



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

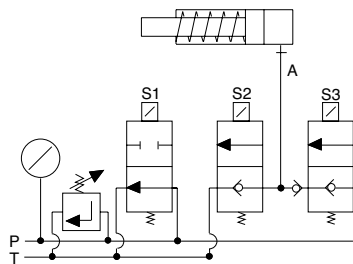
A glycerine-damped pressure gauge GGY-631 is standard with solenoid valves, 0-1000 bar, Ø 63 mm.

Mounting flange

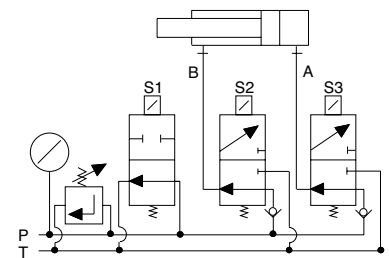
The valve flanges are designed in a way that valves (with pressure connector) can easily be mounted onto power packs.

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.

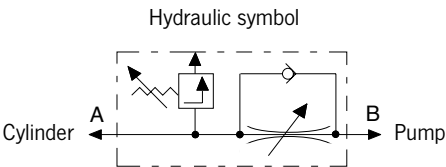
A safety pressure valve protects the cylinder from being overloaded by external loading.

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

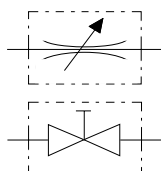
Technical data model VHM

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.



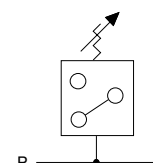
Technical data model VPS

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 (altering 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).

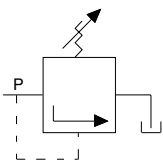
Technical data model VPR

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.

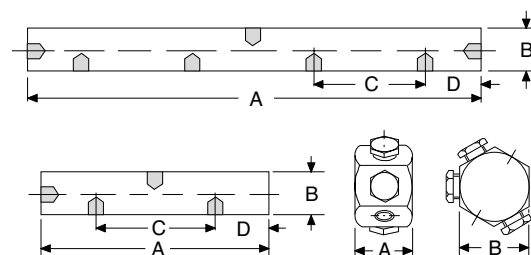
To connect a manifold directly to a hand pump a FY-1 double nipple is recommended.

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	6x 3/8-NPT inner	0.5
MY-2	*154895	4x 3/8-NPT inner	0.6
MY-4	*154833	7x 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 (L x W x H): 800 x 300 x 170 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	M22 x 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	–	–

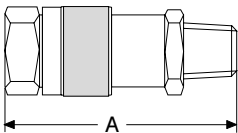
¹ fits to female and male coupler halves (standard with all female coupler halves)

Dimensions models CFY, CMY and CCY

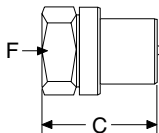
Model	CFY-1	CFY-2	CFY-18	CFY-10-S	CMY-1	CCY-1
A, mm	–	–	–	–	–	85
B, mm	72	78	72	72	–	–
C, mm	–	–	–	–	38	–
D, mm	35	35	35	35	–	–
E, mm	24	27	24	24	–	–
F, mm	–	–	–	–	32	–

INFO

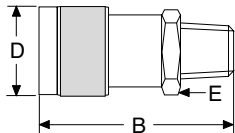
Hydraulic couplers must always be completely closed, since otherwise the circulation cannot be released.



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


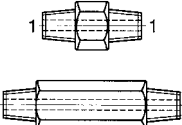

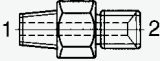

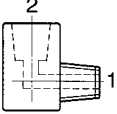



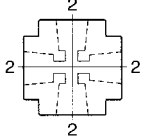

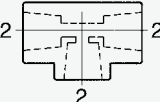
Fittings are useful for versatile combinations of hydraulic cylinders.

Yale high pressure fittings have been designed to give a variety of connections, extensions and combinations.


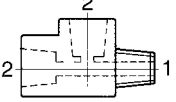

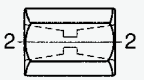

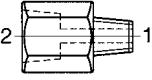

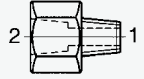

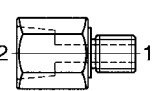






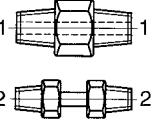

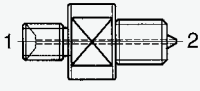
The fittings are designed for a max. system pressure of 700 bar.

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)