HVL - SINGLE ACTING VERY LOW HEIGHT PANCAKE CYLINDERS

Capacities from 10 to 104 tonnes

Stroke length 6mm

Working pressure 700 Bar

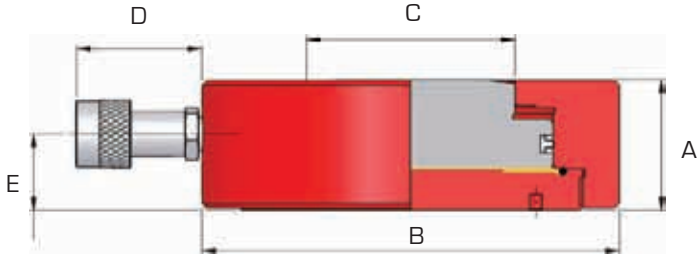
The HVL pancake cylinder range combines a very low closed height with a 6mm stroke, providing a precise adjusting and lifting force in very confined work areas. Ideally suited for applications requiring alignment of machinery, turbines, heavy structures etc... All models are single acting, load return design. The base of all HVL cylinders must be fully supported during use.

- Single acting load return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals

HVL10 also available with 400mm extension hose and coupling.
Please add suffix 'H' to model no.

Did you know .....

Hi-Force HVL pancake cylinders are the lowest closed height hydraulic cylinders available on the market.
If you don't have the space, we have the solution !



Note: All models, excluding HVL100, are fitted with extension nipple for required coupling clearance (drawing is without coupling extension nipple).

Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HVL10	10	6	9	14.4	1.6
HVL20	20	6	17	28.6	2.6
HVL30	32	6	27	45.6	3.0
HVL50	50	6	43	71.3	7.2
HVL100	104	6	88	146.5	15.6

Dimensions in mm				
A	B	C	D	E
28	87	38	111	16.0
32	104	52	111	19.0
34	120	60	111	19.5
45	158	75	111	29.0
65	200	100	76	37.0

HPS - SINGLE ACTING LOW HEIGHT PAD CYLINDERS

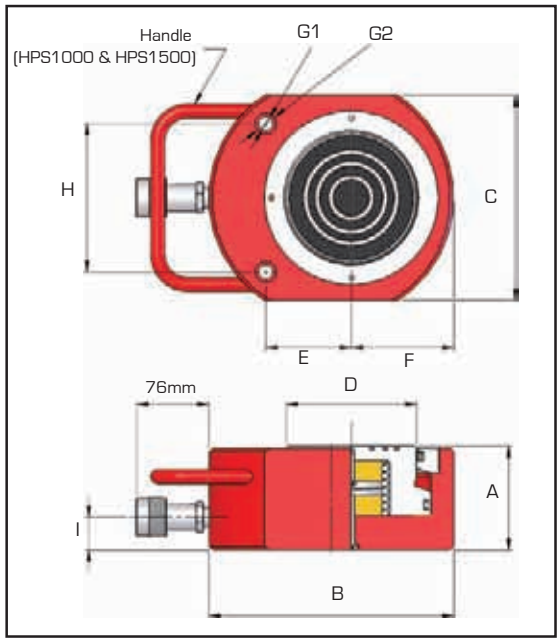
Capacities from 4.5 to 147 tonnes

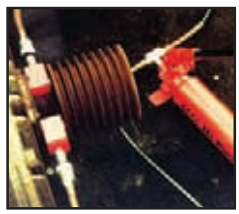
Stroke lengths from 6 to 16mm

Working pressure 700 Bar

The HPS pad cylinder range offers the best capacity, closed height and stroke length combination, spring assisted return cylinders in the industry. Ideally suited for applications where a low closed height and maximum possible stroke is of prime importance, these highly versatile cylinders are extensively used for maintenance, structural weld positioning, rigging, flange separating and many other applications.

- Single acting, spring assisted return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals





Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HPS50	4.5	6	4	6.4	0.8
HPS51	4.5	16	10	6.4	0.9
HPS100	10	10	14	14.4	1.6
HPS200	20	11	31	28.6	2.6
HPS300	32	12	55	45.6	4.2
HPS500	50	15	107	71.3	6.6
HPS750	73	16	164	102.7	10.4
HPS1000	109	16	245	153.4	23.2
HPS1500	147	16	330	206.2	28.5

Dimensions in mm									
A	B	C	D	E	F	G1	G2	H	I
32	60	38	24	20	19	5.6	9.75	26	19
42	60	38	24	20	19	5.6	9.75	26	19
46	81	56	38	34	28	6.8	11.25	37	19
52	100	76	51	40	39	8.8	14.25	50	19
59	115	95	60	46	48	8.8	14.25	52	19
67	140	114	70	54	60	10.8	17.25	67	20
81	165	140	82	67	70	13.0	19.00	76	21
91	215	180	114	75	90	12.8	19.00	130	29
100	215	191	114	83	95	13.0	19.00	117	29

HLS - SINGLE ACTING LOW HEIGHT CYLINDERS

Capacities from 10 to 147 tonnes

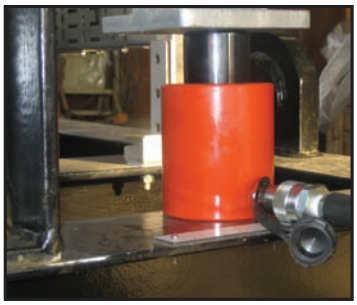
Stroke lengths from 25 to 60mm

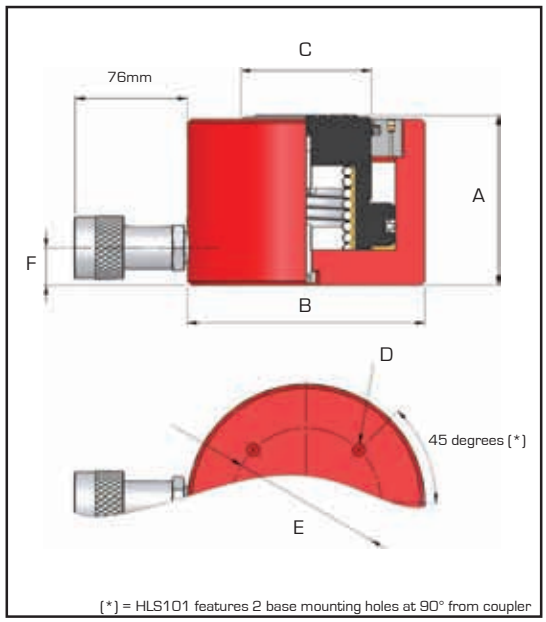
Working pressure 700 Bar

B

The HLS low height cylinder range is the most widely used Hi-Force cylinder design in the world today. All models have spring assisted return pistons and combine low closed height with optimum stroke lengths. Offering a compact, powerful force for a wide variety of applications in many industries including power generation, ship building & repair, construction, railways, mining, steel works, oil & gas and many others. The HLS range offers a compact, portable option in an inexpensive package.

- Spring assisted return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals





Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HLS101	10	40	58	14.4	2.4
HLS201	20	44	126	28.6	4.8
HLS301	32	25	114	45.6	5.0
HLS302	32	60	274	45.6	7.0
HLS501	50	25	178	71.3	8.4
HLS502	50	60	428	71.3	10.4
HLS1001	109	25	384	153.4	19.8
HLS1002	109	60	921	153.4	24.0
HLS1501	147	25	516	206.2	37.0
HLS1502	147	50	1031	206.2	42.0

Dimensions in mm					
A	B	C	D	E	F
95	70	38	M8	40	19
102	90	51	M8	60	19
83	102	60	M8	80	19
119	102	60	M8	80	19
91	127	70	M8	80	20
126	127	70	M8	80	20
108	178	114	M12	140	30
143	178	114	M12	140	30
130	216	114	M12	165	41
155	216	114	M12	165	41

HSS - SINGLE ACTING MULTI-PURPOSE CYLINDERS

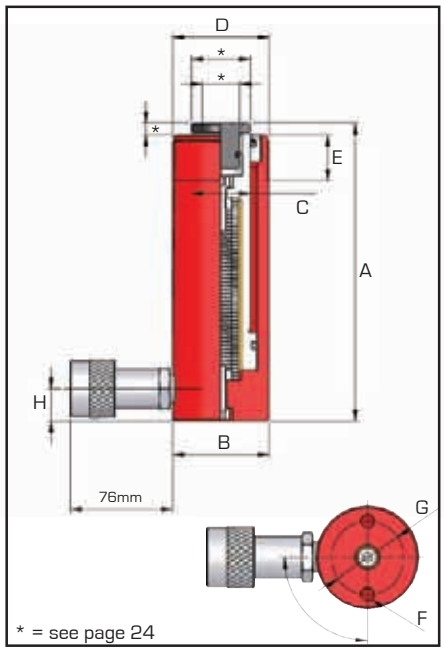
Capacities from 4.5 to 109 tonnes

Stroke lengths from 25 to 457mm

Working pressure 700 Bar

The HSS single acting multi-purpose cylinder range offers the widest choice of stroke lengths and lifting capacities available, and provides an excellent choice for maintenance, production, fabrication and construction applications. All models are provided with a collar thread and thread protector, cylinder base and piston rod mountings for easy fixturing, making the HSS range the most versatile and adaptable multi-purpose cylinders available. Major user industries include power generation, railways, steelworks, mining, shipyards and oil & gas.

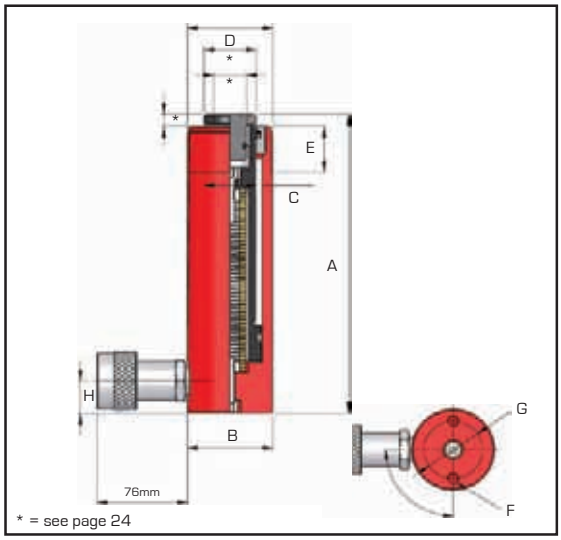
- Spring assisted return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals
- Collar threads withstand full load
- Piston rod thread on all models up to 30t
- Base mounting holes on all models (except HSS308)
- Optional piston rod saddles (see page 23)
- Collar thread protector supplied as standard



Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HSS51	4.5	25	16	6.4	1.0
HSS52	4.5	50	32	6.4	1.2
HSS53	4.5	75	48	6.4	1.4
HSS54	4.5	100	64	6.4	1.5
HSS55	4.5	125	80	6.4	1.8
HSS57	4.5	176	113	6.4	2.0
HSS59	4.5	227	146	6.4	2.4
HSS101	10	25	36	14.4	1.8
HSS102	10	56	81	14.4	2.4
HSS104	10	100	144	14.4	3.0
HSS106	10	150	217	14.4	4.2
HSS108	10	206	297	14.4	5.0
HSS1010	10	250	361	14.4	5.4
HSS1012	10	305	440	14.4	6.2

Dimensions in mm (unless otherwise stated)							
A	B	C	D	E	F	G	H
107	38	24	1 ½"-16un	28	M6	25	19
132	38	24	1 ½"-16un	28	M6	25	19
157	38	24	1 ½"-16un	28	M6	25	19
182	38	24	1 ½"-16un	28	M6	25	19
207	38	24	1 ½"-16un	28	M6	25	19
258	38	24	1 ½"-16un	28	M6	25	19
308	38	24	1 ½"-16un	28	M6	25	19
100	57	35	2 ¼"-14un	27	M8	40	19
131	57	35	2 ¼"-14un	27	M8	40	19
175	57	35	2 ¼"-14un	27	M8	40	19
225	57	35	2 ¼"-14un	27	M8	40	19
281	57	35	2 ¼"-14un	27	M8	40	19
325	57	35	2 ¼"-14un	27	M8	40	19
379	57	35	2 ¼"-14un	27	M8	40	16

HSS - SINGLE ACTING MULTI-PURPOSE CYLINDERS

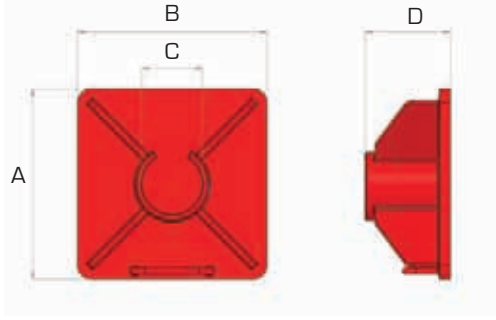


* = see page 24

Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HSS152	14.5	50	101	20.3	3.4
HSS154	14.5	100	203	20.3	5.0
HSS156	14.5	150	304	20.3	6.6
HSS1510	14.5	250	507	20.3	8.8
HSS252	25	51	178	34.9	6.5
HSS254	25	102	356	34.9	8.0
HSS256	25	150	524	34.9	9.6
HSS2510	25	250	874	34.9	12.6
HSS2514	25	356	1242	34.9	16.8
HSS2518	25	457	1597	34.9	21.4
HSS308	29	205	860	41.9	18.6
HSS502	50	51	364	71.3	13.0
HSS504	50	102	728	71.3	16.8
HSS506	50	152	1084	71.3	20.0
HSS508	50	203	1448	71.3	23.2
HSS5013	50	330	2354	71.3	33.6
HSS756	73	152	1561	102.7	31.0
HSS1004	109	102	1565	153.4	41.6
HSS1006	109	153	2347	153.4	49.8
HSS10010	109	254	3896	153.4	65.5

Dimensions in mm (unless otherwise stated)							
A	B	C	D	E	F	G	H
154	70	41	2 3/4"-16un	39	M10	48	19.0
204	70	41	2 3/4"-16un	39	M10	48	19.0
254	70	41	2 3/4"-16un	39	M10	48	19.0
354	70	41	2 3/4"-16un	39	M10	48	19.0
174	86	54	3 5/16"-12un	49	M12	60	25.0
225	86	54	3 5/16"-12un	49	M12	60	25.0
273	86	54	3 5/16"-12un	49	M12	60	25.0
374	86	54	3 5/16"-12un	49	M12	60	25.0
480	86	54	3 5/16"-12un	49	M12	60	25.0
611	86	54	3 5/16"-12un	49	M12	60	25.0
374	102	57	3 5/16"-12un	50	-	-	50.0
150	127	79	5"-12un	55	M12	85	20.0
201	127	79	5"-12un	55	M12	85	20.0
251	127	79	5"-12un	55	M12	85	20.0
302	127	79	5"-12un	55	M12	85	20.0
429	127	79	5"-12un	55	M12	85	20.0
272	146	95	5 3/4"-12un	45	M12	115	31.5
223	185	114	6 7/8"-12un	50	M12	146	32.0
274	185	114	6 7/8"-12un	50	M12	146	32.0
375	185	114	6 7/8"-12un	50	M12	146	32.0

Load spreading base plates



Model No	For Cylinder Capacity	Dimensions in mm A	B	C	D
HSS5BP	4.5 t	200	200	40.3	118
HSS10BP	10 t	230	230	58.6	120
HSS15BP	14.5 t	254	254	71.3	122
HSS25BP	25 t	280	280	89.0	126

HAS - SINGLE ACTING LIGHTWEIGHT ALUMINIUM CYLINDERS

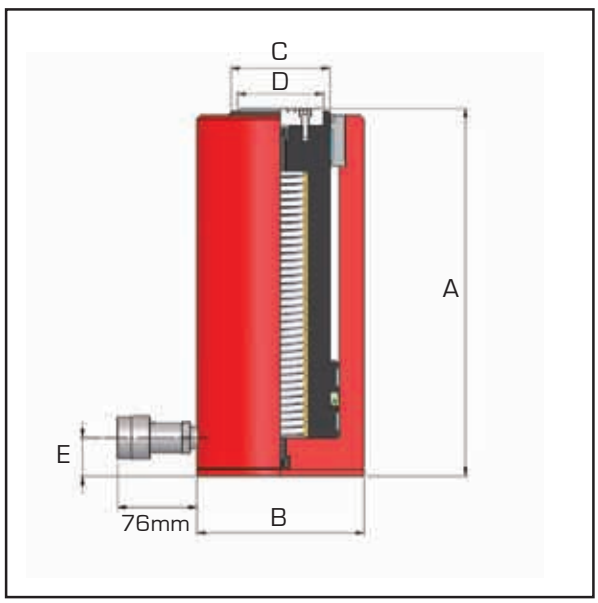

HAS506

- Working pressure 700 Bar
- Capacities from 32 to 110 tonnes
- Stroke length 152mm

The HAS range of single acting, lightweight, aluminium cylinders is specifically designed for applications where weight and ease of positioning are features of prime importance. With an average weight of approximately 50% of comparable capacity steel construction cylinders, all models are supplied with a hard anodised, wear resistant, piston rod and cylinder body and a steel cylinder base protection plate. Available lifting capacities range from 32 to 110 tonnes capacity, at maximum working pressure of 700 Bar. All models are commonly used in a wide variety of industrial applications in shipyards, steel mills, construction and power plants. Other capacities and stroke length options available on request.

Please Note.....

Aluminum cylinders offer the benefit of greatly reduced weight compared to conventional steel cylinders. However, due to the inherent nature of the material, are not recommended for use in high cycle production applications. The recommended life cycle is estimated at approximately 5000 operations at maximum pressure, which in most lifting and maintenance applications represents a more than acceptable period of usage.



Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HAS306	32	152	672	44.2	6.0
HAS506	51	152	1077	70.9	9.0
HAS1006	110	152	2340	153.9	23.0

Dimensions in mm (unless otherwise stated)				
A	B	C	D	E
282	104	60	50	20
287	135	80	70	25
317	195	110	100	35

HHS - SINGLE ACTING HOLLOW PISTON CYLINDERS

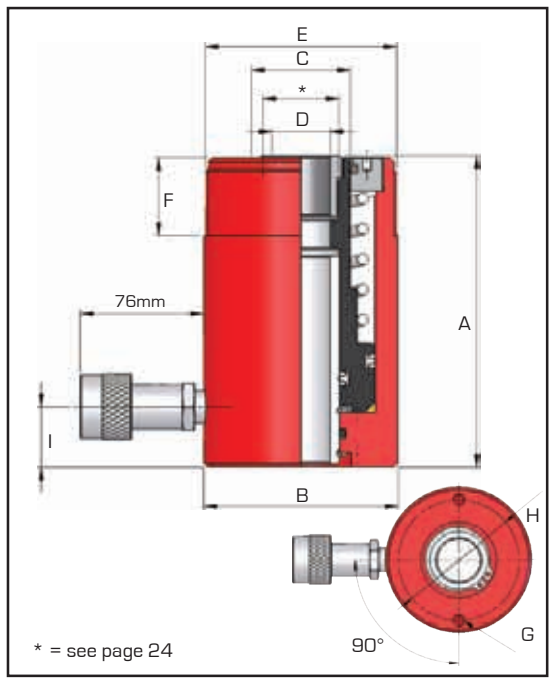
Capacities from 11 to 102 tonnes

Stroke lengths from 25 to 152mm

Working pressure 700 Bar

The HHS single acting hollow piston cylinder range is extremely versatile for use in tooling, maintenance and tensioning applications. Specifically designed with a hollow piston to enable a rod or cable to be passed through the entire cylinder length for applications where a pulling force is required, the HHS range is used extensively in post-tensioning and pre-stressing applications as well as testing of various bonded or mechanical anchoring systems. HHS cylinders can also be used for general lifting applications, when fitted with readily available interchangeable hardened steel piston rod saddles.

- Spring assisted return
- Nitrocarburised piston rod
- Low friction bearing surfaces
- Anti-extrusion seals
- Optional piston rod saddles (see page 23)
- Collar thread protector supplied as standard



Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HHS101	11	25	39	15.8	2.8
HHS102	11	50	79	15.8	3.0
HHS106	11	152	240	15.8	10.2
HHS202	23	50	167	33.3	7.0
HHS206	23	150	500	33.3	13.8
HHS302	33	50	233	46.7	10.6
HHS306	33	152	710	46.7	19.2
HHS603	61	76	651	85.7	28.0
HHS606	61	150	1285	85.7	40.6
HHS1003	102	76	1088	143.1	64.0
HHS1006	102	150	2147	143.1	75.0

Dimensions in mm (unless otherwise stated)								
A	B	C	D	E	F	G	H	I
110	70	38	20	2 ¾"-16un	30	M8	51	19
140	70	38	20	2 ¾"-16un	30	M8	51	19
297	70	38	20	2 ¾"-16un	30	M8	51	19
160	100	51	30	3 ⅞"-12un	40	M8	82.5	31
306	100	51	30	3 ⅞"-12un	40	M8	82.5	31
165	115	60	35	4 ½"-12un	40	M8	92	31
320	115	60	35	4 ½"-12un	40	M8	92	31
226	160	92	55	6 ¼"-12un	59	M12	130	31
315	160	92	55	6 ¼"-12un	59	M12	130	31
276	213	127	81	8 ⅜"-12un	60	M16	178	45
350	213	127	81	8 ⅜"-12un	60	M16	178	45

HHR - DOUBLE ACTING HOLLOW PISTON CYLINDERS

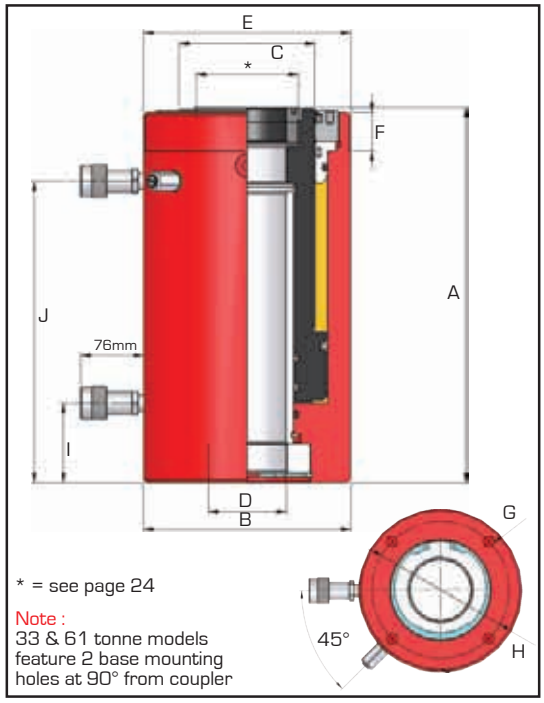
Capacities from 33 to 247 tonnes

Stroke lengths from 50 to 305mm

Working pressure 700 Bar

The HHR double acting hollow piston cylinder range incorporates all of the design features of the HHS range with the added benefit of double acting design, which greatly enhances speed of operation and performance particularly in the longer length stroke options. Additionally a substantial hydraulic pulling force is available in the piston retraction mode of operation. Standard range models are featured in this catalogue, however other stroke and tonnage options are available on request.

- Double acting design
- Nitrocarburised piston rod
- Annular area overload protection valve
- Low friction bearing surfaces
- Anti-extrusion seals
- Optional piston rod saddles (see page 23)
- Collar thread protector supplied as standard



* = see page 24

Note :
33 & 61 tonne models feature 2 base mounting holes at 90° from coupler

Model number	Capacity Push tonnes	Pull tonnes	Stroke mm	Oil cap. cm³	Cyl. eff. area cm²	Weight kg
HHR302	33	24	51	238	46.7	12.2
HHR306	33	24	150	701	46.7	17.6
HHR3012	33	24	305	1424	46.7	25.7
HHR603	61	38	76	652	85.7	30.6
HHR606	61	38	152	1304	85.7	41.6
HHR6010	61	38	254	2179	85.7	52.5
HHR1002	102	43	50	715	143.1	61.3
HHR1003	102	43	76	1087	143.1	68.5
HHR1006	102	43	152	2174	143.1	90.0
HHR1508	152	71	203	4320	212.8	170.0
HHR2508	247	76	203	7039	346.5	269.0

Dimensions in mm (unless otherwise stated)										
A	B	C	D	E	F	G	H	I	J
180	115	60.3	35	4 ½"-12un	40	M8	92	28	119
279	115	60.3	35	4 ½"-12un	40	M8	92	28	218
434	115	60.3	35	4 ½"-12un	40	M8	92	28	373
239	160	92	55	6 ¼"-12un	45	M12	130	31	166
315	160	92	55	6 ¼"-12un	45	M12	130	31	242
417	160	92	55	6 ¼"-12un	45	M12	130	31	344
283	213	140	80	8 ⅜"-12un	40	M16	178	82	208
310	213	140	80	8 ⅜"-12un	40	M16	178	82	234
386	213	140	80	8 ⅜"-12un	40	M16	178	82	310
503	270	184	102	n/a	n/a	n/a	n/a	98	389
505	350	254	150	n/a	n/a	n/a	n/a	98	389

HDA - HIGH TONNAGE DOUBLE ACTING CYLINDERS

Capacities from 25 to 520 tonnes

Stroke lengths from 152 to 330mm

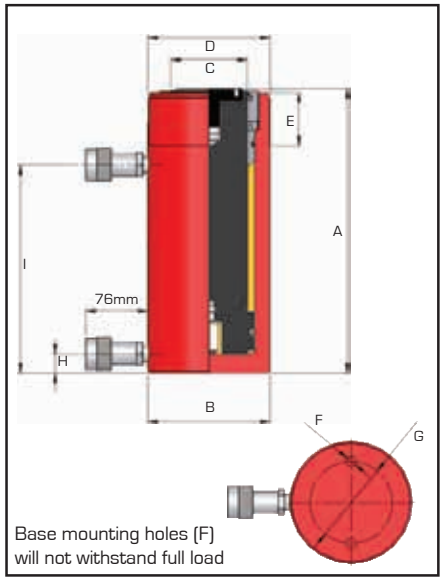
Working pressure 700 Bar

The HDA double acting cylinder range offers the utmost in versatility and durability. Specifically designed for heavy duty lifting, construction and maintenance applications as well as presswork and industrial production, the double acting design provides substantial pulling force in the piston retraction mode as well as providing fast, controlled retraction for continuous duty cycle operation. All models up to 152 tonnes are supplied with flat saddle, piston rod threads and collar threads as standard. Models from 203 tonnes and upwards are supplied without collar thread and piston rod thread, however include replaceable tilting saddle as standard. Standard range models are featured in this catalogue, however other stroke and tonnage options are available on request.

- Internal annular area overload protection valve
- Low friction bearing surfaces
- Nitrocarburised piston rod
- Anti-extrusion seals
- Base mounting holes*
- Optional piston rod saddles (see page 23)

*Base mounting holes are for location of cylinder only. They are not designed to resist the full capacity of the cylinder

Up to 152 tonnes :	From 203 tonnes :
Flat saddle	Tilting saddle
Piston rod thread	Piston without thread
Collar thread with protector	Excluding collar thread



Model number	Capacity Push tonnes	Capacity Pull tonnes	Stroke mm	Oil cap. litres	Cyl. eff. area cm²	Weight kg
HDA256	25	10	152	0.53	34.9	15.0
HDA506	50	15	152	1.08	71.3	28.4
HDA5013	50	15	330	2.35	71.3	42.6
HDA1006	109	36	152	2.33	153.3	64.5
HDA10013	109	36	330	5.06	153.3	89.0
HDA1506	152	79	152	3.26	214.2	90.0
HDA15012	152	79	305	6.53	214.2	120.5
HDA2006	203	-	152	4.33	285.2	129.8
HDA20012	203	-	305	8.69	285.2	167.4
HDA3006	326	-	152	6.95	457.4	193.0
HDA4006	398	-	152	8.49	558.9	286.0
HDA5006	520	-	152	11.09	729.9	372.0

Dimensions in mm (unless otherwise stated)								
A	B	C	D	E	F*	G	H	I
287	92	50	3 5/16"-12un	53	M10	60	30	212
295	127	79	5"-12un	55	M12	85	20	216
473	127	79	5"-12un	55	M12	85	20	394
304	178	114	6 7/8"-12un	51	M12	146	30	226
482	178	114	6 7/8"-12un	51	M12	146	30	404
310	210	114	8"-12un	55	M16	160	35	231
463	210	114	8"-12un	55	M16	160	35	384
356	254	140	Optional	Optional	M20	185	43	238
509	254	140	Optional	Optional	M20	185	43	391
409	312	165	Optional	Optional	M20	158	50	262
431	360	216	Optional	Optional	M24	203	55	277
470	397	203	Optional	Optional	M24	203	65	300

HFL - SINGLE ACTING LOW HEIGHT FAILSAFE LOCK RING CYLINDERS

Capacities from 50 to 520 tonnes

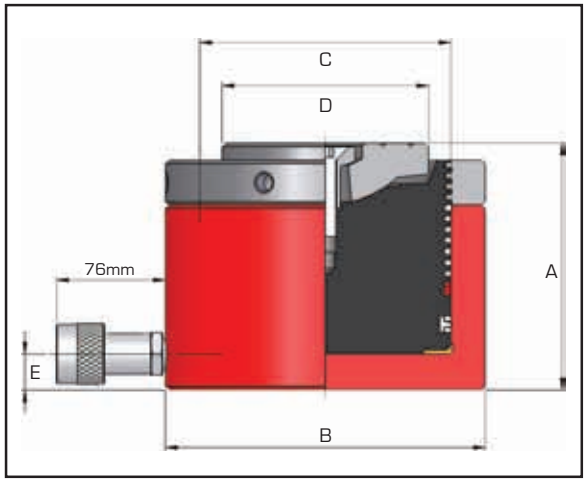
Stroke lengths from 45 to 51mm

Working pressure 700 Bar

The HFL low height single acting failsafe lock ring cylinder range combines all the versatility and efficiency of hydraulic power with the safety of mechanical load support, offering a sustainable lifting force in very confined work areas. Ideally suited for applications requiring load holding for extended periods, such as bridge support work. The HFL range features a single acting load return piston, threaded throughout it's stroke length to suit the threaded mechanical load holding lock ring. All models are suitable for vertical lifting only and are supplied with tilting saddles as standard.

- Single acting load return design
- Nitrocarburised cylinder bore and piston rod
- Low friction bearing surfaces
- Anti-extrusion seals
- Tilting saddle fitted as standard
- Overstroke restrictor port

See pages 25-44 for pumps suitable for use with all Hi-Force cylinders



Model number	Capacity tonnes	Stroke mm	Oil cap. litres	Cyl. eff. area cm^2	Weight kg
HFL502	50	51	0.36	71.3	14.2
HFL1002	109	50	0.77	153.4	25.1
HFL1502	152	45	1.07	214.3	44.0
HFL2502	260	45	1.65	366.1	69.4
HFL5002	520	45	3.29	729.9	186.0

Dimensions in mm				
A	B	C	D	E
125	127	95	70	19
137	178	140	115	20
150	216	165	135	28
159	273	216	130	31
192	400	305	180	43

HFG - SINGLE ACTING FAILSAFE LOCK RING CYLINDERS

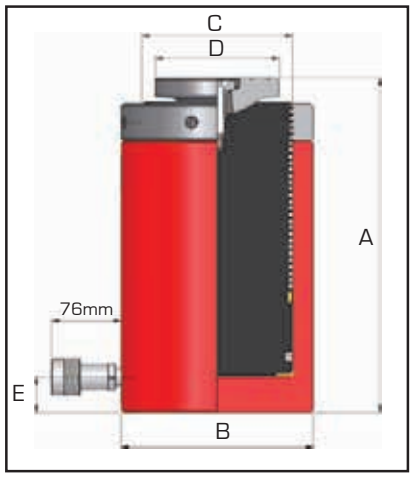
Capacities from 50 to 520 tonnes

Stroke lengths from 50 to 152mm

Working pressure 700 Bar

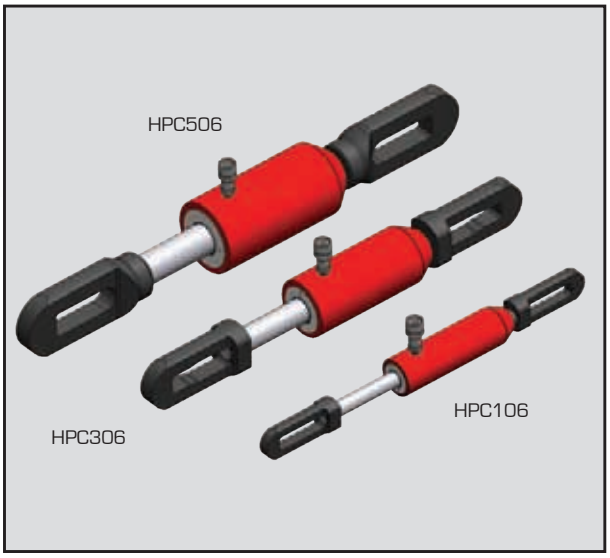
The HFG single acting failsafe lock ring cylinder range combines all the versatility and efficiency of hydraulic power with the safety of mechanical load support. Ideally suited for applications requiring sustained load holding for extended periods, such as bridge support work, the HFG range features a single acting, load return piston, threaded throughout it's stroke length to suit the threaded mechanical load holding lock ring. Simply jack up the load, wind down the mechanical lock ring until it comes into contact with the cylinder body, release the hydraulic pressure and sustain the load mechanically. All models are suitable for vertical lifting only and are supplied with tilting saddles as standard to reduce the risk of side loading the cylinder. Standard models are featured in this catalogue, however other stroke and tonnage options are available on request.

- Single acting load return design
- Nitrocarburised cylinder bore and piston rod
- Low friction bearing surfaces
- Anti-extrusion seals
- Tilting saddle fitted as standard
- Overstroke restrictor port



Model number	Capacity tonnes	Stroke mm	Oil cap. litres	Cyl. eff. area cm^2	Weight kg	Dimensions in mm A	B	C	D	E
HFG502	50	50	0.36	71.3	15.4	172	127	95	70	25.0
HFG504	50	102	0.73	71.3	20.6	224	127	95	70	25.0
HFG506	50	150	1.07	71.3	25.0	272	127	95	70	25.0
HFG1002	109	50	0.77	153.4	33.5	184	178	140	115	27.5
HFG1004	109	100	1.53	153.4	47.5	240	178	140	115	27.5
HFG1006	109	150	2.30	153.4	61.5	311	178	140	115	27.5
HFG1502	152	50	1.07	214.3	69.5	238	216	165	135	42.0
HFG1504	152	100	2.14	214.3	84.0	288	216	165	135	42.0
HFG1506	152	150	3.21	214.3	89.5	338	216	165	135	42.0
HFG2002	203	50	1.42	258.1	95.4	261	254	190	135	50.0
HFG2006	203	152	4.33	285.1	137.0	362	254	190	135	50.0
HFG3006	326	150	6.87	457.7	228.5	417	310	241	150	50.0
HFG4006	398	151	8.44	559.0	308.5	459	342	267	180	70.0
HFG5006	520	152	11.10	729.9	457.0	498	400	305	180	80.0

HPC - SINGLE ACTING PULL CYLINDERS



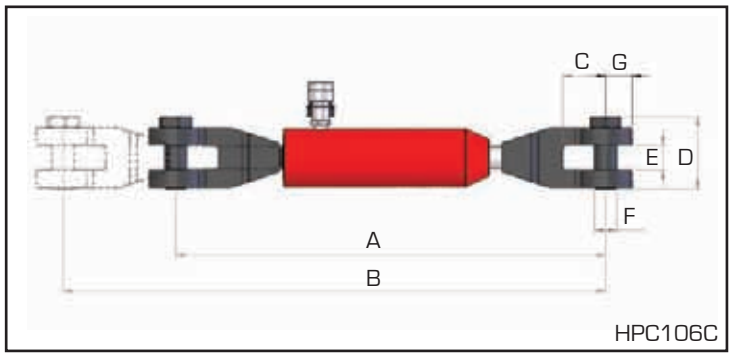
Working pressure 700 Bar

Capacities from 10 to 50 tonnes

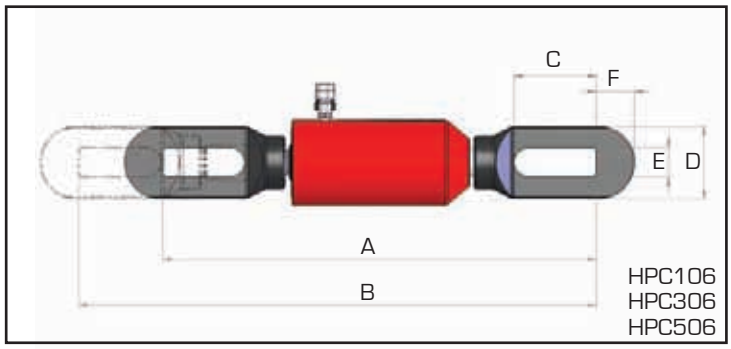
Stroke length 152mm

The HPC pull cylinder range comprises of four models, with capacities ranging from 10 tonnes to 50 tonnes of pulling force. All models are 700 Bar maximum working pressure and feature a single acting, spring assisted return piston, with a 152mm stroke length. Fitted with easily replaceable machined pulling eyes on the piston rod and cylinder base, the 10 tonnes capacity version can also be supplied with clevis eye attachments. Typical applications for HPC pull cylinders are plate alignment prior to welding in shipyards, cable tensioning and heavy load moving using chains or wire ropes.

- Spring assisted return
- Surface treated piston rod
- Replaceable pulling and clevis eyes
- Piston wiper prevents contamination



HPC106C



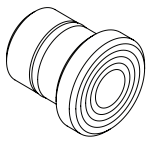
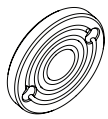
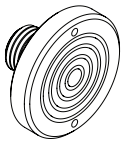
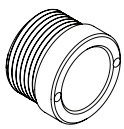
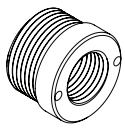
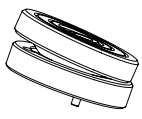
HPC106
HPC306
HPC506

Hand and powered pumps suitable for use with HPC range pull cylinders are detailed on pages 25 to 44.

Model number	Capacity tonnes	Stroke mm	Oil cap. cm^3	Cyl. eff. area cm^2	Weight kg
HPC106	10	152	228	15.0	12.0
HPC106C	10	152	228	15.0	15.5
HPC306	30	152	636	41.8	31.0
HPC506	50	152	1078	71.0	54.0

Dimensions in mm						
A	B	C	D	E	F	G
578	730	114	67	30	33	-
581	733	58	99	35	30	36
672	825	145	105	39	51	-
785	937	149	130	52	69	-

CYLINDER SADDLES

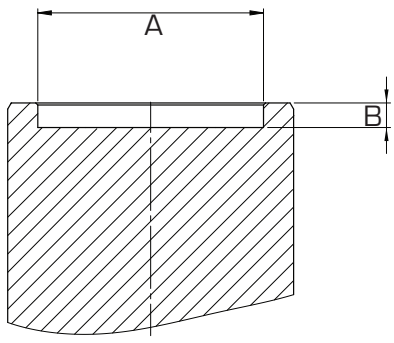
Fitted as standard					Available options			
Cylinder range	Cylinder capacity	Saddle model No.	See figure		Cylinder range	Cylinder capacity	Saddle model No.	See figure
HAS	32	**HA30**	2	Fig. 1 	HAS	32	**HAT30**	6
HAS	51	**HA50**	2		HAS	51	**HAT50**	6
HAS	110	**HA100**	2		HAS	110	**HAT100**	6
HSS	4.5	**HA5**	1		HSS	4.5	-	-
HSS	10	**HA10**	1		HSS	10	**HAT10**	8
HSS	14.5	**HA15**	1	Fig. 2 	HSS	14.5	-	-
HSS	25	**HA25**	1		HSS	25	**HAT25**	8
HSS	29	**HA25**	1		HSS	29	-	-
HSS	50	**HA50**	2		HSS	50	**HAT50**	6
HSS	73	**HA75**	2		HSS	73	**HAT75**	6
HSS	109	**HA100**	2	Fig. 3 	HSS	109	**HAT100**	6
HHS	11	**HA102**	4		HHS	11	**HA102T**	5
HHS	23	**HA202**	4		HHS	23	**HA202T**	5
HHS/R	33	**HA302**	4		HHS/R	33	**HA302T**	5
HHS/R	61	**HA603**	4		HHS/R	61	**HA603T**	5
HHS/R	102	**HA1003**	4	Fig. 4 	HHS/R	102	**HA1003T**	5
HHR	152	**HA1508**	4		HHR	152	**HA1508T**	5
HHR	247	**HA2508**	4		HHR	247	**HA2508T**	5
HDA	25	**HD25**	3		HDA	25	**HD25T**	8
HDA	50	**HD50**	3	Fig. 5 	HDA	50	**HD50T**	8
HDA	109	**HD100**	3		HDA	109	**HD100T**	8
HDA	152	**HD150**	3		HDA	152	**HD150T**	8
HDA	203	**HD200**	3		HDA	203	**HD200T**	8
HDA	326	**HD300T**	6		HDA	326	**HD300**	2
HDA	398	**HD400T**	6	Fig. 6 	HDA	398	**HD400**	2
HDA	520	**HD500T**	6		HDA	520	**HD500**	2
HFG	50	**TS50**	7		HFG	50	-	-
HFG	109	**TS100**	7		HFG	109	-	-
HFG	152	**TS150**	7		HFG	152	-	-
HFG	203	**TS200**	7	Fig. 7 	HFG	203	-	-
HFG	326	**TS300**	7		HFG	326	-	-
HFG	398	**TS400**	7		HFG	398	-	-
HFG	520	**TS500**	7		HFG	520	-	-
HFL	50	**TS50**	7	Fig. 8 	HFL	50	-	-
HFL	109	**TS100**	7		HFL	109	-	-
HFL	152	**TS150**	7		HFL	152	-	-
HFL	260	**TS250**	7		HFL	260	-	-
HFL	520	**TS500**	7		HFL	520	-	-

PISTON ROD THREAD SPECIFICATIONS

HSS Cylinder Range

Cylinder Range	Figure	Dimensions in mm A	B	C	Thread Size D
HSS5	3	-	-	20	¾"-16UNF
HSS10	3	-	-	14	1"-8UNC
HSS15	3	-	-	14	1"-8UNC
HSS25	3	-	-	30	1½"-16UN
HSS30	3	-	-	30	1½"-16UN
HSS50	1	70	11.0	-	-
HSS75	1	80	12.0	-	-
HSS100	1	100	12.0	-	-

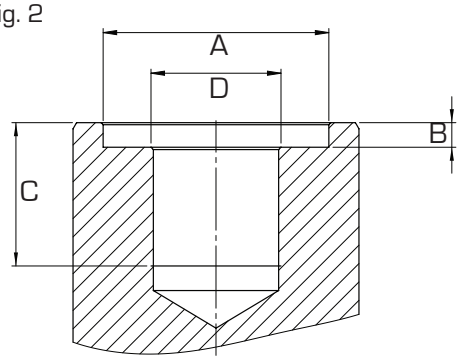
Fig. 1



HAS Cylinder Range

Cylinder Range	Figure	Dimensions in mm A	B	C	Thread Size D
HAS30	1	50	10.0	-	-
HAS50	1	70	11.0	-	-
HAS100	1	100	12.0	-	-

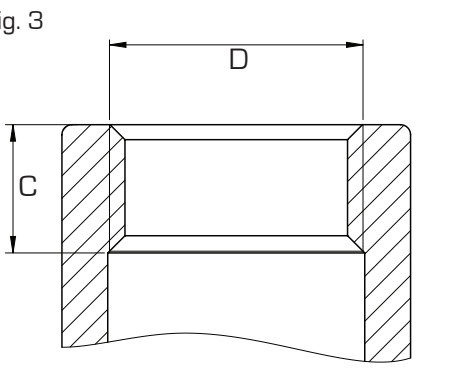
Fig. 2



HDA Cylinder Range

Cylinder Range	Figure	Dimensions in mm A	B	C	Thread Size D
HDA25	2	45	9.0	35	1"-12UNF
HDA50	2	70	11.0	45	1"-12UNF
HDA100	2	100	12.0	55	1¾"-12UNF
HDA150	2	100	12.0	52	3⅜"-16UN
HDA200	2	110	12.0	70	2½"-12UN
HDA300	1	150	25.0	-	-
HDA400	1	180	25.0	-	-
HDA500	1	180	25.0	-	-

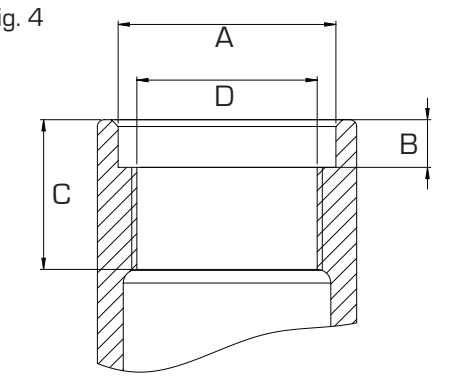
Fig. 3



HHS Cylinder Range

Cylinder Range	Figure	Dimensions in mm A	B	C	Thread Size D
HHS11	4	32	7.0	21	M28x1.5
HHS23	4	43	10.0	31	M39x1.5
HHS33	4	52	10.0	31	M48x1.5
HHS61	4	80	10.0	31	M70x1.5
HHS102	4	114	12.0	38	M105x2

Fig. 4



HHR Cylinder Range

Cylinder Range	Figure	Dimensions in mm A	B	C	Thread Size D
HHR33	4	52	10.0	32	M48x1.5
HHR61	4	80	10.0	32	M70x1.5
HHR102	4	114	12.0	38	M105x2
HHR1508	4	170	13.5	50	M150x3
HHR2508	4	242	13.5	74	M220x3