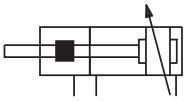
DYNAMIC ROD-LOCKING DEVICE

Ø 40 to 100 mm - double acting cylinder
ISO 15552



Series
453-450
492

FEATURES

- *Designed to stop and hold the rod of the cylinder under load in the event of air pressure or power failure. The rod lock is an elastic mechanical device acting on brake pads. It is disengaged when pressure is applied.*
- *Stops and holds the piston rod at any point of its stroke*
- *Holds maximum allowable cylinder load without drifting*
- *Locks in the absence of air*
- *Bi-directional action*
- *Cast iron brake pads, concentric on the rod, ensure long service life without damaging the piston rod*
- *Compact and easy to install*
- *Any mounting position*
- *Reduced weight (light metal alloy body)*
- *Possibility of mounting to cylinders complying with ISO 15552-AFNOR-DIN standards (longer rod, without front bushing)*

GENERAL (DYNAMIC ROD-LOCKING DEVICE)

Operating pressure	8 bar max.
Disengage pressure	4 bar (min.), 8 bar (max.)
Ambient temperature	-5°C to +70°C
Pneumatic connection	G1/8 (Ø32) - G1/4 (Ø 50 - 100

fluids (✳)	temperature range (TS)	seal materials (✳)
air or inert gas	-25°C to +80°C	NBR (nitrile)
	0°C to +60°C	UR (cast urethane)

MECHANICAL CHARACTERISTICS

Holding forces (static)	40 mm: 1000 N / 50 mm: 1600 / 63 mm: 2500 N 80 mm: 4000 N / 100 mm: 6300 N
Locking capacity	Maximum load, in kg, that can be stopped dynamically over a distance of 50 mm in relation to the rate of speed of the rod (the cylinder must be in a vertical mounting position)

V (mm/s)	**Ø 40**	**Ø 50**	**Ø 63**	**Ø 80**	**Ø 100**
500	80	130	200	320	500
200	90	145	225	360	590

Max. allowable speed	500 mm/s
Number of cycles	1,5 x 10^6 (at 20° C, at a balanced stop, in hold function, cycle = 1 Hz)

OPTIONS

The following options and versions cannot be fitted to this cylinder with rod-locking device

Stainless steel piston rod
Reinforced piston rod
High temperature version
Barrel in glass-fibre reinforced epoxy resin
U and H guiding units

THIS PRODUCT IS NOT A SAFETY COMPONENT

HOW TO ORDER

UNIT CONSISTING OF SERIES 453 OR 450 CYLINDER + DYNAMIC ROD-LOCKING DEVICE

Configurator - CAD Files

15-DIGIT PRODUCT CODE

G 45- A - S 5 - - - - A00

Thread connection
G = ISO 228/1

Product series
453
450

Revision letter
A = Initial release

Diameter (mm)
4 = 40
5 = 50
6 = 63
8 = 80
1 = 100

Rod options 1
Series 453:
S = Standard

Series 450:
S = Standard (chromed single rod + rod nut)

Rod options 2
5 = Dynamic rod-locking device

Options
A00 = Without option

Recommended standard strokes (mm) (2)

Ø mm	connect. Ø	50	80	100	125	160	200	250	320	400	500	630	700	800	900	1000	1500
32	G1/8	●	●	●	●	●	●	●	●	●							
40	G1/8	●	●	●	●	●	●	●	●	●	●	●					
50	G1/4	●	●	●	●	●	●	●	●	●	●	●	●				
63	G3/8	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
80	G3/8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
100	G1/2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

(2) Other strokes on request. / Min. stroke: 25 mm
max. stroke: 2000 mm

MOUNTINGS

DETECTORS
reed switch or magneto-resistive type

ROD-LOCKING DEVICE ALONE

15-DIGIT PRODUCT CODE

G	492	A	-	1	1	0000	A00

Thread connection
G = ISO 228/1

Product series
492 = Rod-locking device

Diameter (mm)
4 = 40
5 = 50
6 = 63
8 = 80
1 = 100

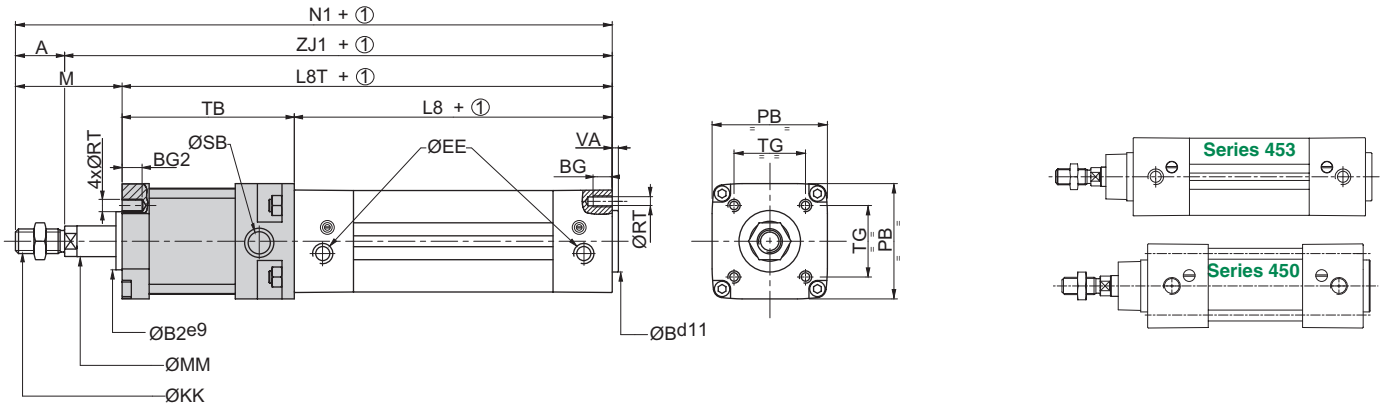
Accessory type
1 = Dynamic

Cylinder type
1 = ISO 15552

DIMENSIONS (mm), WEIGHT (kg)

Configurator - CAD Files

DYNAMIC ROD-LOCKING DEVICE
Series 453/450
ISO 15552



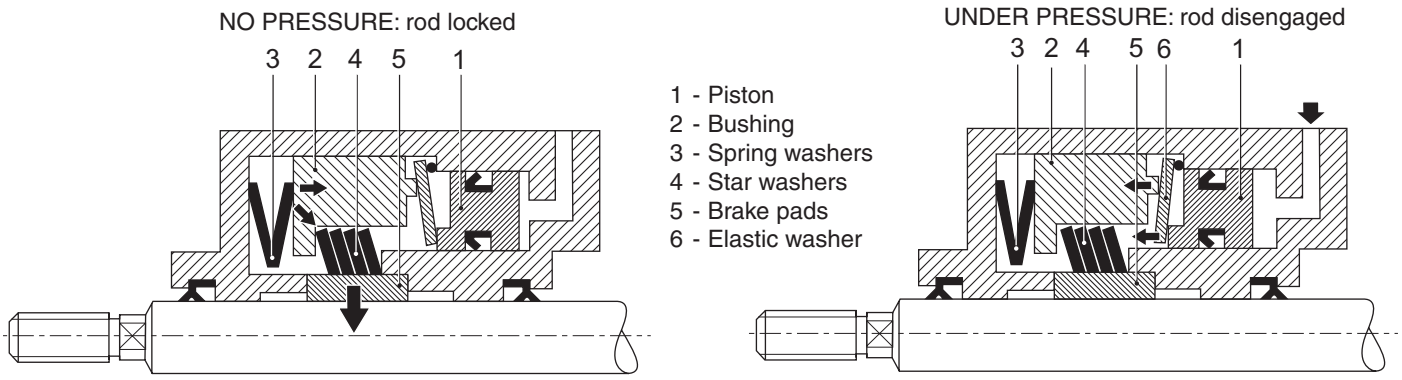
① Stroke

Ø (mm)	A	ØB	ØB2	BG	BG2	ØRT	ØEE	ØKK	L8	L8T	M	ØMM	N1	PB	ØSB	TB	TG
40	24	35	35	16	10	M6	G1/4	M12x1,25	105	200	54	16	254	70	G1/8	95	38
50	32	40	40	16	13	M8	G1/4	M16x1,5	106	218	69	20	287	75	G1/4	112	46,5
63	32	45	45	16	12	M8	G3/8	M16x1,5	121	241	69	20	310	95	G1/4	120	56,5
80	40	45	45	17	18	M10	G3/8	M20x1,5	128	268	86	25	354	95	G1/4	140	72
100	40	55	55	17	19	M10	G1/2	M20x1,5	138	288	91	25	379	120	G1/4	150	89

Ø (mm)	VA	VD	ZJ1	**weight** (kg) (rod-locking device alone)
40	4	4	230	1.3
50	4	4	255	1.5
63	4	4	278	3.1
80	4	4	314	3.5
100	4	4	339	5.6

NOTE: The rod-locking device is mounted in line and centered on the piston rod. Its outside dimensions are approximately equal to the standard dimensions of the cylinder. The lengths of the versions equipped with the rod-locking device correspond to the standard lengths of the cylinders (see standard products) to which dimension TB is added.

OPERATING PRINCIPLE



THIS PRODUCT IS NOT A SAFETY COMPONENT

DYNAMIC ROD-LOCKING DEVICE IN THE ABSENCE OF PRESSURE

No force is transmitted to the pneumatic piston (1). The two spring washers (3) apply an axial force to the bushing (2) which transmits it to the star washers (4). The star washers apply a radial force to the brake pads (5) which lock the piston rod.

DYNAMIC ROD-LOCKING DEVICE UNDER PRESSURE (min. 4 bar, max. 8 bar)

The pressure exerts a force on the pneumatic piston (1) which transmits it to the elastic washer (6). This acts as a lever and gears down the force on the bushing (2). The bushing compresses the spring washers (3), all restraint is removed from the star washers (4) and brake pads (5). The rod is disengaged.

DYNAMIC RESTRAINT

The cylinder must be locked only in case of need in the event of an emergency shutdown or failure in the power or air supply.

The rod-locking device can, however, be activated in every cycle as soon as the cylinder has come to a stop (hold function).

The stopping precision of the cylinder depends on:

- the fitting position of the cylinder (horizontal or vertical)
- the load being moved by the cylinder
- the rate of speed at which the load is moved
- the response time of the downstream pneumatically or electrically operated valves
- the air volume and opening area between the rod locking device control valve and its supply port

DYNAMIC LOCKING CAPACITY: Maximum load between 80 and 590 kg according to speed and cylinder diameter.
STATIC HOLDING CAPACITY: Maximum force between 1000 and 6300 N according to cylinder diameter.

MOUNTING AND OPERATING RECOMMENDATIONS

Precautions should be taken when installing a cylinder fitted with a rod-locking device. It is important to clearly define the type of layout that is required and the operating conditions of the cylinder.

The cylinder must be locked only in case of need in the event of an emergency shutdown or a situation such as:

- failure in electric supply
- failure in pneumatic supply
- drop in pressure

The rod-locking device can, however, be activated in every cycle as soon as the cylinder has come to a stop (hold function).

The cylinder may be mounted horizontally or vertically, with the rod either upward or downward, or mounted tilted, with the rod either upward or downward. A specific layout corresponds to each application. The specimen layouts on the opposite page show the principles to be observed and the stops caused by interruption of the power supply or removal of the pressure by means of electropneumatic valves.
In vertical load movements, the force generated by the pressure on the piston, acting in the same direction as the load, must not exceed the locking capacity of the device when combined to the force of the load.
The rate of speed of the rod must be less than 500 mm/sec.
After any emergency locking operation, make sure that the chambers of the cylinder are filled before the signal to unlock the device is given.
The rod-locking device is fitted with 2 wiper seals made of PUR. It is recommended to grease the rod lightly at regular intervals with a non-detergent class ISO VG 32 oil without aggressive additives (commonly used in pneumatic circuits). Do not let the rod come into contact with any other oils or products which might damage the wiper seals made of PUR.
It is recommended to check the correct operation of the rod-locking device at regular intervals.

Note: Position control for rod-locking device on request: contact us

HORIZONTAL MOUNTING

The cylinder is controlled by a 5/3 valve (ISO size 1 for diameters 40 and 50 mm, ISO size 2 for diameters 63, 80 and 100 mm), with centre open to the central port (type W2 - fig.1) or centre open to exhaust (type W3 - fig.2), and supplied by exhaust ports 3 and 5. In both options, the pressure is maintained on both sides of the cylinder piston and the forces exerted on it are balanced. This prevents any accidental movement of the rod when it is disengaged. Type W2 is recommended for its simpler wiring. Do not use a 5/3 valve with closed centre (type W1), since this will unbalance the piston in case one of the components in the circuit leaks.
NOTE: The cylinder rod may move out slowly after release of the system as a result of the “rod effect”.
One-directional flow reducers must be used to control the rate of speed of the rod.
The rod lock device must be activated by a 3/2 NC solenoid valve, with a minimum passage diameter of 8 mm, to ensure fast braking of the cylinder rod. It locks in the absence of air.

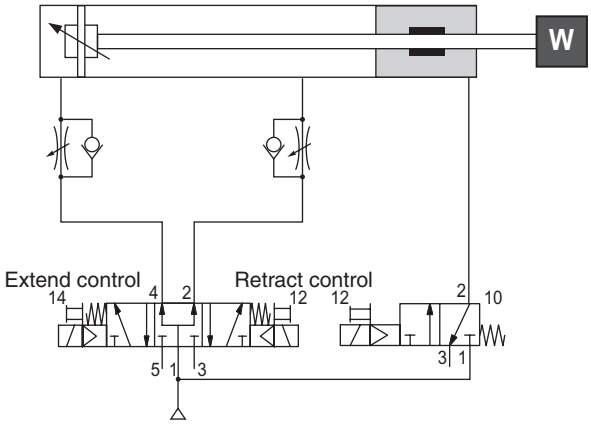


Fig. 1 - Cylinder control with a 5/3 valve, centre open on central port (type W2).

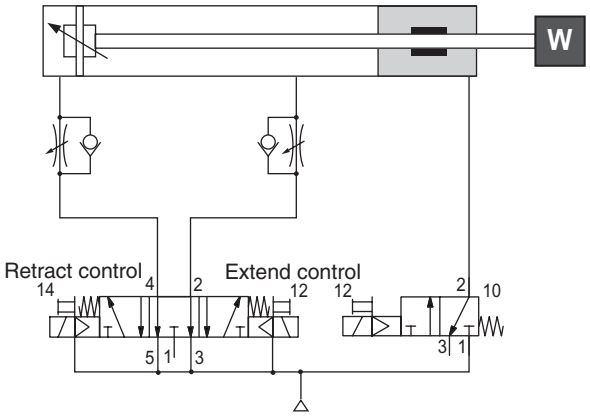


Fig. 2 - Cylinder control with a 5/3 valve, centre open to exhaust (type W3).

VERTICAL MOUNTING

The cylinder is controlled by a 5/3 valve (ISO size 1 for diameters 40 and 50 mm, ISO size 2 for diameters 63, 80 and 100 mm), with centre open to exhaust (type W3), and supplied by the exhaust ports. To ensure the lock functions properly, the force generated by the pressure on the piston, acting in the same direction as the load, must not exceed the locking capacity of the device when combined to the force of the load.
The rate of speed of the rod must be less than 500 mm/sec.
Do not use a 5/3 valve with closed centre (type W1) since this will unbalance the piston in case one of the components in the circuit leaks. This could be hazardous when the rod is disengaged.
Use of a 5/3 (type W3) valve provides a braking effect and ensures that the rod is held in a given position. The stopping precision depends on the rate of speed of the rod and the loads in motion.
One-directional flow reducers must be used to control the rate of speed of the rod.
The rod lock device must be activated by a 3/2 NC solenoid valve, with a minimum passage diameter of 8 mm, to ensure fast braking of the cylinder rod. Locking by absence of air.

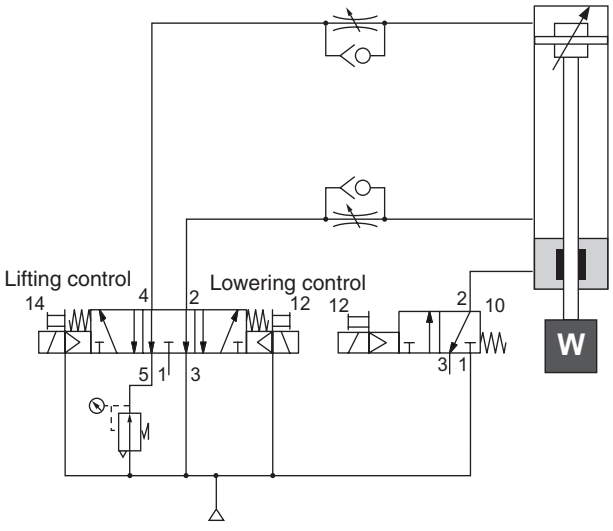


Fig. 3 - Load underneath the cylinder

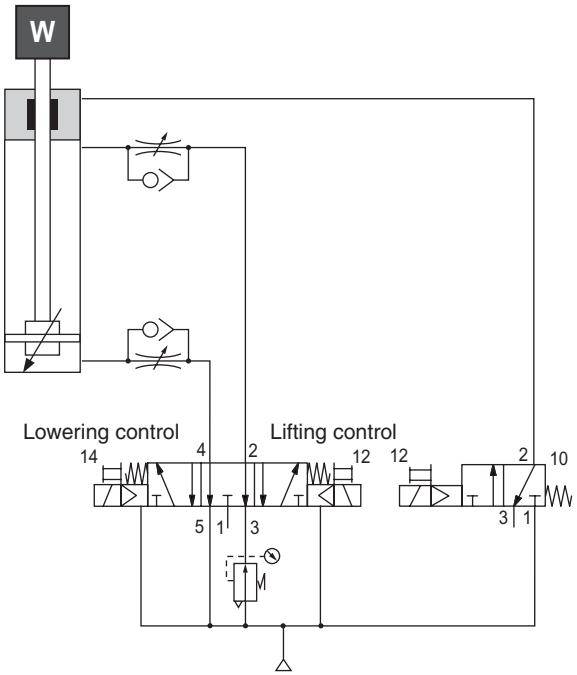


Fig. 4 - Load on top of the cylinder