



Lifting claws, piston plates, base adaptors and extension tubes, load-spreading plates model AYS

Lifting claws

In connection with the corresponding hydraulic cylinder a lifting claw represents a compact, lightweight and versatile lifting unit. The lifting claws are screwed onto the collar thread of cylinder series YS. Claws can be placed under loads with minimum clearance.

When operating lifting claws, the following aspects have to be considered:

The hydraulic cylinders need to be able to support themselves against the load. The max. force of the cylinder is reduced by 50%.

Piston plates

Piston plates can be screwed into the piston thread of cylinder series YS. They reduce the surface pressure and prevent the pistons from sinking into the ground. Also when using a piston plate in connection with a lifting claw the cylinder must be supported against the load.

Base adaptors and extension tubes

Extension tubes are mounted onto the bottom of cylinders series YS by means of the base adaptor and two hexagon socket screws (screws are included with the base adaptor). The use of extension tubes adds to the versatility of the standard cylinders.

Load-spreading plates

These load-spreading plates are recommended when slim cylinders are used for lifting operations. They prevent the cylinders from falling over and sinking into the ground. Robust steel design with carrying handle.



AYS-101
151
231



Straightening of a container box by use of a hydraulic cylinder YS-10/100, extension tube AYS-106, base adaptor AYS-103 and electric power pump PY-04/2/5/2 M.



Lifting of a container by use of an hydraulic cylinder YS-23/160, lifting claw AYS-23 and piston plate AYS-232 powered by a two-stage hand pump HPS-2/2 with base frame.

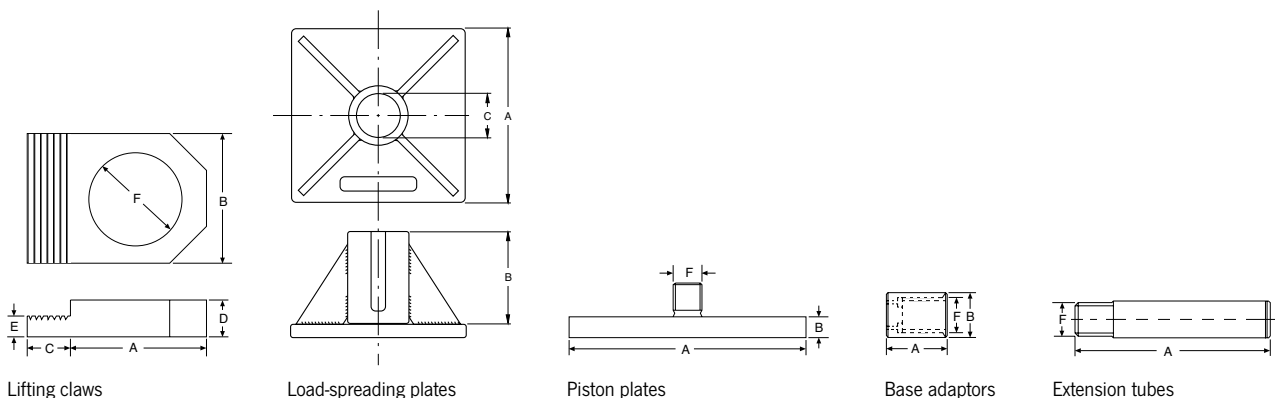
Technical data model AYS

Model	EAN-No. 4025092*	Description	Suitable for cylinder	Weight kg
AYS-10	*156721	Lifting claw, permissible capacity 5 t	YS-10/...	0.9
AYS-15	*156738	Lifting claw, permissible capacity 8 t	YS-15/...	1.3
AYS-23	*156745	Lifting claw, permissible capacity 12 t	YS-23/...	3.8
AYS-53	*157049	Base adaptor, 5 t	YS-5/...	0.5
AYS-54	*157056	Extension tube 125 mm, 5 t	YS-5/...	0.9
AYS-55	*157063	Extension tube 250 mm, 5 t	YS-5/...	1.5
AYS-56	*157070	Extension tube 500 mm, 5 t	YS-5/...	2.8
AYS-101	*157100	Load-spreading plate 10 t	YS-10/...	10.5
AYS-102	*156752	Piston plate, round	YS-10/...	1.5
AYS-103	*156783	Base adaptor, 10 t	YS-10/...	0.7
AYS-104	*156790	Extension tube 125 mm, 10 t	YS-10/...	1.2
AYS-105	*156806	Extension tube 250 mm, 10 t	YS-10/...	2.2
AYS-106	*156813	Extension tube 500 mm, 10 t	YS-10/...	3.9
AYS-107	*156820	Extension tube 750 mm, 10 t	YS-10/...	5.9
AYS-151	*157131	Load-spreading plate 15 t	YS-15/...	10.5
AYS-152	*156769	Piston plate, round	YS-15/...	1.8
AYS-153	*156929	Base adaptor, 15 t	YS-15/...	0.9
AYS-154	*156936	Extension tube 125 mm, 15 t	YS-15/...	1.6
AYS-155	*156943	Extension tube 250 mm, 15 t	YS-15/...	2.9
AYS-156	*156950	Extension tube 500 mm, 15 t	YS-15/...	4.9
AYS-157	*156967	Extension tube 750 mm, 15 t	YS-15/...	7.9
AYS-231	*157162	Load-spreading plate 23 t	YS-23/...	10.5
AYS-232	*156776	Piston plate, round	YS-23/...	2.2

Dimensions model AYS

Model	AYS-10	AYS-15	AYS-23	AYS-53	AYS-54	AYS-55	AYS-56	AYS-101	AYS-102	AYS-103	AYS-104	AYS-105
A, mm	90	110	125	53	125	250	500	230	140	58	125	250
B, mm	90	110	125	50	-	-	-	120	12	60	-	-
C, mm	30	30	30	-	-	-	-	58	-	-	-	-
D, mm	29	34	40	-	-	-	-	-	-	-	-	-
E, mm	22	25	35	-	-	-	-	-	-	-	-	-
F, mm	M57 x 1.5	M67 x 1.5	M85 x 2	M42 x 1.5	M42 x 1.5	M42 x 1.5	M42 x 1.5	-	M27 x 2	M50 x 2	M50 x 2	M50 x 2

Model	AYS-106	AYS-107	AYS-151	AYS-152	AYS-153	AYS-154	AYS-155	AYS-156	AYS-157	AYS-231	AYS-232
A, mm	500	750	230	140	70	125	250	500	750	230	160
B, mm	-	-	120	12	73	-	-	-	-	120	15
C, mm	-	-	68	-	-	-	-	-	-	86	-
D, mm	-	-	-	-	-	-	-	-	-	-	-
E, mm	-	-	-	-	-	-	-	-	-	-	-
F, mm	M50 x 2	M50 x 2	-	M33 x 2	M60 x 2	M60 x 2	M60 x 2	M60 x 2	M60 x 2	-	M40 x 2





Threaded flanges model AYP

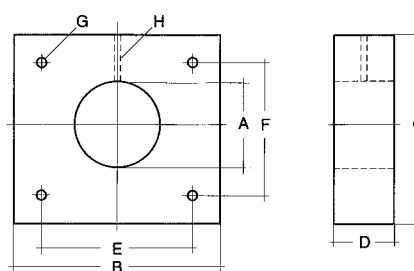
In case hydraulic cylinders have to be inserted into fixtures, press frames or similar devices, these steel flanges can be very handy. Material: weldable steel.

Technical data model AYP

Model	EAN-No. 4025092*	Suitable for cylinder	Weight kg
AYP-1010	*157407	YS-10/...	9.7
AYP-1510	*157414	YS-15/... and YH-10/...	12.6
AYP-2310	*157421	YS-23/... and YH-20/...	12.1
AYP-5010	*159531	YS-50/... and YH-50/...	19.6
AYP-10010	*159548	YS-100/... and YH-100/...	46.0
AYP-20010	*159555	YH-200/...	97.0

Dimensions model AYP

Model	AYP-1010	AYP-1510	AYP-2310	AYP-5010	AYP-10010	AYP-20010
A, mm	M57x1.5	M67x1.5	M85x2	M125x2	M180x3	M250x4
B, mm	220	220	220	250	330	450
C, mm	200	200	200	250	330	450
D, mm	30	40	40	50	70	80
E, mm	120	120	120	225	300	400
F, mm	150	150	150	225	300	400
G, mm	M12	M12	M12	Ø 13.5	Ø 17.5	Ø 17.5
H, mm	M8	M8	M8	M8	M8	M8



Model AYP

Clevis eye mountings model AYH

Clevis eye mountings are screwed onto the piston and bottom of the hydraulic cylinder whenever mounting conditions require a pivoting of the cylinder.



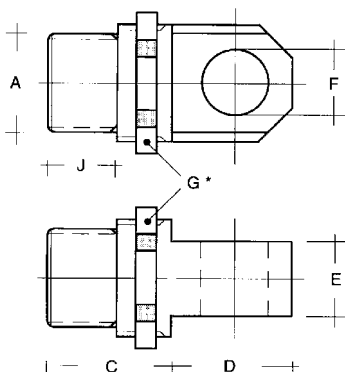
Technical data model AYH

Model	EAN-No. 4025092*	Suitable for cylinder	Suitable for	Weight kg
AYH-5-1	*157179	YH-5/30, YH-5/80, YH-5/150	Cylinder base	0.3
AYH-5-2	*157186	YH-5/30, YH-5/80, YH-5/150	Piston	0.3
AYH-10-1	*157193	YH-10/30, YH-10/80, YH-10/150, YH-10/250	Cylinder base	0.6
AYH-10-2	*157209	YH-10/30, YH-10/80, YH-10/150, YH-10/250	Piston	0.6
AYH-20-1	*157216	YH-20/150, YH-20/250	Cylinder base	2.1
AYH-20-2	*157223	YH-20/150, YH-20/250	Piston	2.1

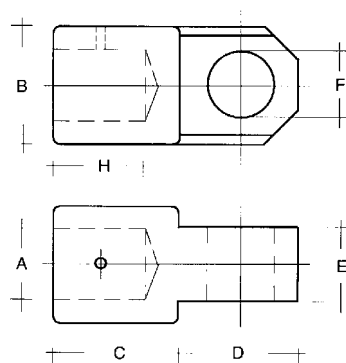
Dimensions model AYH

Model	AYH-5-1	AYH-5-2	AYH-10-1	AYH-10-2	AYH-20-1	AYH-20-2
A, mm	M27x2	M18x1.5	M36x2	M27x2	M45x2	M36x2
B, mm	-	35	-	40	-	70
C, mm	35	35	38	38	50	50
D, mm	35	35	42	42	65	65
E, mm	15	15	25	25	35	35
F, mm	16	16	20	20	30	30
G ¹ , mm	M35x1.5	-	M40x1.5	-	M70x2	-
H, mm	-	-	-	21	-	24
J, mm	18	-	21	-	23	-

¹G = retainer nut DIN 981



Model AYH-...-1 for cylinder base



Model AYH-...-2 for piston

INFO

Build-up and description of Yale hand pumps

Hand pumps are the most common power source within the area of "High-Pressure Hydraulic Tools". For this reason our hand pumps have been carefully designed and equipped with many details which make the pumps very versatile and handy in every-day applications.

Relief valve/hand wheel

The fine-adjustment relief valve in connection with the large hand wheel allows millimeter increments when lifting and lowering even highest loads. The fact that sometimes hundreds of tons are controlled by this hand wheel underlines the importance of this feature.

Sturdy "all-metal-design"

The robust pump head and the absence of any plastic parts result in a long service life and easy maintenance over many years. Plastic reservoirs filled with oil may present a fire risk in connection with welding or similar work!

Carrying handle

A handy carrying handle on all our hand pumps facilitates transportation enormously.

Pressure relief valves

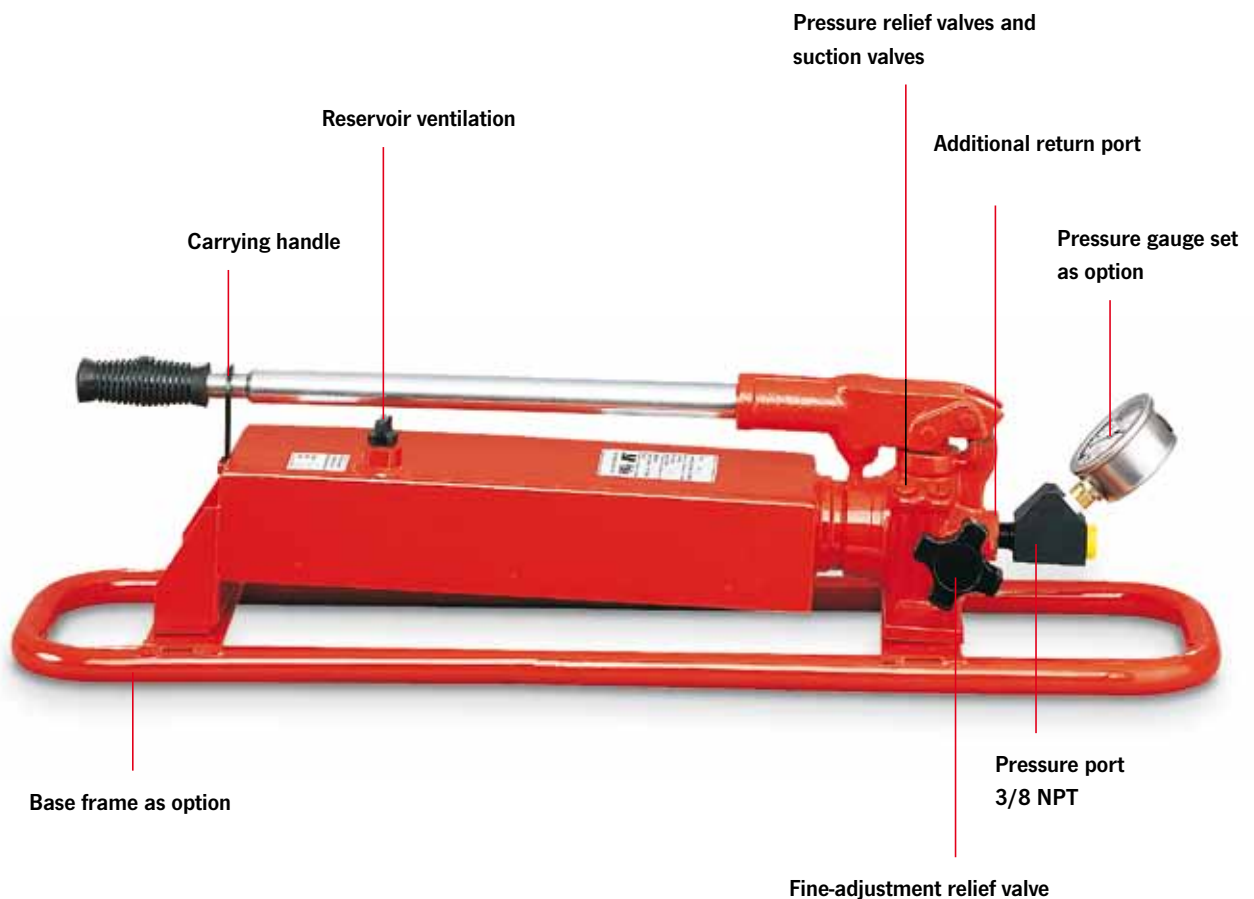
All hand pumps are equipped with two pressure relief valves. They are easily adjustable from outside if pumps must be re-adjusted or a lower operating pressure should not be exceeded.

Reservoir ventilation

All hand pumps are equipped with a reservoir ventilation plug. This ensures perfect suction of hydraulic oil and allows you to use the total oil capacity of the reservoir.

Two-stage output

All hand pumps have two-stage design (except HPS-1/0,7). This allows an increased speed and efficient working during unloaded conditions of the hydraulic cylinder. The switch-over from the low pressure to the high pressure stage is done automatically.



Delivered ready to use

All hand pumps are supplied ready to use incl. hydraulic oil.

Easy-maintenance-design

There is no need to disassemble the hand pumps in case of service work. All parts like suction and pressure valves, seals, packings etc. are accessible from the outside.

All hand pumps have the same design

The same design (build-up) for all hand pumps with the exception of the reservoirs allows the interchangeability of all components. Therefore spare part stocks can be kept to an absolute minimum. Only one spare part kit is necessary to service all hand pumps.

Excellent suction properties

Hand pumps suck and displace 100% of their volume per stroke. This results both in a high efficiency as well as a rapid cylinder movement.

Interchangeability

All hydraulic cylinders, hand pumps and other components are fully interchangeable and can be combined with all other 700 bar hydraulic lines. All components have the standard oil port and same coupler parts.

Additional return oil port

All hand pumps are equipped with a return port to the reservoir. This detail is very advantageous as many hand pumps are integrated in more complex hydraulic circuits.

Base frame

On request you can get base frames for the most common hand pumps. These base frames add to the stability and protection of the hand pumps, in particular when used in the field or on a construction site.

Pressure gauge

Appropriate pressure gauges with the corresponding adaptors are shown.



Hand pump model: HPH...

With integrated pressure gauge GGY-631 and gauge adaptor set GA-704.

Hand pumps for double-acting cylinders with relief valve and 4/2-way directional valve

Unlike conventional pumps, all hand pumps of the model HPH (with 4/2-way directional valve for double-acting cylinders) include a precision relief valve in addition to the directional control valve. Manual directional control valves switch over abruptly, thus causing undesired pressure surges in the system under load.

The additional relief valve in all HPH-hand pumps allows a precise lowering of the load without any pressure shocks. All components have the standard oil port and same coupler parts.

Further advantage of this design:

The pressure gauge shows the pressure as pushing and as pulling force. The combination of a 4-way directional valve with a sensitive relief valve allows a controlled pressure relief without pressure shocks.

OFFLINE

INFO

Selection charts "cylinder/hand pumps" can be found on pages 405-407!



Hand pumps for single-acting cylinders model HPS

Hand pumps are easy to use and operate independently of any external energy source. They are designed for a maximum 700 bar system pressure and will allow each hydraulic cylinder to utilize its maximum capacity.

The two-stage system reduces pumping time. Stage 1 allows rapid piston travel under no load or light load conditions. The pump automatically switches to stage 2 when the piston is loaded and a higher force is required from top. The hand pump is an all-steel construction designed for rough use and has a high-efficiency pumping action. The handle can be locked for easy carrying.

The large and easy-to-control return valve allows the operator to precisely control the return stroke. Other standard features include a large and easy-to-control hand wheel, air bleeding and oil filling plug, large support feet for stability, tilted tank to increase usable oil volume and ergonomic handle grip.

Features

- Operating pressure max. 700 bar.
- Two-stage operation with automatic switch-over (except HPS-1/0,7 A).
- Large reservoir volumes.
- With pressure relief valves, adjustable from the outside.
- Precision-adjustable relief valve (handwheel).
- Robust all-steel construction.
- HPH-pumps are equipped with a 4-way control valve plus a precision-adjustable relief valve.
- Oil port thread 3/8 NPT.
- Incl. oil filling.
- Pressure gauges with corresponding adaptors are also available as accessories.

INFO

Hydraulic hoses are the connection between hand pump and hydraulic cylinders and need to be selected separately. Please see page 381.

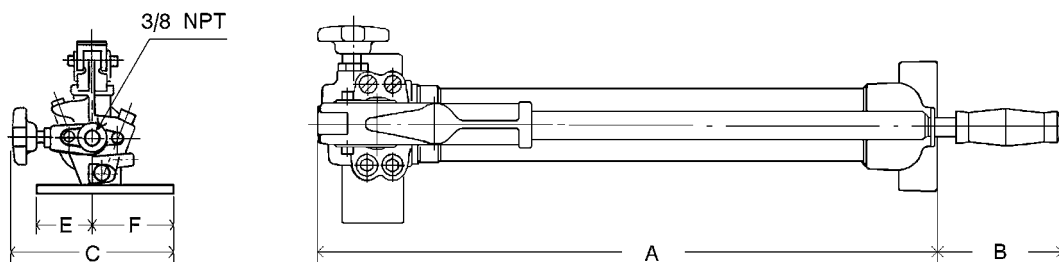
Technical data model HPS

Model	EAN-No. 4025092*	Displacement	Reservoir volume cm ³	Displacement 1 st stage cm ³	Displacement 2 nd stage cm ³	Weight kg
HPS-1/0,7 A	*159081	single-stage	700	–	2	7.0
HPS-2/0,3 A	*160148	two-stage	300	5	1	3.5
HPS-2/0,7 A	*159098	two-stage	700	11	2	7.0
HPS-2/2 A	*159104	two-stage	2000	11	2	10.0
HPS-2/4 A	*159111	two-stage	4000	11	2	13.0
HPS-2/6 A	*159128	two-stage	6000	11	2	21.0
HPS-2/10 A	*159135	two-stage	10000	11	2	27.0

Dimensions model HPS

Model	HPS-1/0,7 A	HPS-2/0,3 A	HPS-2/0,7 A	HPS-2/2 A	HPS-2/4 A	HPS-2/6 A	HPS-2/10 A
A, mm	505	410	505	520	645	645	800
B, mm	85	100	85	70	65	65	65
C, mm	135	105	135	145	160	215	250
D, mm	150	125	150	150	150	180	190
E, mm	43	35	43	43	43	43	43
F, mm	52	35	52	52	52	52	52

Dimensions approx.





HPH-2/4 A

HPH-2/2 A

HPH-2/0,7 A

Hand pumps for double-acting hydraulic cylinders model HPH

With 4-way valve and relief valve (hand wheel)

All hand pumps of type HPH are designed as double-acting cylinders. Basically, they do not differ from series HPS, but are equipped with a 4/3-way directional valve.

The precision-adjustable relief valve remains unaffected and permits a sensitive pressure relief. Pressure gauge and adaptor can be delivered as accessories.

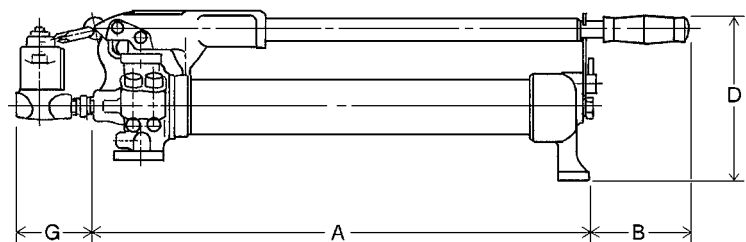
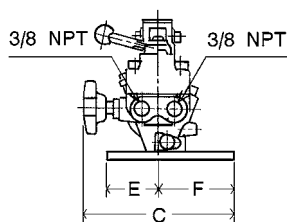
Technical data model HPH

Model	EAN-No. 4025092*	Displacement	Reservoir volume cm ³	Displacement 1 st stage cm ³	Displacement 2 nd stage cm ³	Weight kg
HPH-2/0,7 A	*159159	two-stage	700	11	2	8
HPH-2/2 A	*159166	two-stage	2000	11	2	11
HPH-2/4 A	*159173	two-stage	4000	11	2	14
HPH-2/6 A	*159180	two-stage	6000	11	2	22
HPH-2/10 A	*159197	two-stage	10000	11	2	28

Dimensions model HPH

Model	HPH-2/0,7 A	HPH-2/2 A	HPH-2/4 A	HPH-2/6 A	HPH-2/10 A
A, mm	590	595	715	715	880
B, mm	95	65	65	65	65
C, mm	160	160	160	200	160
D, mm	165	165	180	180	190
E, mm	55	55	55	55	55
F, mm	80	80	80	80	80
G, mm	85	85	85	85	85

Dimensions approx.



Base frames for hand pumps model HPB

These base frames add to the stability of your hand pump, in particular when used in the field or on a construction site where hand pumps are frequently operated on uneven and soft ground.

At the same time, the hand pumps are protected from sand, humidity and possible damage.

The assembly of the base frames is very easy; just three holes have to be bored to mount the frame to the hand pump.

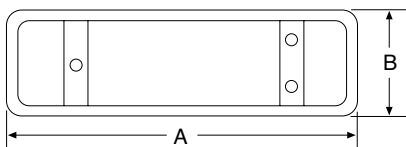


Technical data model HPB

Model	EAN-No. 4025092*	Suitable for hand pump	Weight kg
HPB-2	*156684	HPS-1/0,7 A + HPS-2/0,7 A + HPS-2/2 A + HPH-2/0,7 A + HPH-2/2 A	1.3
HPB-4	*156691	HPS-2/4 A + HPS-2/6 A + HPH-2/4 A + HPH-2/6 A	1.8

Dimensions model HPB

Model	HPB-2	HPB-4
A, mm	765	885
B, mm	190	190



Hand pumps model TWAZ

Operating pressure max. 2000 bar

These high-performance hand pumps allow a very rapid pressure build-up due to their two-stage design. Both pressure stages are equipped with a limiting valve which can easily be adjusted from outside.

High-pressure hand pumps are used for special applications like pressurizing hydraulic nuts and safety couplings, hydrostatic testing, bolt tensioners, high-pressure oil injection for bushing removal, pretensioning anchors, for test applications in laboratories and as a power source within test stands and propeller press systems.



Accessories for hand pumps model TWAZ



Option:
pressure gauge,
model: GGY-2500.



Option:
pressure gauge-adaptor,
model GA-2000.



Option:
adaptor,
model: FY-201
(M22 x 1.5 on G 1/4).



Option:
hydraulic hoses,
model: HH-2001-20,
max. pressure: 2000 bar.

Technical data model TWAZ

Model	EAN-No. 4025092*	Pressure max. bar	Reservoir volume cm ³	Displacement 1 st stage cm ³	Displacement 2 nd stage cm ³	Oil port	Pressure gauge	Pressure gauge model	Gauge adaptor model	Pressure relief valve	Weight kg
TWAZ-0,7	*159920	2000	700	8	0.6	M22 x 1.5	option	GGY-2500	GA-2000	yes	7.0
TWAZ-1,3	*159937	2000	1300	13	1.0	M22 x 1.5	option	GGY-2500	GA-2000	yes	9.0
TWAZ-2,3	*159951	2000	2300	31	1.6	M22 x 1.5	option	GGY-2500	GA-2000	yes	16.0

Foot pump model FPS

Operating pressure 700 bar

Used to operate single-acting hydraulic cylinders, especially for repeated applications, such as checking of welding samples, pressing of connection components (crimping), actuating of clamping devices, as well as for all applications, where it is necessary to keep hands free.

The pump can be used everywhere, as it is independent of an external energy source and is easily portable. An extremely good stability guarantees a comfortable and safe operation up to the highest pressure. It is a “real” foot operated pump, as the return stroke of the connected hydraulic cylinder is released by foot control.

Features

- Operating pressure max. 700 bar.
- Absolute stability due to large base plate.
- Minimized labour fatigue.
- Operating pressure adjustable. Valves accessible from the outside.
- Return stroke of cylinder also controlled by foot operation.
- Oil port 3/8 NPT.

Options

- Pressure gauges and suitable adaptors.
- Hydraulic hoses



Technical data model FPS

Model	EAN-No. 4025092*	Operating pressure max. bar	Displacement 1 st stage cm ³	Displacement 2 nd stage cm ³	Reservoir volume useable cm ³	Weight kg
FPS-2/0,5 A	*160155	700	11	2	500	7



PY-04/2/5/2M

PY-04/2/5/4M

Operation of the power pump

PY-04/2/5/2E:

By activating push-button number 1, the motor starts and the cylinder advances. In the neutral position the pressure is held. By activating push-button number 2, the solenoid valve is activated, the pressure decreases and the hydraulic cylinder retracts.

Electric motor pumps, portable model PY-04

Operating pressure max. 700 bar

These light-weight but powerful two-stage pumps are particularly designed for maintenance and repair jobs. Depending on their type, they can either operate single-acting or double-acting hydraulic cylinders.

The ideal combination of manually operated valve and remote pendant control provides the operator with ample freedom of motion and ensures a safe "holding of the load".

The remote pendant control (1.5 m) is used to start the motor even under full load. The function for both manual valves is as follows: – advance – stop – return – With their light weight and convenient carrying handle, these pumps can be easily transported. Pumps are equipped with thermal overload protection and are supplied with hydraulic oil.

Operation of the power pump

PY-04/2/5/2M:

The 2/2-way manual valve operates together with a pilot operated unloading valve, so that the two valve positions result in the following two control possibilities:

1. Cylinder holds pressure after motor stop.
2. Cylinder automatically retracts after motor stop.

Technical data model PY-04

Model	EAN-No. 4025092*	Control valve	Operating pressure max. bar	No load stroke l/min up to 30 bar	Under load stroke l/min up to 700 bar	Useable reservoir volume l	Connecting valve	Cable remote control m	Speed rpm	Protection standard	Weight, without oil, approx. kg
PY-04/2/5/2 M	*153263	2/2-way manual valve	700	4.0	0.23	5.0	0.37 kW - 230 V-1Ph	1.5	2800	IP 50	24
PY-04/2/5/4 M	*153294	4/3-way manual valve	700	4.0	0.23	5.0	0.37 kW - 230 V-1Ph	1.5	2800	IP 50	26
PY-04/2/5/2 E	*163392	2/2-way solenoid	700	4.0	0.23	5.0	0.37 kW - 230 V-1Ph	1.5	2800	IP 50	28

Mini hydraulic pumps, with compressed air driven motor model PAY

Operating pressure max. 700 bar

These mini-pumps are driven by an air-powered motor and can be connected to any supply source of compressed air. These compact low-cost pumps can operate all single-acting or double-acting hydraulic cylinders up to a max. operating pressure of 700 bar.

Due to large reservoirs, large cylinders or multiple cylinders can be operated. The use of an inline air filter-lubricator is recommended.

The hydraulic pressure can be infinitely adjusted on the regulator of the air-lubricator unit. The air-driven motor guarantees 100% explosion protection.

Pumps for double-acting hydraulic cylinders are equipped with an additional 4-way control valve type VHH-4/3.

The connected hydraulic cylinder is controlled – advance – stop – return – by the universal pedal, which can be either hand or foot-operated.



Control of cylinder motion

- Pedal in neutral position – motor stands still, cylinder stands, pressure is held.
- Pedal depressed – motor starts, cylinder advances, pressure is built-up.
- Pedal pushed forward – motor stands still, pressure is released, cylinder retracts.

Technical data model PAY

Model	EAN-No. 4025092*	For cylinders	Reservoir volume l	Oil pressure max. bar	Oil-displacement l/min	Required air pressure bar	Air consumption l/min	Oil port	Air port	Weight kg
PAY-6	*153270	single-acting	1.5	700	0.85 up to 0.08	7	560	3/8 NPT	1/4 NPT	6.3
PAY-6-5	*160735	single-acting	5.0	700	0.85 up to 0.08	7	560	3/8 NPT	1/4 NPT	12.0
PAY-64	*153614	double-acting	1.5	700	0.85 up to 0.08	7	560	3/8 NPT	1/4 NPT	7.5
PAY-64-5	*160940	double-acting	5.0	700	0.85 up to 0.08	7	560	3/8 NPT	1/4 NPT	13.0

INFO



PY-11/3/20/4M

Electric hydraulic power packs model PYE and model PY

Single-stage and two-stage

Power packs are easy to operate as they are fully assembled and easy to control.

The use of power packs is always recommended when jobs have to be done in a time-saving and efficient way, when repeating jobs have to be finished off, quick cylinder cycles have to be achieved or if large oil volumes in connection with high-tonnage cylinders have to be transmitted.

Two-stage output

The standard power packs are equipped with two-stage pumps, which means that a low pressure stage fills the connected hydraulic cylinder quickly up to a pressure of 80 bar. The high pressure stage is activated automatically from 80 bar up to 700 bar, while the low pressure stage is discharged back to the reservoir. This economic solution avoids heating-up, saves energy and keeps the power packs compact.

Single-stage output model PYE

The hydraulic packs have single-stage pumps. These packs deliver between 0 and 700 bar with the same volume (high-pressure stage).

Control/Operation

The motion control of the connected hydraulic cylinder is done by operating the directional valve.

Do you have a single-acting or a double-acting hydraulic cylinder?

The directional control valve has to correspond to the a.m. functional principle of the hydraulic cylinder to be operated. Depending on these principles the power packs are equipped with a:

- 3/3-way valve to operate single-acting hydraulic cylinders (connection with one hydraulic hose)
- 4/3-way valve to operate double-acting hydraulic cylinders (connection with two hydraulic hoses)

The directional control valves are available either as manual or solenoid operated valves.

Operation of the directional valves

Depending on the way of operation, there are manual or solenoid operated valves. Manual valves are controlled by shifting the operating lever and represent the economic way of control.

These valves have 3 lever positions:
- advance - hold - retract -



PY-07/3/10/3E

Solenoid valves

Solenoid valves have the advantage that they are controlled by a pendant remote control box which makes the operator independent from the power pack, making it easier for him to monitor the job.

The solenoid valves are controlled by two push-buttons – advance – hold – retract –
In neutral position – hold – the valves rest in pressureless circuit. Pressure and force of the connected cylinder are held without pressure drop. The complete electrical set-up (with 24V control) belongs to the scope of delivery. Solenoid valves allow a very ergonomic operation and offer a quick and precise switching (millimeterwise) of the connected hydraulic cylinder.

Pressureless circuit

In neutral position all directional valves rest in pressureless circuit which means that the oil flow coming from the rotating pump is guided back to the reservoir without creating any pressure build-up.

Special solenoid valve configurations

Some applications require a special valve configuration, e.g. the independent control of several hydraulic cylinders from a single power pack. In such cases the complete valve build-up and electrical control is designed according to customer's requirements.

Pressure-Guard power packs

By using an electro-hydraulic pressure switch and a special electric control, power packs automatically control their pre-adjusted pressure. In applications where the pressure (load) should be applied over a very long period, the connected power pack is switched on and off automatically and replaces the pre-set pressure in case a pressure drop has occurred.

Trolleys

For all power packs we offer a cart-frame for flexible movement from job to job. Cart-frames are equipped with 2 fixed and 2 swivel castors.

Oil cooler

For certain applications, especially when power packs are continuously operated and the oil temperature could exceed 60 °C, the use of an oil cooler is recommended.

Hydraulic oil

All power packs are designed for an operation with standard hydraulic oil (specification ISO VG 32). For certain operating conditions the viscosity class of the hydraulic fluid can be varied. All power packs are supplied including oil.

Features

- Robust packs, also capable for continuous applications.
- Suitable for all jobs in workshops and on construction sites where hydraulic force is required; supplied ready to use.
- On-off motor switch and 3 m motor connecting cable.
- With carrying handles, oil level gauge, oil filler/reservoir ventilation plug.
- Incl. pressure gauge GGY-631.
- Two-stage displacement, which means a rapid advance without load, as well as an automatic switch into the 2. phase by a congruous load.
- Low noise level due to standard motors with 1450 rpm.
- Further motor voltage and oil reservoirs on request.
- With manual or solenoid operated directional valves.
- Solenoid valves with 3 m remote control box (with 2 push-buttons) and pressure set valve as standard. Adjustable from 0-700 bar.
- 24V - low voltage control includes a sturdy metal electric control box and ready to use set up.



Two-stage electric hydraulic power packs, 700 bar

Model	Reservoir size				Control valve (directional valve)				Motor power kw	Displacement, two-stage	
	10 l	20 l	30 l	50 l	manual valve		solenoid valve			approx. l/min 0 - 80 bar	approx. l/min 80 - 700 bar
					3/3-way	4/3-way	3/3-way	4/3-way			
PY-07/3/10/3 M	•	–	–	–	•	–	–	–	0.75	6.0	0.6
PY-07/3/10/4 M	•	–	–	–	–	•	–	–	0.75	6.0	0.6
PY-07/3/20/3 M	–	•	–	–	•	–	–	–	0.75	6.0	0.6
PY-07/3/20/4 M	–	•	–	–	–	•	–	–	0.75	6.0	0.6
PY-07/3/20/3 E	–	•	–	–	–	–	•	–	0.75	6.0	0.6
PY-07/3/20/4 E	–	•	–	–	–	–	–	•	0.75	6.0	0.6
PY-11/3/20/3 M	–	•	–	–	•	–	–	–	1.1	8.5	1.0
PY-11/3/20/4 M	–	•	–	–	–	•	–	–	1.1	8.5	1.0
PY-11/3/30/3 M	–	–	•	–	•	–	–	–	1.1	8.5	1.0
PY-11/3/30/4 M	–	–	•	–	–	•	–	–	1.1	8.5	1.0
PY-11/3/20/3 E	–	•	–	–	–	–	•	–	1.1	8.5	1.0
PY-11/3/20/4 E	–	•	–	–	–	–	–	•	1.1	8.5	1.0
PY-11/3/30/3 E	–	–	•	–	–	–	•	–	1.1	8.5	1.0
PY-11/3/30/4 E	–	–	•	–	–	–	–	•	1.1	8.5	1.0
PY-22/3/30/3 M	–	–	•	–	•	–	–	–	2.2	18.0	2.1
PY-22/3/30/4 M	–	–	•	–	–	•	–	–	2.2	18.0	2.1
PY-22/3/50/3 M	–	–	–	•	•	–	–	–	2.2	18.0	2.1
PY-22/3/50/4 M	–	–	–	•	–	•	–	–	2.2	18.0	2.1
PY-22/3/30/3 E	–	–	•	–	–	–	•	–	2.2	18.0	2.1
PY-22/3/30/4 E	–	–	•	–	–	–	–	•	2.2	18.0	2.1
PY-22/3/50/3 E	–	–	–	•	–	–	•	–	2.2	18.0	2.1
PY-22/3/50/4 E	–	–	–	•	–	–	–	•	2.2	18.0	2.1

Code explanation

- Directional valve : 3 = for single-acting, 4 = for double-acting cylinder, M = manual valve, E = solenoid valve
- Reservoir size : in liters (other reservoir sizes on request)
- Motor voltage : 3 = 380-420 V, 3-phase (Euro-voltage), 2 = 230 V, 1-phase, (other voltages on request)
- Hoist motor : 07 = 0.75 kW, 11 = 1.1 kW, 22 = 2.2 kW, 30 = 3 kW, 55 = 5.5 kW, 75 = 7.5 kW, 110 = 11 kW
- Type of motor : PY = electric motor, PAY = air motor, PGY = petrol driven motor (4 cycle)

Single-stage electric hydraulic power packs, 700 bar

Model	Reservoir size				Control valve (directional valve)				Motor power kw	Displacement l/min 0 - 700 bar
	10 l	20 l	30 l	50 l	manual valve		solenoid valve			
					3/3-way	4/3-way	3/3-way	4/3-way		
PYE-03/3/10/3 M	•	–	–	–					0.35	0.3
PYE-03/3/10/4 M	•	–	–	–					0.35	0.3
PYE-07/3/10/3 M	•	–	–	–					0.75	0.6
PYE-07/3/10/4 M	•	–	–	–					0.75	0.6
PYE-07/3/20/4 M	–	•	–	–					0.5	0.6
PYE-11/3/20/3 M	–	•	–	–					1.1	1.0
PYE-11/3/20/4 M	–	•	–	–					1.1	1.0
PYE-11/3/30/4 M	–	–	•	–					1.1	1.0
PYE-22/3/20/3 M	–	•	–	–					2.2	2.1
PYE-22/3/20/4 M	–	•	–	–					2.2	2.1
PYE-22/3/30/4 M	–	–	•	–					2.2	2.1
PYE-22/3/50/4 M	–	–	–	•					2.2	2.1

All valve and reservoir combinations available.

High-performance electric hydraulic power packs, 700 bar, single-stage

Model	Reservoir size			Control valve (directional valve)				Motor power kw	Displacement l/min 0 - 700 bar
	50 l	100 l	150 l	manual valve		solenoid valve			
				3/3-way	4/3-way	3/3-way	4/3-way		
PYE-40/3/50/4 M	•	–	–					4.0	2.7
PYE-55/3/70/4 M	•	–	–					5.5	4.0
PYE-75/3/100/4 M	–	•	–					7.5	6.0
PYE-110/3/150/4 M	–	–	•					11.0	8.0
PYE-180/3/150/4 M	–	–	•					18.0	12.0

All valve and reservoir combinations available.

Hydraulic power pack with protection cage

This power pack is specially designed for general lifting applications in construction areas. Equipped with an optimized valve configuration, including 4-way manual directional valve VHP-4/3-1, safety-check valve VSM-21, pressure relief valve VPR-1 and 2 pressure gauges for permanent load control.



Hydraulic power pack with 4-way manifold MY-44-GYA

The most economic way for a pressure-independent and individual control of 4 single-acting hydraulic cylinders. The additionally mounted safety-check valve VSM-21 avoids uncontrolled pressure drops, and the built-in throttle valve allows a precise (millimeterwise) lowering even of the highest loads. Four pressure gauges allow a permanent reading of the individual loads. On request, the power packs can be equipped with a handy cart-frame to make the operation flexible. This type of power pack can be supplied in all sizes of the PY and PYE series.



Hydraulic power pack with 4-times solenoid valve

The quadruple solenoid valve block ensures a pressure-independent and individual control of 4 double-acting hydraulic cylinders. Solenoid valves offer several well-known advantages such as: ergonomic and safe control by pendant remote control, exact load hold, precise and quick switch characteristics and many more.



Double-hydraulic power pack

In order to realise very high oil flows, two independent pump systems can be combined in one large reservoir. A gear pump ensures an extremely high oil flow up to 250 bar while the high-pressure stage is generated by a high-performance radial piston pump. Each pump is equipped with its own solenoid control valve so that the individual oil flows can be generated or discharged on request.





PMF-15/3/40/4 x 3 M

Multiple-flow hydraulic power packs model PMF

Multiple-flow hydraulic pumps can advance 4 cylinders with the same speed at the same time by injecting equal amounts of hydraulic oil into each individual cylinder. This principle allows a synchronized lifting of machines or similar loads from a central point. Even under different loading conditions the cylinders advance in synchronisation.

Levelling of a lopsided load is easily possible by an individual control of each single cylinder. The lifting phase is initiated by a push-button remote control box and can be interrupted and continued at any time.

Lowering of the load is done by operating the directional valve in connection with the throttle valve individually for each circuit. The multiple-flow pumps can drive all kinds of hydraulic cylinders, machine jacks or stage lifts.

Features

- 4-point synchronized lift due to 4 equal, independent and individual oil flows.
- 4 manually operated directional valves, or 4 solenoid directional valves allow an individual or joint control of all 4 connected cylinders (easy levelling of loads).
- Safe load hold due to check valve in each circuit.
- One-man central operation.
- Motor on-off switch by means of a pendant remote control box in connection with manual valves
- A complete remote control box to operate the solenoid valves.

Options

- All pump packs are also available with 4/3 direction-valves (for controlling the double-acting hydraulic cylinders).
- All power packs can be supplied with a protection frame suitable for on-site operation. Also cart-frames with 2 fixed and 2 swivel castors are available on request.

Scope of delivery

For each of the four circuits the ready-to-use supply includes: glycerine-damped pressure gauge, 3-way control valve, safety-check valve, a female coupler-half as connecting port. Furthermore: hydraulic oil, carrying handles, motor on-off switch, motor connecting cable, pendant remote control, electro-box with transformer and motor relais, oil level gauge and oil-filler/ventilation plug. All multiple-flow power packs are also available with 4-way directional valves in order to operate double-acting hydraulic cylinders.

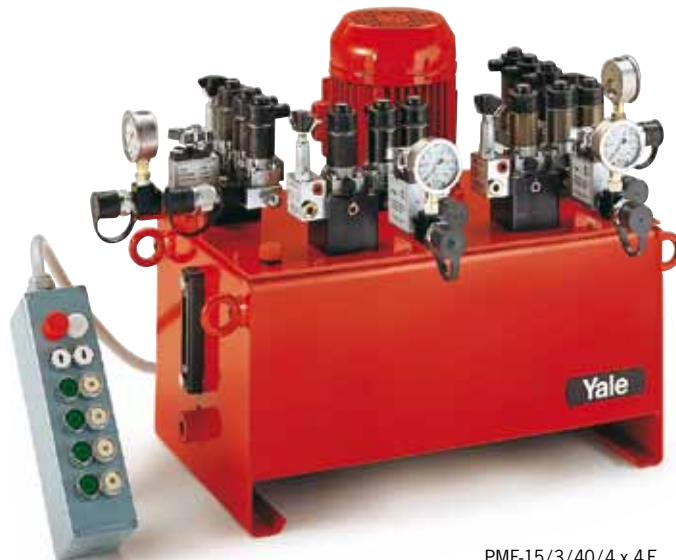
INFO

All extra loads can be meter-read permanently.

4-multiple-flow power packs with solenoid directional valves model PMF

4-multiple-flow power packs with solenoid directional valves to advance 4 hydraulic cylinders independently and in a synchronized way by means of solenoid valves with a pendant remote control box.

The solenoid valves in connection with safety-throttle valves allow a precise control of all connected hydraulic cylinders.



PMF-15/3/40/4 x 4 E

Technical data model PMF

Model	EAN-No. 4025092*	Operating pressure max. bar	Displacement l/min	Manual valve	Solenoid valve	Motor remote control	Reservoir size l	E-motor
PMF-07/3/20/2x3 M	*163521	2x700	2x0.3	•	–	•	20	0.75 kW-400 V-3 Ph
PMF-07/3/20/2x3 E	–	2x700	2x0.3	–	•	–	20	0.75 kW-400 V-3 Ph
PMF-15/3/20/2x3 M	–	2x700	2x0.6	•	–	•	20	1.5 kW-400 V-3 Ph
PMF-15/3/20/2x3 E	–	2x700	2x0.6	–	•	–	20	1.5 kW-400 V-3 Ph
PMF-15/3/40/4x3 M	*157827	4x700	4x0.3	•	–	•	40	1.5 kW-400 V-3 Ph
PMF-15/3/40/4x3 E	*160681	4x700	4x0.3	–	•	–	40	1.5 kW-400 V-3 Ph
PMF-30/3/40/4x3 M	*160957	4x700	4x0.6	•	–	•	40	3.0 kW-400 V-3 Ph
PMF-30/3/40/4x3 E	*160902	4x700	4x0.6	–	•	–	40	3.0 kW-400 V-3 Ph
PMF-55/3/100/4x3 M	–	4x700	4x1.0	•	–	•	100	5.5 kW-400 V-3 Ph
PMF-55/3/100/4x3 E	–	4x700	4x1.0	–	•	–	100	5.5 kW-400 V-3 Ph
PMF-110/3/100/4x3 M	*163972	4x700	4x2.1	•	–	•	100	11.0 kW-400 V-3 Ph
PMF-110/3/100/4x3 E	*162128	4x700	4x2.1	–	•	–	100	11.0 kW-400 V-3 Ph

INFO

All multiple-flow power packs are also available with 4-way directional valves in order to operate double-acting hydraulic cylinders model PMF.



This port can easily be used to connect a pressure gauge and a pressure relief valve (e.g. VPR-1). The oil port T shall always be connected to the reservoir without any back pressure.

Directional valves, 700 bar model VHP and model VHH

Manually operated

These directional valves control the oil flow in combination with hydraulic power packs (YHH-4/3 with hand pumps).

All valves have 3 lever positions to control movement of the connected hydraulic cylinder:

1. left: cylinder advance.
2. middle: cylinder neutral (pressureless circuit).
3. right: cylinder retracts.

In the middle position (hold) the piston of the cylinder stops and the oil flow is guided in a circuit back to the reservoir (P to T). The valves can be flanged directly onto power packs but can also be connected by using hydraulic piping.

In addition, all valves are equipped with a second pressure oil port P at the back of the valve base.

Technical data model VHP and model VHH

Model	EAN-No. 4025092*	Pressure max. l/min	Size	Oil ports	Hydraulic symbol	Applications
VHP-3/3-1	*155175	8 - 16	1	3/8 NPT		3/3-way valve with "open centre" in middle position (pressureless circuit) to control single-acting hydraulic cylinders, standard valve for smaller power packs, size 1.
VHP-3/3-2	*155199	20 - 40	2	3/8 NPT		3/3-way valve with "open centre" in middle position (pressureless circuit) to control single-acting hydraulic cylinders, standard valve for larger power packs, size 2.
VHP-3/3-1 CC	*155182	8 - 16	1	3/8 NPT		3/3-way valve with "closed centre" in middle position to control single-acting hydraulic cylinders, only for specific multiple valve configuration, size 1.
VHP-3/3-2 CC	*155205	20 - 40	2	3/8 NPT		3/3-way valve with "closed centre" in middle position to control single-acting hydraulic cylinders, only for a multitude of valve operations, size 2.
VHP-4/3-1	*154857	8 - 16	1	3/8 NPT		4/3-way valve with "open centre" in middle position (pressureless circuit) to control double-acting hydraulic cylinders, standard valve for smaller power packs, size 1.
VHP-4/3-2	*154864	20 - 40	2	3/8 NPT		4/3-way valve with "open centre" in middle position (pressureless circuit) to control double-acting hydraulic cylinders, standard valve for larger power packs, size 2.
VHP-4/3-1 CC	*154932	8 - 16	1	3/8 NPT		4/3-way valve with "closed centre" in middle position to control double-acting hydraulic cylinders, only for specific multiple valve configuration, size 1.
VHP-4/3-2 CC	*154956	20 - 40	2	3/8 NPT		4/3-way valve with "closed centre" in middle position to control double-acting hydraulic cylinders, only for specific multiple valve configuration, size 2.
VHH-4/3	*154840	2 - 3	small special design	1/4 NPT		4/3-way valve with "open centre" in middle position (pressureless circuit) to control double-acting hydraulic cylinders. Special design to be mounted directly to all HPS hand pumps (with connecting set FY-703). Also suitable for small hydraulic power packs.

Solenoid directional valves model VEP

700 bar incl. pressure set valve

Solenoid operated valves are used to control the connected hydraulic cylinder by means of a pendant remote control or further electrical controls like pressure switches or limit switches.

Control principle

All solenoid valves have 3 positions:

- advance - stop - retract -

In neutral position (stop) the valves switch to "pressure-less circuit" so that the oil flow is guided back to the reservoir while the connected cylinder is safely held under pressure.

Normally, solenoid valves are mounted directly onto power packs but can also be connected by using hydraulic piping.

Design

Long-life, direct-control ball seal valves with leak-free "load hold function" in neutral position.

The solenoids guarantee a very quick reaction of the valves so that cylinders can be controlled millimeterwise.

The valves are suitable for continuous operation (100% on/off duration).

Modular design

The modular principle allows special valve configurations e.g. control of multiple cylinder systems or specific control sequences.

Pressure adjustment

All solenoid valves are equipped with a precision-adjustable pressure set valve which allows the system pressure (force of cylinder) to be limited to any value from 0 to 700 bar.



VEP-3/3-1

VEP-4/3-1

Pressure gauge

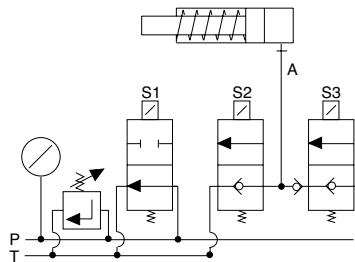
A glycerine-damped pressure gauge GGY-631 is standard with solenoid valves, 0-1000 bar, Ø 63 mm.

Mounting flange

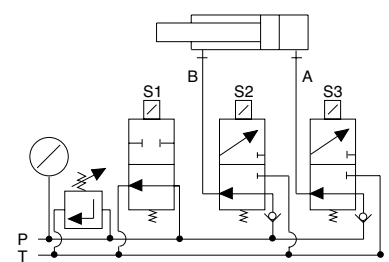
The valve flanges are designed in a way that valves (with pressure connector) can easily be mounted onto power packs.

Option

The connector model FY-905 is to be ordered separately.



VEP-3/3-1 and VEP-3/3-2 for single-acting cylinders



VEP-4/3-1 and VEP-4/3-2 for double-acting cylinders

INFO

If oil ports A and B should have 3/8 NPT the adaptor model FY-30 is to be ordered separately.

Technical data model VEP

Model	EAN-No. 4025092*	Control	For cylinders	Operating pressure max. bar	Size	Oil flow max. l/min	Control voltage	Oil ports P T	Pressure relief valve	Weight kg
VEP-3/3-1	*154994	3/3-way	single-acting	700	1	12	24 V =	3/8 NPT	yes	4.1
VEP-3/3-2	*155007	3/3-way	single-acting	700	2	25	24 V =	3/8 NPT	yes	7.9
VEP-4/3-1	*154987	4/3-way	double-acting	700	1	12	24 V =	3/8 NPT	yes	4.1
VEP-4/3-2	*155014	4/3-way	double-acting	700	2	25	24 V =	3/8 NPT	yes	7.9



Selection advice

If the valve is to be screwed directly into a hydraulic cylinder, please order model VSM-11.

If the valve is to be combined with the directional valve of a power pack, please order model VSM-21. (see picture on page 368).

Safety-check valves model VSM

700 bar

These safety-check valves are used for those applications where pressure drops must be avoided (e.g. holding of a lifted load). Depending on the location in a hydraulic circuit, these valves can have different functions.

The model VSM-11 can be directly screwed into the oil port of a hydraulic cylinder and works at this location as a "hose break fuse". The design of the VSM-21 is suitable for a combination with VHP directional valves.

At this location the VSM-21 ensures that the pressure is held precisely and that pressure drops caused by operating the directional valve are avoided.

Operation

After closing the relief valve (hand wheel) the cylinder can be advanced via the by-pass. In direction to the cylinder the valves always have free flow. The built-in check valve ensures that a pressurized cylinder (e.g. a lifted load) is held precisely in stop position.

A smooth lowering speed can be adjusted by opening the throttle valve (hand wheel) in order to relieve the pressure.

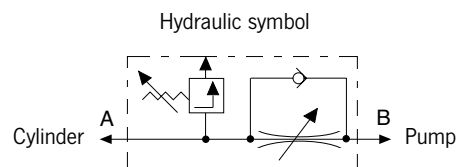
A safety pressure valve protects the cylinder from being overloaded by external loading.

Technical data model VSM

Model	EAN-No. 4025092*	Operating pressure max. bar	Control	Oil-port cylinder side A	Oil-port pump side B	Width mm	Weight kg
VSM-11	*157797	700	Check valve	3/8-18 NPT outer	3/8-18 NPT inner	6	0.9
VSM-21	*158442	700	Check valve	3/8-18 NPT inner	3/8-18 NPT outer	6	1.0

Dimensions model VSM

Model	VSM-11	VSM-21
Length, mm	75	75
Width, mm	25	25
Height, mm	100	100



Throttle-/Shut-off valves model VHM

700 bar

These valves are used to shut-off hydraulic lines especially in multiple cylinder systems. The needle valve VHM-1 also allows to throttle an oil flow especially in connection with lifting applications.



VHM-2



VHM-1

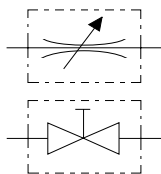
Technical data model VHM

Model	EAN-No. 4025092*	Operating pressure max. bar	Control	Oil ports both ends	Width mm	Weight kg
VHM-1	*154819	700	Needle	3/8-NPT inner	6	0.4
VHM-2	*154963	700	Ball	3/8-NPT inner	6	0.9

Dimensions model VHM

Model	VHM-1	VHM-2
Length, mm	75	75
Width, mm	28	45
Height, mm	100	75

Hydraulic symbol



Pressure switch model VPS

Adjustable between 100 - 800 bar

As soon as the pressure has reached the set value, a micro-switch (altering contact) is activated.

This signal can be used:

- For automatic pressure limiting.
- To report a certain pressure value.
- As an automatic motor on/off switch with pressure guard power packs.



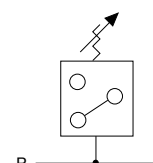
Technical data model VPS

Model	EAN-No. 4025092*	Control range bar	Electric data	Oil ports	Difference of switch point bar	Repeat accuracy bar	Weight kg
VPS-1	*155090	100 - 800	5 A/250 V	3/8 NPT	25 - 70	10	0.5

Dimensions model VPS

Model	VPS-1
Height x width, mm	130x85

Hydraulic symbol



As soon as the pressure has reached the set value, a micro-switch (alternating contact) is activated. Should the pressure drop, the micro-switch starts the pump again in order to rebuild the pressure.



Pressure relief valves model VPR

0 - 700 bar

Pressure relief valves are used if the system pressure (force of the connected hydraulic cylinder) should not exceed a certain value. These precision valves can be easily adjusted and are characterized by precise repetition. The question of a pressure relief valve only depends on the displacement of the high pressure stage of the power pack.

After achieving the set pressure value, the excessive oil is guided back to the reservoir (pressureless).

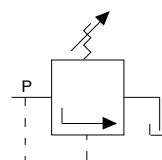
Technical data model VPR

Model	EAN-No. 4025092*	Control range bar	Oil ports P	Oil ports T	Oil flow max. l/min	Weight kg
VPR-1	*155212	0-700	G3/8	G 1/4	10	0.8

Dimensions model VPR

Model	VPR-1
Length, mm	120
Ø, mm	40

Hydraulic symbol



Manifolds model MY

700 bar

Manifolds are used when several hydraulic cylinders have to be connected to one hydraulic pump. All manifolds are equipped with 3/8 NPT inner oil ports, so that fittings, hydraulic hoses and couplers can easily be attached.

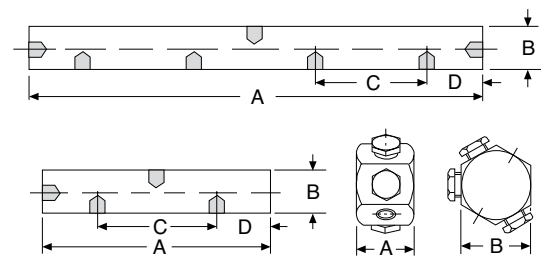
To connect a manifold directly to a hand pump a FY-1 double nipple is recommended.

Each manifold is supplied with three steel blind plugs in case not all the oil ports are required.



Technical data model MY

Model	EAN-No. 4025092*	Oil ports	Weight kg
MY-1	*154789	6 x 3/8-NPT inner	0.5
MY-2	*154895	4 x 3/8-NPT inner	0.6
MY-4	*154833	7 x 3/8-NPT inner	1.4



Dimensions model MY

Model	MY-1	MY-2	MY-4
A, mm	40	150	330
B, mm	50	40	40
C, mm	-	90	90
D, mm	-	30	30



Manifolds model MY

With shut-off valve, 700 bar

Manifolds with shut-off valves are used when different pressures must be maintained in each hydraulic line and therefore allow the lifting of unequal loads. The manifolds are fully assembled and can be screwed directly to a hand pump or power pack. Depending on the way of assembly a short hose HHC-10 and a coupler half CFY-1 can be helpful.

Manifolds models MY ... GYA are equipped with the corresponding number of shut-off valves plus pressure gauge sets (GYA-63) which allow a permanent reading of each individual load.

Technical data model MY

Model	EAN-No. 4025092*	Version	Weight kg
MY-22	*155045	Manifold with 2 shut-off valves	1.8
MY-44	*155052	Manifold with 4 shut-off valves	3.7
MY-66	*159517	Manifold with 6 shut-off valves	5.5
MY-22-GYA	*159210	Manifold with 2 shut-off valves and 2 pressure gauges	2.8
MY-44-GYA	*159227	Manifold with 4 shut-off valves and 4 pressure gauges	5.7
MY-66-GYA	*159524	Manifold with 6 shut-off valves and 6 pressure gauges	8.5

Assembly examples:



Hand pump
HPS - 2/2 with MY - 44



Electric hydraulic pump
PY - 07/3/20/3 M with VSM - 21 and MY - 44

Transportation box model HPK-10

For hand pumps, hydraulic cylinders and accessories

For easy transportation and protection of your valuable tools. Large enough to take a hand pump with pressure gauge and hydraulic hose plus several hydraulic cylinders.

The sturdy sheet metal box is equipped with a solid handle and two clasps.

Model HPK-10

Dimensions (LxWxH): 800x300x170 mm,
weight: approx. 7.8 kg.



Hydraulic oil model HFY

For all hand pumps and power packs

The high quality of the Yale hydraulic oil guarantees a long service life for your equipment.

The high grade HLP oil has the following features:

Features

- Class of viscosity ISO VG 32.
- High lubrication index.
- High pressure resistance
- Favourable temperature/viscosity index.
- Protection against corrosion and cavitation.
- Minimizes the formation of foam and sludge.
- Good derivation of temperature.
- No aging problems
- Good compatibility with all sealing materials.
- Fulfills all requirements of DIN 51524 part 2.



Technical data model HFY

Model	EAN-No. 4025092*	Content l
HFY-1	*156622	1
HFY-5	*156639	5
HFY-10	*159562	10
HFY-20	*159579	20



Pressure gauges model GGY

The use of pressure gauges is recommended when the operating pressure (the force of the connected cylinder) should be monitored. Yale pressure gauges are equipped with a stainless steel housing and an acrylic plastic face cover plate.

To absorb pressure shocks gauges are glycerine-filled, thus contributing to a long service life. Also, when fitted to a motor pump, the pointer will stay jitterfree.

For the calculation of applied cylinder forces corresponding converting charts (pressure vs. force) can be supplied for all Yale hydraulic cylinders free of charge.

Technical data model GGY

Model	EAN-No. 4025092*	Pressure range bar	Scale diameter mm	Glycerine- damped	Oil port DIN 16288	Spanner size	Accuracy class %
GGY-631	*154796	0 - 1000	63	yes	G 1/4	14	1.6
GGY-632	*155120	0 - 1000	63	yes	1/4 NPT	14	1.6
GGY-633	*155274	0 - 160	63	yes	G 1/4	14	1.6
GGY-634	*155281	0 - 250	63	yes	G 1/4	14	1.6
GGY-635	*155298	0 - 400	63	yes	G 1/4	14	1.6
GGY-636	*155304	0 - 600	63	yes	G 1/4	14	1.6
GGY-1001	*154802	0 - 1000	100	yes	G 1/2	22	1.0
GGY-1001 SZ ¹	*155168	0 - 1000	100	yes	G 1/2	22	1.0
GGY-1004	*155151	0 - 700	100	yes	G 1/2	22	1.0
GGY-1005	*159203	0 - 160	100	yes	G 1/2	22	1.0
GGY-1002	*155137	0 - 250	100	yes	G 1/2	22	1.0
GGY-1003	*155144	0 - 400	100	yes	G 1/2	22	1.0
GGY-2500	*155113	0 - 2500	100	yes	G 1/2	22	1.6

¹ GGY-1001 SZ = with maximum pointer



Pressure gauge model GYA-63

Consisting of pressure gauge GGY-632 (diameter Ø 63 mm, glycerine-damped) and corresponding gauge adaptor. This pressure gauge set is suitable for connection to all HPS hand pumps.

Assembled ready to use, compact design with 45° inclination for easy reading.

Technical data model GYA-63

Model	EAN-No. 4025092*	Pressure gauge bar	Oil port pump	Oil port hose	Weight kg
GYA-63	*156103	0 - 1000 bar, Ø 63 mm, glycerine-damped	3/8-NPT outer	3/8-NPT inner	0.5

Pressure gauge adaptor model GA

Gauge connection with sleeve nut and 30° inclination for easy reading.

Suitable for all hand pumps series HPS.



Technical data model GA

Model	EAN-No. 4025092*	Oil port gauge	Oil port pump	Oil port hose
GA-700	*155557	G 1/4	3/8-NPT outer	3/8-NPT inner
GA-701	*155588	G 1/2	3/8-NPT outer	3/8-NPT inner

Pressure gauge adaptor model GA

For double-acting hand pumps model HPH, for mounting between 4/2-directional valve and hand pump.

Features

- Advantage: shows both the pushing force and the pulling force of the connected hydraulic cylinder.
- 30° inclination for easy reading.
- Pressureless return line by means of telescopic double nipple.



Technical data model GA

Model	EAN-No. 4025092*	Oil port gauge	Oil port	Telescopic nipple
GA-703	*155564	G 1/2	2 x 3/8-NPT outer	2 x 1/4-NPT outer
GA-704	*156172	G-1/4	2 x 3/8-NPT outer	2 x 1/4-NPT outer

Pressure gauge adaptor model GA-2000

This pressure gauge adaptor is suitable for connection to all TWAZ hand pumps (2000 bar). Suitable for pressure gauge GGY-2500.



Technical data model GA-2000

Model	EAN-No. 4025092*	Operating pressure max. bar	Oil port gauge	Oil port pump	Oil port hose
GA-2000	*155915	2000	G 1/2	M22x 1.5 outer (with seal cone)	M22 x 1.5 inner (for FY - 201)



Hydraulic couplers models CFY, CMY, CCY

Yale hydraulic couplers are self-sealing which means that the coupler halves only have to be closed hand-tight. Both female and male parts have inner balls which seal the coupler halves in uncoupled condition, so that no hydraulic fluid will leak.

Please note that all Yale hydraulic cylinders are equipped with the standard female coupler half CFY-1 and dust cap CDF-9.

Technical data models CFY, CMY and CCY

Model	EAN-No. 4025092*	Description	Connection thread	Pressure max. bar
CFY-1	*155489	Coupler half, female (standard)	3/8-NPT, outer	700
CFY-2	*155960	Coupler half, female	3/8-NPT inner	700
CFY-18	*155922	Coupler half, female	M18x1.5 outer	700
CFY-10-S	*156400	Coupler half, female	Pipe Ø 10 mm	700
CMY-1	*155496	Coupler half, male	3/8-NPT, inner	700
CCY-1	*155472	Coupler halves, female + male	3/8-NPT	700
CDF-9 ¹	*155885	Dust cap, rubber	-	-

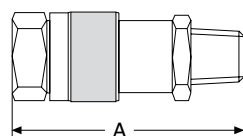
¹ fits to female and male coupler halves (standard with all female coupler halves)

Dimensions models CFY, CMY and CCY

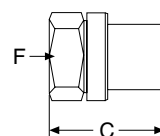
Model	CFY-1	CFY-2	CFY-18	CFY-10-S	CMY-1	CCY-1
A, mm	-	-	-	-	-	85
B, mm	72	78	72	72	-	-
C, mm	-	-	-	-	38	-
D, mm	35	35	35	35	-	-
E, mm	24	27	24	24	-	-
F, mm	-	-	-	-	32	-

INFO

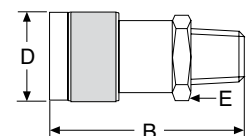
Hydraulic couplers must always be completely closed, since otherwise the circulation cannot be released.



Coupler complete CCY-1



Coupler half, male CMY-1



Coupler half, female CFY-1

Hydraulic hoses model HHC

Durable but highly flexible thermoplast hydraulic hoses guarantee a very long life.

The 4-layer build-up includes 2 layers of high tensile steel fabric and robust fitting with 19 mm hexagon.

The volumetric expansion is very low. Hydraulic hoses model HHC... are equipped with a male coupler half as standard.

Standard length are as per the chart below, further lengths or hoses with larger diameters are quoted on request.



Technical data model HHC

Model	EAN-No. 4025092*	Length	Width	Operating pressure	Burst pressure	Connection 2 male coupler half CMY-1	Connection 1 thread nipple 3/8-NPT, outer	External diameter approx.	Bend radius min.	Width
		m	mm	bar	bar			mm	mm	mm
HHC-5	*155786	0.5	6.3	700	2800			14	100	6.3
HHC-10	*155687	1	6.3	700	2800			14	100	6.3
HHC-20	*155380	2	6.3	700	2800			14	100	6.3
HHC-30	*155793	3	6.3	700	2800			14	100	6.3
HHC-40	*155397	4	6.3	700	2800			14	100	6.3
HHC-60	*155595	6	6.3	700	2800			14	100	6.3
HHC-80	*155731	8	6.3	700	2800			14	100	6.3
HHC-100	*155809	10	6.3	700	2800			14	100	6.3
HHC-120	*156370	12	6.3	700	2800			14	100	6.3
HHC-150	*156387	15	6.3	700	2800			14	100	6.3

How to order

Hydraulic hose for all standard combinations (- pump - hose - cylinder -):

Order a standard hose with female coupler half model HHC... (e.g. HHC-20).

Hydraulic hose for coupling connections on both sides (both ends with CMY-1):

Order a complete coupler CCY-1 in addition to a standard hose model HHC... (recommended for long hydraulic hoses).

Hydraulic extension hose

(one male coupler half, one female coupler half):

Order a female coupler half CFY-2 (inner thread) in addition to a standard hose model HHC.

Hydraulic hose without any coupler parts (both ends with threaded nipples):

Order model HH... (both ends 3/8-NPT outer).




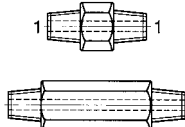

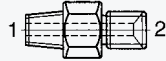

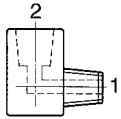

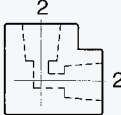

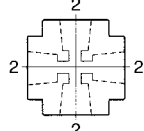

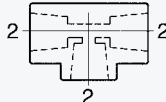
Fittings, reducers, connectors model FY

Fittings are useful for versatile combinations of hydraulic cylinders.


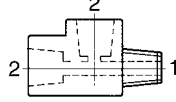

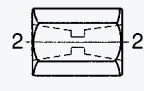

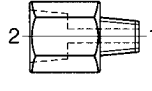

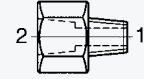

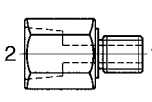
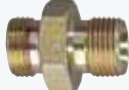
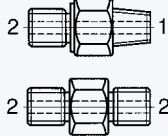

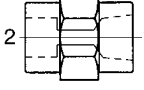

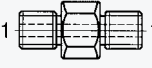

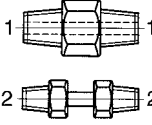

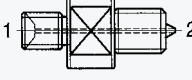
Yale high pressure fittings have been designed to give a variety of connections, extensions and combinations. The fittings are designed for a max. system pressure of 700 bar.

For improved sealing of 3/8 NPT connections use 2 layers of teflon tape and tighten accordingly.

Technical data model FY

Model	EAN-No. 4025092*		Description	Figures	Connection 1	Connection 2
FY-1 FY-1L	*155403 *156219		Double nipple Double nipple, long		3/8 NPT outer 3/8 NPT outer	- -
FY-13 FY-17 FY-18	*155656 *155816 *155823		Double nipple		1/4 NPT outer 3/8 NPT outer 3/8 NPT outer	R 1/4 outer M14x1.5 (for sleeve nut) R 1/4 outer
FY-2	*155410		Elbow		3/8 NPT outer	3/8 NPT inner
FY-3	*155427		Elbow		-	3/8 NPT inner
FY-6	*155458		Cross		-	3/8 NPT inner
FY-4	*155434		Tee		-	3/8 NPT inner

Technical data model FY

Model	EAN-No. 4025092*		Description	Figures	Connection 1	Connection 2
FY-5	*155441		Tee		3/8 NPT outer	3/8 NPT inner
FY-7 FY-11	*155465 *155649		Connection		-	3/8 NPT inner 1/4 NPT inner
FY-8 FY-9	*155540 *155632		Adaptor		3/8 NPT outer 1/4 NPT outer	R 1/2 inner 3/8 NPT inner
FY-10 FY-12	*155663 *155670		Adaptor		3/8 NPT outer 1/2 NPT outer	1/4 NPT inner 3/8 NPT inner
FY-16 FY-19 FY-20 FY-30 FY-33	*155748 *155830 *155847 *156318 *156592		Adaptor		3/8 NPT outer M18x1.5 outer M14 outer G 3/8 outer 3/8 NPT outer	M18x1.5 inner 3/8 NPT inner 3/8 NPT inner 3/8 NPT inner M14x1.5 inner
FY-26 FY-27	*156196 *156202		Double nipple		3/8 NPT outer G 3/8 outer	G 3/8 outer G 3/8 outer
FY-31 FY-32	*156325 *156332		Connection		3/8 NPT inner 3/8 NPT inner	M18x1.5 inner M20x1.5 inner
FY-35	*156608		Double nipple		M14 outer	-
FY-703	*155571		Connecting set for 4/3-way valve to HPS hand pumps (telescopic nipple)		3/8 NPT outer	1/4 NPT outer
FY-201	*156011		Adaptor for TWAZ hand pumps 2000 bar		R1/4 outer	M22x1.5 outer (with seal cone)