

Braking-/ Jackingcylinder

General

Hydropower plants make a significant contribution to sustainable energy supply. HYDAC, one of the leading companies in the fields of fluid technology, hydraulics, process technology and electronics, is also demonstrating its expertise in this industry. HYDAC is well known as a full-liner for various auxiliary systems for main inlet valves, generators, gates and turbines for many years.

HYDAC supplies all auxiliary systems, e.g. jacking systems, brake and lifting panels, oil cooling plants, cooling water plants and many more, for a state of the art hydro generator of our clients. Our modularized Brake- and lifting cylinders complete our full range of auxiliary systems.

The brake cylinders are used in brake- and lifting plants of generators. These cylinders are designed and manufactured in accordance with the currently valid European Machinery Directive (Richtlinie 2006/42/EG).

The cylinder is single-acting and is used for braking and lifting. For braking, air is used and for lifting oil. Seals and guides are suitable for mineral, synthetic and also biodegradable oil. Various attachments are available.

Technical specification

Execution	Plunger, single acting
	Mechanical locking extended position
	Mechanical locking against rotation
	Return springs
Materials	Carbon Steel
Piston rod coating	ISO6158-Fe//Cr25
Corrosion protection	Galvanic coated according to DIN ISO 4042-A4B
Braking pad	Semi-flexible, rubber-resin-compound, asbestos- and metal free
Design pressure	250 bar oil pressure, 20 bar pneumatic pressure
Test pressure	375 bar
Medium	Mineral oil, dry air
Certificates	Material certificate 3.1 according to DIN EN 10204 for cylinder tube and piston rod
	Pressure test certificate 3.1 according to DIN EN 10204
Documentation	Manual (DE/EN); Material certificates; pressure test certificates, general arrangement drawing (DE/EN)

Dimensions

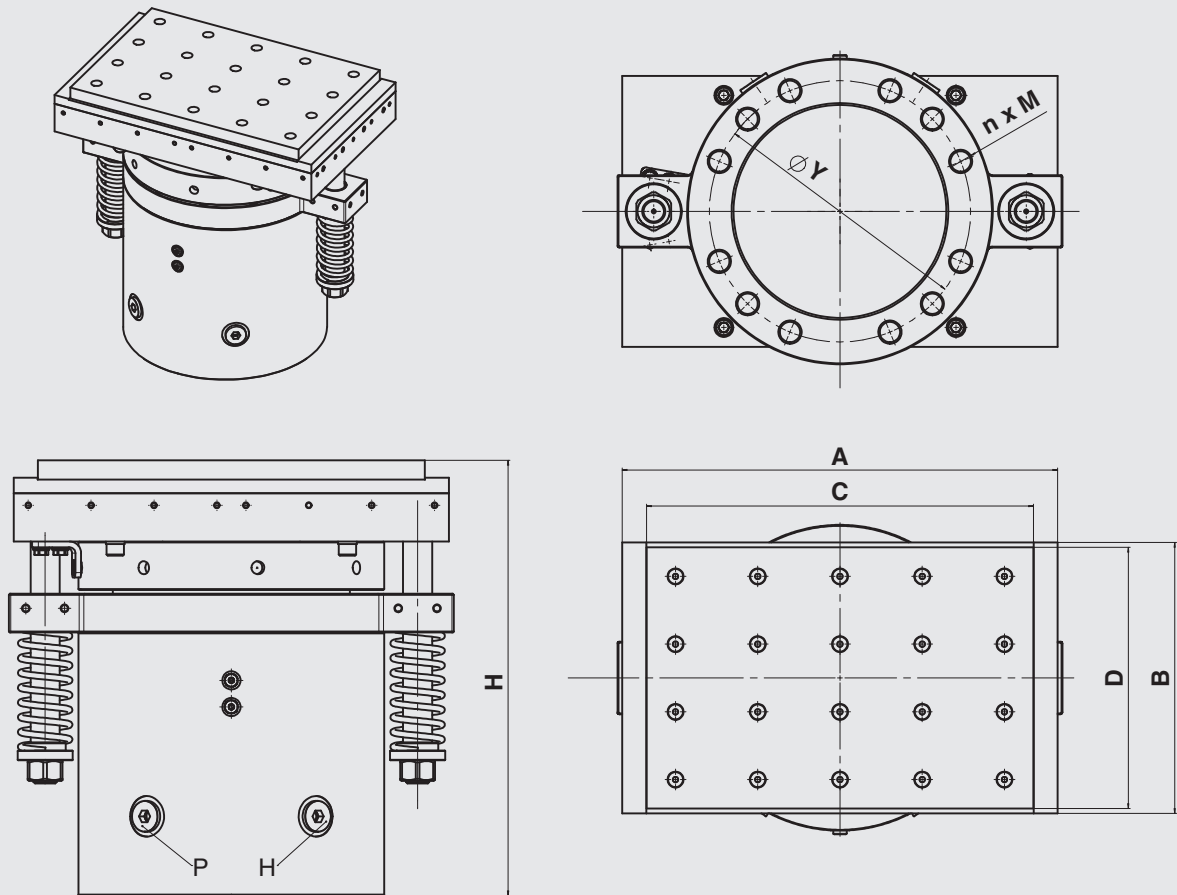


Figure 1

Piston diameter	Piston stroke	Compressive force [kN]		H	A	B	C	D	Y	n	M	P/H
		at 250bar oil pressure	at 20bar air pressure									
D [mm]	s [mm]			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
100	35	190	15	300	270	190	260	180	140	4	M16x30	G1/2"
125	35	300	24	300	290	220	270	210	165	4	M20x30	G1/2"
160	35	480	38	350	340	250	320	240	190	4	M20x34	G1/2"
200	35	750	60	400	400	280	370	270	230	8+4	M20x34	G3/4"
250	50	1200	95	450	450	280	400	270	270	8+4	M24x40	G3/4"

Table 1

Option 1

Fixed connection between brake pad and cylinder.

Option 2

Connection between brake pad and cylinder with axial bearing.

Option 3

Version with flange connection available on request.

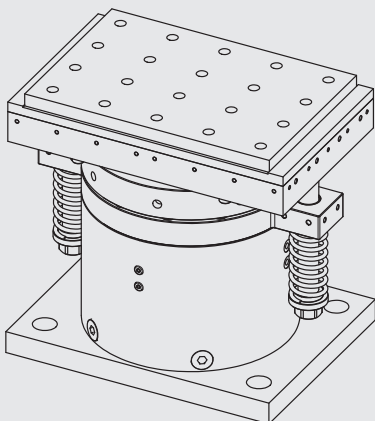


Figure 2

Additional Options

Limit switch

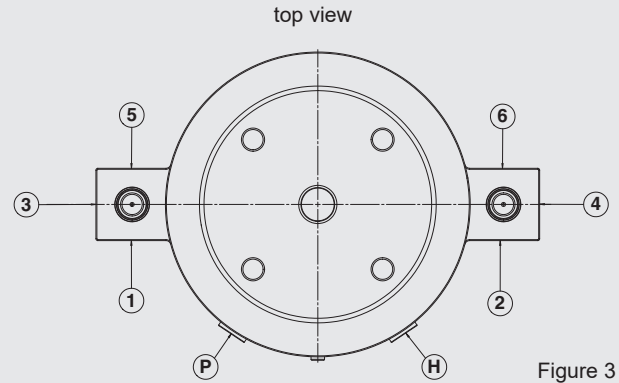
Limit switch is including sensor fixation and signaling device.
Additional switches are available on request.

Inductive limit switch		
analog	Output signal	4-20 mA
	Contact voltage	15-30 V DC
Mechanic limit switch		
digital		
	Spring contact	One turnkey / one opener

Different positions can be detected:

- brake cylinder extended
- brake cylinder retracted
- wear of pad lining

Sensor can be attached on different positions:



Brake pad

Customer specific brake pads available on request

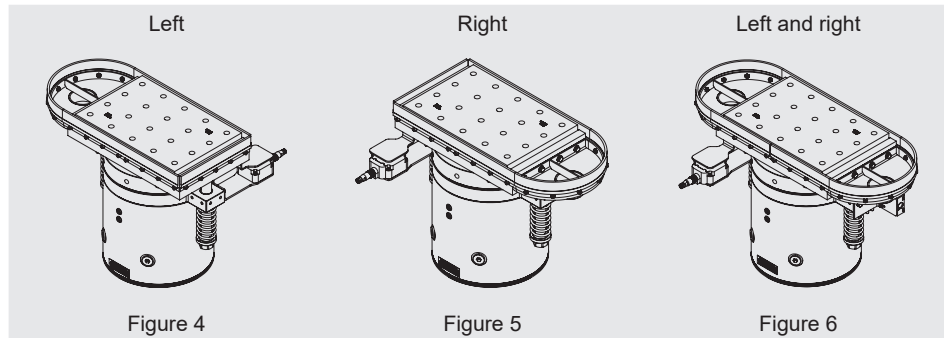
Hydrosaar Standard:

Semi-flexible, rubber-resin-compound asbestos- and metal free

$\mu = 0,3$ ($v = 10$ m/s, $p = 60$ N/cm², $t < 300$ °C)

Brake dust exhaust

including bristles



Adjustment shims

Set:

1 mm / 2x2 mm / 5 mm, Carbon steel coated DIN ISO 4042-A4B

Spare parts

- Seal kit
 - Including seal, scraper and guide rings
- Brake pad, single
 - Including rivet
- Brake pad assembly
 - Brake pad, rivet on carrier plate
- Sensors
- Brake dust exhaust
- Additional parts on request

Model code

HC-G- XXX - X - X - X - XXXXXX - X - X

Size

100
125
160
200
250

Brake pad fixation

1 = fixed
2 = axial bearing

Brake pad type

1 = Hydrosaar Standard
* = customer specific

Cylinder fixation

1 = standard
2 = flanged

Sensors

Choose Pos. 1-6

0 = no sensor
1 = analog
2 = digital

Brake dust exhaust

1 = left
2 = right
3 = left + right
4 = without

Shims

1 = with
2 = without

Example of a model code:

HC-G- 250 - 1 - 1 - 1 - 120000 - 4 - 2

- piston diameter: Ø 250 according to table 1 and figure 1
- brake pad with fixed connection
- brake pad material according to Hydrosaar standard
- brake cylinder connection according to Hydrosaar standard
- analog limit switch on pos. 1 according to figure 2, page 3
digital limit switch on pos. 2 according to figure 2, page 3
no limit switch on pos. 3-6 according to figure 2, page 3
- without exhaustion
- without shims

Figure 7

Note

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

HYDROSAAR

HYDAC INTERNATIONAL

HYDROSAAR GmbH
Hirschbachstraße 7
66280 Sulzbach/Saar
Germany

Tel.: +49 6897 509-9700

Fax: +49 6897 509-9791

E-Mail: info@hydrosaar.de

Internet: www.hydrosaar.de