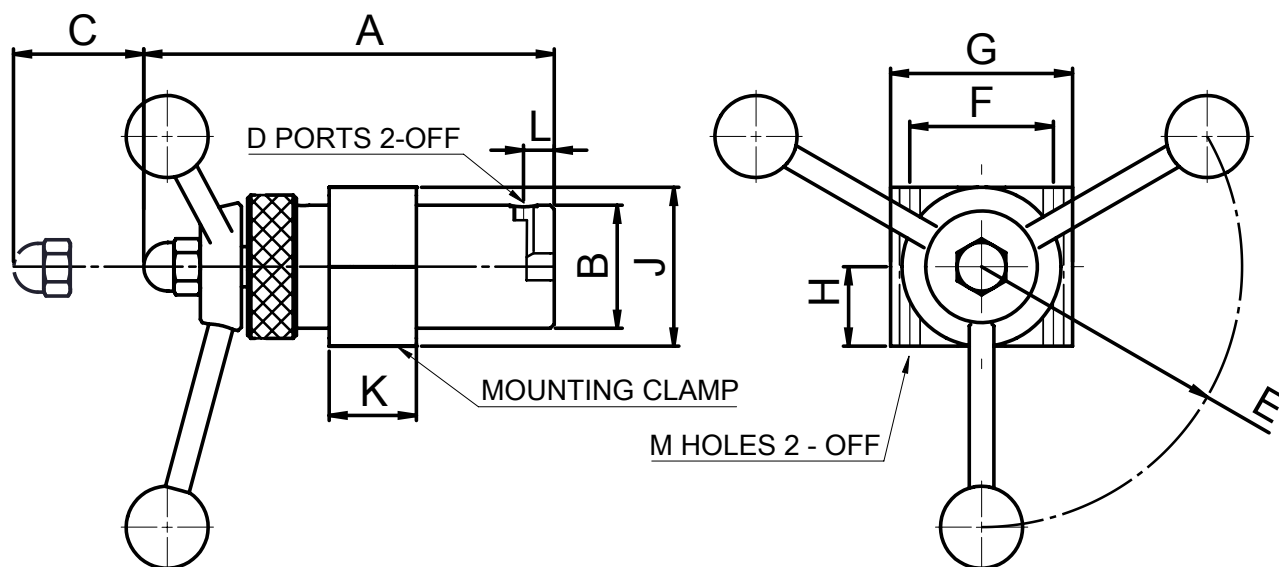
Maximum Operating Pressure = 350 Bar
Torque Required to Produce 275 Bar Approx 35N



SF-OE00411-0E00412

Capstan Pump

Refer to page 26-51 & 26-52 for more technical information



A	B	C	D	E	F	G	H	J	K	L	M	WDS No.	Clamp Only WDS No.
150.8	50.8	25.4	1/8"	85.7	60.3	82.5	31.75	63.5	44.5	12.7	10.3	SF-OE00411	SF-OE50010
200	60	65	1/4"	131	71.5	91	40	75	45	15	10.3	SF-OE00412	SF-OE50011

ALL CAPSTANS ARE SUPPLIED WITH MOUNTING CLAMP AS STANDARD

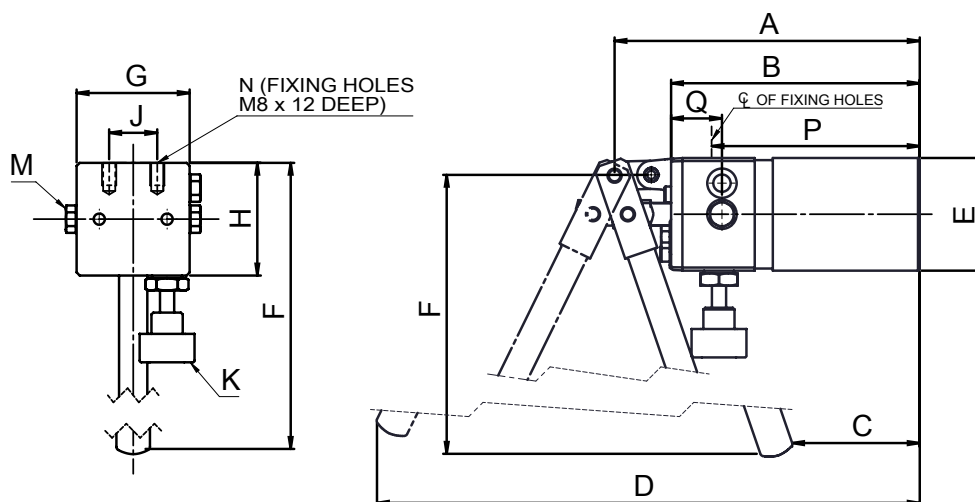
Output for full travel cm ³	Output for one complete turn of Handwheel cm ³	Weight kg	WDS No.
25.84	1.84	2	SF-OE00411
127.6	2.95	3.74	SF-OE00412

Maximum Operating Pressure = 270 Bar (3000 P.S.I)

SF-OE00690/ OE00691

PowRlock Lever Pump

Refer to page 26-51 & 26-52 for more technical information



PORTS 1/8" B.S.P. WITH 13.5 SPOTFACE (SEAL WITH COPPER WASHER)

Fluid Capacity cm ³	Displacement per Cycle cm ³	Normal Operating Pressure kg/cm ²	Max Pressure kg/cm ²	Weight kg	WDS No.	Seal Kit No.
163.87	4.91	141	175	3.17	SF-OE00690	SF-4405
327.74	4.91	141	175	3.4	SF-OE00691	SF-4405

Dimensions in mm												
A	B	C	D	E	F	G	H	J	N	P	Q	WDS No.
167.4	135.73	57.15	317.5	64.76	298.45	63.5	63.5	26.98	12.7	117.5	29.4	SF-OE00690
237.49	205.74	127	307.35	64.76	298.45	63.5	63.5	26.98	12.7	187.2	29.4	SF-OE00691

Note: Exchange unit available.

- All dimensions in millimeters

- K-release knob (anti-clockwise to release)

- M-port may be used as additional outlet

- Double acting lever pumps must be installed with lever mechanism and plunger at the top - maximum tilt from vertical 30°

- Internal relief valve set to limit pressure to 175kg/cm² - it is adjustable

SF-OE00731/ OE00732

PowRlock Dual Displacement Pump

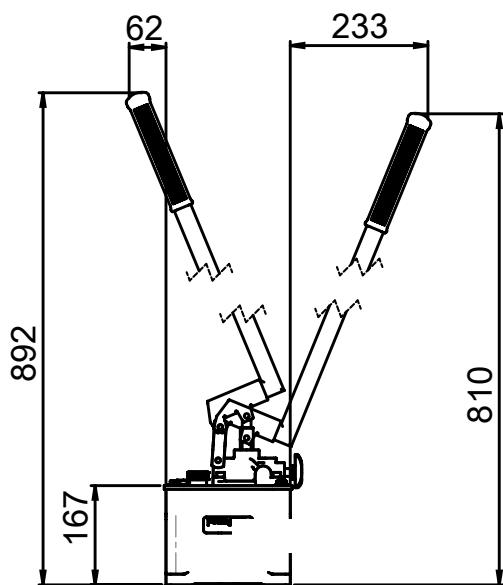


TECHNICAL INFORMATION -

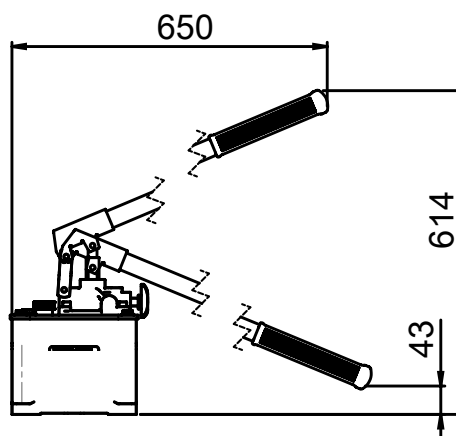
2.9 litre container
 Normal operating pressure 100 bar
 Change over pressure 33 bar
 Maximum pressure (blow off) 175kgf/cm²
 Effort required on handle at operating pressure of 100 bar = 18kgs

Output/complete cycle		Ratio
1st Stage	47.33cm ³	3.5:1
2nd Stage	13.55cm ³	1:1

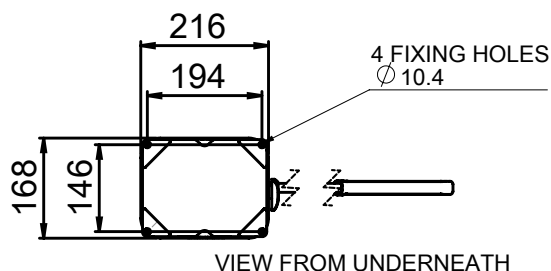
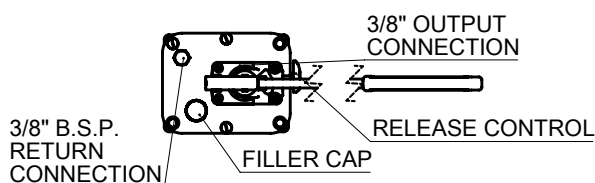
Refer to page 26-51 & 26-52 for more technical information



VERTICAL HANDLE



HORIZONTAL HANDLE



VIEW FROM UNDERNEATH

Handle Position	Weight kg	WDS No.	Seal Kit No.
Vertical	10	SF-OE00731	SF-4404
Horizontal	10	SF-OE00732	SF-4404

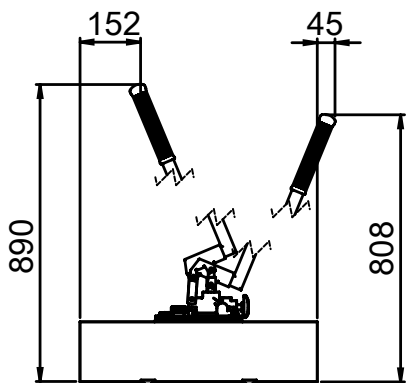
SF-OE00733/ OE00736

PowRlock Dual Displacement Pump

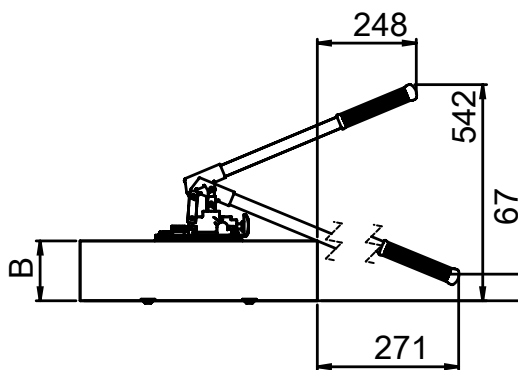


Refer to page 26-51 & 26-52 for more technical information

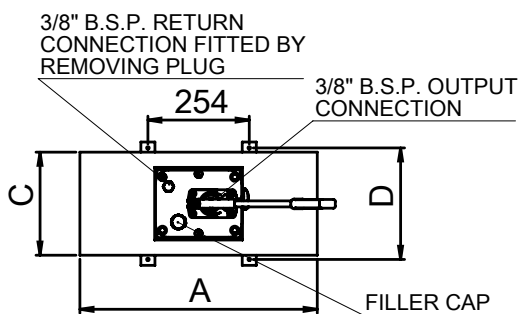
Large container	Output/complete cycle	Ratio
Change over pressure 100 bar	1st Stage 47.33cm ³	3.5:1
Maximum pressure (blow off) 175kgf/cm ²	2nd Stage 13.55cm ³	1:1
Effort required on handle at operating pressure of 100 bar = 18kgs		



VERTICAL HANDLE



HORIZONTAL HANDLE



Fluid Capacity Litres	Handle Position	Dimensions in mm				Weight kg	WDS No.	Seal Kit No.
		A	B	C	D			
9	Vertical	363	160	203	229	12	SF-OE00733	SF-4404
9	Horizontal	363	160	203	229	12	SF-OE00734	SF-4404
18	Vertical	591	152.4	254	279	16	SF-OE00735	SF-4404
18	Horizontal	591	152.4	254	279	16	SF-OE00736	SF-4404

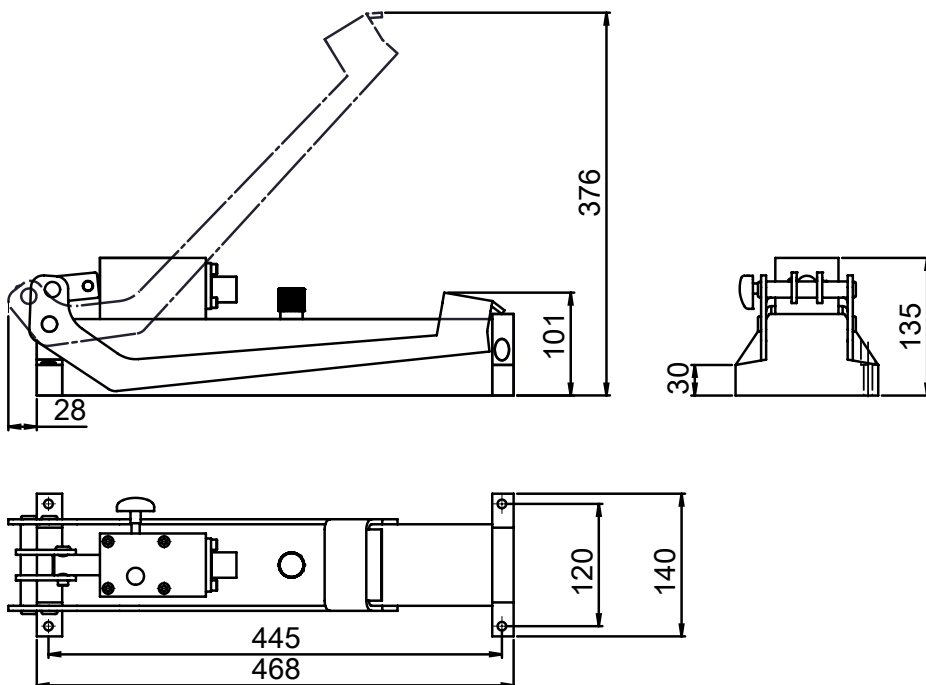
SF-OE00510

Foot Pump



TECHNICAL INFORMATION -
 Normal Operating Pressure = 100 bar
 Maximum pressure (blow off) 175 bar

Refer to page 26-51 & 26-52 for more technical information



Pressure relief valve setting (BAR)	Pressure generated by 30N force on pedal (BAR)	WDS No.
175	100	SF-OE00510

Fluid Mineral Oil type HM ISO VG32
 Reservoir must be horizontally mounted
 Reservoir capacity 1.5 litre useable
 Output per complete cycle 68 CC

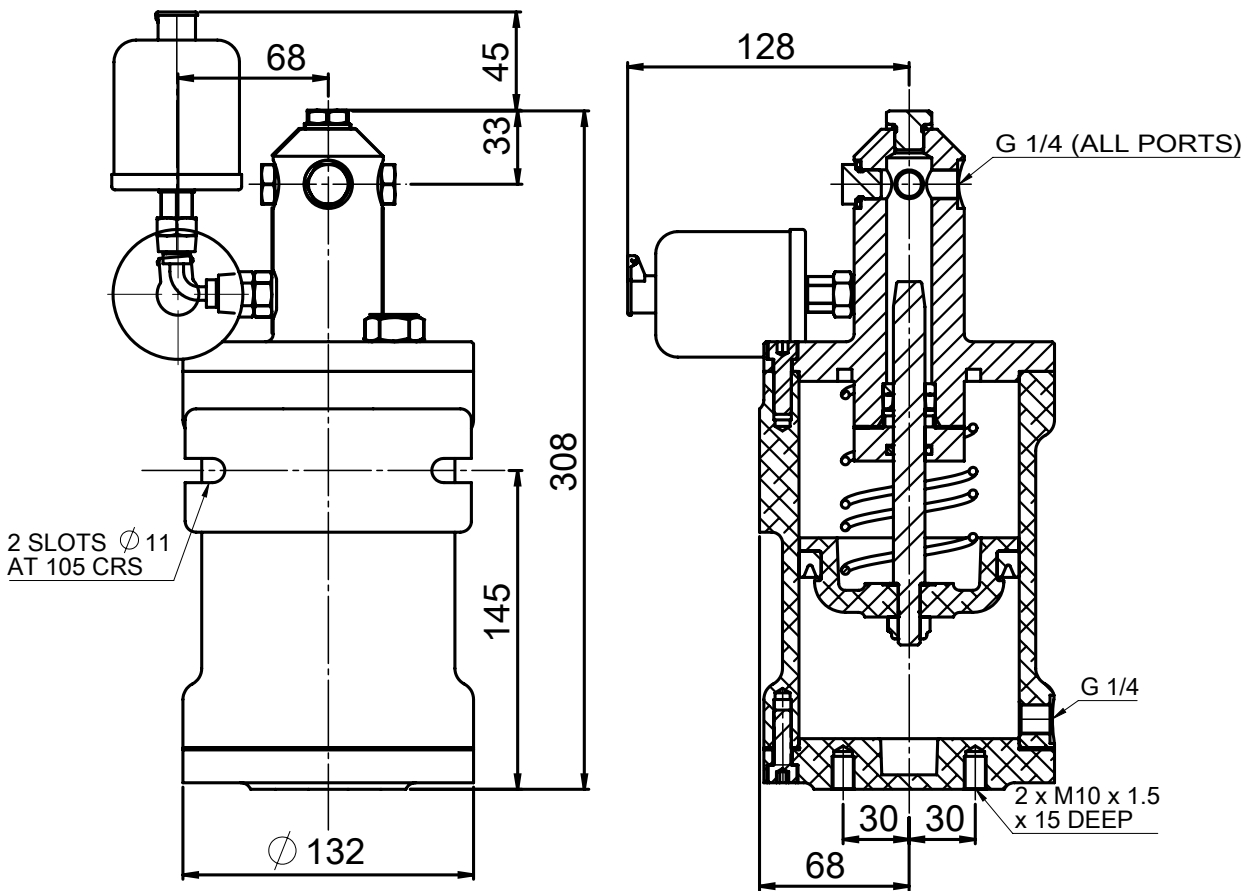
SF 2300/ 2350/2380

PowRlock Minibooster

Refer to page 26-51 & 26-52 for more technical information



TECHNICAL INFORMATION -
7.0 bar maximum air input pressure



Intensification Ratio	Maximum Oil Output cm ³	Air Pressure (max) bar	Air Consumption at 5.62 bar per 25.4mm stroke	Stroke mm	Weight kg	WDS No.	Seal Kit No.
25:1	31.4	7	.0016m ³	110	7.48	SF-2300	SF-23009
30:1	25.4	7	.0016m ³	110	7.38	SF-2350	SF-23509
49:1	16	7	.0016m ³	110	7.28	SF-2380	SF-23809

SF 2600 Series

PowRlock Minibooster

TECHNICAL INFORMATION -
 Air Cylinder Stroke: 110mm
 Air Cylinder Bore Dia: 160mm
 Air Consumption at 5.62 bar per 25.4mm stroke = 0.0034m³

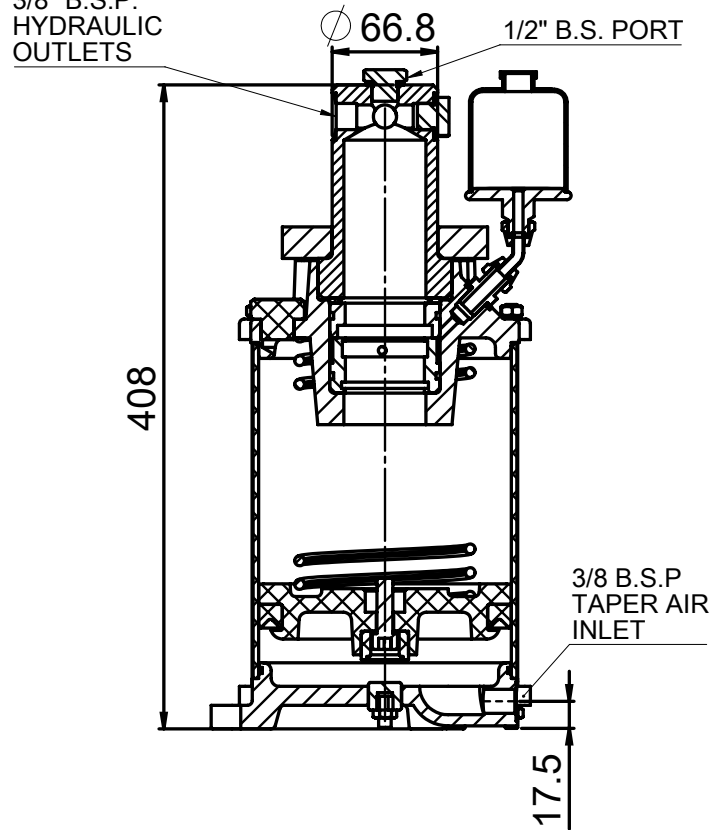
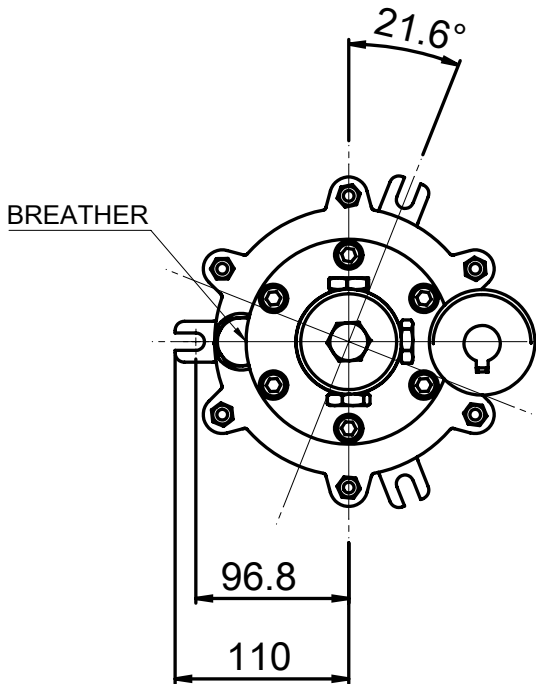
7.0 bar maximum air input pressure

Refer to page 26-51 & 26-52 for more technical information



1/2" B.S.P. TAPER PLUG MAY BE REMOVED FOR ALTERNATEIVE AIR CONNECTION

4 PORTS G 3/8" B.S.P. HYDRAULIC OUTLETS



Mounting: Novel arrangement of the Autofeed device allows Booster to be mounted horizontally or vertically with the outlet ports uppermost, simply by rotating the Autofeed assembly through 90°.

Max Oil Intensification Ratio	Maximum Output cm ³	Max Oil Output Pressure bar	Max Air Pressure bar	Weight kg	WDS No.	Seal Kit No.
10:1	215.98	70	7	18	SF-2600	SF-26009
16:1	138.23	112	7	18	SF-2610	SF-26109
25:1	88.46	175	7	18	SF-2620	SF-26209
32:1	67.73	224	7	18	SF-2630	SF-26309
40:1	53.99	280	7	18	SF-2640	SF-26409
64:1	34.55	384	6	18	SF-2650	SF-26509
100:1	22.11	500	5	18	SF-2660	SF-26609

SF-7600A Series

PowRlock Zoom-ATC Booster

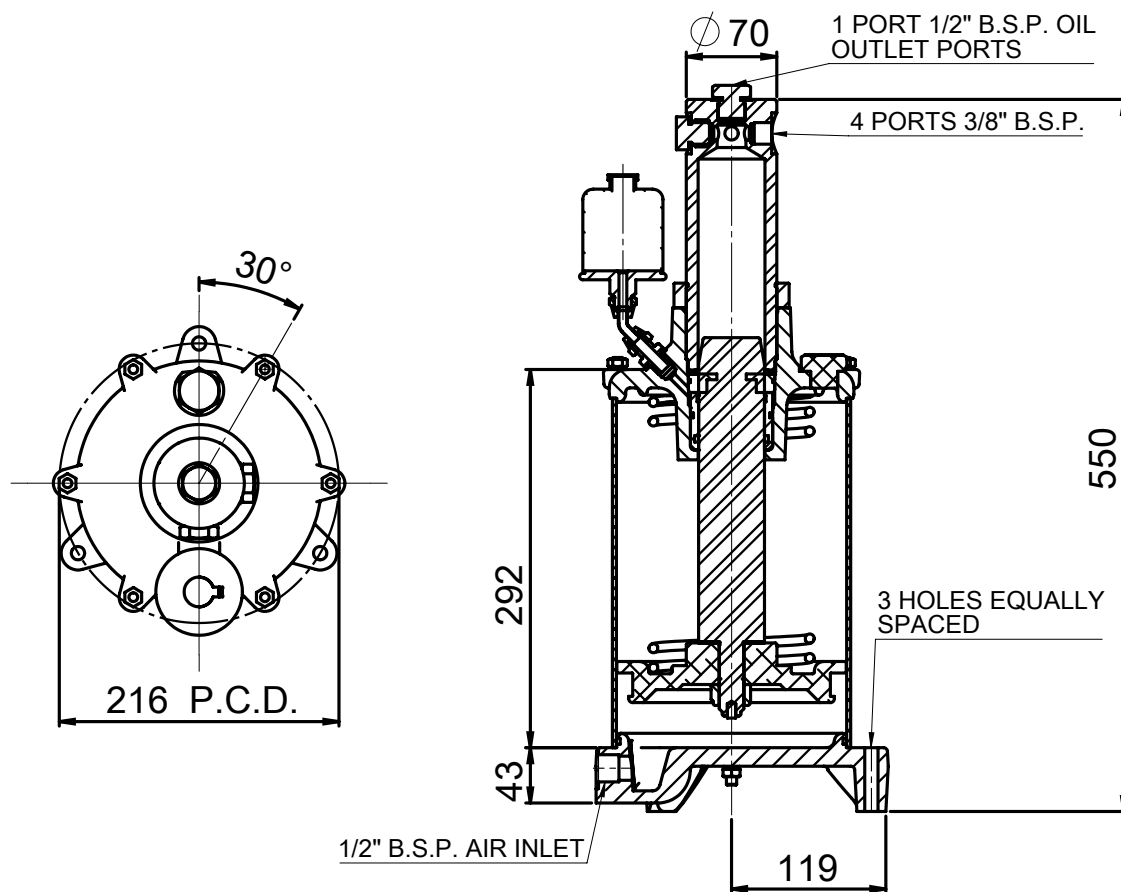
TECHNICAL INFORMATION -

Maximum Air Pressure 7 bar except for 7635 which must not exceed 5.5 bar

Air Consumption at 5.6 bar per 25.4mm stroke = 0.004m³

Maximum Stroke: 152.4mm

Refer to page 26-51 & 26-52 for more technical information



Mounting: Novel arrangement of the Autofeed device allows Booster to be mounted horizontally or vertically with the outlet ports uppermost, simply by rotating the Autofeed assembly through 90°.

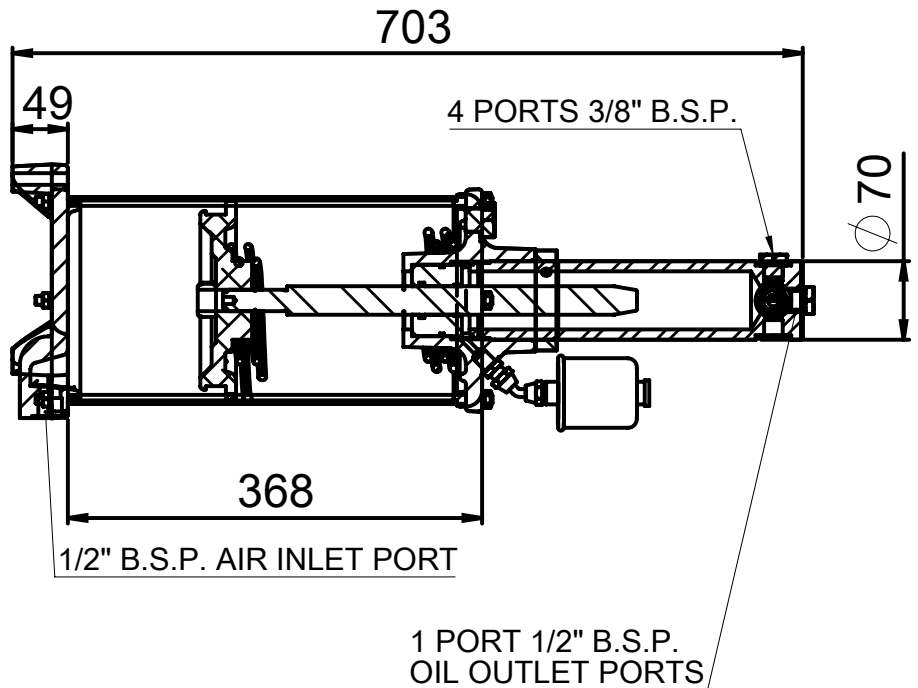
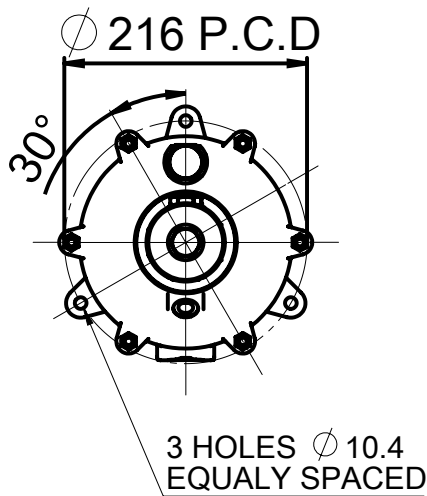
Intensification Ratio	Maximum Oil cm ³	Max Air Input bar	Weight kg	WDS No.	Seal Kit No.
12.2:1	308	7	19.5	SF-7680A	SF-76809
21.8:1	174	7	19.5	SF-7660A	SF-76609
31.4:1	120	7	19.5	SF-7650A	SF-76509
49.0:1	77	7	19.5	SF-7640A	SF-76409
64.0:1	59	5.5	19.5	SF-7635A	SF-76359



SF-7900A Series

PowRlock Zoom-ATC Booster High Volume

TECHNICAL INFORMATION -
 Maximum Air Pressure 7 bar except for 7935 which must not exceed 5.5 bar
 Air Consumption at 5.6 bar per 25.4mm stroke = 0.004m³
 Maximum Stroke: 228.6mm
 Refer to page 26-51 & 26-52 for more technical information

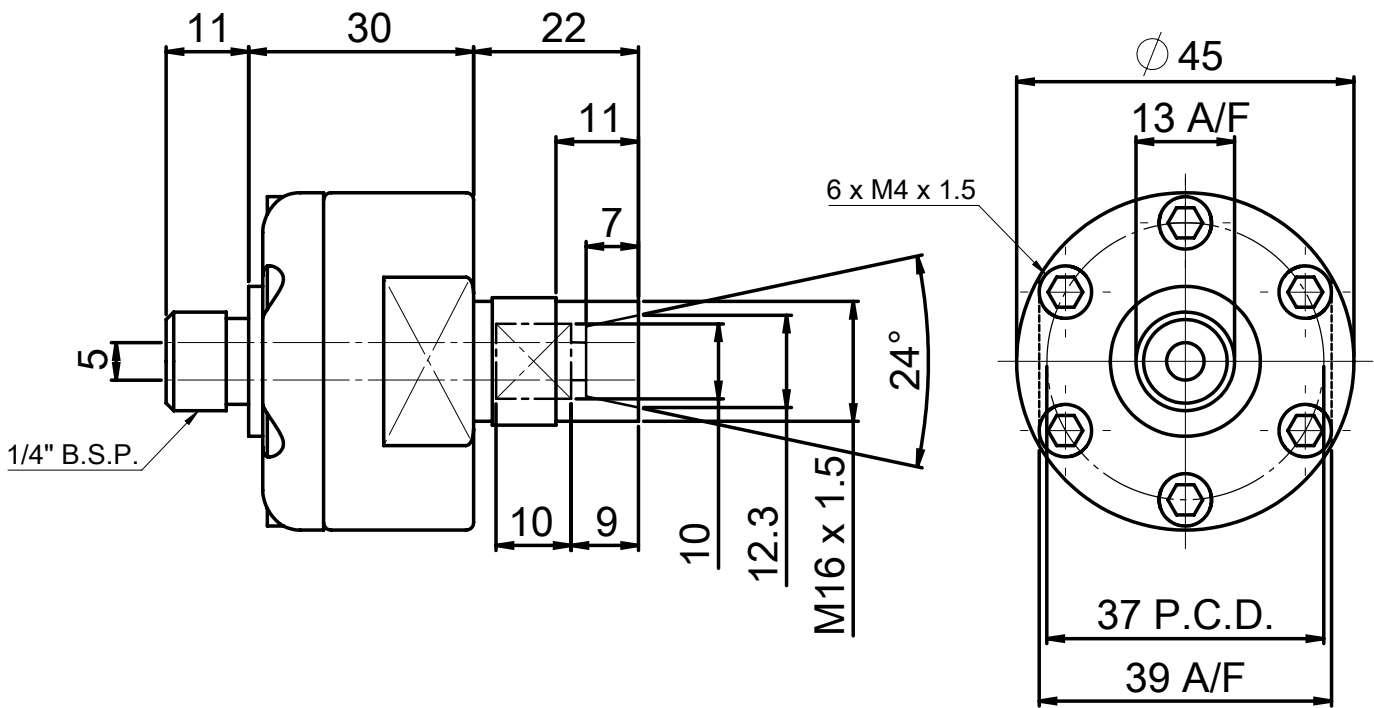


Mounting: Novel arrangement of the Autofeed device allows Booster to be mounted horizontally or vertically with the outlet ports uppermost, simply by rotating the Autofeed assembly through 90°.

Intensification Ratio	Maximum Oil cm ³	Max Air Input bar	Weight kg	WDS No.	Seal Kit No.
12.2:1	463	7	21.8	SF-7980A	SF-76809
21.8:1	260	7	21.8	SF-7960A	SF-76609
31.4:1	181	7	21.8	SF-7950A	SF-76509
49.0:1	116	7	21.8	SF-7940A	SF-76409
64.0:1	88	5.5	21.8	SF-7935A	SF-76359

SF-4620

Rotating Coupling



Test Pressure 350 bar
 Operating Pressure 250 bar max
 Maximum Speed 30 rpm

Spencer Franklin Information Sheet

Available for the past 60 years the range is particularly suitable for simple clamping and presswork applications. Using mainly single acting spring return cylinders the range offers a simple and economical solution to clamping and presswork problems.

Air/Oil boosters and pumps are usually part of the above systems – so the only service required is a compressed air supply.

Key

Symbol	Unit	Definition
S_t	mm	Maximum stroke in millimetres
F	N	Clamping force in Newtons
A_p	cm ²	Internal surface area of the piston (effective area in catalogue tables)
A_{out}	cm ²	Output surface area of the ram or the output surface area of the fixture attached
P_{oil}	Bar	Oil pressure in bar
P_{out}	Bar	Output clamping pressure in bar
P_{air}	Bar	Air input pressure for booster in bar
R	N/A	Ratio of booster
V_o	cm ³	Volume of oil required for maximum stroke

Actual pressures can be up to 10% less than theoretical due to system losses.

When using the calculations please use the units given in the table.

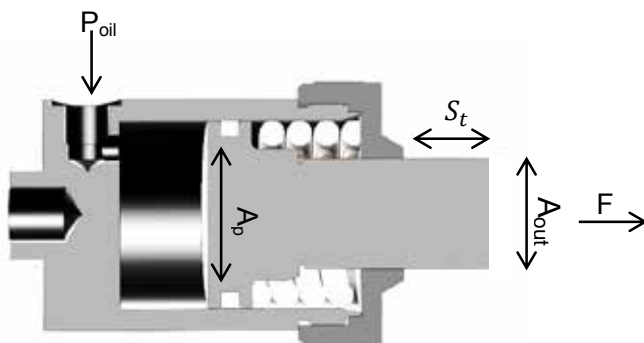
Ram Information

$$\frac{A_p \times P_{oil}}{A_{out}} = P_{out}$$

$$V_o = A_p \times S_t \times 10$$

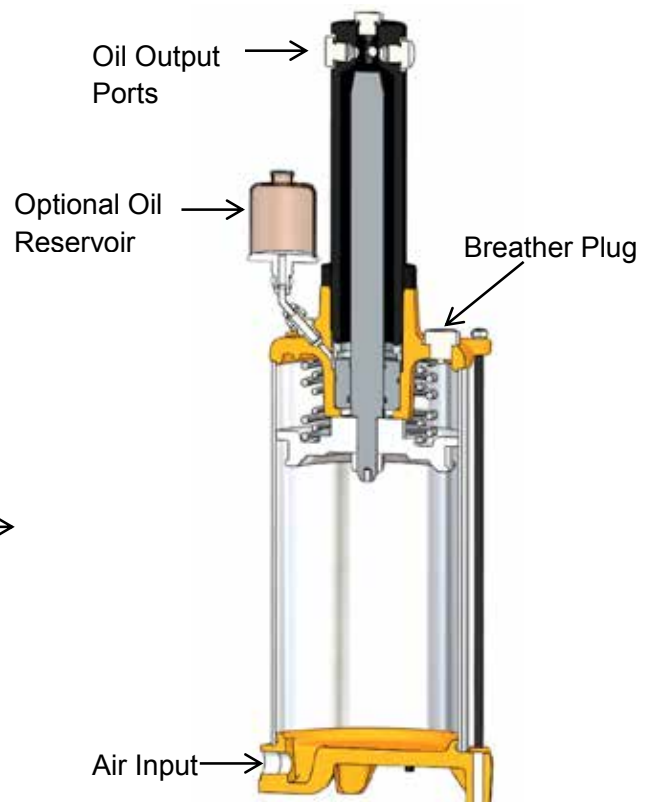
*Select a booster 15-20% greater than the calculated volume, to allow for expansion.

$$F_{(newtons)} = A_p \times P_{oil} \times 9.81$$



Booster Information

$$P_{oil} = P_{air} \times R$$



Recommended Hydraulic Oil

WDS SF – 8M99000 (1/2 Litre)

SF – 8M99001 (1 Litre)

Oil Grade SAE 10w HYDRAULIC

System Design

Do not use the booster or cylinder return springs as dead stops.

Take care not to subject the linear cylinders to any significant side loading as this can damage the seals.

Always use bonded self-centering washers when sealing parallel B.S.P. threads.

For general clamping applications $\frac{1}{4}$ " bore hoses and $\frac{1}{4}$ " B.S.P. air valves are suitable. For maximum speed of operation, i.e. on presswork use $\frac{3}{8}$ " or $\frac{1}{2}$ " bore pipework and air valves. The shorter the flexible hose the less the expansion losses.

Whilst the booster will operate effectively when sited below the cylinders, the bleeding of the system and maintenance are much easier if the booster is placed at the highest point in the system. The use of the self-bleed reservoir SF- 4957 will make air removal easier.

Bleeding the Hydraulic System

The bleeding of a PowRlock circuit is exactly the same principle as the automobile hydraulic braking systems, except normally the automobile is on level ground and it is recommended to commence bleeding from the farthest point of the hydraulic energy source. The PowRlock system is simpler in effect as it is recommended to bleed from the highest point of the circuit and if it also be the hydraulic energy source (i.e. Booster, Lever or hand pump) so much the better.

If the circuit to be bled is an existing one and has air bubbles entrained, consider at this point the necessity for seal and fluid renewal.

Slacken off connectors (finger tight) and introduce fluid at the highest port connection, filler plug or hose, which shall be referred to as the 'high point' for convenience.

Starting from the lowest point, slacken connection to allow a flow of oil to escape from the system (wasted fluid should be prevented from contaminating floors by using a drip tray). When flow becomes continuous and free from air bubbles – tighten the connection, top up the system with fluid at the high point – continuously during bleeding. Repeat the procedure at every clamping head or ram working upwards towards the high point.

Should the high point be in the middle of the circuit, start as above from one end working upwards to the high point and then repeat from the other end of the circuit. Having secured all connections (including the high point), cycle the unit several times and then switch it off. Remove the high point connection and top up with fluid if necessary, repeat until the system is fully primed.

On presswork applications the use of a booster reservoir assembly SF - 4957 will greatly assist in the bleeding of the circuit and prove most useful as a permanent feature of the hydraulic circuit. If in doubt please contact WDS, who would be pleased to advise you.