ARIET
di Teresa Cereda

POLYP DISC

Electromagnetic disk brake PY type

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DESCRIPTION

In terms of safety, there is no need to compromise. Only the best products, certified and made with the most update technologies, guarantee that people and machinery do not expose themselves to damage in case of malfunctions, bumps and other dangerous situations.

The Polyp Disc brake differs from any other similar brake on the market thanks to the following characteristics:

Electromagnetic brake with negative action. This is the definition of brake type that operate in the absence of current, guaranteeing a safe stopping of machinery and plants in any position even after de-energizing, in the case of a power failure or in case of an emergency stop

It can operate with three-phase alternate current, without the need for auxiliary feeding equipment.

It can be arranged for running at any voltage, by only modifying its winding.

It allows the star-delta connection and therefore the possibility to have two voltage feeding.

Its extremely simple construction makes it perfectly fit for employment on any machine.

It is free from linkages and complicated devices, thus ensuring maximum safety of operation.

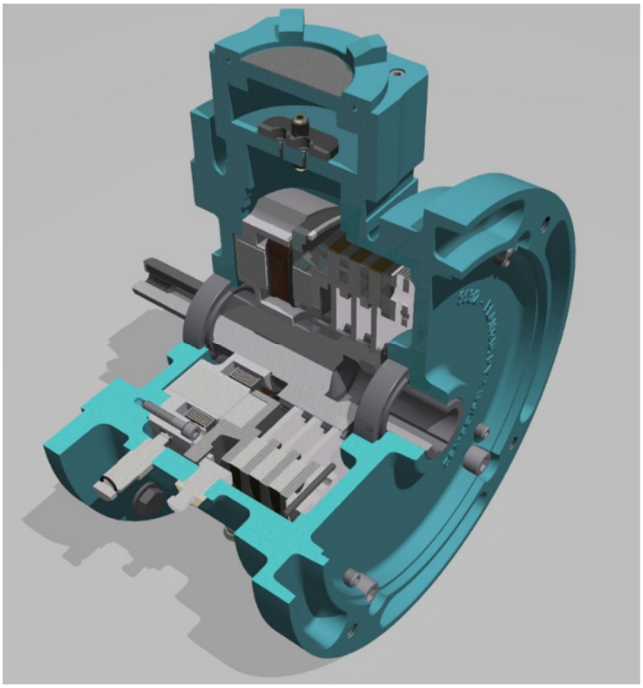
Soft, smooth, and yet immediate, braking.

Minimum consumption.

Easily accessed for adjusting the braking moment as well as consumption.

OPTIONS:

- Manual lever release
- Version B5 / B5 suitable for standard IEC connections
- DC power supply (dc)
- Versions for continuous duty S1
- Anti-condensation valves.



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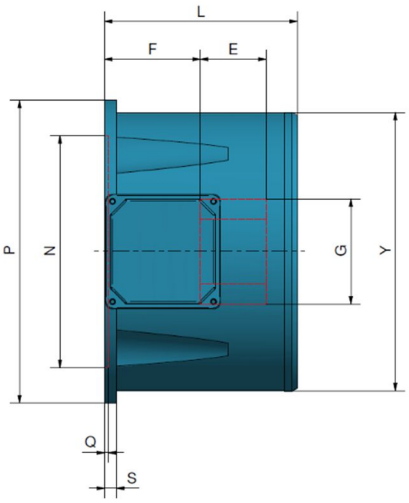
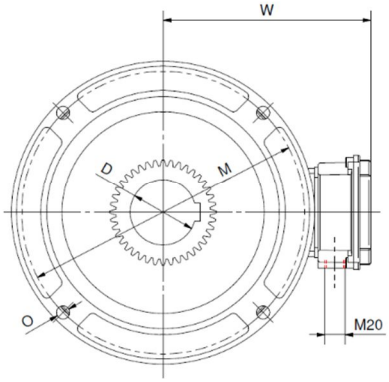
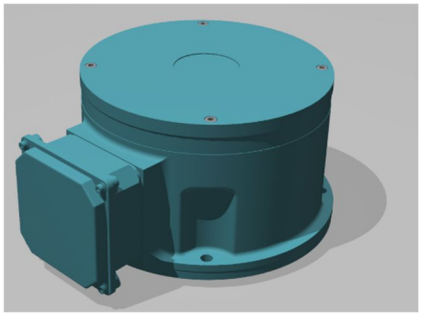
TECHNICAL FEATURES AND DIMENSION

BRAKES FOR SAFETY AREA







TYPE	Gza.	Max theoretic torque (da Nm)	N° Mobile disks	E Energy loss in 1 min. (da Nm)	GD² Dynamic moment (da Nm²)	DIMENSIONS (mm) (1)												Weight (Kg)
						P	N (H7)	M	D max. (2)	E	F	G	O	L	S	Q	W	
PY 0	A	0,3	1	300	0,001	160	110	145	20	40	73	41	7 (3)	130	14	3,7	155	9
	B	0,5	2	500	0,002													9,25
	C	0,8	3	800	0,003													9,5
PY 1	A	1	1	1000	0,005	200	130	185	30	35	65	50	9	130	13	3,7	155	11,5
	B	2	2	2000	0,010													11,9
	C	3	3	3000	0,015													12,3
PY 2	A	5	1	4000	0,02	250	180	230	40	50	70	67.5	11	140	15	4.2	180	20,1
	B	8	2	5000	0,04													21,4
	C	12	3	6000	0,06													22,7
PY 3	A	16	2	8000	0,1	300	230	280	50	65	95	100	13	200	17	4.2	205	42,4
	B	25	3	10000	0,15													44,8
	C	32	4	12000	0,20													47,2

(1) DIMENSIONS ARE NOT BINDING

(2) HUBS ARE SUPPLIED UNPOLISHED WITH ROUGHED OUT HOLES Ø 10/14/*20/25/25

(3) PY0 BRAKE HAS 3 HOLES AT 120°

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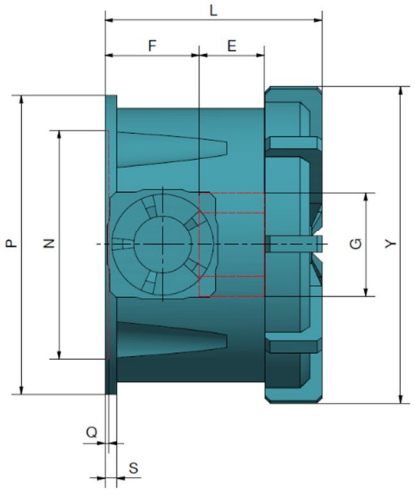
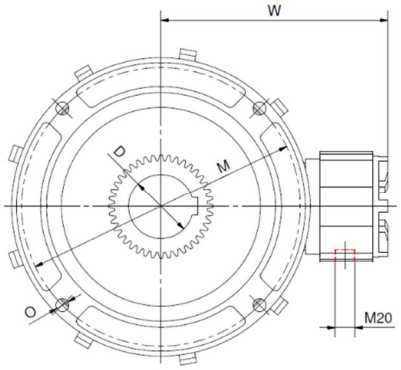
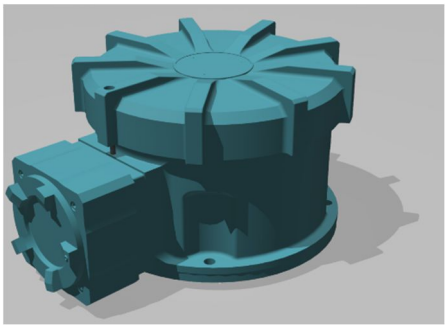
EXPLOSION-PROOF EXECUTION BRAKES

TYPE Ex	Gza.	Max theoretic torque (da Nm)	N° Mobile disks	Energy loss in 1 min. (da Nm)	Gd 2 Dynamic moment (da Nm2)	OVERALL DIMENSIONS (mm) (1)													Weight (Kg)
						P	N (H7)	M	D	E	F	G	O	L	S	Q	W	Y	
PY O	A	0,3	1	300	0,001	160	110	145	16 20	40	73	41	7 (3)	140	14	3,7	180	190	9,7
	B	0,5	2	500	0,002														9,9
	C	0,8	3	800	0,003														10,2
PY 1	A	1	1	1000	0,005	200	130	185	24 28	35	65	50	9	150	15	3,7	185	210	12,7
	B	2	2	2000	0,010														13,1
	C	3	3	3000	0,015														13,5
PY 2	A	5	1	4000	0,02	250	180	230	28 38	50	70	67.5	11	165	15	4,2	210	265	21,7
	B	8	2	5000	0,04														23
	C	12	3	6000	0,06														24,3
PY 3	A	16	2	8000	0,1	300	230	280	42 48	65	95	100	13	220	17	4,2	210	320	44,8
	B	25	3	10000	0,15														47,2
	C	32	4	12000	0,20														49,6

(1) DIMENSIONS ARE NOT BINDING
(2) PY0 BRAKE HAS 3 HOLES AT 120°







Product quality assurance: INERIS 05 ATEX Q708 **INERIS FR/INE/QAR11.0005/07**

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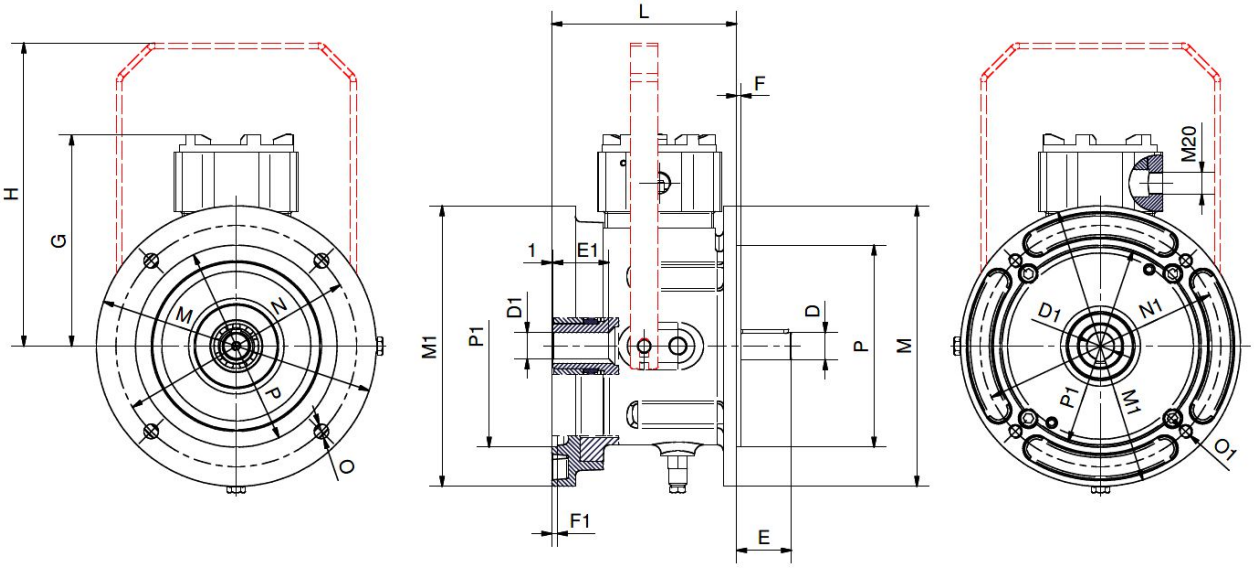
BRAKE B5/B5

TIPO TYPE Ex	Gza.	Massima coppia teorica Max theoretic torque (daNm)	N° Dischi mobili Mobile disks	E (daNm) Energia dissipabile in 1 min Energy loss in 1 mm	Gd^2 $(daNm)^2$ Momento dinamico Dynamic moment	Peso (Kg) Weight		
							IK180	IK315
PY 1	A	1	1	1000	0,005	25	-	-
	B	2	2	2000	0,010	26	-	-
	C	3	3	3000	0,015	27	-	-
PY 2	A	5	1	4000	0,02	41	45	52.5
	B	8	2	5000	0.04	43	47	54.5
	C	12	3	6000	0,06	45	49	56.5
PY 3	A	16	2	8000	0,1	75	-	-
	B	25	3	10000	0,15	80	-	-
	C	32	4	12000	0,20	85	-	-

DIMENSIONI INGOMBRO (mm)
OVERALL DIMENSIONS (mm)

TIPO TYPE		D	E	F	M	N	P	O	D1	E1	F1	M1	N1	P1	O1	G	H	L
PY1		24	50	4	250	215	180	13	24	50	5	250	215	180	M12	190	270	165
PY2		28	60	4	300	265	230	13	28	60	6	300	265	230	M12	210	290	185
	IK180	24	50	4	280	215	180	13	24	50	5.5	260	215	180				206
	IK315	38	80	5	350	300	250	17	28	60	6	300	265	230				206
PY3		42	80	5	350	300	250	17	42	80	7	350	300	250	M16	235	375	242



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CHOOSING TYPE AND SIZE

1) Calculation of the braking torque required: it is performed based on the desired breaking time, and on the GD2 dynamic moment of the braked shaft according to:

$$M=GD^2n\ /375/t$$

Where:

- M= Maximum required torque (daNm)
- GD^2 = Dynamic moment (daNm2)
- n= Shaft speed (rpm)
- t= Braking time (s)

GD^2 of the different revolving bodies of a machine is indicated based on the relevant speed of the braked shaft with:

$$GD^2= GD_1{}^2n_1{}^2+GD_2{}^n\ n_2{}^2+.../\ n^2$$

- Where:
- $GD_1{}^{2-}\ GD_2{}^2$= Dynamic moment of the moving parts
- $n_{1-}\ n_2$= Corresponding speeds
- n = Brake speed

The GD^2 referring to the braking shaft of a body moving with a rectilinear motion is obtained as follows:

$$GD2=G(10*V/\ n)^{\ 2}$$

Where:

- G = weight in motion (t)
- V = linear velocity (m/min)
- n = brake speed (giri/min)

2) Verification of the energy loss: the brake chosen as explained above must be checked based on the heat it can lose. The quantity of heat generated during braking over a period of one minute is calculated as follows:

$$E= GD^{2*}\ n^2/7200*F\ (daNm)$$

where F = stops per minute

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CERTIFICATIONS Ex

Conformity to ATEX Directive 2014/34/UE

EN 60079-0 Explosive atmospheres. Equipment general requirements

EN 60079-1 Explosive atmospheres. Equipment protection by flameproof enclosures “d”

EN 60079-31 Explosive atmospheres. Equipment dust ignition protection by enclosure “t”

Conformity to IECEx scheme

EN 60079-0 Explosive atmospheres. Equipment general requirements

EN 60079-1 Explosive atmospheres. Equipment protection by flameproof enclosures “d”

EN 60079-31 Explosive atmospheres. Equipment dust ignition protection by enclosure “t”

Certifications:

INERIS 12 ATEX 0084X

IECEx INE 12.0016X

Type of protection:

Ex d IIB /IIC T4,T5 Gb

Extb IIIC Db IP66 T135°C/T100°C

Ex de IIB /IIC T4,T5 Gb

Extb IIIC Db IP66 T135°C/T100

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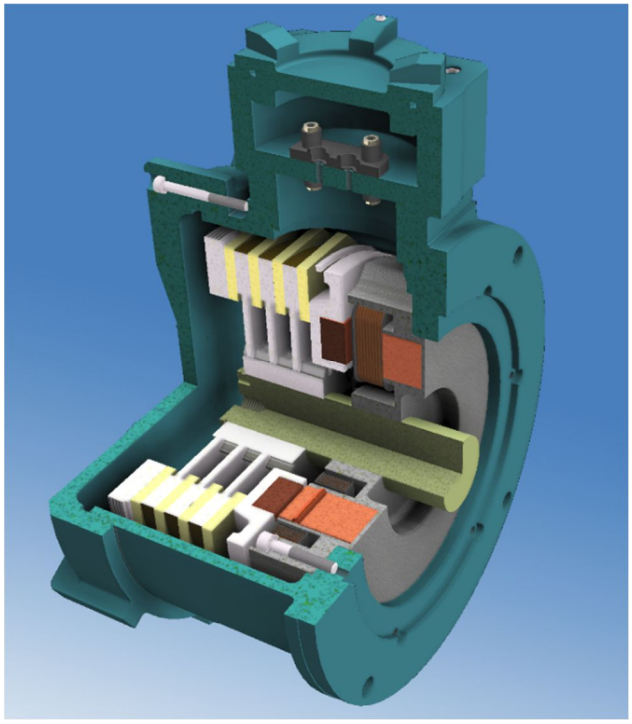
BRAKING TORQUE ADJUSTMENT

Brakes are set for maximum braking torque , they are complete with all springs and related thrust pistons.
In case it should be necessary to reduce the braking torque, adjustment is possible by removing the small thrust pistons in pairs, which are inserted around the magnet core. Only for the **PYO** type adjustment is not possible because this is the smallest brake provided with only one central spring.
To remove springs it is necessary to partially disassemble the brake as follows:
Remove protection cover (2), after removing pin (11) unscrew ring (8), withdraw the possible spacer and the fixed and mobile disks. Remove stop ring by acting on the keeper and withdraw the keeper itself gently so that springs can be seen.
Symmetrically eliminate the necessary number of small pistons and reassemble following opposite procedure.
Restore correct air gap as specified below.
The set braking torque tends to reduce during operation owing to normal disk wear. Therefore the torque is restored by only adjusting the air gap as specified below and not acting on the thrust springs.
Braking adjustment does not concern either electromagnetic supply conductors or terminal board connections.

AIR GAP ADJUSTMENT



The air gap (distance between the electromagnet magnet core (4) and keeper (5) when brake is unfed) shall not exceed 0.5 -1.5 mm value according to the number of disks. It is therefore recommended to periodically re-set this dimension since due to brake disks (9) linings wear the air gap tends to increase, causing the braking torque to decrease.
In order to restore it, bring the air gap to optimum value by tightening adjusting ring (8) (using of the proper key to be supplied upon request) then unscrew by one third turn for size A brakes, half turn for size B brake and two thirds turn for size C brakes.
After adjustment, introduce brake pins slightly unscrewing ring nut until the most suitable position is found.

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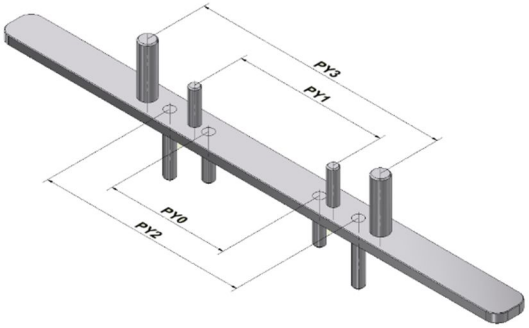
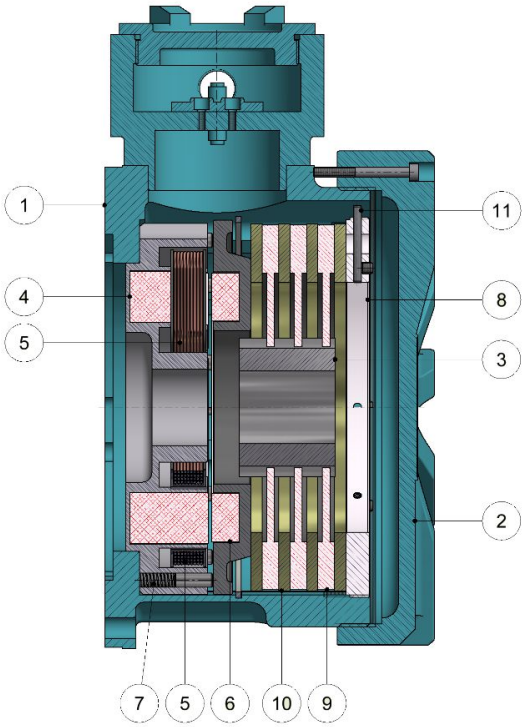


PY Brake adjusting spanner

⚠ ***Do not feed the brake without having first fitted the keeper to prevent the coil from being immediately burnt.***



1) Casing

2) Cover

3) Slotted hub

4) Magnetic core

5) Mobile keeper

6) Winding

7) Thrust springs with small pistons

8) Adjusting ring

9) Brake disks

10) Fixed disks

11) Locking pin

BRAKE TYPE	*INPUT 380 V (A)*	*RECOMMENDED AIR GAP (mm)*			*LINING DISK THICKNESS (mm)*	
		BRAKE SIZE			*Nominal*	*Worn**
		A	*B*	*C*		
PYO	*0,15*	*0,5*	*0,75*	*1*	*6*	*5*
PY1	*0,30*	*0,5*	*0,75*	*1*	*6*	*5*
PY2	*0,7*	*0,7*	*1*	*1,3*	*8,5*	*7*
PY3	*1,20*	*0,9*	*1,35*	*1,8*	*10*	*8*

⚠ **** Below this thickness disks must be replaced***

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