

SIME Brakes Industrial Braking Systems



Stromag

Founded in 1932, Stromag has grown to become a globally recognized leader in the development and manufacture of innovative power transmission components for industrial drivetrain applications. Stromag engineers utilize the latest design technologies and materials to provide creative, energy-efficient solutions that meet their customer's most challenging requirements.

Stromag's extensive product range includes flexible couplings, disc brakes, limit switches, an array of hydraulically, pneumatically, and electrically actuated brakes, and a complete line of electric, hydraulic and pneumatic clutches.

Stromag engineered solutions improve drivetrain performance in a variety of key markets including energy, off-highway, metals, marine, transportation, printing, textiles, and material handling on applications such as wind turbines, conveyor systems, rolling mills, agriculture and construction machinery, municipal vehicles, forklifts, cranes, presses, deck winches, diesel engines, gensets and stage machinery.



VISIT US ON THE WEB AT **STROMAG.COM**

Altra Motion

Altra is a leading global designer and producer of a wide range of electromechanical power transmission and motion control components and systems. Providing the essential control of equipment speed, torque, positioning, and other functions, Altra products can be used in nearly any machine, process or application involving motion. From engine braking systems for heavy duty trucks to precision motors embedded in medical robots to brakes used on offshore wind turbines, Altra has been serving customers around the world for decades.

Altra's leading brands include **Ameridrives**, **Bauer** Gear Motor, **Bibby** Turboflex, **Boston** Gear, **Delevan**, **Delroyd** Worm Gear, **Deltran**, **Formsprag** Clutch, **Guardian** Couplings, **Huco**, **Jacobs** Vehicle Systems, **Kilian**, **Kollmorgen**, **Lamiflex** Couplings, **Marland** Clutch, **Matrix**, **Nuttall** Gear, **Portescap**, **Stieber**, **Stromag**, **Svendborg** Brakes, **TB Wood's**, **Thomson**, **Twiflex**, **Warner** Electric, **Warner** Linear and **Wichita** Clutch.

VISIT US ON THE WEB AT **ALTRAMOTION.COM**



SIME Brakes

SECURITY - QUALITY - RELIABILITY

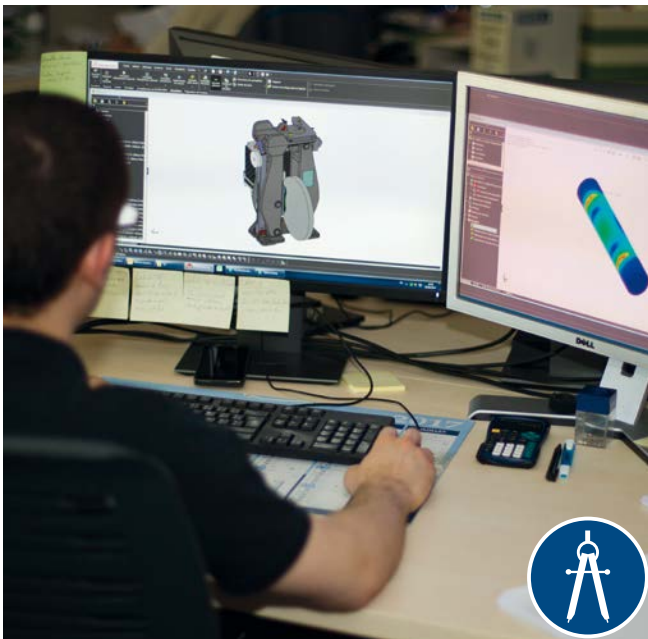
With more than 60 years of experience, Stromag provide high efficiency braking systems to equip steel industries, nuclear plants, port cranes, offshore winches and mass transports throughout the world.

Quality and innovation have always been the two essential features in the development of the company. Therefore Stromag provide disc brakes certified by recognized authorities such as DNV, ABS, TUV, Lloyd's Register and EDF.

In 2016, ISO 9001 certification of our Quality management system was renewed under the version V2008 and our Safety management system was awarded OHSAS 18001 - V2007 certification.

Whatever the application, Stromag meet the global supply requirements with standard or fully customised braking systems solutions.

OUR KNOW-HOW AT YOUR DISPOSAL



RESEARCH & DEVELOPMENT DEPARTMENT

In a mutually beneficial way, Stromag create a strong relationship with their customers in order to understand their needs and provide them the best solution. With in-depth knowledge and experience in all key applications and markets, our teams keep constantly abreast of every changing needs and market development.



TRAINING

After sales service team can provide to its customers training sessions : upgrade operations on-site or trainings in the production center in La Guerche (France). Each training consists of two parts : theoretical in a classroom / practical in the work-shop. Topics : products operation, periodic maintenance, settings, fault diagnosis.

BENEFITS

- | | |
|--|--|
| <ul style="list-style-type: none">• A team of experts at your disposal• Reactivity of the interventions• Study of the specific requirements• Secured installation | <ul style="list-style-type: none">• Optimal operation of the braking systems• Preventive maintenance• Expertise sustainability |
|--|--|

Reactivity, availability and listening at the customer are values which define our teams. We put all our experience and knowledge at your disposal:



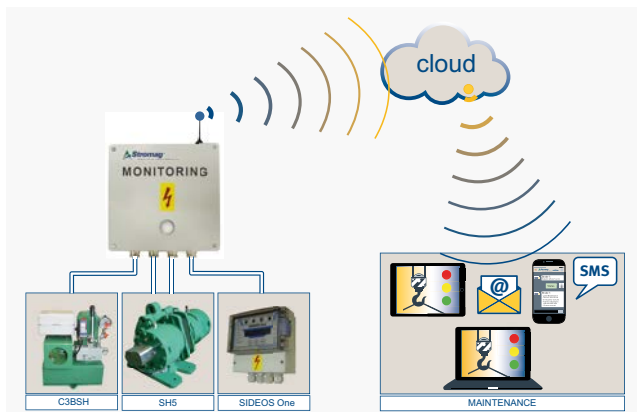
DIAGNOSIS

The After Sales team shares its “know-how” with companies having an important fleet to help them to realise a self-diagnosis on their brakes systems to achieve their maximal reliability in compliance with the safety regulations. The diagnosis takes place in two stages : a complete on-site examination of the different devices and a detailed report with synthesis for a global visibility.



INTERVENTION

Stromag has many sub-structures in France and worldwide ; these allow our After Sales Service Department to operate very fast in the customer sites. Each member of our team has a qualified engineering background which means they are totally able to help and advise customers technically and commercially.



Stromag developed a Monitoring system which allows to connect your braking system to one or several monitoring modules. CAN Bus enables an easy connection, transmission and processing of a great quantity of data. The modules offer a high degree of adaptability and allow utilisation of transmission means as : SD cards, mobile telephone, internet.

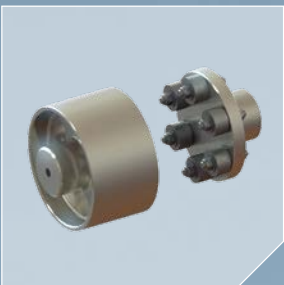
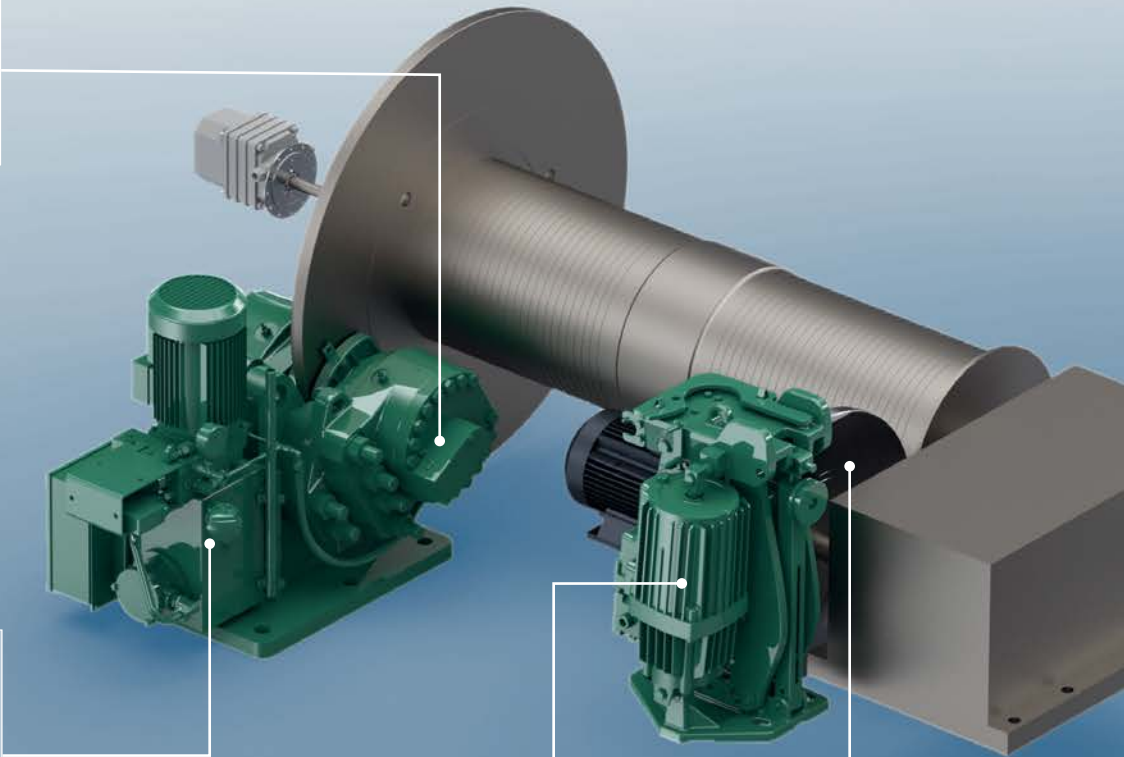
SIME Brakes PRODUCTS



Hydraulic
emergency brakes



Hydraulic
Power Packs



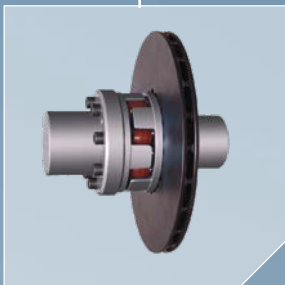
Drums &
couplings



Drum brakes
with thrustor



Disc brakes
with thrustor



Discs &
couplings

COMPLETE BRAKING SOLUTIONS



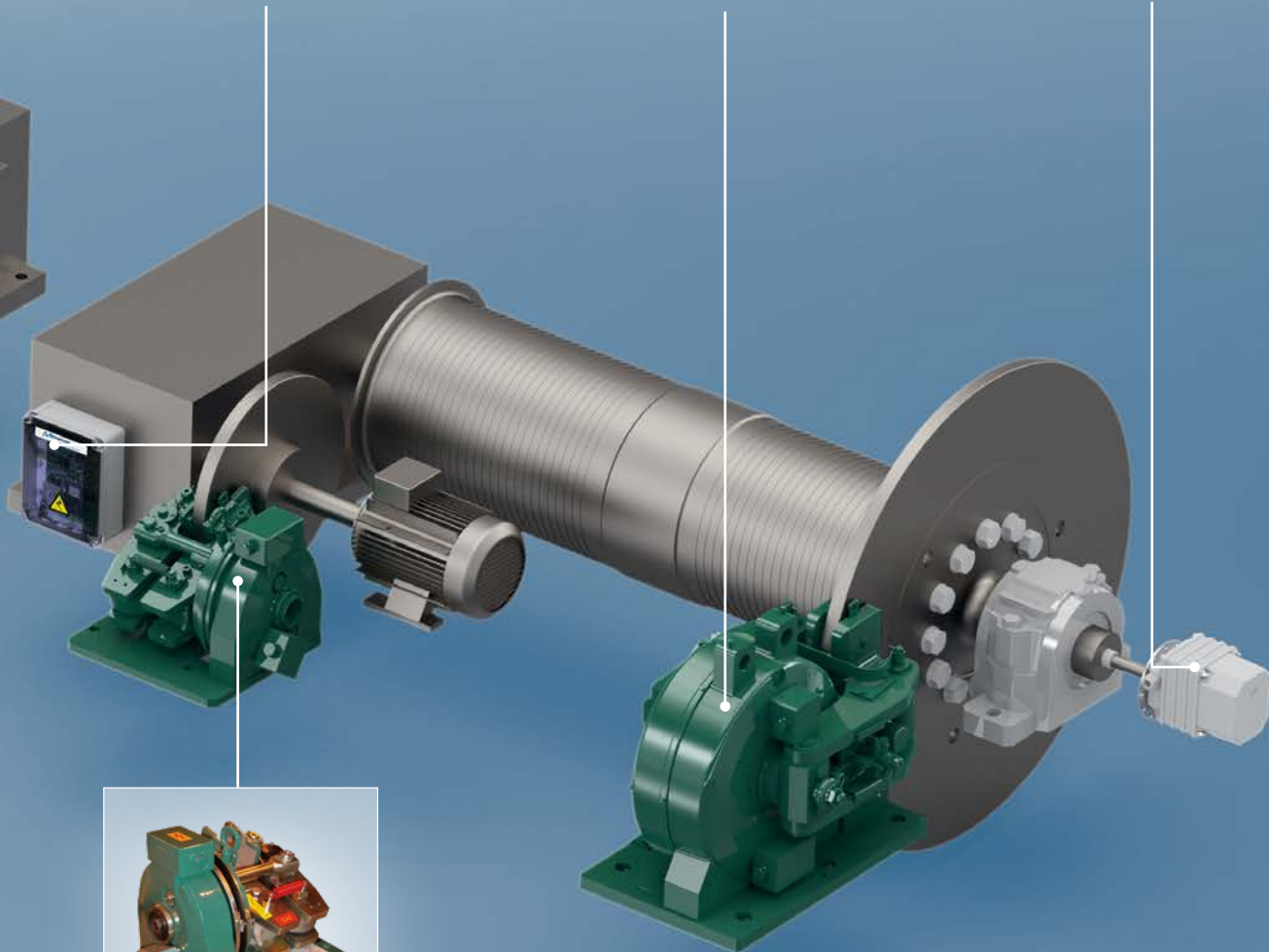
Electrical
power units



Electromagnetic
emergency brakes

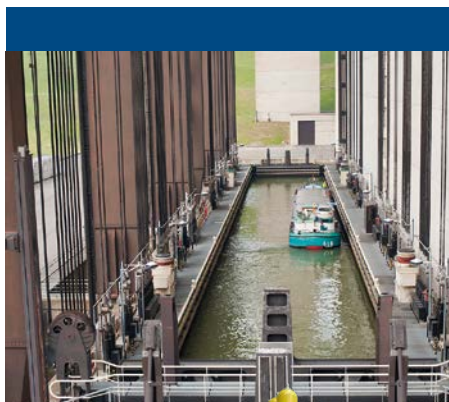


Safety systems



Electromagnetic
service brakes

SOLUTIONS FOR YOUR APPLICATION



Solutions for **BOAT LIFTING SYSTEMS**

- Hydraulic service brakes type SHD
- Hydraulic emergency brakes type SH
- Custom Hydraulic Power Packs
- Touch-screen and control interfaces
- CRD systems for regulated braking
- Tailor made solutions



Photo courtesy of RECOM

Solutions for **CONSTRUCTION INDUSTRIES**

- Hydraulic brakes
- Electromagnetic brakes
- Thrustors brakes
- Drum brakes
- Discs & Couplings
- Hydraulic Power Packs
- Electrical units
- Safety and control systems



Solutions for **PORTS**

- Hydraulic brakes
- Electromagnetic brakes
- Thrustors brakes
- Drum brakes
- Discs & Couplings
- Hydraulic Power Packs
- Electrical units
- Safety and control systems

HIGH CUSTOMERS SATISFACTION

SIME Brakes products and services comply with the requirements of our customers in terms of quality, safety, service life, easy maintenance and delivery times. The quality and environmental policy is an integral part of our company policy.

The certification ISO9001 of our Quality management system is renewed under the version ISO 9001 - V2015 in 2018, combined with OHSAS 18001 - V2007 certification.

With more than 60 years of experience in the supply of high efficiency braking systems, Stromag provides disc brakes certified by recognised organisations such as DNV, ABS, TUV, Lloyd's Register and EDF.

- Hydraulic brakes
- Electromagnetic brakes
- Thrustors brakes
- Drum brakes
- Discs & Couplings
- Hydraulic Power Packs
- Electrical units
- Safety and control systems



- Hydraulic brakes
- Electromagnetic brakes
- Thrustors brakes
- Drum brakes
- Discs & Couplings
- Hydraulic Power Packs
- Electrical units
- Monitoring systems



- Hydraulic brakes
- Electromagnetic brakes
- Thrustors brakes
- Drum brakes
- Discs & Couplings
- Hydraulic Power Packs
- Electrical units
- Monitoring systems



Lloyd's Register
Marine Design

Address: Lloyd's Register 1965A
 P.O. Box 761, 3000 AS Rotterdam
 K.P. van der Maaldrijkstra 17a
 3031 MB Rotterdam
 Telephone 010 45 50 50 Fax
 010 45 50 50
 Not lloydregister.org

Page: 1/1

ISO 9001 : 2015

This Design Approval Document (D.A.D.) is
 (Issue No. 2) dated 18 July 2012. The plan
 The documentation, as listed in category
 approval status, as indicated provided the
 the Code for Lifting Appliances in a Man
 certified with ISO 9001 as they are applicable
 and subject to the following conditions are

A. Machinery

Type Designation

B. Brake Details

Normal Holding Force BS 085
 Maximum Holding Force BS 085
 Normal Working Pressure BS 085
 Maximum Working Pressure BS 085
 Coefficient of friction BS 085
 Type Designation Friction Pad lining

C. Comments

1. All materials used apart from the b
 Manufacture, Testing and Certificate
 2. The friction coefficient of the brake
 results to be satisfactory.

FINAL ACCEPTANCE BY

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Page 1 of 1



ABS
American Bureau of Shipping

DESIGN

This is to Certify that a represent
STROMAG FRANCE

assess design plans and data for the below
 However as to the degree of compliance the
 assessment does not waive until certificate
 products to be installed in ABS classed ves
 that the product is Type Approved. The p
 pages attached to this certificate.

PRODUCT: Brake

Model: Caliper SH18B Offshore

This Product Certificate Assessment (PCA) is issued
 the Rules or specifications used in the assessment are as
 follows:
 This PCA is intended for a product to be installed as a
 use in accordance with the data of the ABS Rules or specifications.

Use of the Product on an ABS classed vessel, MOU
 certificate used to evaluate the Product, will require a
 Use of the Product for an ABS classed vessel, MOU
 class.

The Director General des (DNV),
 the obligation
 DNV Certification ATX

Part: Technology
 MB + 33293 44 55 66 77 88
 Number national de
 Certification public à caractère industriel ou



DNV-GL
Classification No.
 TAY0000147

CATE

-3, SH15-1, SH15-2, SH15-3,

and platform lifting appliances

Installation on all vessels classed

for DNV GL
 Classification No. TAY0000147

Aids to Navigation
 Head of Section

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Page 1 of 1



Ex

Appareil non électrique destiné à
**Non electrical equipment intended for use in
 explosive atmospheres**
 Nicht-elektrisches Gerät zur Verwendung in explosionsgefährdeten Bereichen

Appareil/Equipment/Gerät : Caliper SH18B
 Type(s)/Typ(s)/Tipo(s) : SH18B
 Marquage/Marking/Markierung :
 Désignation / Appellation / Anzettelung :

L'EMER, organisme notifié en vertu de la directive 90/269/CEE, a certifié que le produit est conforme à la directive 90/269/CEE du 13 mai 1990, relative à la protection des travailleurs contre les risques de l'électricité statique.

La documentation technique relative à ce produit est disponible sur demande auprès de l'EMER.

Le fabricant s'engage à maintenir la conformité du produit avec les exigences de la directive 90/269/CEE.

Le fabricant s'engage à maintenir la conformité du produit avec les exigences de la directive 90/269/CEE.

Le fabricant s'engage à maintenir la conformité du produit avec les exigences de la directive 90/269/CEE.

Altra Stromag France

Certification No. 1810 LA GUERRE
 Avenue de la République, BP 24
 18100 LA GUERRE, FRANCE

This document is certified according to the requirements of

ISO 9001 : 2015

For the following activities:
 Design, manufacture, put at disposal or deliver built with relevant accessories for use in lifting and handling applications and machine production and people in

Technical support and service before and after use and maintenance training and product

This certificate is valid from 22 March 2017 until 22 March 2020 and remains valid subject to satisfactory surveillance. Issue 2. First Certification date 18 July 2012.

24. Avenue de la République, BP 24
 18100 LA GUERRE, FRANCE

Stromag France S.A.S.

Certification No. 1810 LA GUERRE
 Avenue de la République, BP 24
 18100 LA GUERRE, FRANCE

This document is certified according to the requirements of

ISO 9001 : 2015

For the following activities:
 Design, manufacture, put at disposal or deliver built with relevant accessories for use in lifting and handling applications and machine production and people in

Technical support and service before and after use, use and maintenance training and products revision.

This certificate is valid from 23 August 2016 until 2 February 2019 and remains valid subject to satisfactory surveillance. Issue 3. First Certification date February 2016.

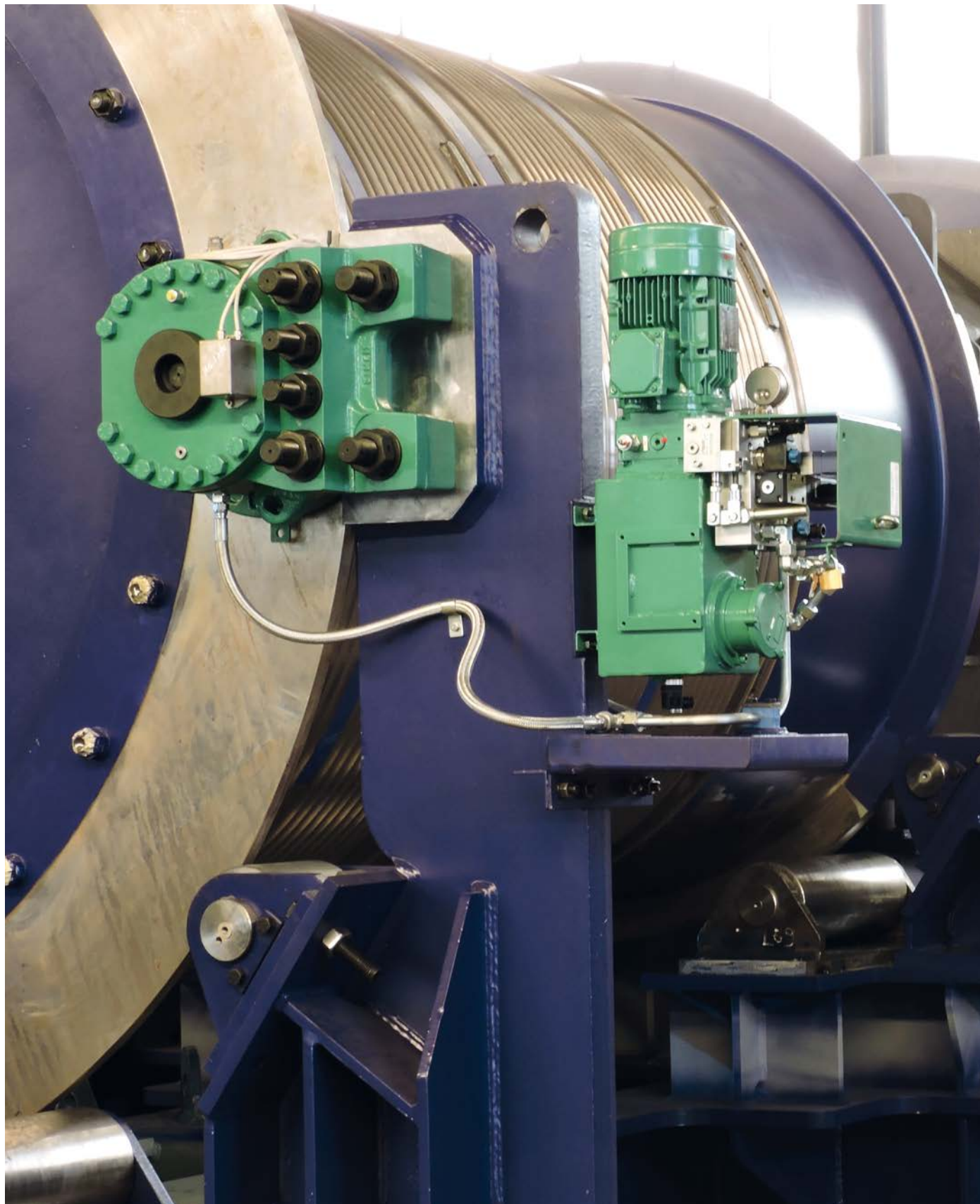
24. Avenue de la République, BP 24
 18100 LA GUERRE, FRANCE







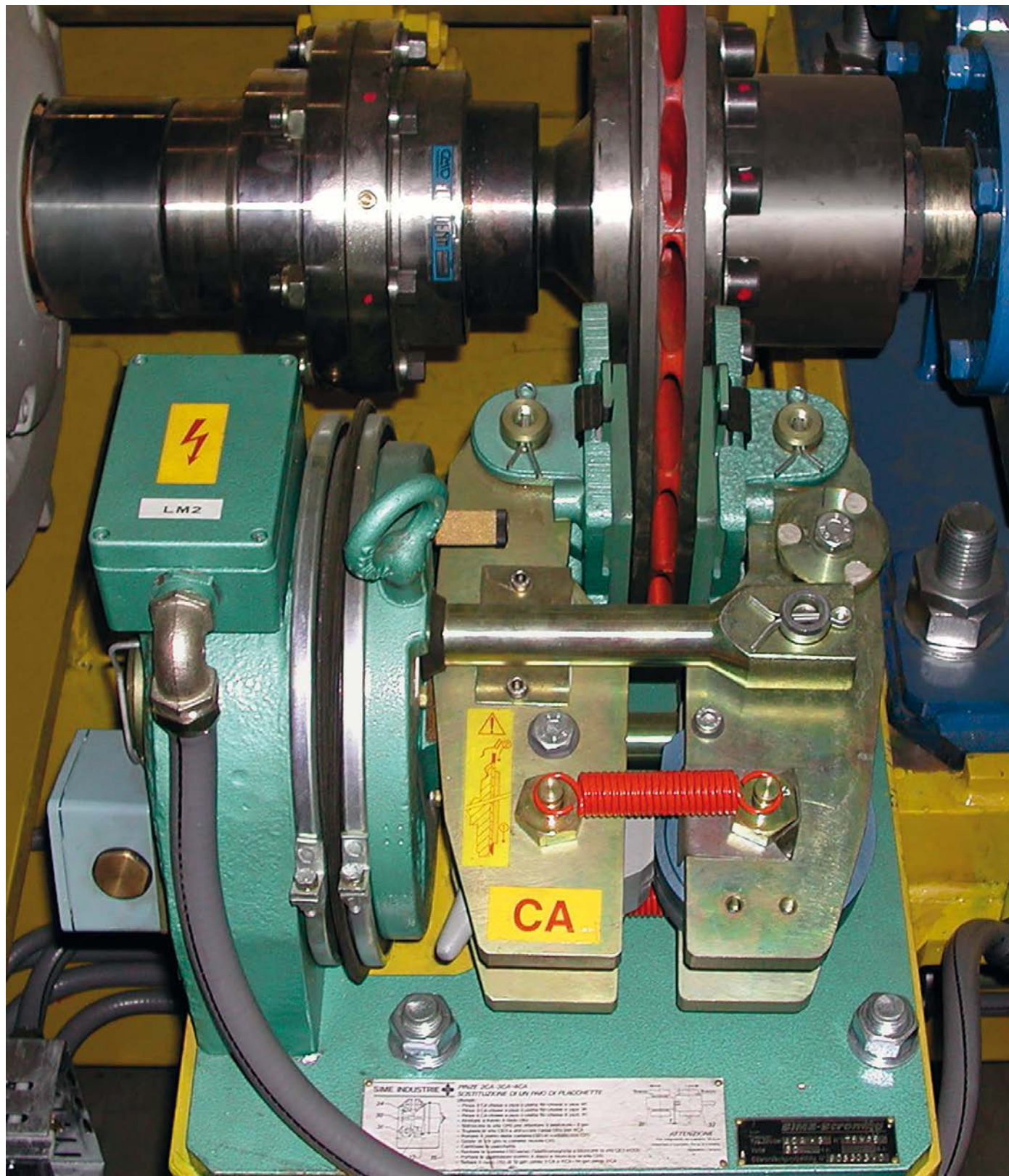

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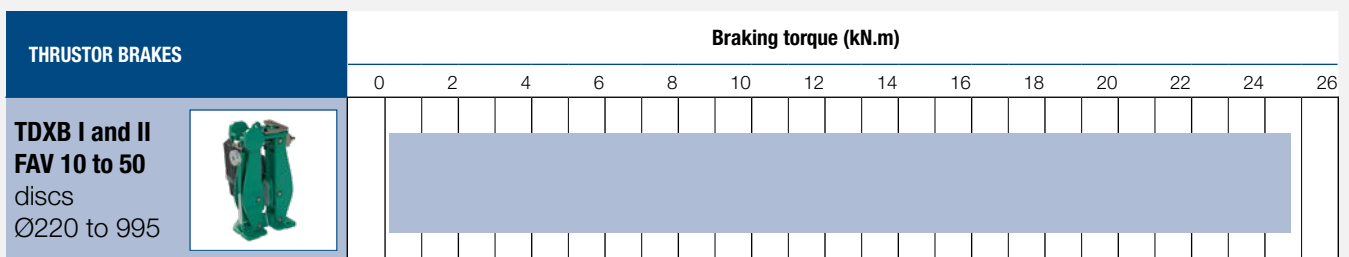
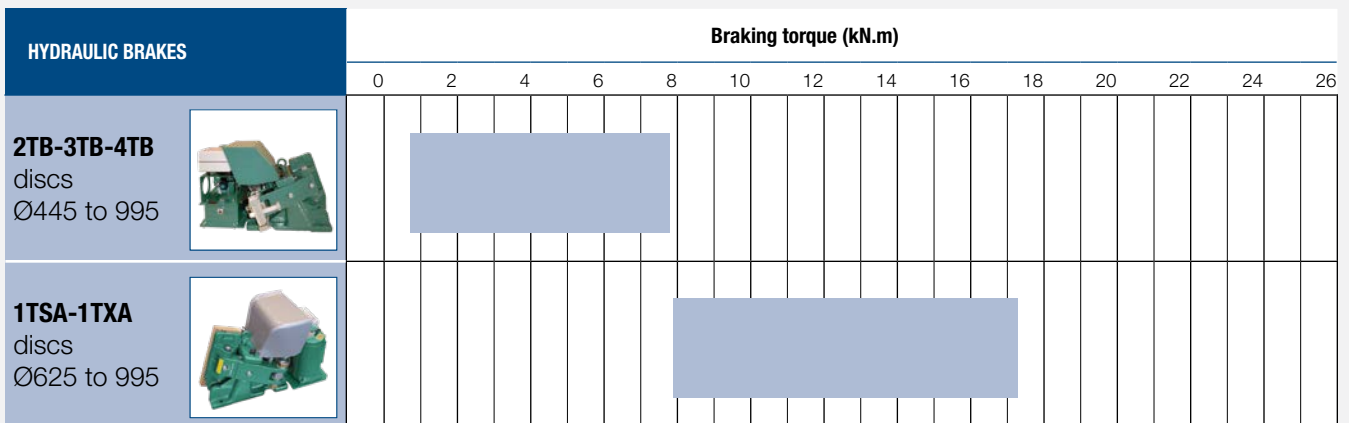
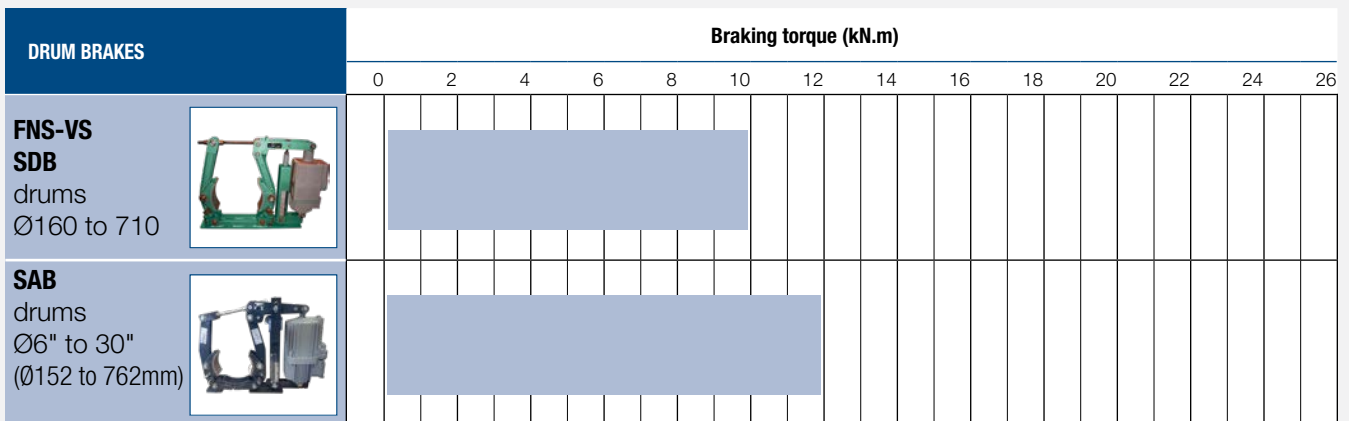
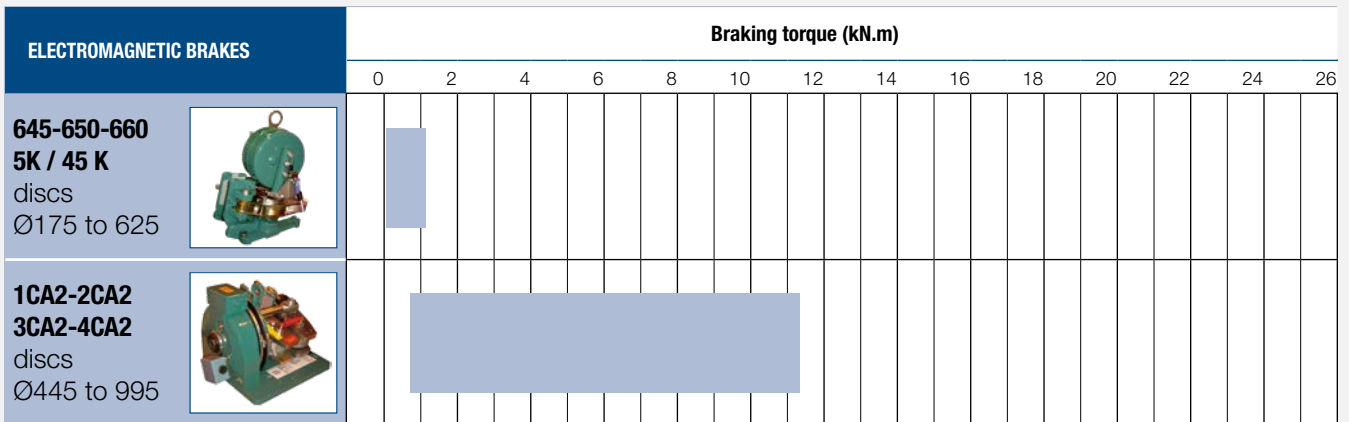


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SERVICE BRAKES





SIME Brakes Industrial Braking Systems

Service Brakes

APPLICATIONS

- STEEL CRANES
- PORT CRANES
- NUCLEAR CRANES
- MASS TRANSPORTS

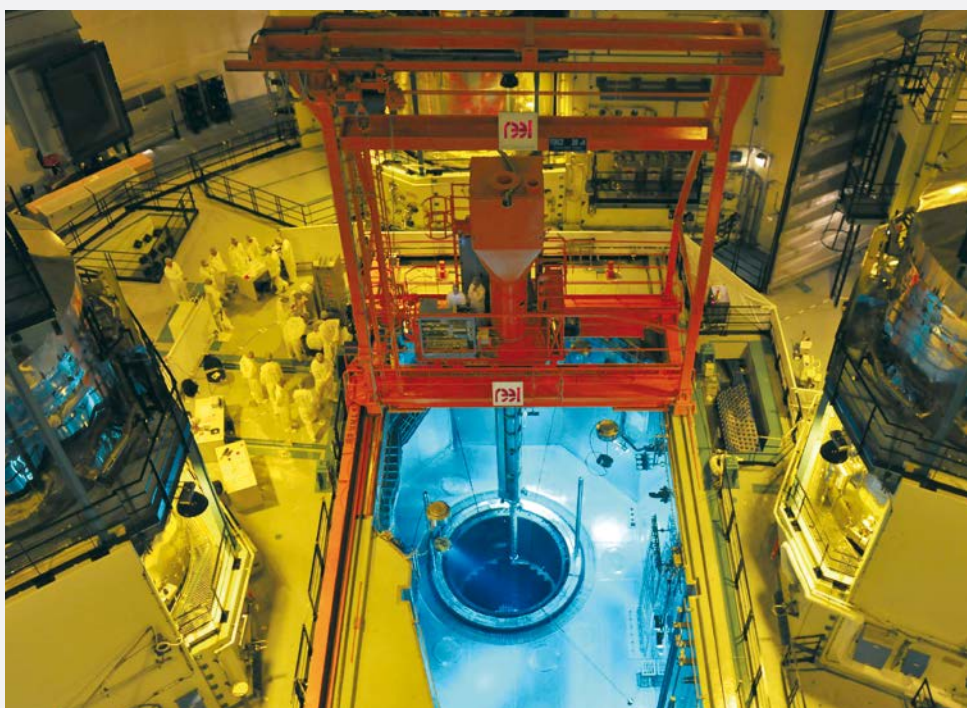
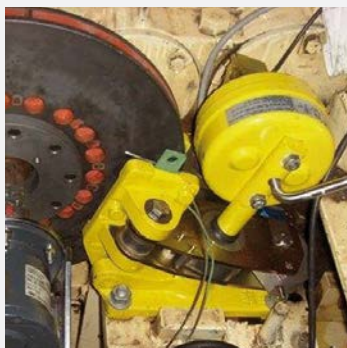


Photo courtesy of REEL



ELECTROMAGNETIC SERVICE BRAKES

MAIN CHARACTERISTICS

- FAILSAFE BRAKE BY SPRING APPLICATION
- ELECTROMAGNETIC RELEASE
- OPENING PROVING SWITCH

OPTIONS

- MECHANICAL RELEASE LEVER
- HYDRAULIC RELEASE
- CLOSING PROVING SWITCH
- MANUAL RELEASE CONTROL SWITCH
- HIGH TEMPERATURE, IRON AND STEEL CONDITIONS



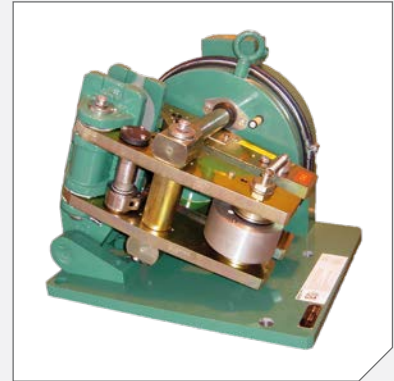
645-650-660

- Association with discs Ø175 to 625
- Manual wear compensation
- Option:
Mounting on a vertical axis disc



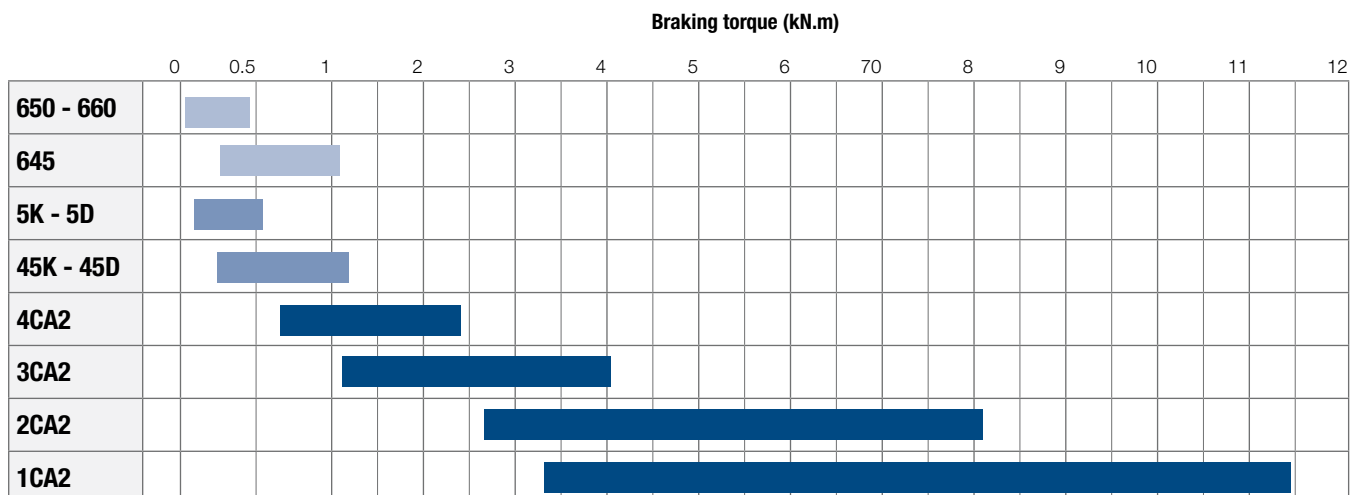
**5K - 5D
45K - 45D**

- Association with discs Ø315 to 625
- Automatic wear compensation
- Option:
Mounting on a vertical axis disc



**4CA2 - 3CA2
2CA2 - 1CA2**

- Association with discs Ø445 to 995
- Automatic wear compensation
- Left and right hand calipers
- Option: Manual wear compensation



SIME Brakes Industrial Braking Systems

Service Brakes

DISC BRAKE - 650 AND 660 CALIPERS

Revision number: T03150-01-G

Revision date: 10.04.2018

Fail safe braking
Spring application
Electromagnetic release
Manual lining wear compensation
Brake pads with wear indicator
Opening proving switch for PLC
With coil supply wire: 2 x 2mm², length 2m

Conditions of use:

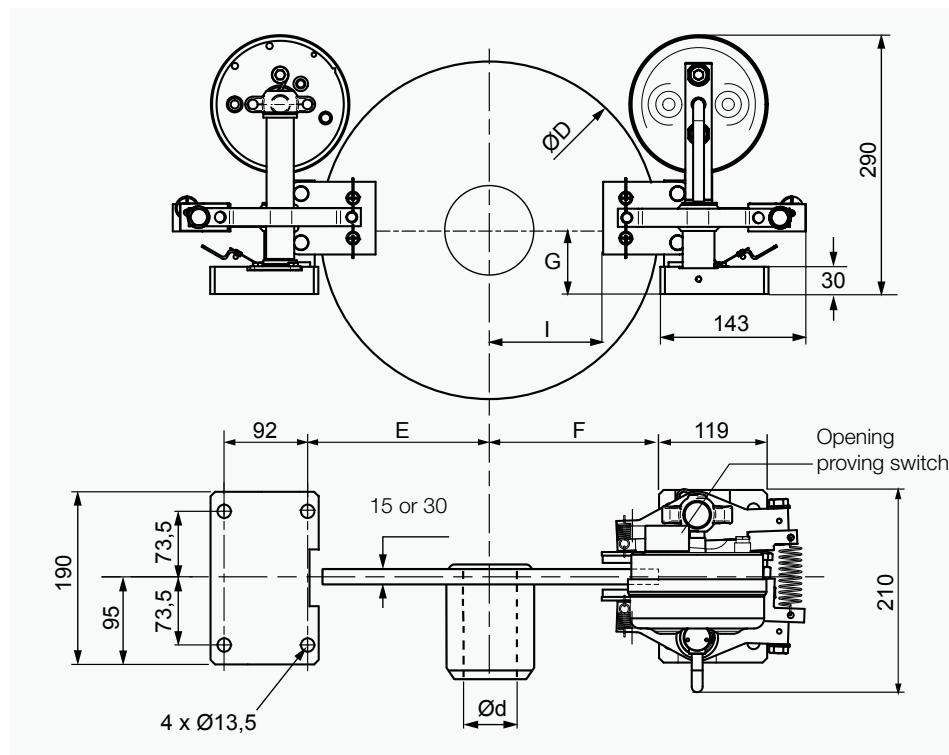
- Ambient temperature -10°C to +60°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65μ
- Other conditions, consult SIME-Stromag.

Use:

- Service brake for application ≤ 150 stops/h

Options:

- Lowering system with lever
- Hydraulic lowering system
- Mounting on vertical axis disc
- Marine protection
- Closing proving switch
- Manual release switch



Opening proving switch :

250VAC maxi., 5A maxi., with
interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi., with
interrupting capacity: 50W maxi.

Compatible with PLC
(Programmable Logic Controllers).
An opening switch used with other
equipment than PLC must not be
reused with a PLC.

The opening switch is delivered with
3 x 0.75mm² cable, length 2m

Weight: 19 kg
Dimensions in mm

Response time at nominal torque : see the leaflet of the associated electrical power supply.

Discs			Thickness 15 mm									Thickness 30 mm							
Maximum speed of the disc for nominal torque			tr/mn	5000	4300	3600	3000	2400	2100	1900	1800	1500	3000	2700	2400	2100	1900	1800	1500
D	mm		175	220	260	315	395	445	495	550	625	315	355	395	445	495	550	625	
d	mm		0-40	0-55	0-75	0-75	0-75	0-75	0-100	0-100	0-100	0-50	0-60	0-70	0-70	0-100	0-100	0-100	
E	mm		118	128	143	173	213	238	263	293	328	173	193	213	238	263	293	328	
F	mm		106	116	131	161	201	226	251	281	316	161	181	201	226	251	281	316	
G	mm		85	85	85	75	60	50	45	45	25	75	60	60	50	45	45	25	
I (approx. dimension)	mm		43	53	68	98	138	163	188	218	253	98	118	138	163	188	218	253	
Caliper 650 :																			
Nominal torque for 1 caliper adjustable from 100% to 50%		N.m	110	130	150	190	260	300	350	390	460	190	220	260	300	350	390	460	
Max. reaction on shaft	1 caliper	N	1600									1600							
	2 calipers	N	0			260	570	580	560	510	680	260	550	570	580	560	510	680	
Caliper 660 :																			
Nominal torque for 1 caliper adjustable from 100% to 60%		N.m	55	65	75	95	130	150	175	195	230	95	110	130	150	175	195	230	
Max. reaction on shaft	1 caliper	N	800									800							
	2 calipers	N	0			130	285	290	280	255	340	130	275	285	290	280	255	340	

DISC BRAKE - 645 CALIPER

Revision number: T03250-01-E

Revision date: 10.04.2018

Fail safe braking
Spring application
Electromagnetic release
Manual wear compensation
Brake pads with wear indicator
Opening proving switch for PLC
With coil supply wire: 2 x 2mm², length 2m

Conditions of use:

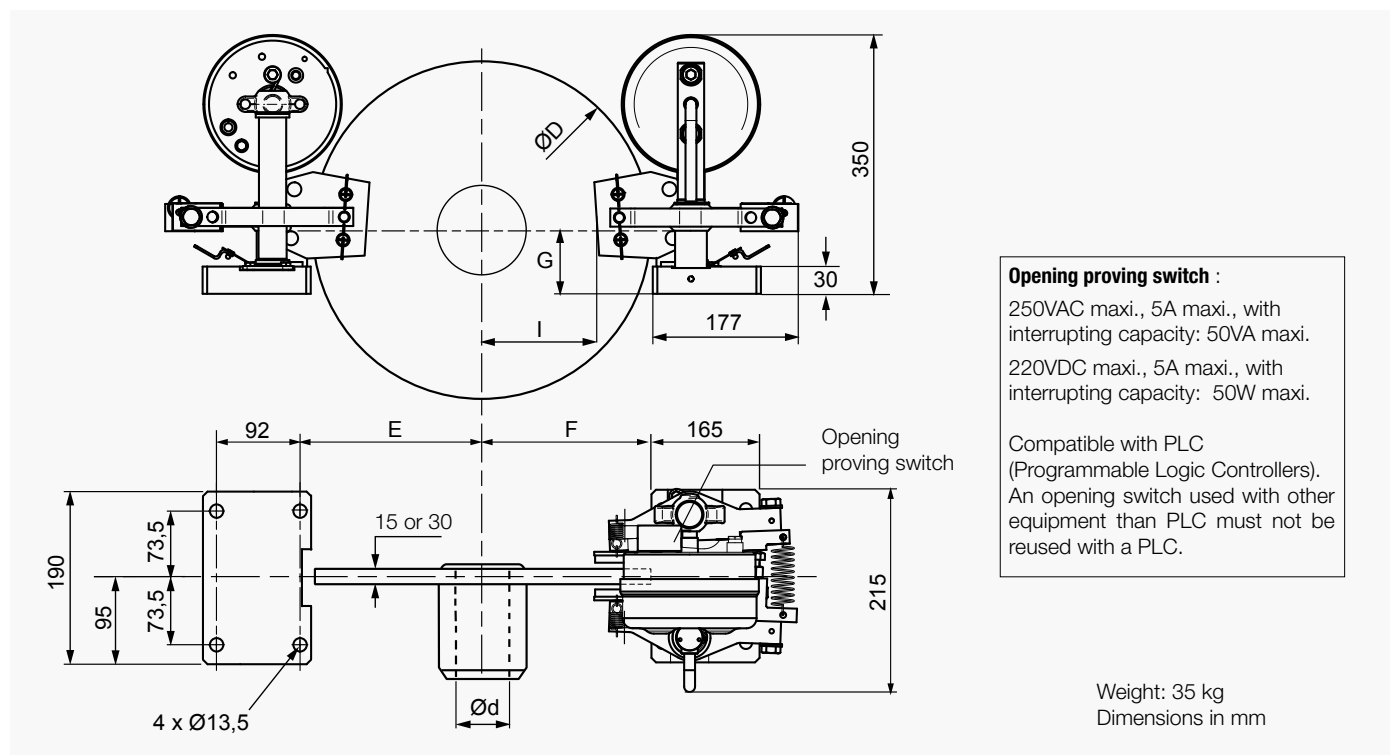
- Ambient temperature -10°C to +60°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65μ
- Other conditions, consult us.

Use:

- Service brake for application ≤ 150 stops/h

Options:

- Lowering system with lever
- Hydraulic lowering system
- Mounting on vertical axis disc
- Marine protection
- Closing proving switch
- Manual release switch



Response time at nominal torque : see the leaflet of the associated electrical power supply.

Designation			Discs		solid and thickness 15 mm						self-ventilated and thickness 30 mm					
Nominal torque for 1 caliper adjustable from -30% to +20%		N.m	380	520	600	700	780	920	380	440	520	600	700	780	920	
Maximum speed of the disc for nominal torque		rpm	3000	2400	2100	1900	1800	1500	3000	2700	2400	2100	1900	1800	1500	
D		mm	315	395	445	495	550	625	315	355	395	445	495	550	625	
d		mm	0-75	0-75	0-75	0-100	0-100	0-100	0-50	0-60	0-70	0-70	0-100	0-100	0-100	
E		mm	173	213	238	263	293	328	173	193	213	238	263	293	328	
F		mm	161	201	226	251	281	316	161	181	201	226	251	281	316	
G		mm	95	80	70	65	65	45	95	80	80	70	65	65	45	
I (approx. dimension)		mm	76	116	141	166	196	231	76	96	116	141	166	196	231	
Max. reaction on shaft		1 caliper	N	3850						3850						
		2 calipers	N	405	405	810	895	780	1230	405	515	450	810	895	780	1230

Service Brakes

DISC BRAKE - 5K AND 5KR CALIPERS

Revision number: T03350-01-E

Revision date: 09.04.2018

Fail safe braking / Spring application

Electromagnetic release

Automatic wear compensation

Detection of full lining wear

Brake pads with wear indicator

Opening proving switch

Association with discs th. 30mm (or 15mm in option)

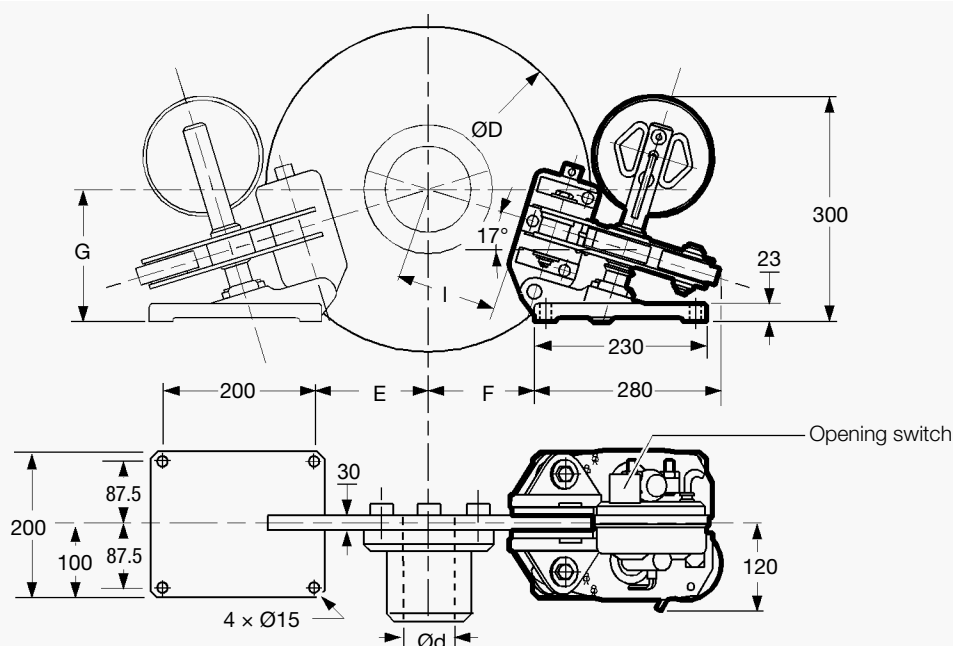
With coil supply wire: 2 × 2mm², length 2m

Conditions of use:

- Ambient temperature - 10°C to + 60°C
- Relative humidity ≤ 70 %
- Dust in atmosphere ≥ 65 µ
- Other conditions, consult us.

Options:

- Lowering system with lever
- Hydraulic lowering system
- Marine protection
- Vertical mounting
- Reduced torque
- Closing proving switch
- Manual release switch
- Association with discs th. 15mm



Opening proving switch :

250VAC maxi., 5A maxi., with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi., with interrupting capacity: 50W maxi.

Compatible with PLC

(Programmable Logic Controllers).

An opening switch used with other equipment than PLC must not be reused with a PLC.

The opening switch is delivered with 3 × 0.75mm² cable, length 2m

Weight: 27 kg

Dimensions in mm

Response time at nominal torque : see the leaflet of the associated electrical power supply.

Discs		315	355	395	445	495	550	625
Maximum speed of the disc for nominal torque rpm		3000	2700	2400	2100	1900	1800	1500
D	mm	315	355	395	445	495	550	625
d	mm	0-50	0-60	0-70	0-70	0-100	0-100	0-100
E	mm	100	120	140	160	190	220	255
F	mm	85	105	125	145	175	205	240
G	mm	160	164	170	180	185	195	205
I (approx. dimension)	mm	72	92	113	135	160	197	233
Caliper 5K :								
Nominal torque for 1 caliper adjustable from - 50% to +20% N.m.		190	220	260	300	350	390	460
Maximum reaction on shaft	1 caliper N 2 calipers N	1950 1150						
Caliper 5KR :								
Nominal torque for 1 caliper adjustable from 100% to -50% N.m.		95	110	130	150	175	195	230
Maximum reaction on shaft	1 caliper N 2 calipers N	815 480						

DISC BRAKE - 5KE CALIPER

Revision number: T03400-01-D

Revision date: 21.03.2016

Fail safe braking

Spring application

Electromagnetic release

Electrical progressive braking

Automatic wear compensation

Detection of full lining wear

Opening proving switch

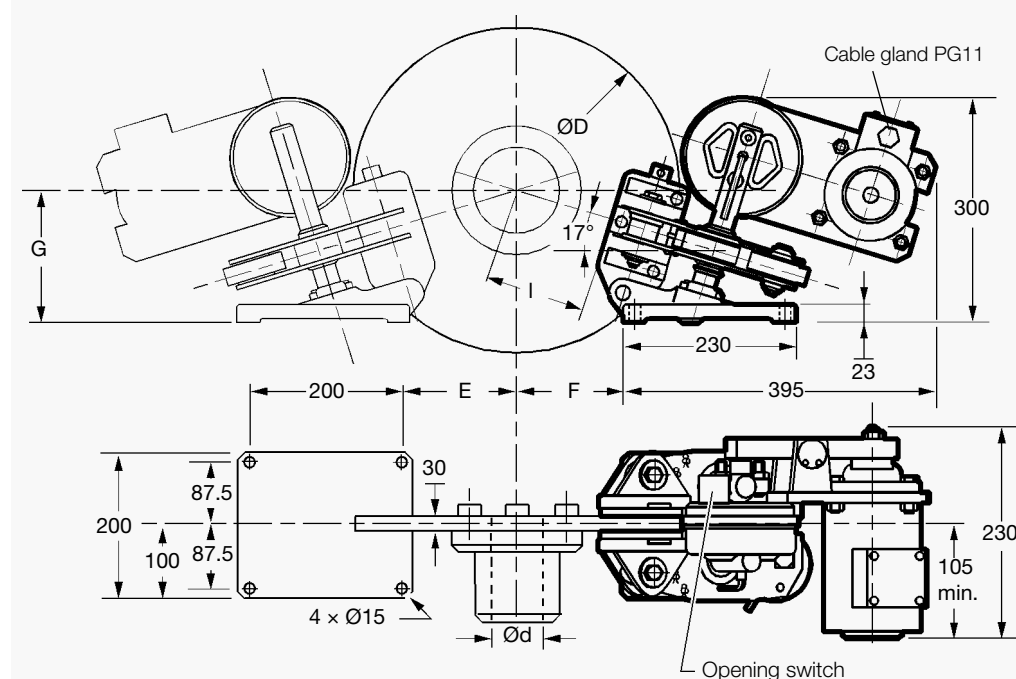
With coil supply wire: 2 x 2mm², length 2m

Conditions of use:

- Ambient temperature - 10°C to + 60°C
 - Relative humidity ≤ 70 %
 - Dust in atmosphere ≥ 65 µ
- Other conditions, consult us.

Options:

- Hydraulic release
- Marine protection
- Vertical mounting



Opening proving switch :

250VAC maxi., 5A maxi., with interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi., with interrupting capacity: 50W maxi.

Compatible with PLC (Programmable Logic Controllers).
An opening switch used with other equipment than PLC must not be reused with a PLC.

Opening switch is delivered with 3 x 0.75mm² cable, length 2 m

Weight: 45 kg
Dimensions in mm

Response time at nominal torque : see the leaflet of the associated electrical power supply.

Discs			315	355	395	445	495	550	625
Progressive torque for 1 caliper adjustable from 0% to 100% *	N.m		190	220	260	300	350	390	460
Nominal torque for 1 caliper adjustable from 100% to -50%	N.m		190	220	260	300	350	390	460
Maximum speed of the disc for nominal torque	rpm		3000	2700	2400	2100	1900	1800	1500
D	mm		315	355	395	445	495	550	625
d	mm		0-50	0-60	0-70	0-70	0-100	0-100	0-100
E	mm		100	120	140	160	190	220	255
F	mm		85	105	125	145	175	205	240
G	mm		160	164	170	180	185	195	205
I (approx. dimension)	mm		72	92	113	135	160	197	233
Maximum reaction on shaft	1 caliper	N	1950						
	2 calipers	N	1150						

* For electro with working rate of 40%

Service Brakes

DISC BRAKE - 5D AND 5DR CALIPERS

Revision number: T03360-01-E

Revision date: 21.03.2016

Fail safe braking

Spring application

Electromagnetic release

Automatic wear compensation

Brake pads with wear indicator

Opening proving switch

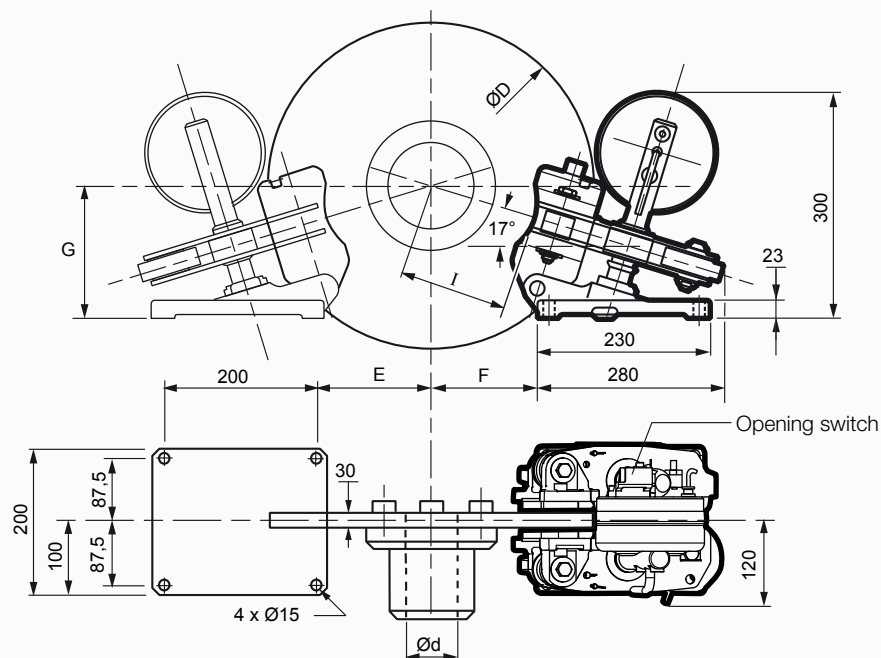
With coil supply wire: 2 x 2mm², length 2m

Conditions of use:

- Ambient temperature - 10°C to + 60°C
 - Relative humidity ≤ 70 %
 - Dust in atmosphere ≥ 65 µ
- Other conditions, consult us.

Options:

- Manual release lever
- Hydraulic release
- Marine protection
- Vertical mounting
- Reduced torque
- Closing proving switch
- Manual release switch



Opening proving switch :

250VAC maxi., 5A maxi., with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi., with interrupting capacity: 50W maxi.

Compatible with PLC (Programmable Logic Controllers). An opening switch used with other equipment than PLC must not be reused with a PLC.

The opening switch is delivered with 3 x 0.75mm² cable, length 2m

Weight: 27 kg
Dimensions in mm

Response time at nominal torque : see the leaflet of the associated electrical power supply.

Discs		220 M30	260 M30	315 M30	315	355	395	445	495	550	625
Maximum speed of the disc for nominal torque	rpm	4300	3600	3000	3000	2700	2400	2100	1900	1800	1500
D	mm	220	260	315	315	355	395	445	495	550	625
d	mm	20-55	30-55	35-60	0-50	0-60	0-70	0-70	0-100	0-100	0-100
E	mm	65	80	100	100	120	140	160	190	220	255
F	mm	50	65	85	85	105	125	145	175	205	240
G	mm	150	153	160	160	164	170	180	185	195	205
I (approx. dimension)	mm	51	68	88	88	108	128	151	176	213	248
Caliper 5D :											
Nominal torque for 1 caliper adjustable from - 50% to +20% N.m.		130	150	190	190	220	260	300	350	390	460
Maximum reaction on shaft	1 caliper N 2 calipers N	1950 1150									
Caliper 5DR :											
Nominal torque for 1 caliper adjustable from 100% to -50% N.m.		65	75	95	95	110	130	150	175	195	230
Maximum reaction on shaft	1 caliper N 2 calipers N	815 480									

DISC BRAKE - 5DE CALIPER

Revision number: T03410-01-D

Revision date: 22.03.2016

Fail safe braking

Spring application

Electromagnetic release

Electrical progressive braking

Automatic wear compensation

Detection of full lining wear

Opening proving switch

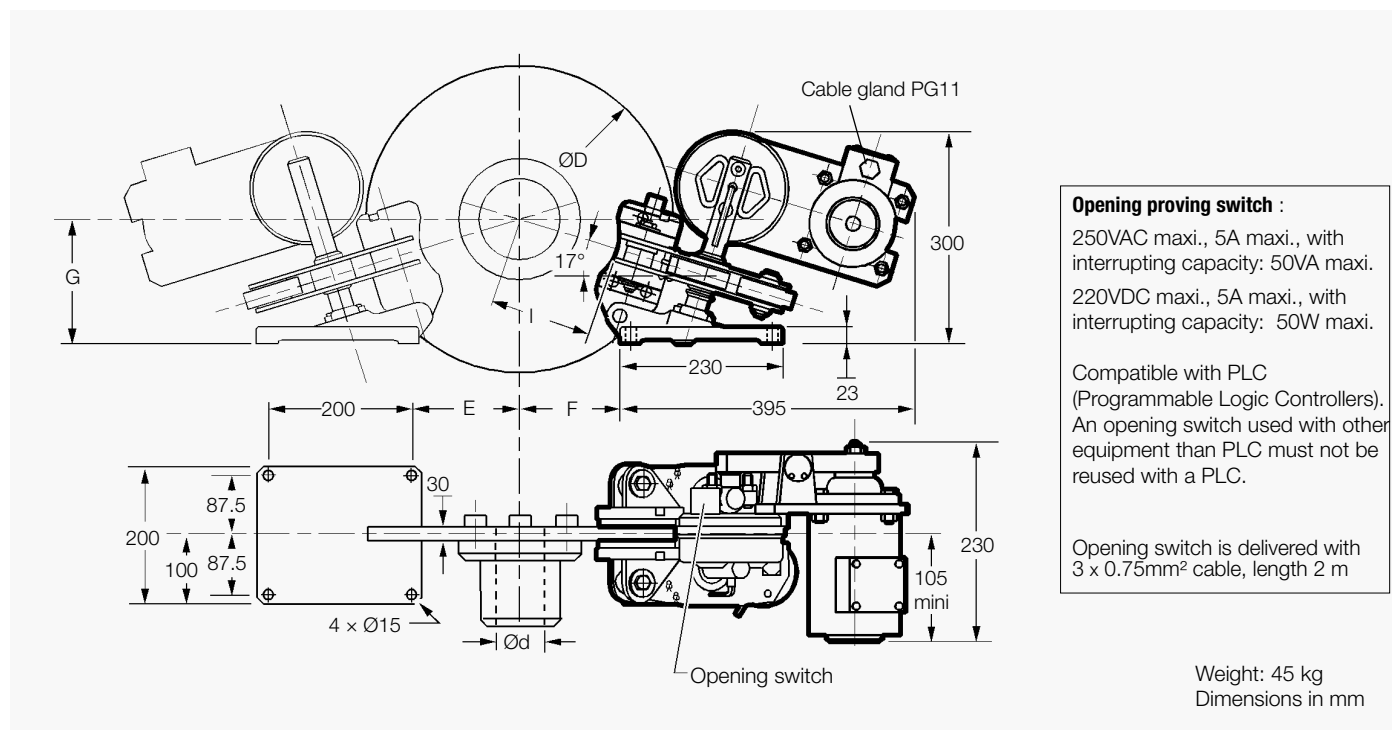
With coil supply wire: 2 x 2mm², length 2m

Conditions of use:

- Ambient temperature - 10°C to + 60°C
 - Relative humidity ≤ 70 %
 - Dust in atmosphere ≥ 65 µ
- Other conditions, consult us.

Options:

- Hydraulic release
- Marine protection
- Vertical mounting



Response time at nominal torque : see the leaflet of the associated electrical power supply.

Discs			220M30	260M30	315M30	315	355	395	445	495	550	625
Progressive torque for 1 caliper adjustable from 0% to 100% *	N.m		130	150	190	190	220	260	300	350	390	460
Nominal torque for 1 caliper adjustable from 100% to -50%	N.m		130	150	190	190	220	260	300	350	390	460
Maximum speed of the disc for nominal torque	rpm		4300	3600	3000	3000	2700	2400	2100	1900	1800	1500
D	mm		220	260	315	315	355	395	445	495	550	625
d	mm		20-55	30-55	35-60	0-50	0-60	0-70	0-70	0-100	0-100	0-100
E	mm		65	80	100	100	120	140	160	190	220	255
F	mm		50	65	85	85	105	125	145	175	205	240
G	mm		150	153	160	160	164	170	180	185	195	205
I (approx. dimension)	mm		51	68	88	88	108	128	151	176	213	248
Maximum reaction on shaft	1 caliper	N	1950									
	2 calipers	N	1150									

* For electro with working rate of 40%

Service Brakes

DISC BRAKE - 45K and 45D calipers

Revision number: T00140-01-J

Revision date: 10.04.2018

Fail safe braking
Spring application
Electromagnetic release
Automatic linings wear compensation
Opening proving switch
Coil with supply wire: $2 \times 2\text{mm}^2$, length 2m
Association with 30mm thick discs (or 15mm in option)
Shoes DIN (caliper 45D) for discs thickness 30mm only.

Conditions of use :

- Ambient temperature -20°C to $+60^\circ\text{C}$
- Relative humidity $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions, consult us.

Use:

- Service brake for application ≤ 600 cycles / h
- Possibility of quick manoeuvres :
1000 cycles/h during 15s every 2 mn

Options:

- Lowering system with lever
- Hydraulic lowering system
- Manual wear compensation (RM)
- Marine protection
- SIDHT steel industry high temperature
- Bearing brackets for mounting in place of a caliper 645.
- Mounting on a vertical axis disc.
- Closing proving switch
- Manual release switch

Nota :

The 45K-RM and 45D-RM calipers (manual wear compensation option) have the same overall dimensions as the 45K and 45D calipers with automatic wear compensation.

* ATTENTION

For discs $\varnothing 315$ to 395 , the length of 137 max. is higher than the length L of the standard hub. Provide space at the rear of the hub by means of a spacer.

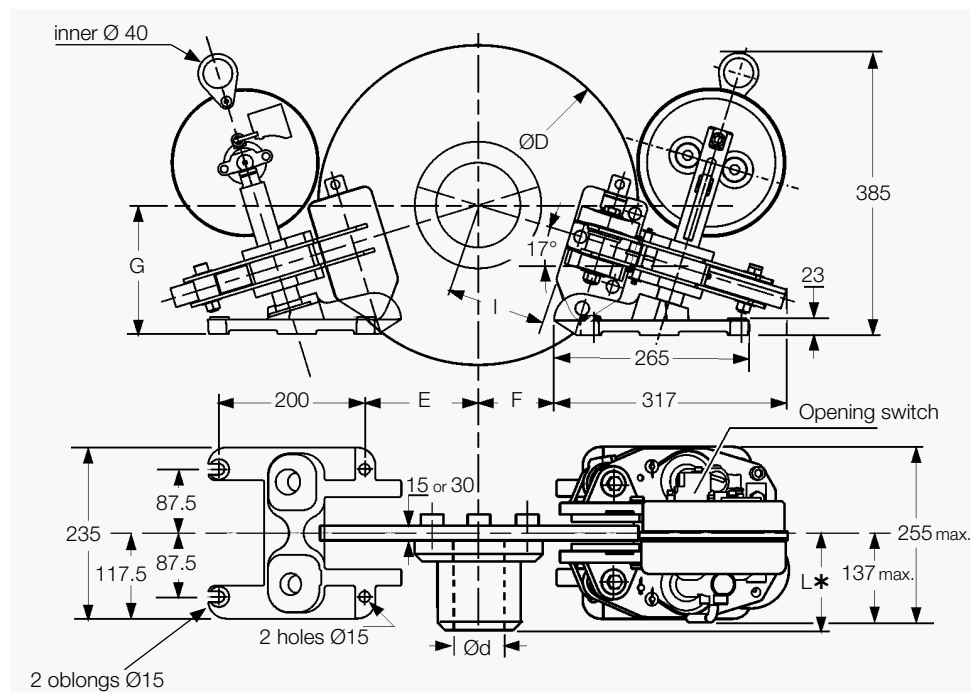
Opening proving switch :

250VAC maxi., 5A maxi., with interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi., with interrupting capacity: 50W maxi.

Compatible with PLC (Programmable Logic Controllers).
An opening switch used with other equipment than PLC must not be reused with a PLC.

Weight: 41 kg

Dimensions in mm



Response time at nominal torque : see the leaflet of the associated electrical power supply.

Caliper delivered in standard with WS1-5 lining.

For energy applications. use WS1-3 (torque loss of 20%).

Designation		Discs	solid and thickness 15 mm (option)							ventilated and thickness 30 mm						
D Disc diameter		mm	315	355	395	445	495	550	625	315	355	395	445	495	550	625
Nominal torque for 1 caliper adjustable from -30% to +20%		N.m	410	470	560	650	750	840	990	410	470	560	650	750	840	990
Maximum speed of the disc for nominal torque		r.p.m.	3000	2700	2400	2100	1900	1800	1500	3000	2700	2400	2100	1900	1800	1500
d		mm	0-75	0-75	0-75	0-75	0-100	0-100	0-100	0-50	0-60	0-70	0-70	0-100	0-100	0-100
E		mm	100	120	140	160	190	220	255	100	120	140	160	190	220	255
F		mm	50	70	90	110	140	170	205	50	70	90	110	140	170	205
G		mm	160	164	170	180	185	195	205	160	164	170	180	185	195	205
I (calipers 45K, 45K-RM)		mm	75	95	116	138	168	200	236	75	95	116	138	168	200	236
I (caliper 45D)		mm								75	95	116	138	168	200	236
I (caliper 45D-RM)		mm								96	116	137	159	189	221	257
Maximum reaction on shaft	1 Caliper	N	4200													
	2 Calipers	N	2450													

DISC BRAKE - 4CA2 CALIPER

Revision number: T10049-01-D

Revision date: 22.03.2016

Fail safe braking
Braking by spring application
Electromagnetic release
Automatic wear compensation
Opening proving switch
Brake pads with wear indicator

Working conditions:

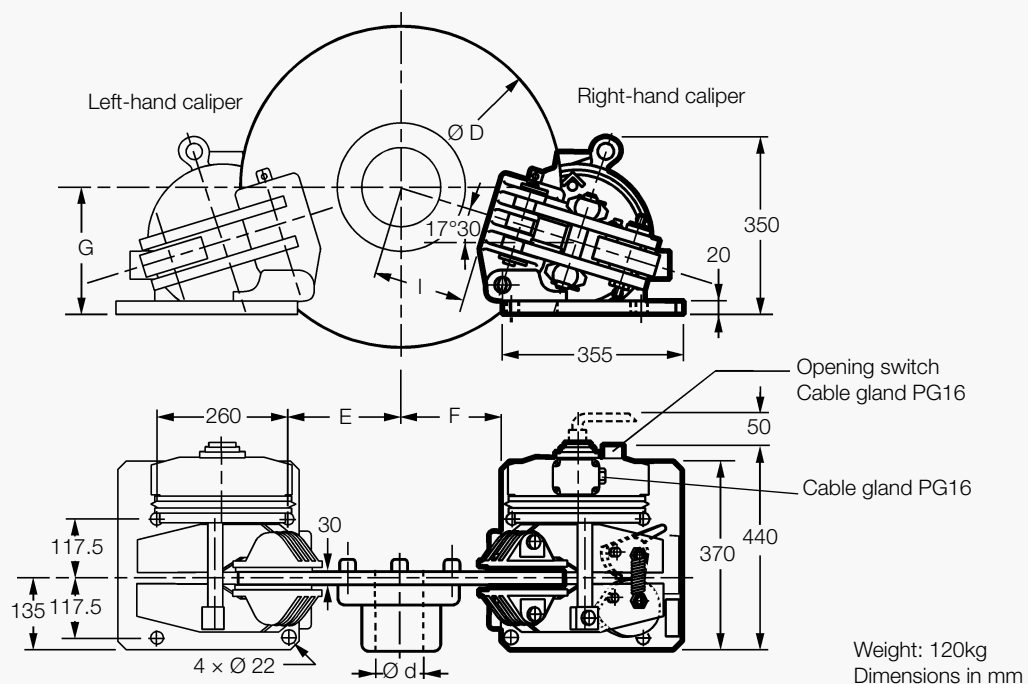
- Ambient temperature: -10°C to +60°C
 - Relative humidity ≤ 70%
 - Dust in atmosphere ≥ 65µ
- Other conditions, consult us.

Use:

Any application up to 1000act/h

Options:

- Manual release lever
- Hydraulic release
- Manual wear compensation
- Flameproof protection
- Marine protection
- Closing proving switch
- Switch on release nut



Response time at nominal torque : see the leaflet of the associated electrical power supply.

Discs		445	495	550	625	705	795
Nominal torque for 1 caliper adjustable from -30 to +20%	N.m	950	1100	1270	1500	1750	2000
Maximum disc speed for nominal torque	r.p.m.	2100	1900	1800	1500	1300	1200
D	mm	445	495	550	625	705	795
d	mm	0-70	0-100	0-100	0-100	0-120	0-130
E	mm	130	160	180	215	255	295
F	mm	110	140	160	195	235	275
G	mm	225	235	240	250	260	275
I (approx. dimension)	mm	90	125	145	180	225	265
Maximum reaction on shaft	1 caliper	N					
	2 calipers	N					

Opening proving switch :

250VAC maxi., 5A maxi., with interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi., with interrupting capacity: 50W maxi.

Compatible with PLC (Programmable Logic Controllers).
An opening switch used with other equipment than PLC must not be reused with a PLC.

Service Brakes

DISC BRAKE - 3CA2 CALIPER

Revision number: T10050-01-C

Revision date: 19.04.2016

Fail safe braking
Braking by spring application
Electromagnetic release
Automatic wear compensation
Opening proving switch
Brake pads with wear indicator

Working conditions:

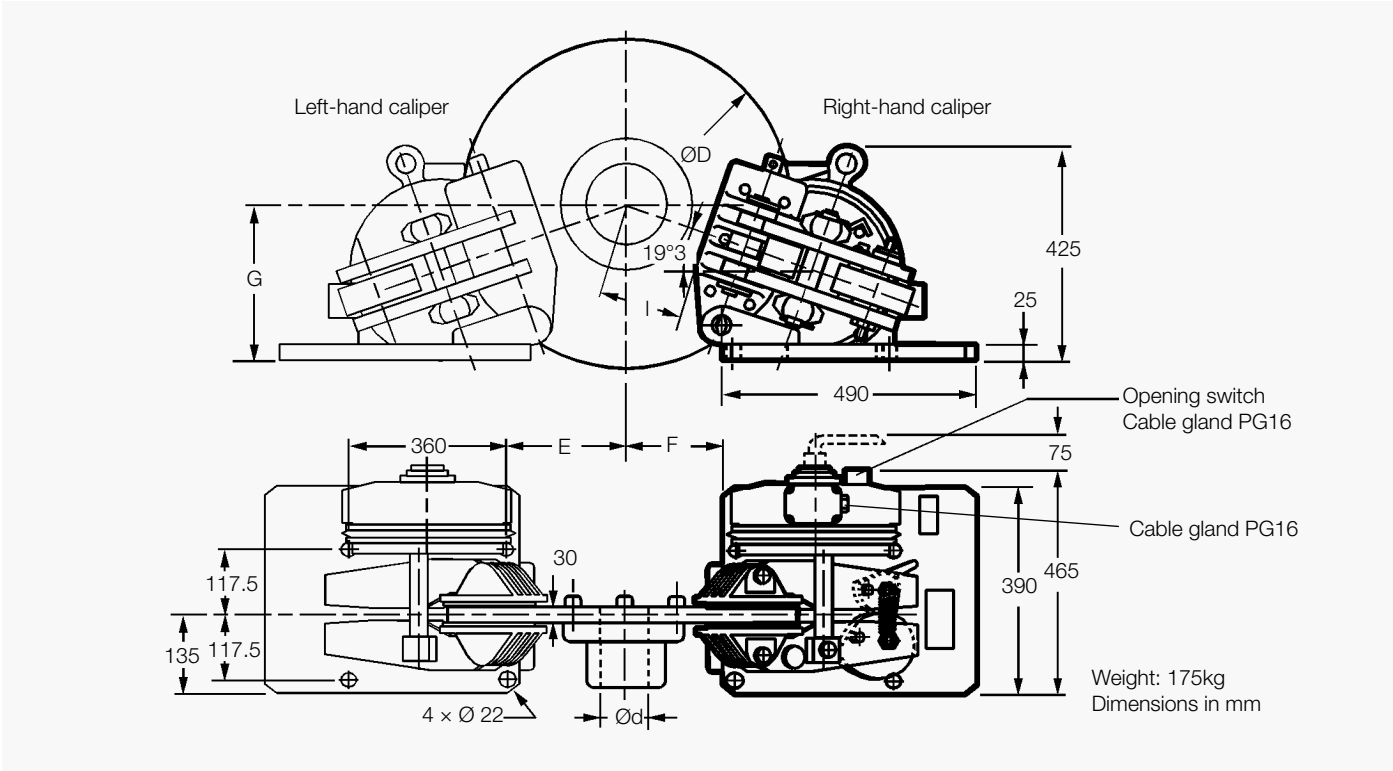
- Ambient temperature: -10°C to +60°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65µ

Other conditions, consult us.

Use:
Any application up to 1000act/h

Options:

- Manual release lever
- Hydraulic release
- Manual wear compensation
- Load regulated lowering
- Flameproof protection
- Marine protection
- Closing proving switch
- Switch on release nut



Response time at nominal torque : see the leaflet of the associated electrical power supply.

Discs		445	495	550	625	705	795
Nominal torque for 1 caliper adjustable from -30 to +20%	N.m	1600	1850	2100	2500	2900	3350
Maximum disc speed for nominal torque	r.p.m.	2100	1900	1800	1500	1300	1200
D	mm	445	495	550	625	705	795
d	mm	0-70	0-100	0-100	0-100	0-120	0-130
E	mm	100	120	150	185	225	265
F	mm	80	100	130	165	205	245
G	mm	285	295	305	315	330	345
I (approx. dimension)	mm	90	115	145	180	225	265
Maximum reaction on shaft	1 caliper N	12300					
	2 calipers N	7400					

Opening proving switch :
250VAC maxi., 5A maxi., with interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi., with interrupting capacity: 50W maxi.

Compatible with PLC (Programmable Logic Controllers).
An opening switch used with other equipment than PLC must not be reused with a PLC.

DISC BRAKE - 2CA2 AND 1CA2 CALIPERS

Revision number: T10051-01-C / T10065-01-B

Revision date: 22.03.2016 / 23.07.2012

Fail safe braking
Braking by spring application
Electromagnetic release
Automatic wear compensation
Opening proving switch

Working conditions:

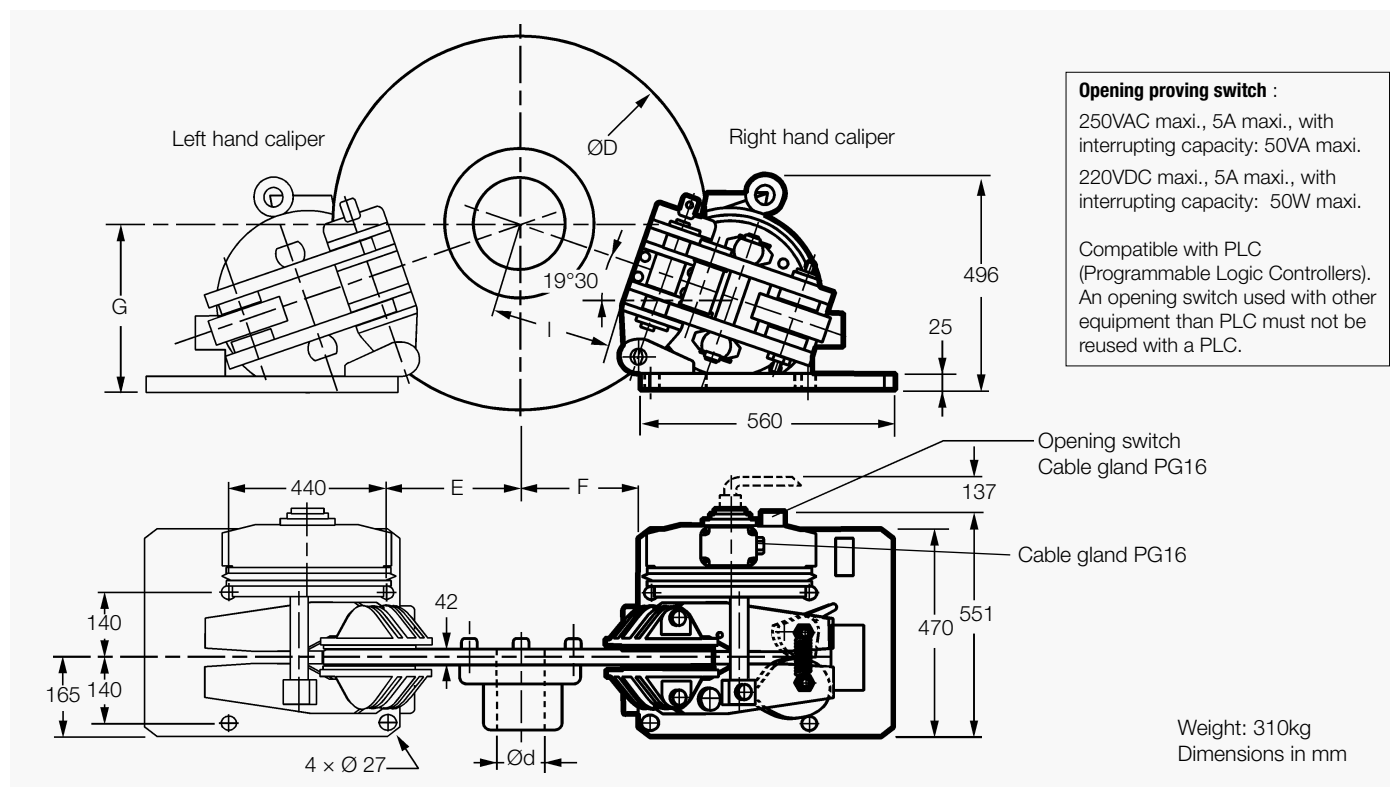
- Ambient temperature: -10°C to +60°C
 - Relative humidity ≤ 70%
 - Dust in atmosphere ≥ 65µ
- Other conditions, consult us.

Use:

Any application up to 600act/h

Options:

- Brake pads with wear indicator
- Manual wear compensation
- Hydraulic release
- Load regulated lowering
- Flameproof protection
- Marine protection.



Discs		625	795	995
D	mm	625	795	995
d	mm	40-140	40-180	40-180
E	mm	157	250	345
F	mm	127	220	315
G	mm	353	385	415
I (approx. dimension)	mm	174	268	368

Response time at nominal torque : see the leaflet of the associated electrical power supply.

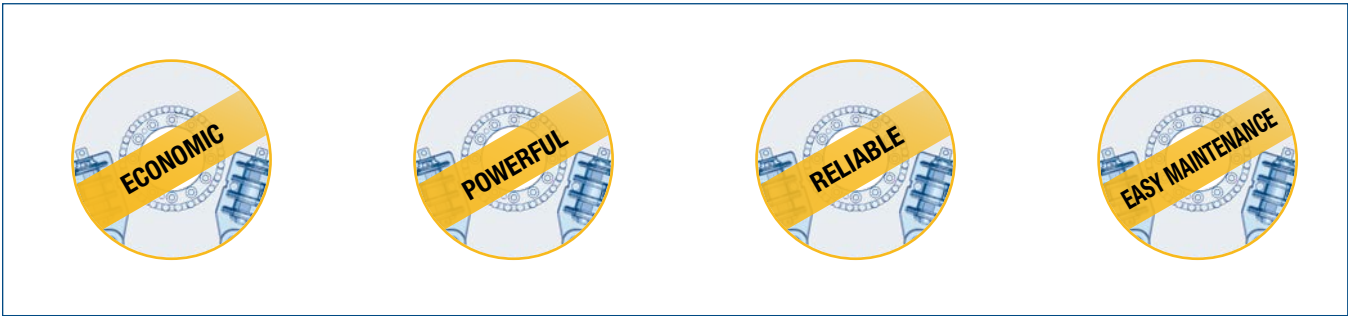
Discs		625	795	995
2CA2				
Nominal torque for 1 caliper adjustable from -30 to +20%	N.m	3 800	5 150	6 700
Maximum disc speed for nominal torque	r.p.m.	1 500	1 200	900
Maximum reaction on shaft	1 caliper	18 600		
	2 calipers	12 600		

Discs		625	795	995
1CA2				
Nominal torque for 1 caliper adjustable from -50 to 100%	N.m	6 610	8 800	11 370
Maximum disc speed for nominal torque	r.p.m.	310	250	200
Maximum reaction on shaft	1 caliper	25 700		
	2 calipers	16 300		

SIME Brakes Industrial Braking Systems

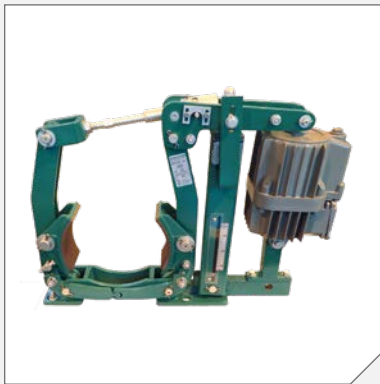
Service Brakes

APPLICATIONS	
• MINING • HYDRO POWER • OIL & GAS • HARBOUR & SHIPPING	• STEEL • POWER • CEMENT



DRUM BRAKES

MAIN CHARACTERISTICS	OPTIONS
• FAILSAFE BRAKES • SPRING APPLIED ELECTROHYDRAULIC THRUSTOR RELEASED • ADJUSTABLE BRAKING TORQUE	• OPENING PROVING SWITCH • FULL LINING WEAR INDICATORS • HAND RELEASE LEVER • HIGH TEMPERATURE, SPECIAL PROTECTION, DELAY. ...



SDB

- Ass. with drums $\varnothing$ 160 to 710
- Standard DIN 15435
- Voltage: 230/400VAC 50Hz
- Automatic lining wear compensation
- Protection C4M



SAB

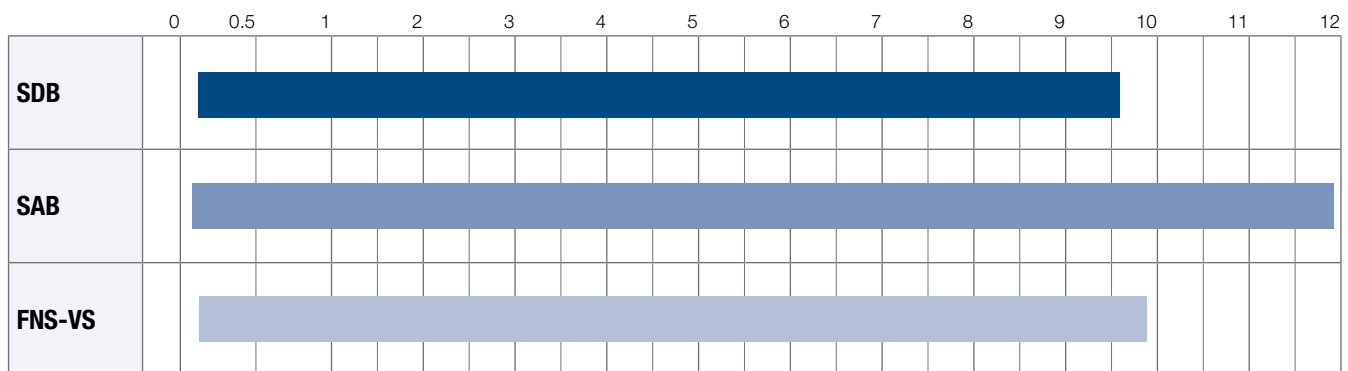
- Ass. drums $\varnothing$ 6" to 30" (152 to 762mm)
- Standard AISE N.11 - 63.120
- Voltage: 230/460VAC 60Hz
- Automatic lining wear compensation
- Protection C4M



FNS-VS

- Ass. with drums $\varnothing$ 160 to 710mm
- Standard DIN 15435
- Voltage: 230/400VAC 50Hz
- Protection C3M
- Option: certificat ATEX / thrustor

Braking torque (kN.m)



NOTES

DRUM BRAKE - SDB BRAKES

Revision number: T10110-01-E

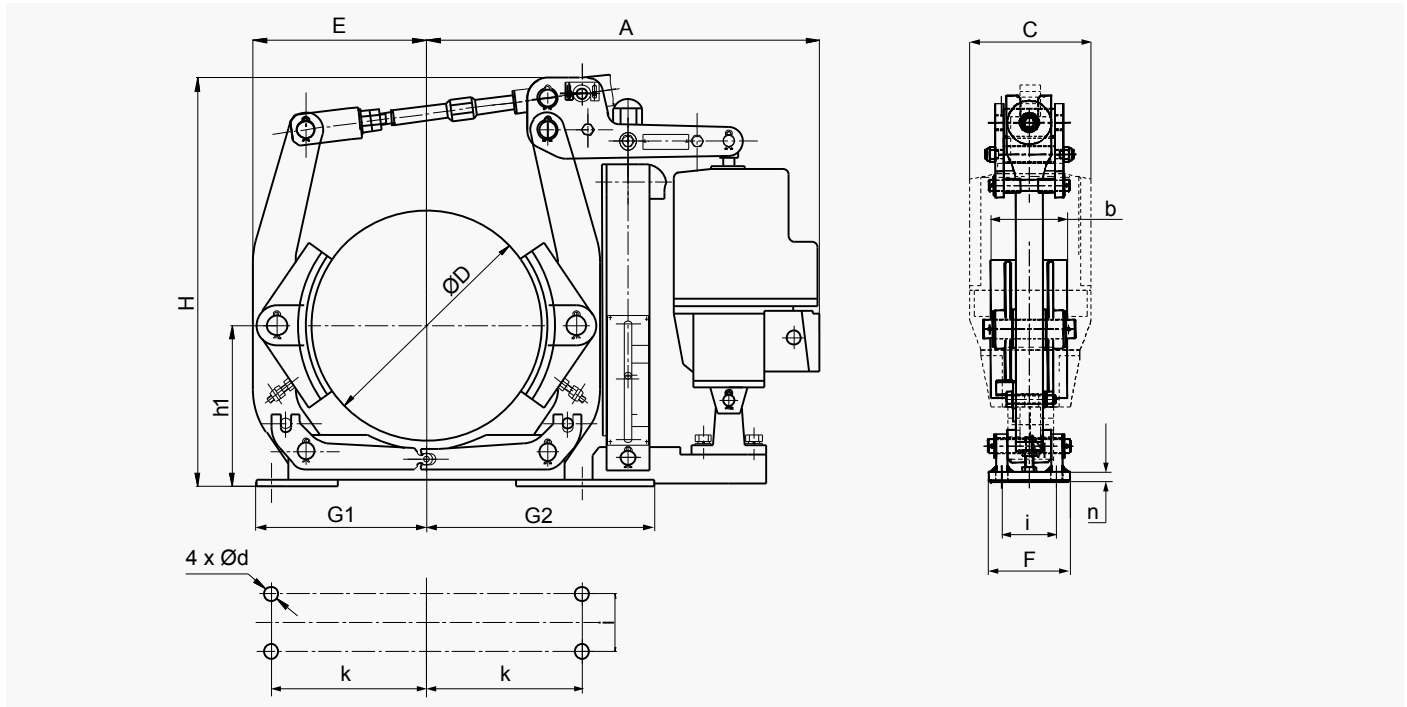
Revision date: 12.10.2018

- Standard DIN 15435
- Standard voltage 230/400 VAC 50Hz
- Automatic lining wear compensation
- Brake shoe auto-aligning device
- Self lubricated bushings at main hinge points

- Galvanized steel spindles and hinges
- Non asbestos organic linings
- Scale for torque adjustment

Operating conditions

- Ambient temperature : -20°C to 50°C
- Relative humidity no higher than 90%



BRAKE TYPE	THRUSTOR	TORQUE (N.m.)		WEIGHT (kg)	DIMENSIONS (mm)													
		min.	max.		A	b	C	D	d	E	F	G1	G2	H	h1	i	k	n
SDB 160	TS 230/5	80	160	28	428	65	160	160	14	140	85	145	195	418	132	55	130	8
SDB 200	TS 230/5	110	260	35	470	70	160	200	14	172	90	165	255	490	160	55	145	10
	TS 300/5	140	380	38														
SDB 250	TS 230/5	140	300	45	533	90	160	250	18	202	110	200	290	583	190	65	180	12
	TS 300/5	180	380	48			195											
	TS 500/6	300	600	53			195											
SDB 315	TS 230/5	180	340	70	670	110	160	315	18	253	115	245	330	585	230	80	220	14
	TS 300/5	250	500	70			195											
	TS 500/6	315	770	75			195											
	TS 800/6	630	1200	80			195											
SDB 400	TS 500/6	400	960	138	695	140	195	400	22	310	160	310	420	715	280	100	270	14
	TS 800/6	630	1500	140			240							775				
	TS 1210/6	1000	2400	155			240							803				
SDB 500	TS 800/6	800	1920	176	925	180	240	500	22	380	180	365	535	830	340	130	325	21
	TS 1210/6	1250	3000	204										830				
	TS 2010/6	2000	4800	204										830				
SDB 630	TS 1210/6	1800	3780	310	1150	225	240	630	27	465	220	450	600	1025	420	170	400	20
	TS 2010/6	2500	6000	310														
	TS 3010/6	4000	8500	315														
SDB 710	TS 2010/6	3150	6000	435	1180	225	240	710	27	520	240	500	630	1135	470	190	450	25
	TS 3010/6	5000	9600	441														

SIME Brakes Industrial Braking Systems

Service Brakes

DRUM BRAKE - SAB BRAKES

Revision number: T10110-02-D

Revision date: 26.02.2019

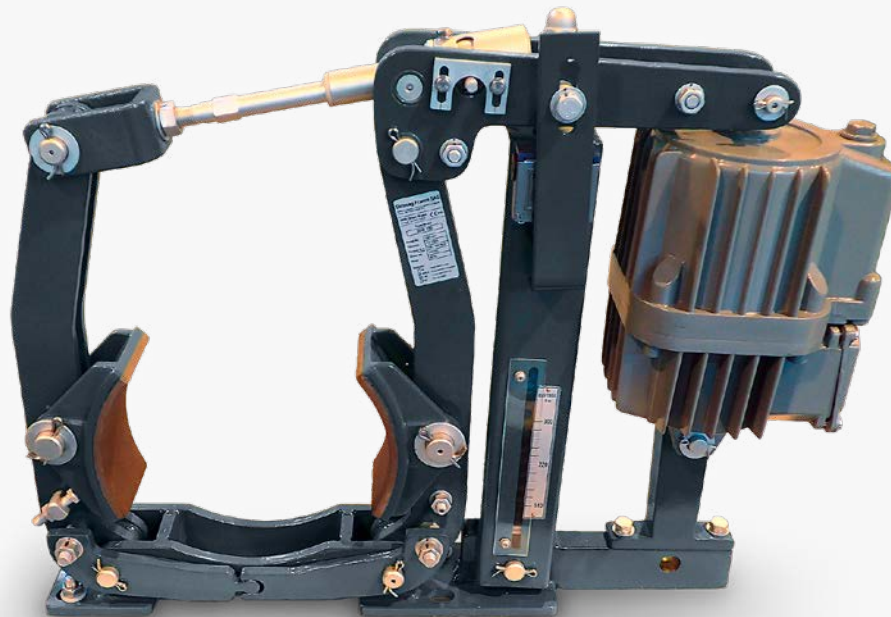
Standard AISE N. 11 - 63.120

- Spring application braking
- Thrustor release
- Standard voltage 230/460 VAC 60Hz
- Paint color RAL7021

- Automatic lining wear compensation
- Brake shoe auto-aligning device
- Scale for torque adjustment
- Brake lever synchronization
- Aluminium shoes with non asbestos organic linings
- Self lubricated bushings at main hinge points
- Galvanized steel spindles and hinges

Operating conditions

- Ambient temperature : -20°C to 50°C
- Relative humidity no higher than 90%
- IP rating : IP65



Options :

HRL	Manual release lever with or without stop
BRLS	Switch for opening monitoring
LWLS	Switch for lining wear monitoring
LWI	Full lining wear indicators
SS1 - SS2	Specific switch
AV - DV	Thrustor delay : Ascent Valve or Descent Valve
SW	Steel Works
SPA	Paint according to Customer Specification
SPR	Protection level C4
SV	Special Voltage

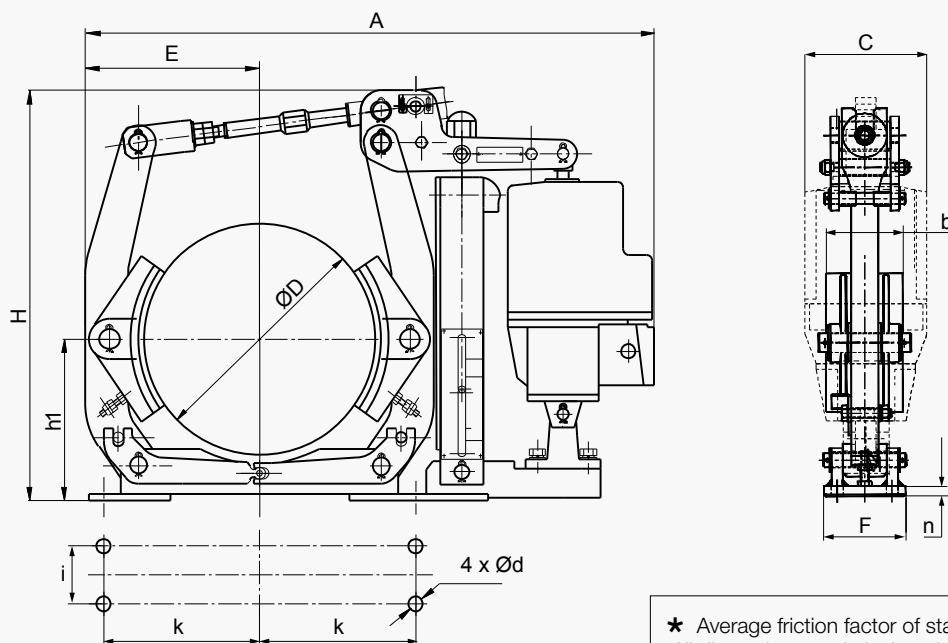
Thrustor Technical Data :

Thrustor type	Power (W)	Current at 400 V (A)	Weight (kg)
TS 230/5	200	0.5	14
TS 300/5	200	0.5	14
TS 500/6	210	0.5	23
TS 800/6	330	1.2	24
TS 1210/6	330	1.2	39
TS 2010/6	450	1.3	39
TS 3010/6	550	1.4	40

DRUM BRAKE - SAB BRAKES

Revision number: T10110-02-D

Revision date: 26.02.2019



According to standard **AISE N. 11 - 63.120**

★ Average friction factor of standard material combination $\mu = 0,4$.
All dimensions are in inches. In () mm

Brake Type	Thrustor TS	M _{BR MAX} (lb-ft) ★	A	b	C	D	d	E	F	H	h1	i	k	n	WEIGHT (lb)							
SAB – 6"	230/5	55-110	17	1.65	6.3	6 (152)	3/8 (9.5)	5.5	7.25	16.5	4.75 (120)	3 (76)	4 (102)	0.38	70							
SAB – 8"	230/5	85-190	26.00	3.00	6.3	8 (203)	0.69 (17)	6.77	7.25	20	7.0 (178)	5.76 (146)	3.25 (83)	0.31	77							
	300/5	140-275													84							
SAB – 10"	230/5	110-220	30.30	3.54	6.3	10 (254)	0.69 (17)	7.95	8.00	23.2	8.38 (213)	6.26 (160)	4.0 (102)	0.60	100							
	300/5	140-280	31.00		7.7	12 (254)	0.69 (17)								7.95	8.00	23.2	8.38 (213)	6.26 (160)	4.0 (102)	0.60	106
	500/6	220-440																				116
SAB – 12"	300/5	170-345	37.00	5.51	6.3	12 (305)	0.81 (21)	10.40	11.00	23.4	9.88 (251)	9.0 (228)	5.75 (146)	0.60	155							
	500/6	270-540			7.7	12 (305)	0.81 (21)								10.40	11.00	23.4	9.88 (251)	9.0 (228)	5.75 (146)	0.60	164
	800/6	430-855																				176
SAB – 13"	300/5	180-375	37.00	5.51	6.3	13 (330)	0.81 (21)	10.40	11.00	23.4	9.88 (251)	9.0 (228)	5.75 (146)	0.60	160							
	500/6	295-590			7.7	13 (330)	0.81 (21)								10.40	11.00	23.4	9.88 (251)	9.0 (228)	5.75 (146)	0.60	164
	800/6	460-930																				176
SAB – 15"	500/6	330-665	40.20	6.49	6.3	15 (381)	1.06 (27)	12.20	13.25	28.4	12.13 (308)	10.76 (273)	7.5 (191)	0.60	300							
	800/6	515-1030			9.45	15 (381)	1.06 (27)								12.20	13.25	28.4	12.13 (308)	10.76 (273)	7.5 (191)	0.60	308
	1210/6	840-1675																				335
SAB – 16"	500/6	355-710	40.20	6.49	7.7	16 (406)	1.06 (27)	12.20	13.25	28.4	12.13 (308)	10.76 (273)	7.5 (191)	0.60	304							
	800/6	550-1110			9.45	16 (406)	1.06 (27)								12.20	13.25	28.4	12.13 (308)	10.76 (273)	7.5 (191)	0.60	308
	1210/6	900-1800																				335
SAB – 19"	800/6	665-1330	49.00	8.50	7.7	19 (483)	1.06 (27)	15.00	16.20	31.9 32.7	13.25 (337)	13 (330)	9.25 (235)	0.79	445							
	1210/6	1055-2110			9.45	19 (483)	1.06 (27)								15.00	16.20	31.9 32.7	13.25 (337)	13 (330)	9.25 (235)	0.79	455
	2010/6	1700-3390																				455
SAB – 23"	1210/6	1220-2440	63.40	10.98	9.45	23 (584)	1.31 (33)	17.50	18.75	41.0	15.88 (403)	16 (406)	11.75 (298)	0.79	695							
	2010/6	1900-3870													695							
	3010/6	2850-5760													705							
	3010/12	3450-6900																				
SAB – 30"	1210/6	1400-2800	68.00	14.01	9.45	30 (762)	1.56 (40)	21.50	23.00	44.5	20.75 (527)	19 (482)	15.0 (381)	1.18	950							
	2010/6	2360-4720													950							
	3010/6	3650-7370													980							
	3010/12	4400-8800																				

SIME Brakes Industrial Braking Systems

Service Brakes

DRUM BRAKE - FNS-VS 160 TO 400 BRAKES

Revision number: T03109-01-E

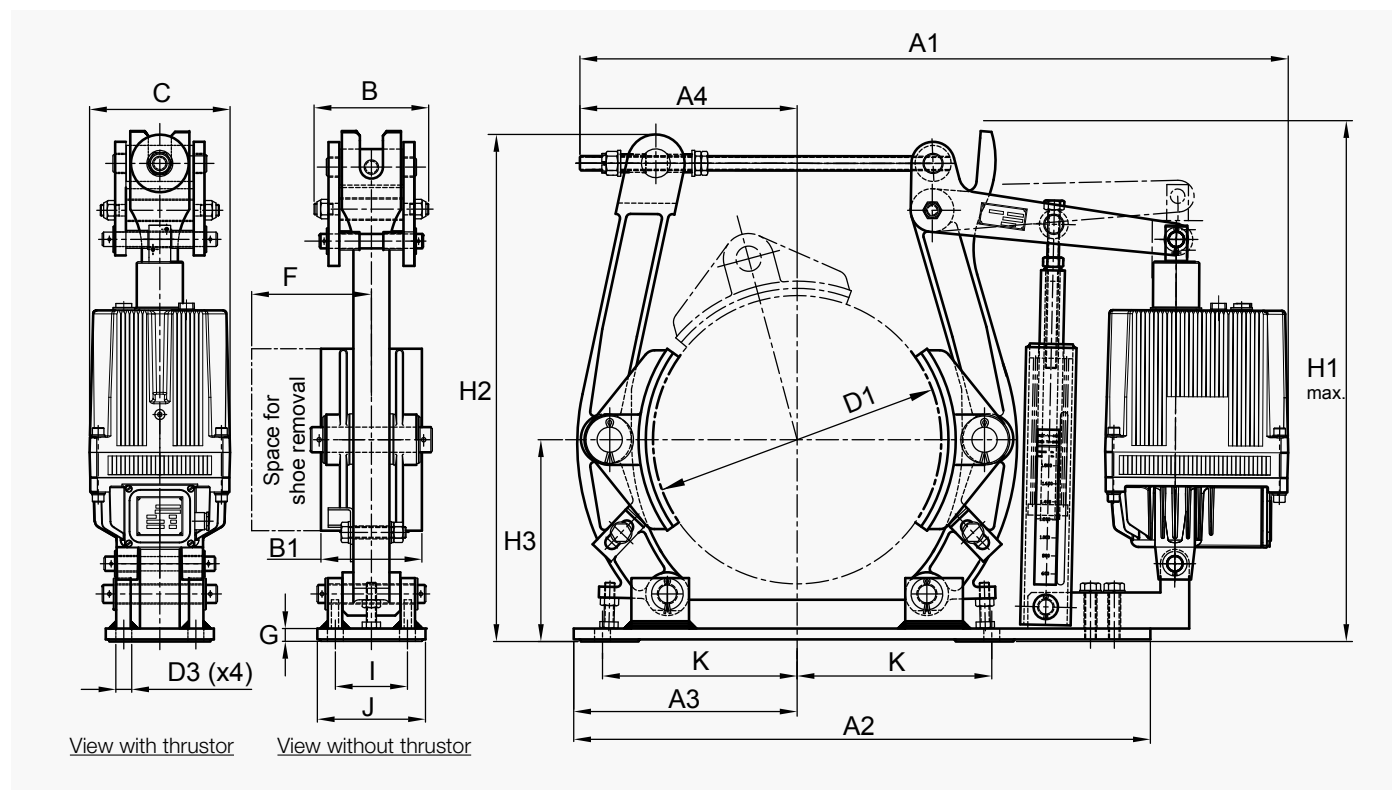
Revision date: 27.07.2016

Standard DIN 15435

Spring application
Thrustor release
Protection level : C3M
Voltage : 230 / 400V 50 Hz
Other voltages, consult us.

AT High temperature
BT Low temperature
ATEX Certificat ATEX / Thrustor
BI Stainless steel bolts
CSA Opening proving switch
DD Lining wear indicators
DM Hand release lever

LM Locking lever to hold the brake open
PE Special paint : color / > C3M
PL Padlock for the locking lever
PR Reduced torque
RA Automatic lining wear compensation
VD Descent valve
Brake not fitted with the thrustor



BRAKE TYPE	THRUSTOR VS	TORQUE N.m.		WEIGHT kg	DRUM WIDTH	SHOE WIDTH	DIMENSIONS																
		min.	max.				B1	D1	D3	H3	I	K	A1	A2	A3	A4	B	C	F	G	H1	H2	J
160	I-256	118	235	28	60	65	160	11	130	55	120	614	420	140	177	116	160	110	20	424	364	90	
200	I-256	125	250	29	75	70	200	14	160	55	145	664 674	510	185	178	116	160	125	19	405 497	355	90	
	I-356	188	375	34																			
250	I-256	128	255	35	95	90	250	18	190	65	180	710 760	580	220	210	116	160	130	13	425 499	413	100	
	I-356	235	470	40																			
315	I-356	275	550	59	118	110	315	18	230	80	220	769	690	260	223	159	160	180	18	595	588	120	
	II-506	438	875	62													195			620			588
	II-806	700	1400	63													195			635			588
400	II-506	450	900	85	150	140	400	22	280	100	270	980	800	310	307	159	195	210	18	710	704	150	
	II-806	760	1520	87								159				195	710						
	III-1306	1350	2700	107								164				240	775			704			

For higher torque, please consult us. Some types may present little differences in the form with the drawing

DRUM BRAKE - FNS-VS 500 TO 710 BRAKES

Revision number: T03109-01-E

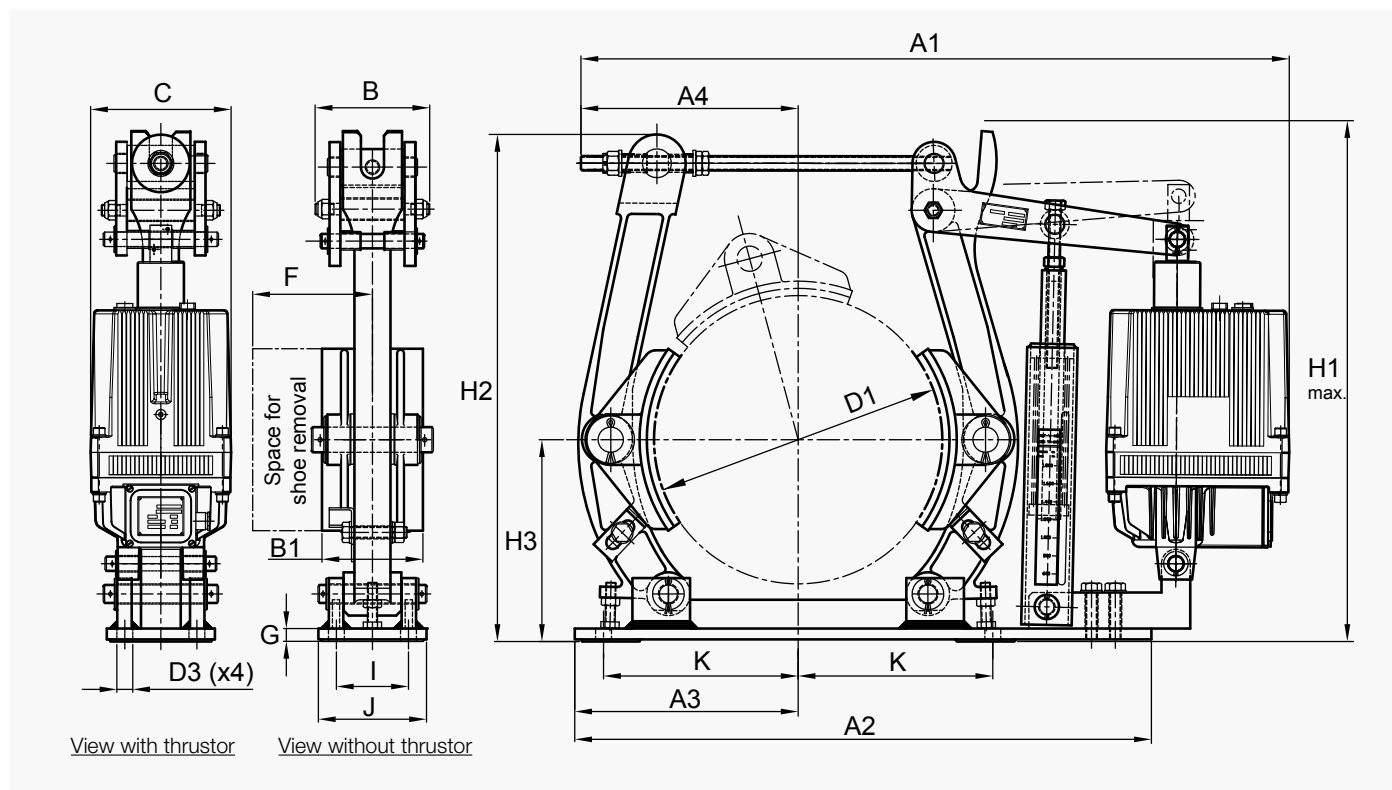
Revision date: 27.07.2016

Standard DIN 15435

Spring application
Thrustor release
Protection level : C3M
Voltage : 230 / 400V 50 Hz
Other voltages, consult us.

AT High temperature
BT Low temperature
ATEX Certificat ATEX / Thrustor
BI Stainless steel bolts
CSA Opening proving switch
DD Lining wear indicators
DM Hand release lever

LM Locking lever to hold the brake open
PE Special paint : color / > C3M
PL Padlock for the locking lever
PR Reduced torque
RA Automatic lining wear compensation
VD Descent valve
Brake not fitted with the thrustor



BRAKE TYPE	THRUSTOR VS	TORQUE N.m.		WEIGHT kg	DRUM WIDTH	SHOE WIDTH	DIMENSIONS															
		min.	max.				B1	D1	D3	H3	I	K	A1	A2	A3	A4	B	C	F	G	H1	H2
500	II-806	800	1600	125	190	180	500	22	340	130	325	1039	940	365	312	195	250	23	820	803	180	
	III-1306	1325	2650	145								1060			325	240						
	III-2006	2125	4250	147								1060			325	240						
630	III-1306	1450	2900	240	236	225	630	27	420	170	400	1240	1150	460	435	230	240	305	23	955	940	220
	III-2006	2325	4650	242								1240			435							
	III-3006	3725	7450	244								1240			435							
	III-3012	3875	7750	258								1325			427							
710	III-2006	2875	5750	323	265	255	710	27	470	190	450	1405	1280	510	470	250	240	340	29	1085	1067	250
	III-3006	4300	8600	324								1405			470	250						
	III-3012	4950	9900	338								1570			470	250						

For higher torque, please consult us. Some types may present little differences in the form with the drawing

SIME Brakes Industrial Braking Systems

Service Brakes

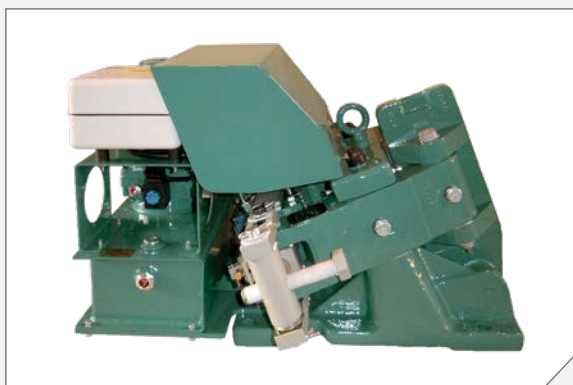
APPLICATIONS

- | | |
|---|--|
| <ul style="list-style-type: none">• PORT CRANES• ALL HOISTING APPLICATIONS• TRAVELLING CONTROL• MASS TRANSPORT | <ul style="list-style-type: none">• STEEL CRANES :
CHARGING AND LADDLE CRANES
SLAG AND SCRAP CRANES• BELT CONVEYORS - MINES |
|---|--|



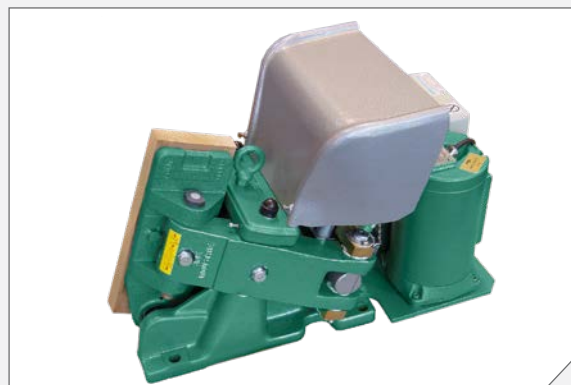
HYDRAULIC SERVICE BRAKES

MAIN CHARACTERISTICS	OPTIONS
• FAILSAFE BRAKES • BRAKING BY HYDROSPRING® SYSTEM • INTEGRAL ELECTRICAL CONNECTIONS • INTEGRAL HYDRAULICAL CONNECTIONS • AUTOMATIC WEAR COMPENSATION	• ADJUSTABLE DELAY OF BRAKE CLOSING • MARINE PROTECTION



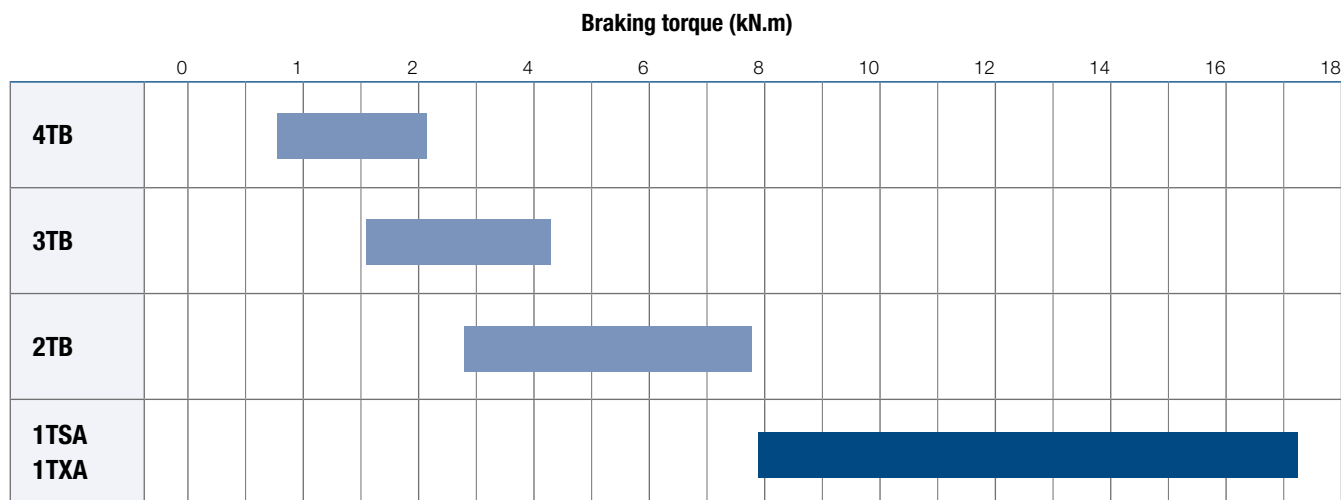
2TB - 3TB - 4TB

- Association with discs Ø445 to 995
- Options:
 - Torque setting
 - Controlled braking torque /stepped braking torque
 - Protective cover



1TSA - 1TXA

- Association with discs Ø625 to 995
- Torque setting



Service Brakes

DISC BRAKE - 1TSA AND 1TXA CALIPERS

Revision number: T03681-01-A

Revision date: 15.02.2007

Fail safe

Braking by HYDROSPRING® system

Electrico-hydraulically released

Integral hydraulic power unit

Self contained electrical system

Lining wear compensation

Opening proving switch

Torque setting

Operating conditions :

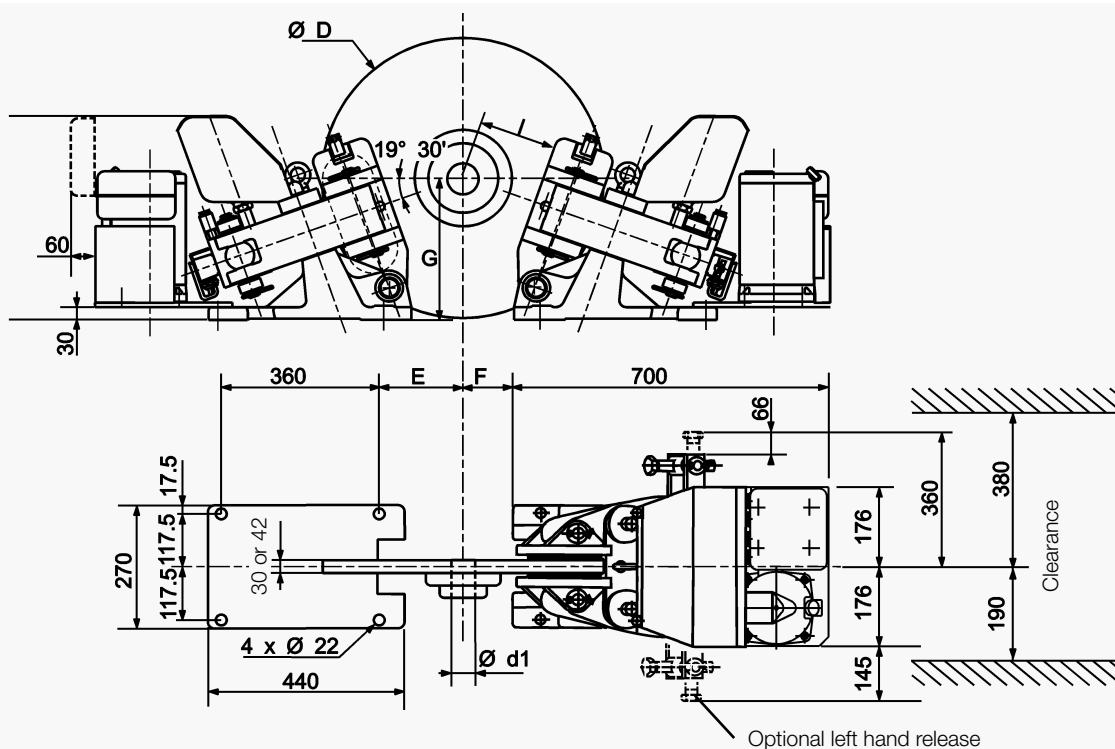
- Ambient temperature : -10° C to +50° C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65µ
- Other conditions, consult us.

• 1TXA:

Mounting of 2 calipers per disc, consult us.

Options:

- Linings with wear detection
- Adjustable delay brake closing system from 0.25 to 20 sec.
- Switch for PLC
- Marine protection



Weight: 160 kg

Response time at nominal torque ≤ 0.25 sec.

Caliper inclination from horizontal ± 15° maxi.

Other inclination, consult us.

Disc	Ø	mm	625		705		795		995
		Thickness	30	42	30	30	42	42	
Nominal torque for 1 caliper	1TSA	N.m	7920	9180	10620	14040			
	1TXA	N.m	9780	11300	13100	17300			
Disc speed for the nominal torque *		r.p.m.	≤ 1500	≤ 1300	≤ 1200	≤ 900			
D		mm	625	705	795	995			
E		mm	185	225	265	365			
F		mm	125	165	205	305			
G		mm	315	330	345	380			
I		mm	180	225	265	370			
1TSA									
Ø d ₁ min. for: 1 caliper (1 key) ○		mm	97	97	100	111	111	130	
2 calipers (2 keys) ●		mm	--	120	--	--	135	170	
1TXA									
Ø d ₁ min. for: 1 caliper (1 key)		mm	104	104	111	125	125	145	
1 caliper (shrink fit)		mm	104	104	107	110	110	118	
Maximum reaction on shaft: 1TSA ■		N	32 400						
1TXA		N	40 000						

Electric data :

- 3 phases AC supply
- Voltages :
230V / 400V ±10% 50Hz
415V ±5% 50Hz
460V ±5% 60Hz
- Maximum consumption: 775 W
- Electrical casing: IP 55
DC supply, other voltages and conditions:
consult us.
- Opening proving switch:
240V, 3A, 10VA AC
250V, 0.3A, 10W DC

* For higher speed, consult us.

○ or shrink fit

■ Mounting with 2 calipers: multiply by 0.6

DISC BRAKE - 2TB, 3TB AND 4TB CALIPERS

Revision number: T03664-01-C

Revision date: 24.08.2012

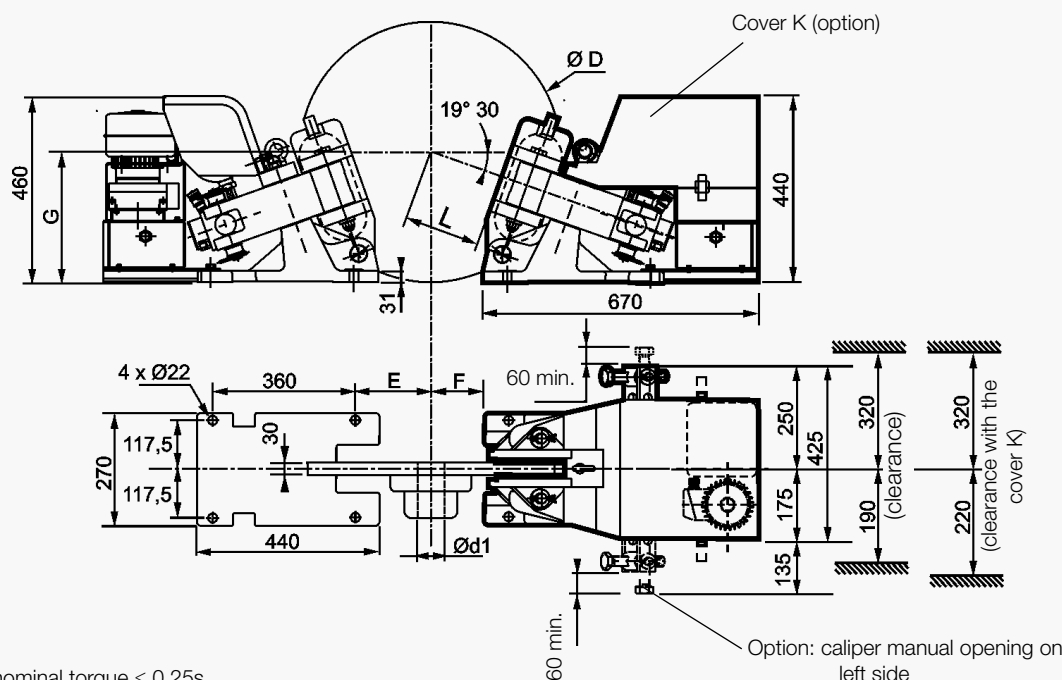
Fail safe
Braking by HYDROSPRING® system
Electrico-hydraulically released
Integral hydraulic power unit
Self contained electrical system
Lining wear compensation
Opening proving switch

Operating conditions:

- Ambient temperature : -10°C to +50°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65µ
- Other conditions, consult us.

Options:

- Torque setting
- Detection of full lining wear
- Adjustable delay brake closing system from 0.25 to 20secs
- Controlled braking torque **
- Marine protection
- Protective cover K
- Stepped braking torque **
- Redundant circuit with 2 solenoid valves



Weight: 160 kg
Response time at nominal torque ≤ 0.25s
Permissible inclination of the caliper ± 45° maximum
Other mountings: consult us.

Discs			445	495	550	625	705	795	995
Nominal torque for 1 caliper:	2TB	N.m	2800	3250	3700	4400	5100	5900	7800
	3TB	N.m	1550	1800	2050	2450	2850	3250	4300
	4TB	N.m	775	900	1030	1230	1430	1630	2150
Maximum disc speed for nominal torque *		rpm	2100	1900	1800	1500	1300	1200	900
D		mm	445	495	550	625	705	795	995
E		mm	100	120	150	185	225	265	365
F		mm	40	60	90	125	165	205	305
G		mm	285	295	305	315	330	345	380
L		mm	90	130	145	180	225	265	370
d1 min. keyed for 1 caliper (steel St 70):	2TB	mm	73	75	77	80	82	87	92
	3TB	mm	60	62	63	66	67	71	76
	4TB	mm	48	49	50	52	53	57	58
d1 min. keyed for 2 calipers (steel St 70):	2TB	mm	79	83	87	92	96	101	110
	3TB	mm	65	68	71	75	79	82	91
	4TB	mm	53	55	57	60	63	66	69
Maximum reaction on shaft ■:	2TB	N	18000						
	3TB	N	10000						
	4TB	N	5000						

Electric data:

- Power unit motor:
3 phases:
230/400 V ±10%, 50 Hz,
0.37 kW, 4 poles
for mains:
230/400 V 50 Hz
or 415 V 50 Hz
or 460 V 60 Hz
- Options motor:
400/690 V ±10% 50Hz
255/440 V ±10% 50Hz
290/500 V ±10% 50Hz
280/480 V ±10% 60Hz
330/575 V ±10% 60Hz
- Other voltages, consult us.
- Electrical casing IP55
- Opening switch:
240 V, 3 A, 10 VA AC
250 V, 0.3 A, 10 W DC

■ Mounting with 2 calipers, multiply by 0.6

* For higher speeds, consult us.

** Increased dimensions, consult us.

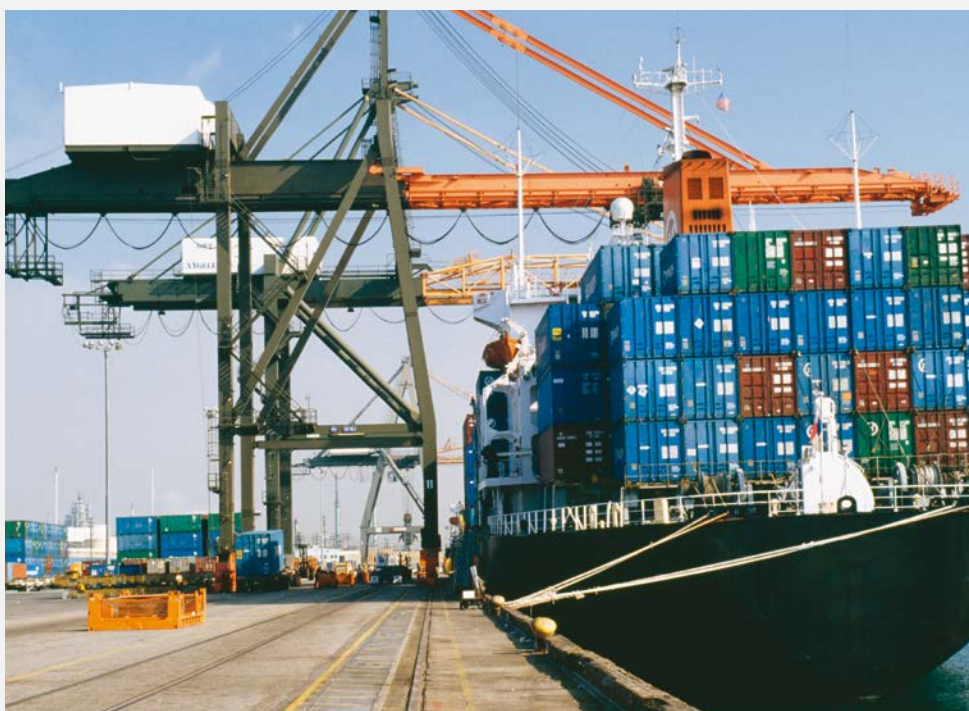
SIME Brakes Industrial Braking Systems

Service Brakes

APPLICATIONS

- PORT CRANES
- HOIST, GANTRY AND TROLLEY MOTIONS
- BELT CONVEYORS
- MINES

- IRON AND STEEL INDUSTRY
- LADLE CRANES



THRUSTOR SERVICE BRAKES

MAIN CHARACTERISTICS	OPTIONS
- FAILSAFE BRAKES - SPRING APPLIED - ELECTROHYDRAULIC THRUSTOR RELEASED - ADJUSTABLE BRAKING TORQUE	- LINING FULL WEAR CONTROL SWITCH - HIGH TEMPERATURE STEEL WORKS (SIDHT) - HIGH TEMPERATURE THRUSTOR (HT)



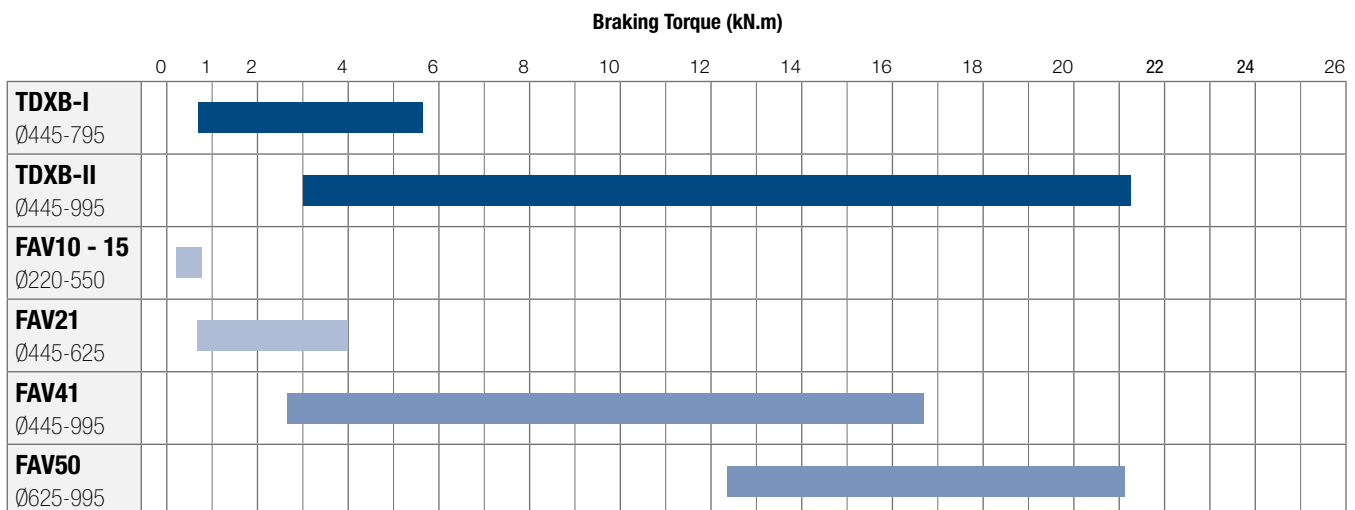
TDXB.I - TDXB.II

- Lining wear automatic compensation
- Self-centering • Manual release lever
- Opening proximity switch
- Options:
Closing and thrustor stroke proximity switches



FAV10 - FAV15 - FAV21 - FAV40 - FAV50

- Lining wear automatic compensation
- Auto centering
- Thrustor stroke and opening proving switches
- Options: Monitoring module



Service Brakes

DISC BRAKE - TDXB-I BRAKE

Revision number: T10121-01-E

Revision date: 15.11.2018

Fail safe

Spring application / Thrustor release

Self-centering

Automatic lining wear compensation

Opening sensor

Low maintenance Teflon bushes

Lining full wear indicators

Manual release lever

Lining pads with DIN shape / Thrustors **TS**

Operating conditions:

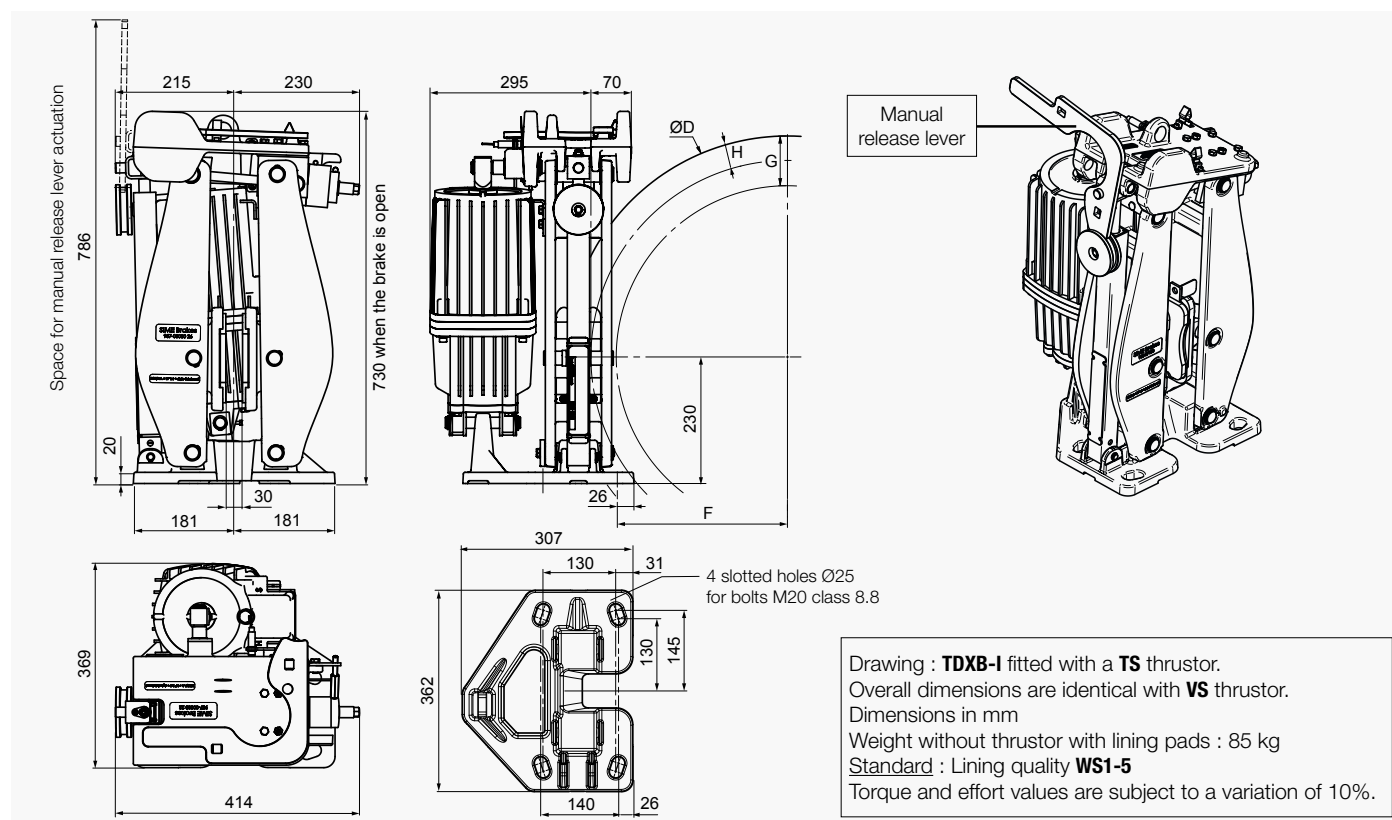
- Ambient temperature: -25°C to +50°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65μ
- Other conditions: consult us.

Use:

- Service brake

Options :

- Closing sensor
- Thrustor limit stroke sensor
- Thrustor **TS** with option :
SW: Oil Shell HF-E-32 / High Temp. seals
SV: Special Voltage
- Custom color
- Thrustor **VS**
- Inductive sensors DC-AC 24-240V 50/60 Hz



DISCS (ØD)			315	355	395	445	495	550	625	705	795
NOMINAL TORQUE. 1 caliper *	TDXB-I 1	N.m	901	996	1104	1267	1437	1619	1877	2148	2453
	TDXB-I 2	N.m	1490	1646	1826	2094	2374	2677	3102	3550	4054
	TDXB-I 3	N.m	2075	2293	2543	2917	3307	3728	4321	4945	5647
MAXIMUM DISC SPEED for nominal torque **		rpm	3000	2700	2400	2100	1900	1800	1500	1350	1200
Maximum linear speed		m/s	50								
F		mm	57	70	80	100	125	155	190	230	275
G		mm	56	59	70						
H		mm	28	30	35						
MAXIMUM REACTION ON SHAFT	TDXB-I 1	N	6776								
	TDXB-I 2	N	11200								
	TDXB-I 3	N	16000								

* Nominal torque is adjustable from 100% to 70%

** For higher speeds, consult Stromag France

DISC BRAKE - TDXB-II BRAKE

Revision number: T10122-01-E

Revision date: 08.02.2019

Fail safe

Spring application / Thrustor release

Self-centering

Automatic lining wear compensation

Opening sensor

Low maintenance Teflon bushes

Lining full wear indicators

Manual release lever

Thrustors **TS**

Operating conditions:

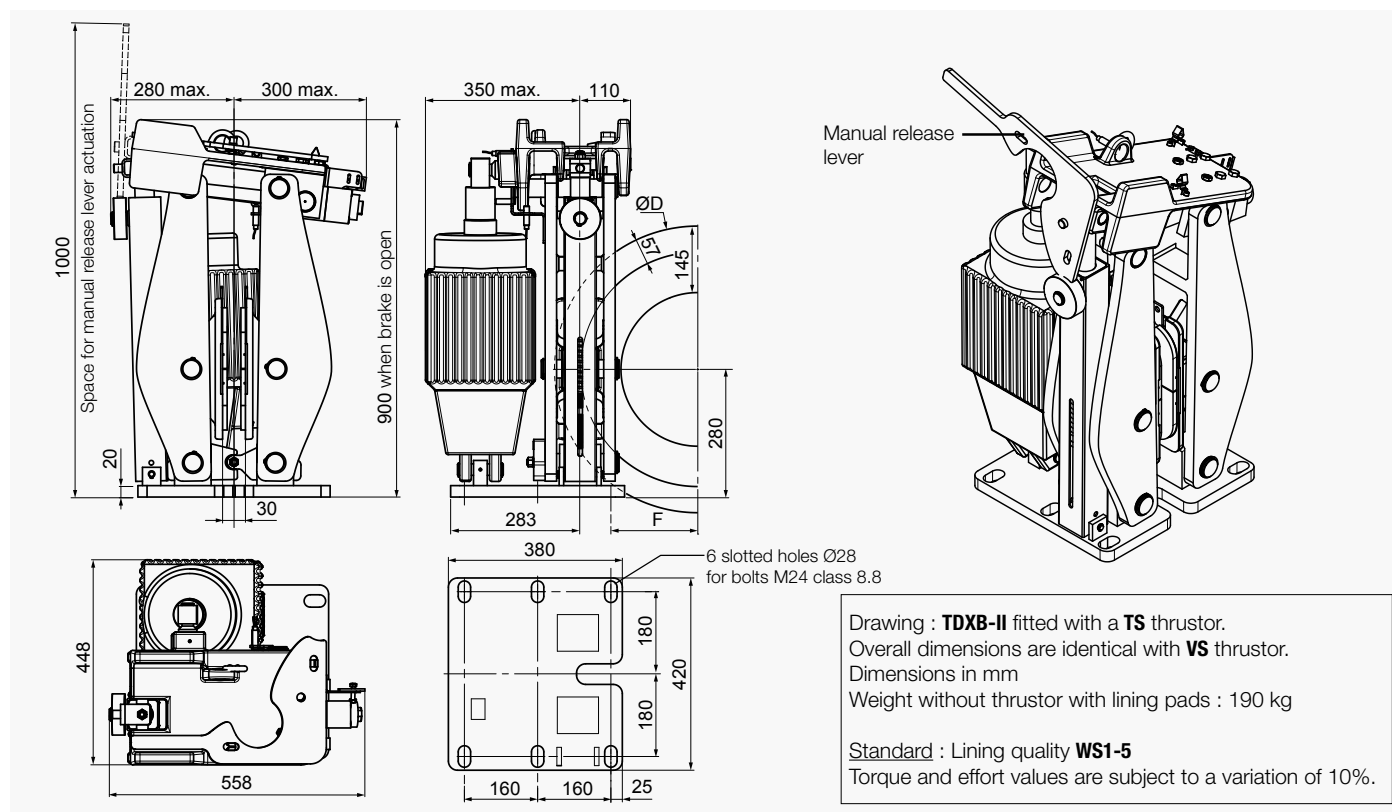
- Ambient temperature: -25°C to +50°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65µ
- Other conditions: consult us.

Use:

- Service brake

Options :

- Closing sensor
- Thrustor limit stroke sensor
- Thrustor **TS** with option :
SW: Oil Shell HF-E-32 / High Temp. seals
SV: Special Voltage
- Custom color
- Thrustor **VS**
- Inductive sensors DC-AC 24-240V 50/60 Hz



DISCS (ØD)			445	495	550	625	705	795	995
NOMINAL TORQUE. 1 caliper *	TDXB-II 1	N.m	4288	4928	5632	6592	7616	8768	11328
	TDXB-II 2	N.m	6030	6930	7920	9270	10710	12330	15930
	TDXB-II 3	N.m	8040	9240	10560	12360	14280	16440	21240
MAXIMUM DISC SPEED for nominal torque **			rpm	2100	1930	1740	1530	1354	1200
Maximum linear speed			m/s	50					
F		mm	93	118	145	183	255	268	368
		mm	D/2-129.5						
MAXIMUM REACTION ON SHAFT	TDXB-II 1	N	25600						
	TDXB-II 2	N	36000						
	TDXB-II 3	N	48000						

* Nominal torque is adjustable from 100% to 70%

** For higher speeds, consult Stromag France

Service Brakes

DISC BRAKE - FAV10-FAV15 BRAKES

Revision number: T10022-01-I

Revision date: 23.05.2013

Fail safe
Spring application / Thrustor release
Manual centering
Lining wear compensation
Lining with wear indicator wires
Thrustor stroke control switch
Opening proving switch
Stainless steel pins
Manual release lever
Protection class C5 standard ISO12944-2

Operating conditions:

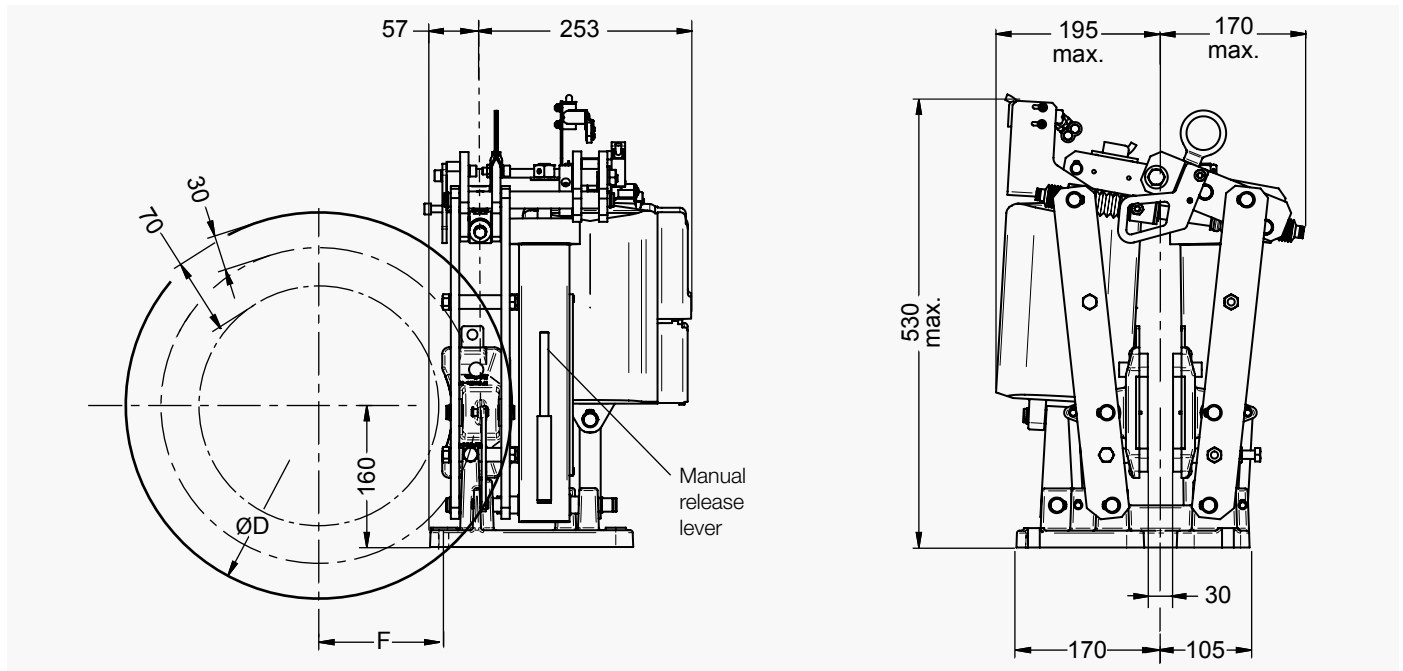
- Ambient temperature: -20°C to +50°C
- Relative humidity $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- Service brake

Options :

- SIDHT : Steel works High Temperature
- HT : High Temperature Thrustor
- Thrustor :
VS-I-256 or Ed23/5 - 230/400V (FAV10)
VS-I-356 or Ed30/5 - 230/400V (FAV15)



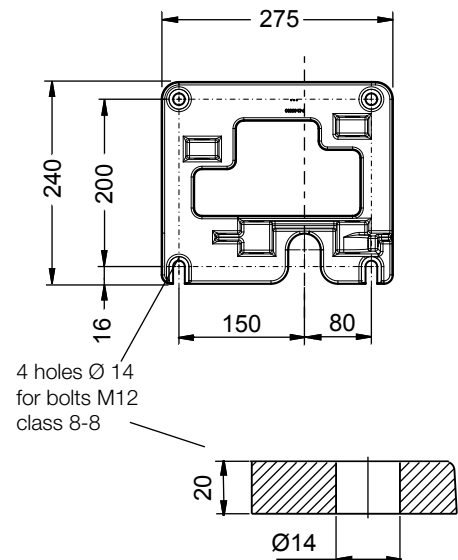
Weight without thrustor: 27 kg

Weight with thrustor : FAV10 : 40 kg. FAV15 : 44 kg

Torque and effort values are subject to a variation of $\pm 10\%$

FAV10 and FAV15 calipers are associated with linings type **WS1-5**.

Discs (ØD)			220	260	315	355	395	445	495	550	
Nominal torque. 1 caliper *	FAV10	N.m.	221	275	349	403	457	525	592	661	
	FAV15	N.m.	265	330	410	485	550	630	710	795	
Maximum disc speed for nominal torque **			rpm	4300	3600	3000	2700	2400	2100	1900	1800
F			mm	47	66	93	113	135	160	185	213
Maximum reaction on shaft	FAV10	N	2700								
	FAV15	N	3200								



* Braking torque is adjustable from 100% to 70% of nominal torque, friction factor $\mu = 0.37$

** For higher speeds, consult Stromag France

Service Brakes

DISC BRAKE - FAV41-VS BRAKE

Revision number: T03524-02-D

Revision date: 08.11.2017

Fail safe

Spring application / Thrustor release

Auto centering

Lining wear compensation

Thrustor stroke control switch

Opening proving switch

Stainless steel pins

Manual release lever for FAV411/412-VS

Manual release system for FAV413-VS

Operating conditions:

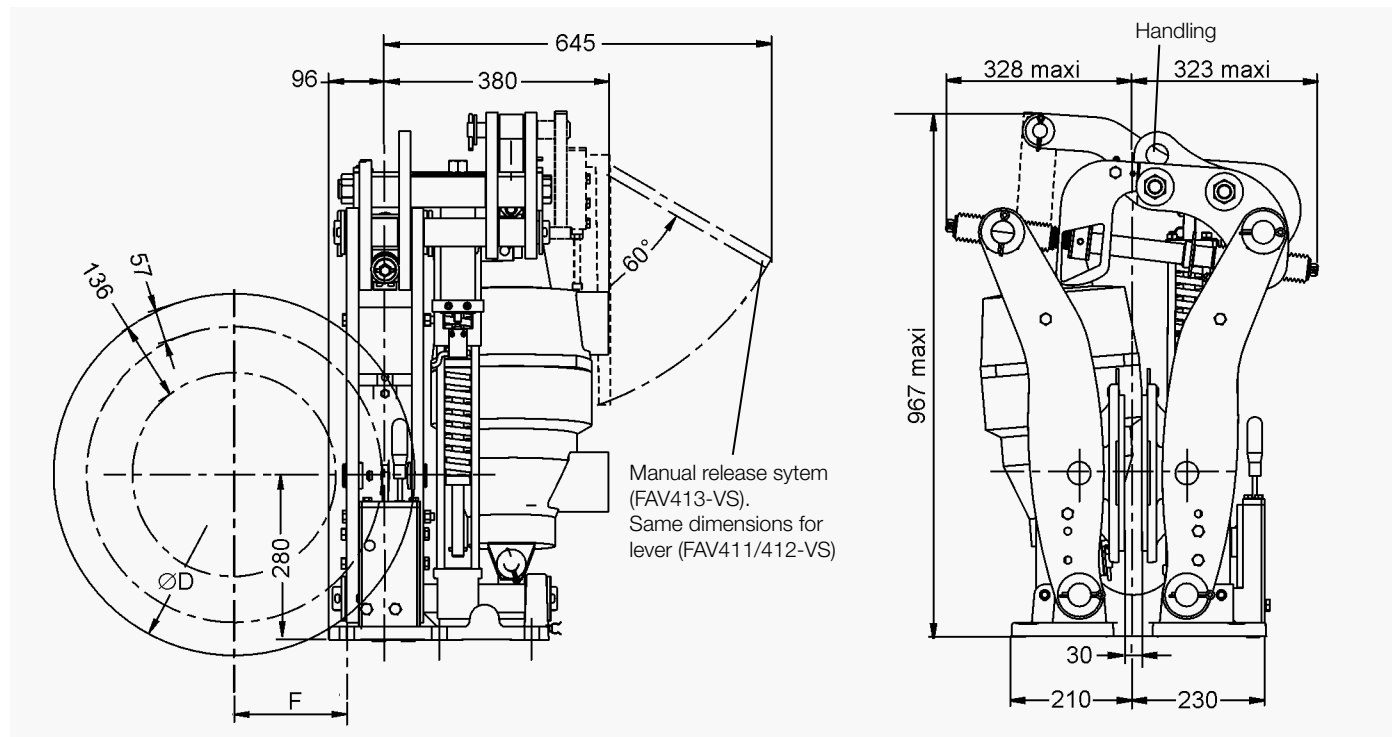
- Ambient temperature: -20°C to +50°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65μ
- Other conditions: consult us

Use:

- Service brake

Options :

- Lining full wear control switch
- MSF : Monitoring modul for FAV
- SIDHT : High Temperature Steel works
- HT : High Temperature Thrustor
- Thrustors : Ed301/10 - Ed201/10 - Ed121/10



Weight without thrustor : 180 kg / Weight with thrustor : 222 kg

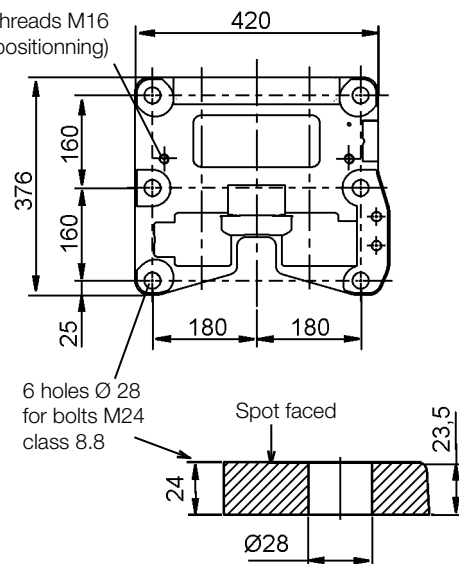
Torque and effort values are subject to a variation of ±10%

The disc run-out must not exceed 0.08 % of the maximum radius and the disc axial displacement must be smaller than 0.5 mm.

Lining quality **WS1-5** in standard.

Discs (ØD)		445	495	550	625	705	795	995
Nominal torque. FAV413 VS-III-3010	-	-	-	-	9700	11200	12950	16700
1 caliper * FAV412 VS-III-2010	-	4960	5650	6600	7650	8800	-	-
(N.m) FAV411 VS-III-1310	2650	3050	3500	4100	4750	5450	-	-
Maximum disc speed for nominal torque (rpm) **	2100	1900	1800	1500	1300	1200	900	
F (mm) (F=D/2-130)	93	118	145	183	223	268	368	
Maximum reaction on shaft (N)				38000	26000	16000		

2 threads M16
(for on-site positioning)



* Nominal torque is adjustable from 100% to 70%

** For higher speeds, consult Stromag France

DISC BRAKE - FAV50 / FAV50-VS BRAKES

Revision number: T03525-01-D / T03525-02-E

Revision date: 08.11.2017 / 08.11.2017

Fail safe
Spring application / Thrustor release
Auto centering
Lining wear compensation
Thrustor stroke control switch
Opening proving switch
Stainless steel pins
Manual release system

Operating conditions:

- Ambient temperature: -20°C to +50°C
- Relative humidity $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

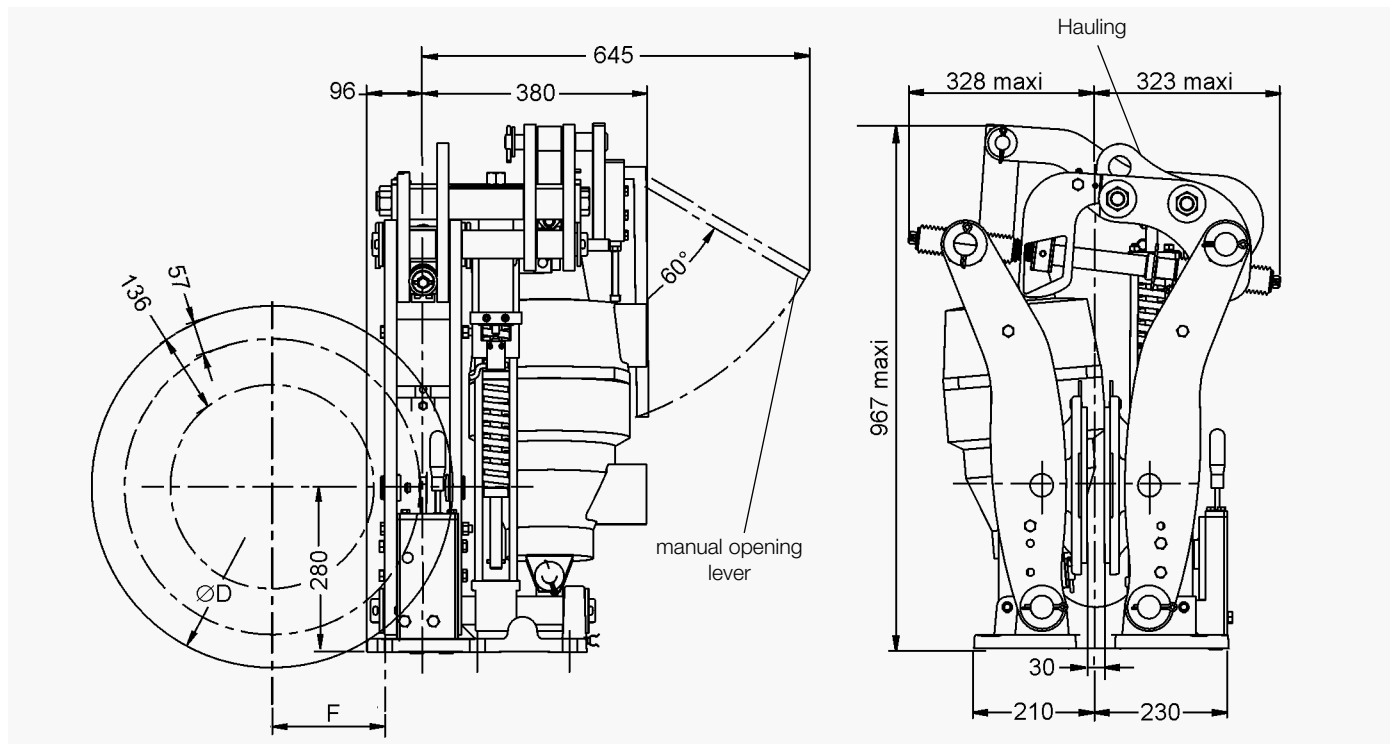
- Service brake

Options :

- Lining full wear control switch
- MSF : Monitoring modul for FAV
- SIDHT : High Temperature Steel works
- HT : High Temperature Thrustor

FAV50 : Thrustor **Ed-301/100**

FAV50-VS : Thrustor **VS-III-3010**



Weight without thrustor: 180 kg

Weight with thrustor of **FAV503** : 220 kg. **FAV503-VS** : 224 kg.

Torque and effort values are subject to a variation of $\pm 10\%$

Lining quality **WS1-5** in standard.

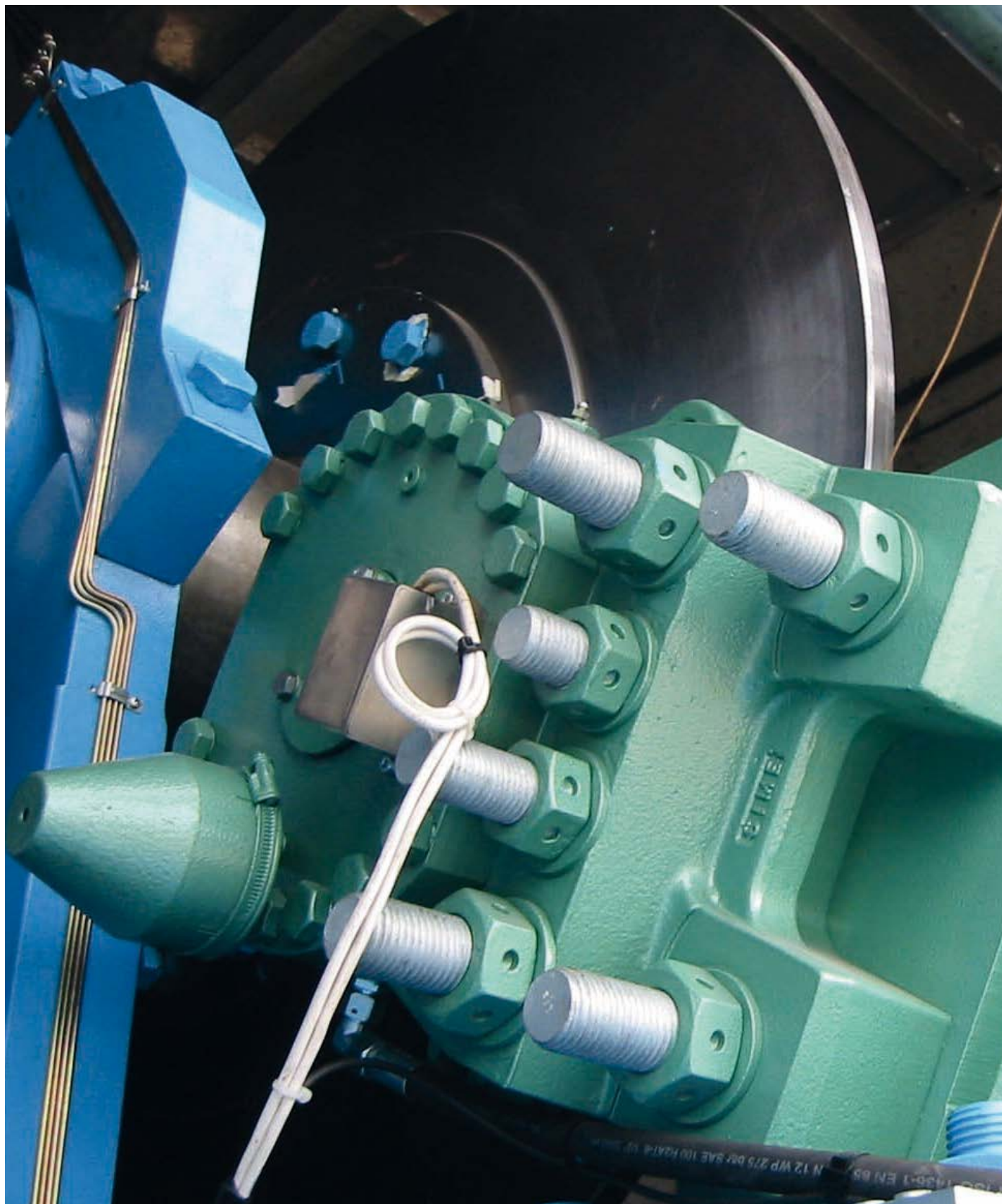
Discs (ØD)	625	705	795	995
Nominal torque. 1 caliper * FAV503 / FAV503-VS (N.m)	12360	14270	16500	21270
Maximum disc speed for nominal torque (rpm) **	1500	1300	1200	900
F (mm) ($F=D/2-130$)	183	223	268	368
Maximum reaction on shaft (N) FAV503 / FAV503-VS	48 400			

* Nominal torque is adjustable from 100% to 70%

** For higher speeds, consult Stromag France

Emergency Brakes

EMERGENCY BRAKES



HYDRAULIC BRAKES		Braking torque (kNm)													
		0	5	10	20	40	60	80	100	150	200	250	300	350	
SH-SHS-SHC disc Ø300 to 3000		Maxi. BT = 458 000 Nm (SH32 disc Ø 3000 mm)													
SHD disc Ø300 to 2000															
TH - THC disc Ø1000 to 2000															

Monitoring systems

Limit switch

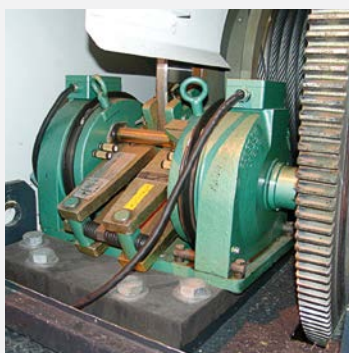
Brake type SHC5

SIME Brakes Industrial Braking Systems

Emergency Brakes

APPLICATIONS

- STEEL INDUSTRY
- NUCLEAR PLANTS



ELECTROMAGNETIC EMERGENCY BRAKES

MAIN CHARACTERISTICS	OPTIONS
• FAILSAFE BRAKE BY SPRING APPLICATION • ELECTROMAGNETIC RELEASE • MANUAL LINING WEAR COMPENSATION • OPENING PROVING SWITCH • DETECTION OF FULL LINING WEAR	• LOAD REGULATED LOWERING



2SA

Air gap switch



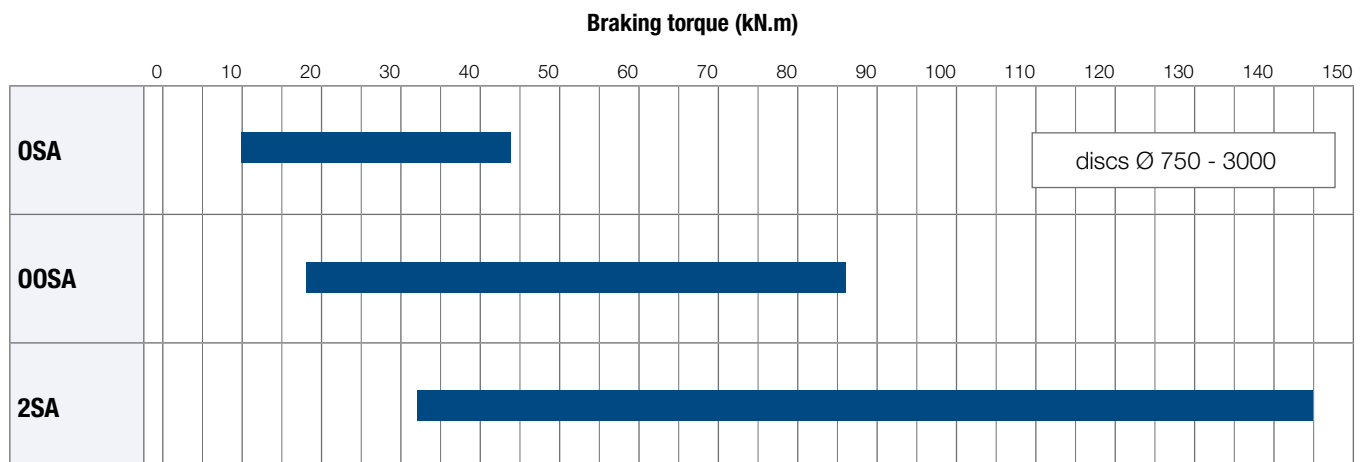
OSA

- Option :
- Manual release lever
- Hydraulic release
- Mounting on a vertical axis disc
- Flameproof / Marine protection...



OOSA

- Option :
- Manual release lever
- Hydraulic release
- Flameproof protection
- Marine protection



Emergency Brakes

DISC BRAKE - OSA CALIPER

Revision number: T03750-01-F

Revision date: 22.03.2016

Fail safe braking

Braking by spring application

Electromagnetic release

Manual lining wear compensation

Detection of full lining wear

Opening proving switch

Operating conditions:

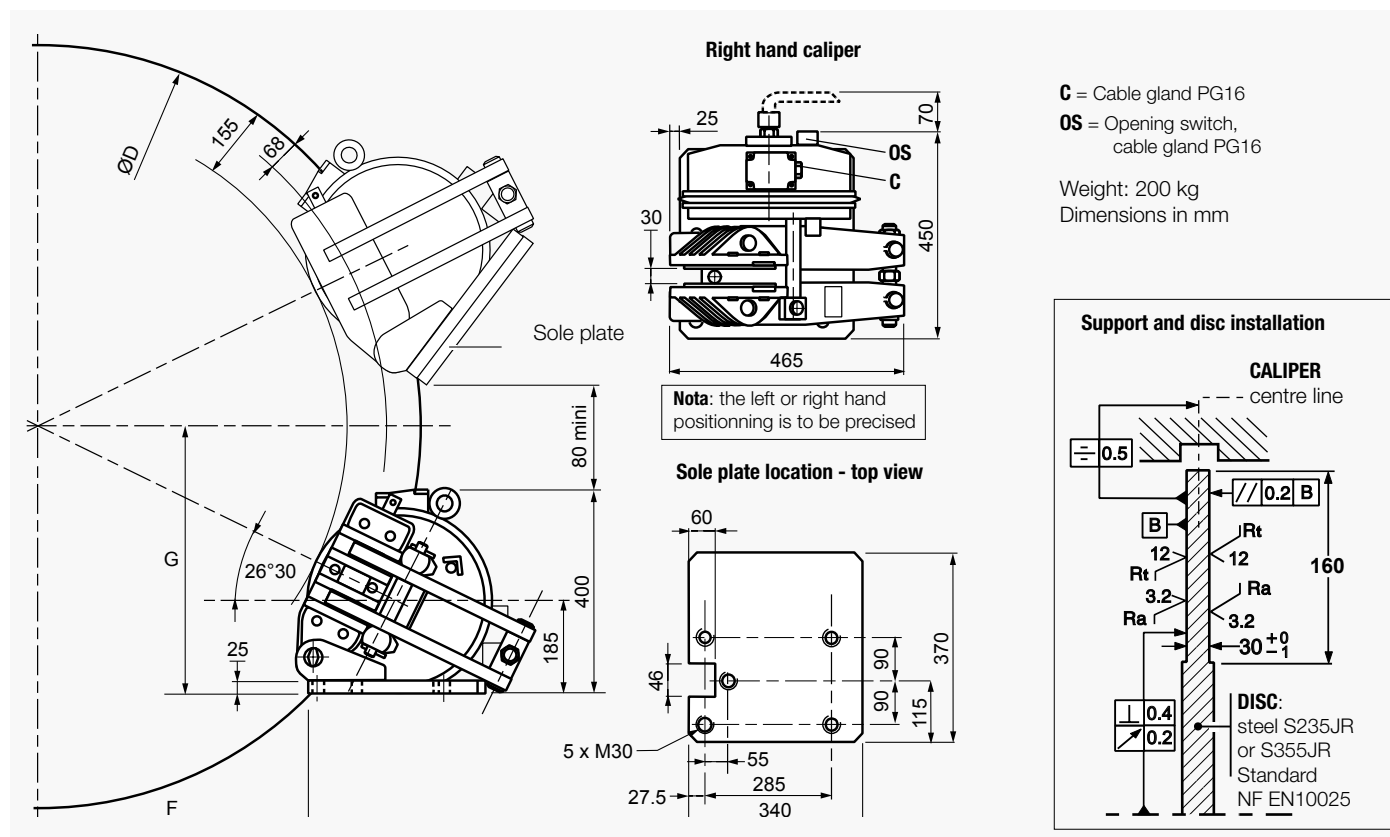
- Ambient temperature: -10°C to +60°C
 - Relative humidity $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu$
- Other conditions, consult us.

Use:

The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains.

Options:

- Manual release lever
- Hydraulic release
- Load regulated lowering
- Flameproof protection
- Marine protection
- Mounting on a vertical axis disc



Response time at nominal torque :

see the leaflet of the associated electrical power supply.

Force values are subject to a variation of $\pm 10\%$.

Designation	Caliper		OSA
	Lining *		US2-1
Braking force BF	Static	N	27 900
	Dynamic	N	31 000
Linear speed of the disc		m/s	≤ 10
Dynamic braking torque BT (N.m) for 1 caliper and disc ØD (mm)	1000 mm	N.m	13 400
	1200 mm	N.m	16 500
	1500 mm	N.m	21 100
	2000 mm	N.m	28 900
BT for other ØD (mm)		N.m	$BT = BF (D/2000 - 0.068)$
F		mm	$F = (0.4475 \times \text{ØD}) - 150$
G		mm	$G = 196 + (0.2231 \times \text{ØD})$

Opening proving switch :

250VAC maxi., 5A maxi., with interrupting capacity : 50VA maxi

220VDC maxi., 5A maxi., with interrupting capacity : 50W maxi

Compatible with PLC (Programmable Logic Controllers).

An opening switch used with other equipment than PLC must not be reused with a PLC.

* **US2-1:** disc temperature during one braking $\leq 150^\circ\text{C}$

US2-5: disc temperature during one braking $\leq 350^\circ\text{C}$. optional. consult us.

DISC BRAKE - OOSA CALIPER

Revision number: T03770-01-E

Revision date: 22.03.2016

Fail safe braking
Braking by spring application
Electromagnetic release
Manual lining wear compensation
Detection of full lining wear
Opening proving switch

Operating conditions:

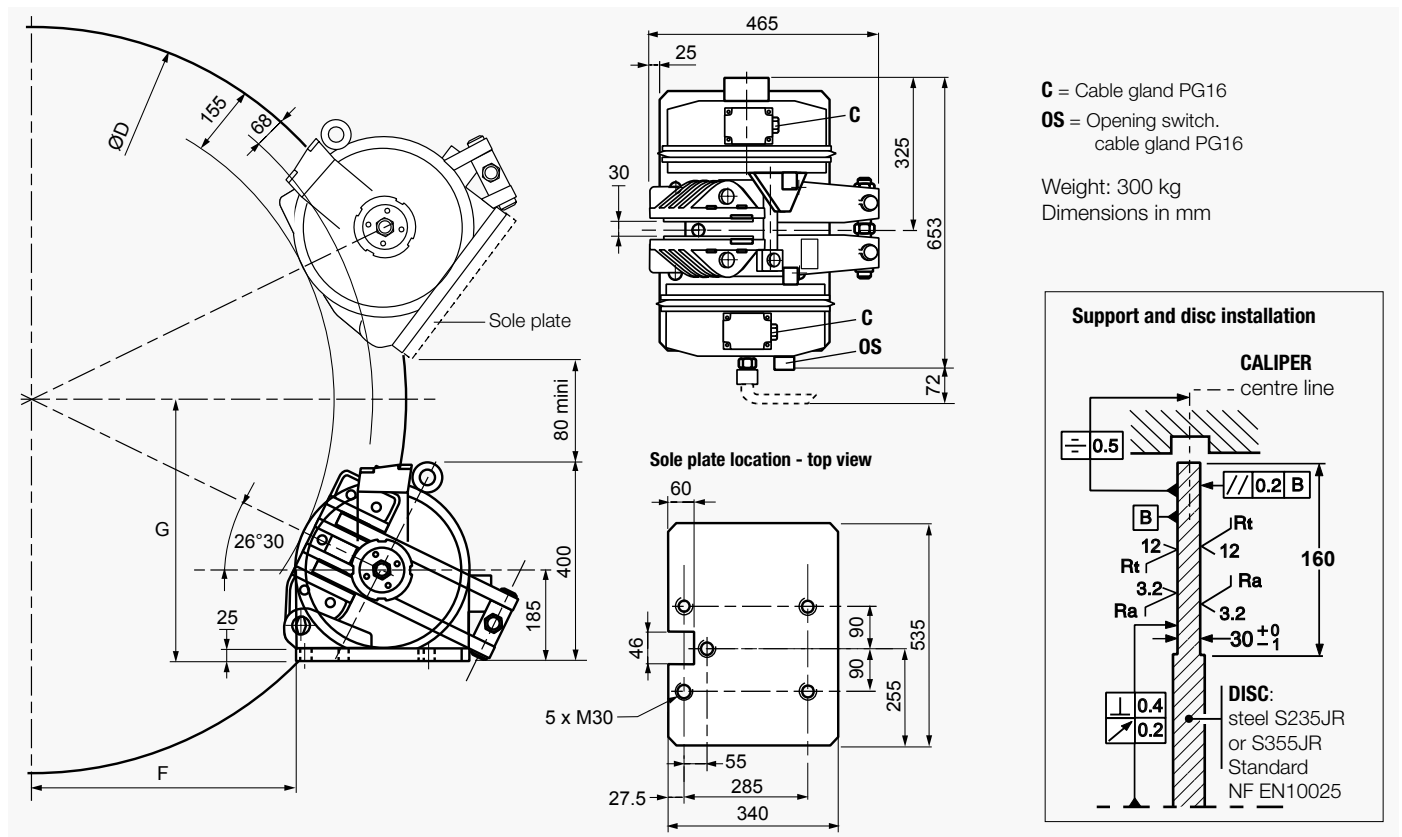
- Ambient temperature: -10°C to +60°C
 - Relative humidity $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu$
- Other conditions, consult us.

Use:

The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains.

Options:

- Manual release lever
- Hydraulic release
- Load regulated lowering
- Flameproof protection
- Marine protection



Response time at nominal torque :
see the leaflet of the associated electrical power supply.
Force values are subject to a variation of $\pm 10\%$.

Designation	Caliper		OOSA
	Lining *		US2-1
Braking force BF	Static	N	54 000
	Dynamic	N	60 000
Linear speed of the disc		m/s	≤ 10
Dynamic braking torque	1000 mm	N.m	25 900
BT (N.m) for 1 caliper	1200 mm	N.m	31 900
and 1 disc ØD (mm)	1500 mm	N.m	40 900
	2000 mm	N.m	55 900
BT for other ØD (mm)		N.m	BT = BF (D/2000 - 0.068)
F		mm	F = (0.4475 × ØD) - 150
G		mm	G = 196 + (0.2231 × ØD)

Opening proving switch :

250VAC maxi., 5A maxi., with interrupting capacity : 50VA maxi
220VDC maxi., 5A maxi., with interrupting capacity : 50W maxi
Compatible with PLC (Programmable Logic Controllers).
An opening switch used with other equipment than PLC must not be reused with a PLC.

- * **US2-1:** disc temperature during one braking $\leq 150^\circ\text{C}$
US2-5: disc temperature during one braking $\leq 350^\circ\text{C}$. optional. consult us.

NOTES

DISC BRAKE - 2SA CALIPER

Revision number: T03781-01-D

Revision date: 22.03.2016

Fail safe braking
Braking by spring application
Electromagnetic release
Manual lining wear compensation
Opening proving switch
Air gap switch

Operating conditions:

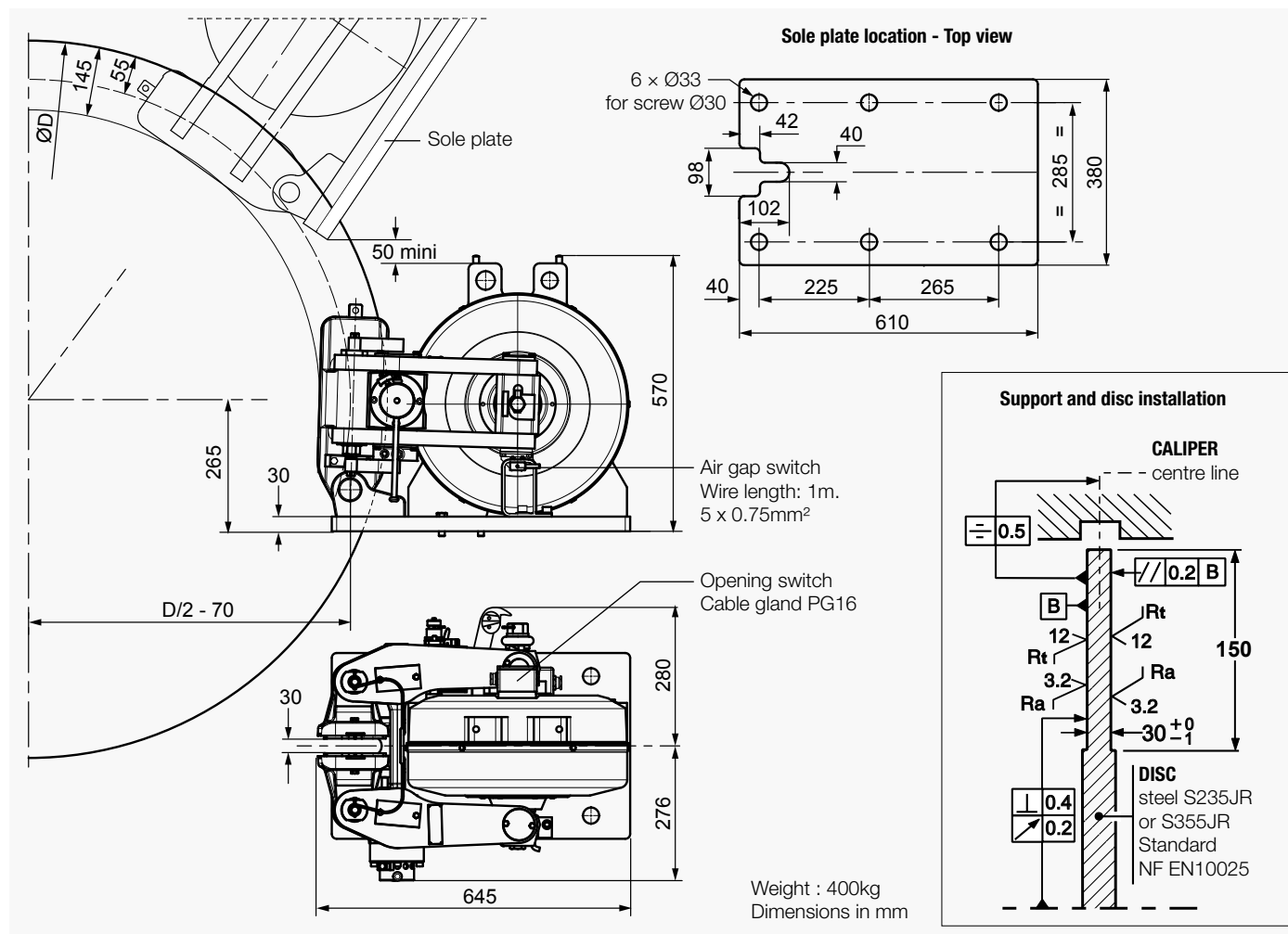
- Ambient temperature: -10°C to +60°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65µ
- Other conditions, consult us.

Use:

The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains.

Options:

- Detection of full lining wear
- Load regulated lowering



Torque and force values are subject to a variation of ±10%
Response time at nominal torque :
see the leaflet of the associated electrical power supply.

Designation	Caliper	2SA	
	Lining *	US2-1	US2-5
Braking force BF for 1mm of air gap disc/lining	Static N	90 000	84 600
	Dynamic N	100 000	94 000
Linear speed of the disc	m/s	≤ 10	≤ 10
Dynamic braking torque BT for 1 caliper and disc ØD (mm)	N.m	BT = BF(D/2000 - 0.055)	

• Opening proving switch:

250VAC maxi., 5A maxi., with interrupting capacity : 50VA maxi
220VDC maxi., 5A maxi., with interrupting capacity : 50W maxi
Compatible with PLC (Programmable Logic Controllers).
An opening switch used with other equipment than PLC must not be reused with a PLC.

• Air gap switch:

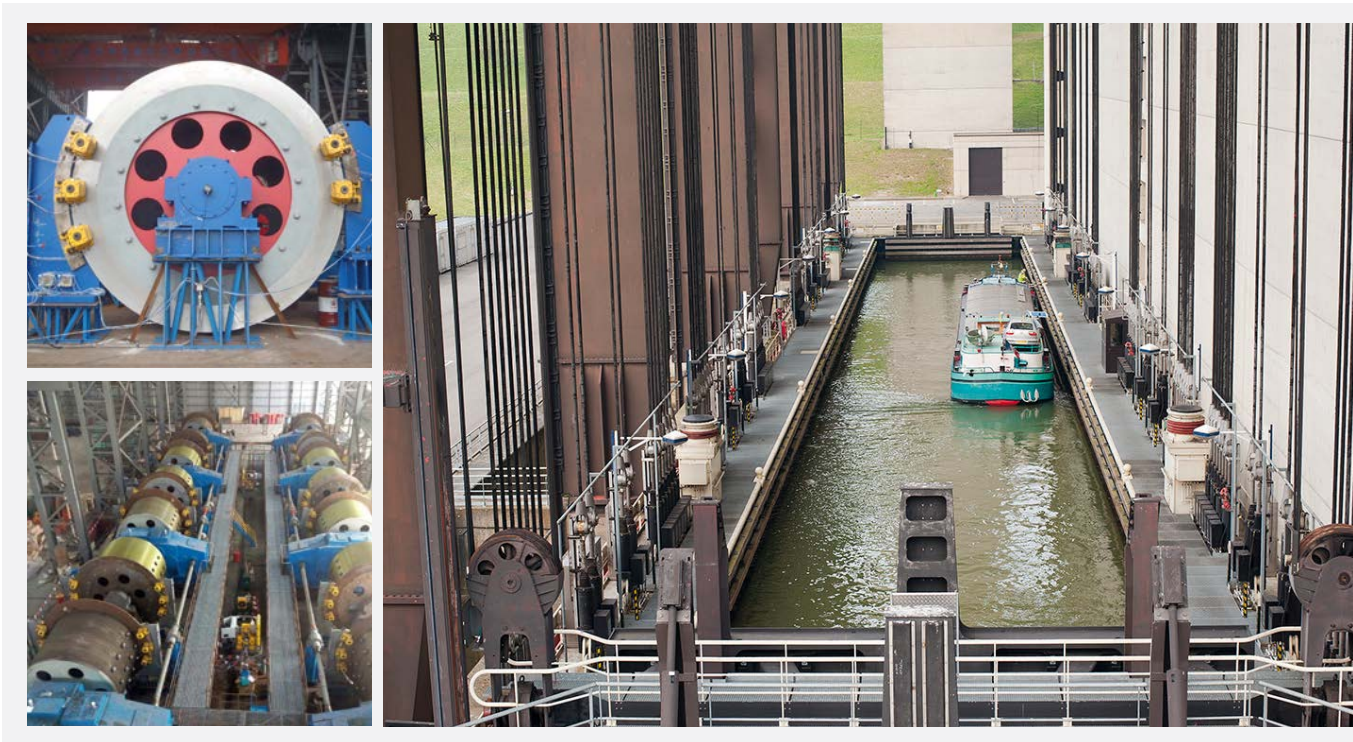
240V. 3A AC
250V. 0.27A DC

- * **US2-1:** disc temperature during one braking ≤ 150°C
US2-5: tdisc temperature during one braking ≤ 350°C

SIME Brakes Industrial Braking Systems

Emergency Brakes

APPLICATIONS	
• STEEL CRANES • PORT CRANES • NUCLEAR CRANES	• OFFSHORE APPLICATIONS • BOATLIFTS • MINES AND CONVEYORS



HYDRAULIC EMERGENCY BRAKES TYPE SH

MAIN CHARACTERISTICS	OPTIONS
• FAILSAFE BRAKE BY SPRING APPLICATION • HYDRAULIC RELEASE • OPENING PROVING SWITCH • LINING WEAR INDICATORS	• LINING WEAR PROVING SWITCH • PROGRESSIVE BRAKING SYSTEM • OFFSHORE PROTECTION • LINING TEMPERATURE SENSOR • HIGH TEMPERATURE, IRON AND STEEL CONDITIONS



SH

- Association with disc thicknesses : depending on the type of caliper : 12.7 - 15 - 20 - 30 or 42 mm.



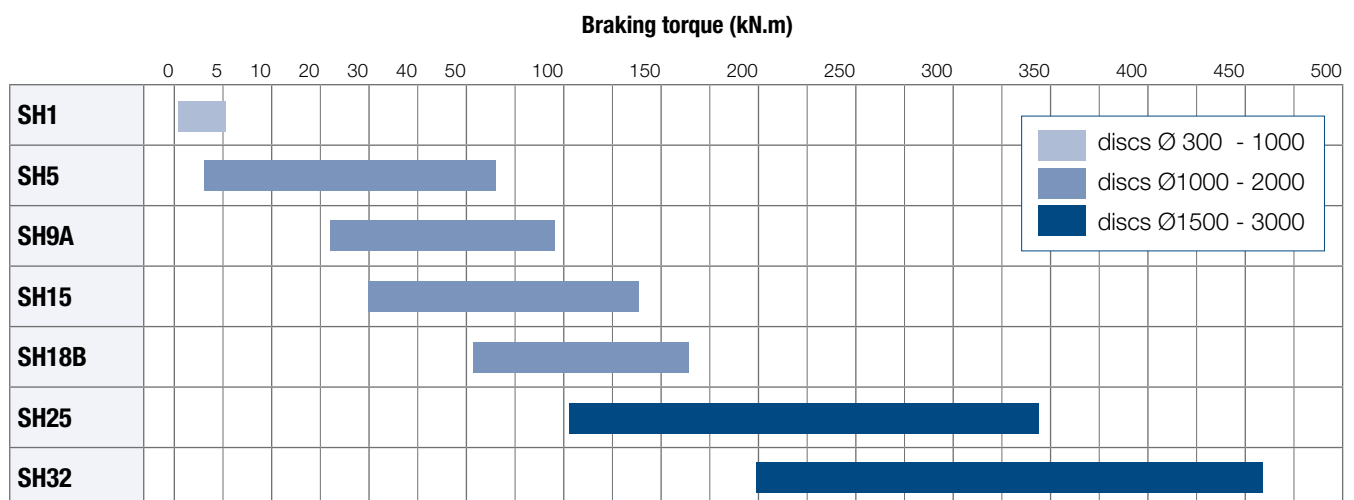
SHS

- Caliper mounted on a support
- Tailor-made solutions for any installation : banana supports



SHC

- Caliper and Hydraulic Power Pack mounted on the same support
- Option: Electrical unit



Emergency Brakes

DISC BRAKE - SH1 CALIPER

Revision number: T10097-01-G

Revision date: 12.01.2016

Emergency brake

Fail to safe

Spring application

Hydraulic release

Linings with wear indicators

Holding tool for maintenance operation

Manual wear centering and compensation

Association with discs thickness:

12.7 (1/2"), 15, 20 and 30mm.

Lining pads type **US2-1** or **ES3-7**

Lining pads with full wear indicators

Protection C5-M M

Operating conditions:

- Ambient temperature:
Dynamic braking : -30°C to +70°C
Brake applied (parking): -40°C to +70°C

- Relative humidity: $\leq 70\%$
- Dust in atmosphere $\geq 65\mu\text{m}$

Other conditions: consult us.

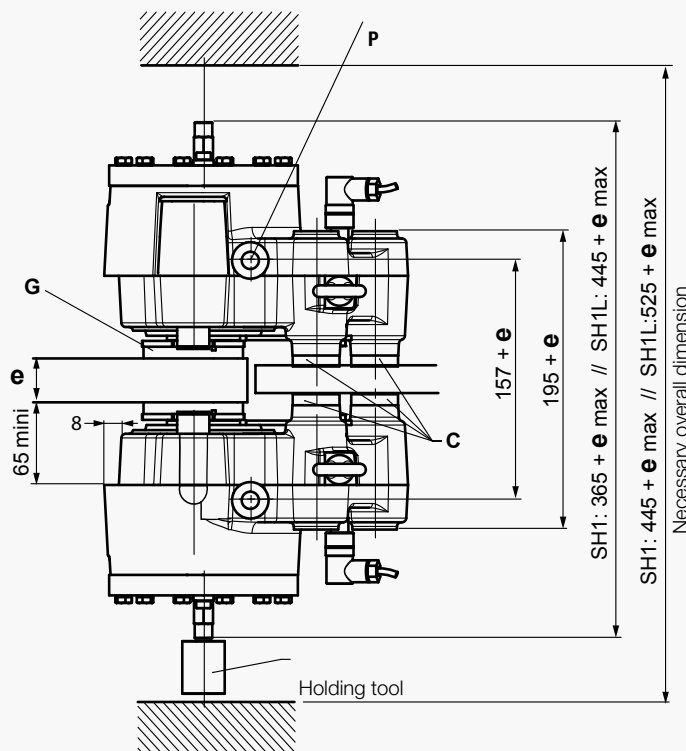
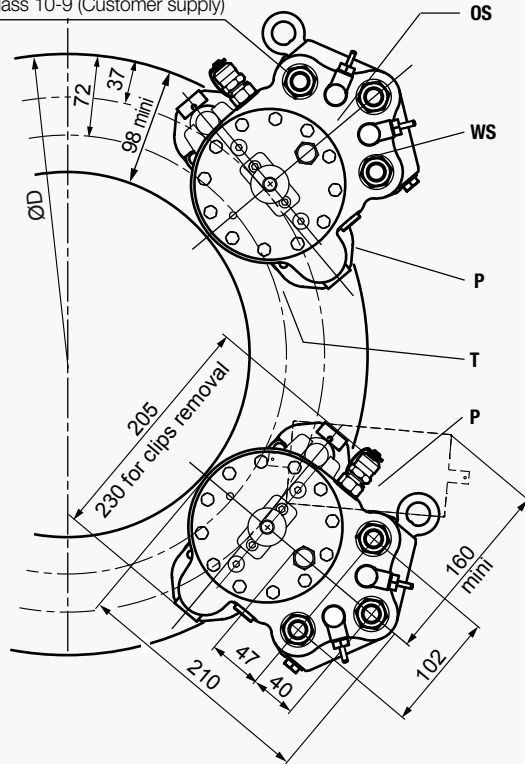
Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains.
- Other use, consult us.

Options:

- Opening proving switch (**OS**)
- Lining wear proving switch (**WS**)
- All non-standard disc thickness $> 12.7\text{mm}$ (1/2")
- Lining temperature sensor (**T**)
- SH1L** : caliper requiring no manual wear compensation:
 - braking force before lining wear = +10% maxi.
 - braking force after lining wear = -10% maxi.

3 holes $\varnothing 17$ for tie rods M16
class 10-9 (Customer supply)



Dimensions in mm
Weight = 35 kg

Electrical data:

Inductive switches of opening and wear (options):

3 wires PNP NO
12 to 24 VDC 200mA
with male connector M12 / 5 positions
according to standard IEC61076-2-101 / code A

Sensor PT100 (option)

Detection of the temperature
threshold : $100^{\circ}\text{C} \pm 5$
Cable length = 2.5 meters
2 wires red/yellow

R	136.6 Ω	95°C
	138.5 Ω	100°C
	140.4 Ω	105°C

C = Spacers according to disc thickness

G = Linings : Thickness of new lining 8 mm

Thickness to wear 6 mm

Each 1mm of wear on each side: manual
centering and compensation

OS = Opening switch (option)

WS = Lining wear switch (option)

P = 2 oil ports 1/4"G per half-caliper

Bleeder screws delivered separately

T = PT100 sensors (option)

ØD = Disc diameter = 300 mm minimum

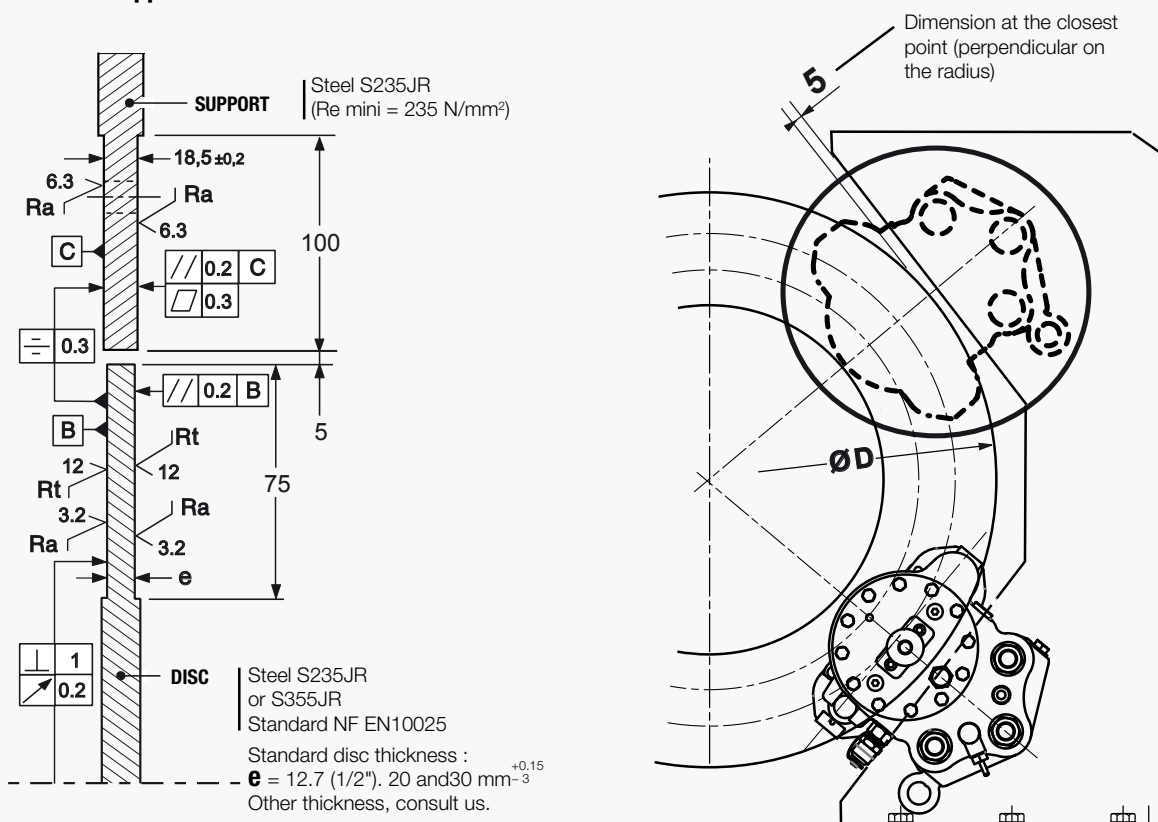
e = Disc thickness

DISC BRAKE - SH1 CALIPER

Revision number: T10097-01-G

Revision date: 12.01.2016

Disc and support :



Torque and effort values are subject to a variation of $\pm 10\%$ - Closing time at nominal torque $\leq 0.3s$

Designation	Caliper SH1-		5	4	3	2	1	5	4	3	2	1
	Lining *		US2-1					ES3-7				
Braking force BF for air gap disc/lining of 2x1mm	Dynamic	N	11 000	8 000	6 000	4 000	3 000	11 000	8 000	6 000	4 000	2 000
	Static	N	9 680	7 040	5 280	3 520	2 640	9 900	7 200	5 400	3 600	1 800
Linear speed of the disc ●		m/s	≤ 10					≤ 50				
Dynamic braking torque BT (m.N) for 1 caliper and disc ØD (mm) / 300 ≤ D ≤ 1000 mm		N.m	BT = BF (D/2000-0.037)									
Regulation pressure	Minimum	bar	150									
	Maximum	bar	170									
Setting pressure limit valve of hydraulic unit		bar	190									
Total volume of oil displaced for air gap disc/lining of:	2 x 1mm (nominal opening)	cm³	5 cm³									
	2 x 3mm (wear+opening)	cm³	13 cm³									
	2 x 7mm SH1L (wear+open.)	cm³	29 cm³									

* ES3-7: disc temperature during one braking $\leq 600^{\circ}\text{C}$

US2-1: disc temperature during one braking $\leq 100^{\circ}\text{C}$

● For higher speed, consult us.

Emergency Brakes

DISC BRAKE - SHS1 AND SHC1 CALIPERS

Revision number: T10099-01-F

Revision date: 10.06.2016

Emergency brake

Fail to safe

Spring application

Hydraulic release

Holding tool for maintenance operation

Manual wear centering and compensation

Possible association possible with discs thickness:
12.7 to 30 mm.

Lining pads type **US2-1** or **ES3-7**

Lining pads with full wear indicators

Protection : Caliper **SHS1** : C5-M M

HPP **CE1L** : C4 M

Operating conditions:

- Ambient temperature:

Caliper **SHS1**:

Dynamic braking : -30°C to +70°C

Brake applied (parking): -40°C to +70°C

HPP **CE1L** : -20°C to +70°C

- Relative humidity: ≤ 70%
- Dust in atmosphere ≥ 65µm

Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains.

Other use, consult us.

Options:

- Opening proving switch (**OS**)
- Lining wear proving switch (**WS**)
- Lining temperature sensor (**T**)
- SHS1L - SHC1L** : caliper with no need of manual wear compensation:
 - braking force before lining wear = +10% maxi.
 - braking force after lining wear = -10% maxi.
- CE1L** HPP options : see "Installation and maintenance" leaflet quoted below.

SHS1 = **SH1** caliper with integral support
SHC1 = **SH1** caliper with integral **CE1L**
hydraulic power pack.

L = Linings :

Thickness of new lining 8 mm

Thickness to wear 6 mm

Each 1 mm of wear on each side:
manual centering and compensation

OS = Opening proving switch (option)

WS = Wear proving switch (option)

P = Oil ports 1/4"G

Bleeder screws delivered separately

T = PT100 sensors (option)

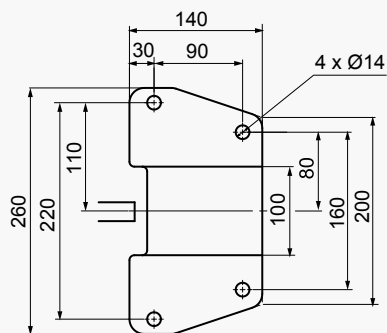
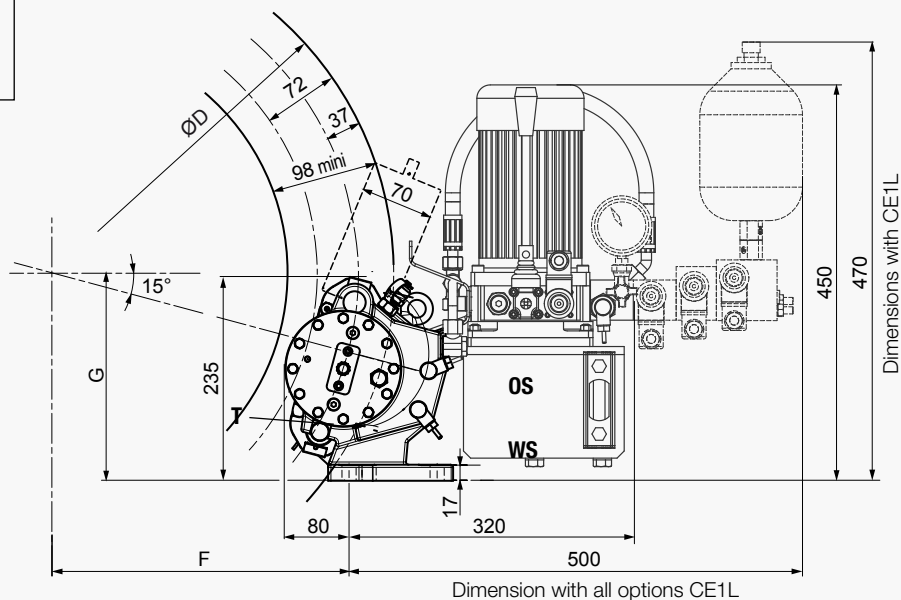
ØD : from 300 to 1000 mm

e = disc thickness

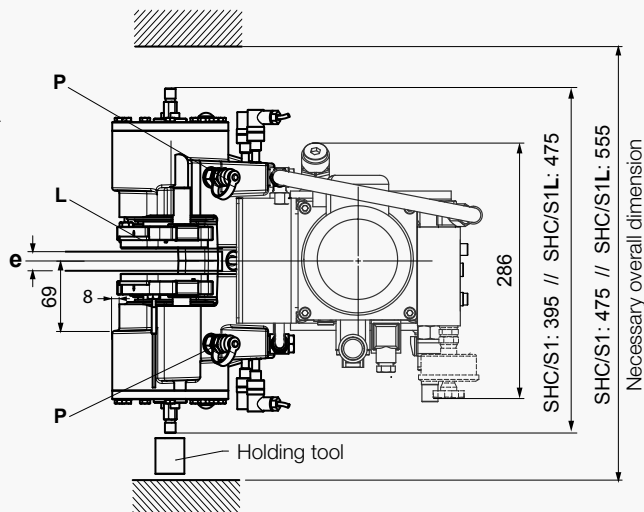
Dimensions in mm

Weight : **SHC1** = 61 kg **SHC1L** = 68 kg

SHS1 = 39 kg **SHS1L** = 46 kg



Calipers fastening :
4 bolts M12 class 10-9 (not provided)
Tightening torque = 77 Nm ± 30%

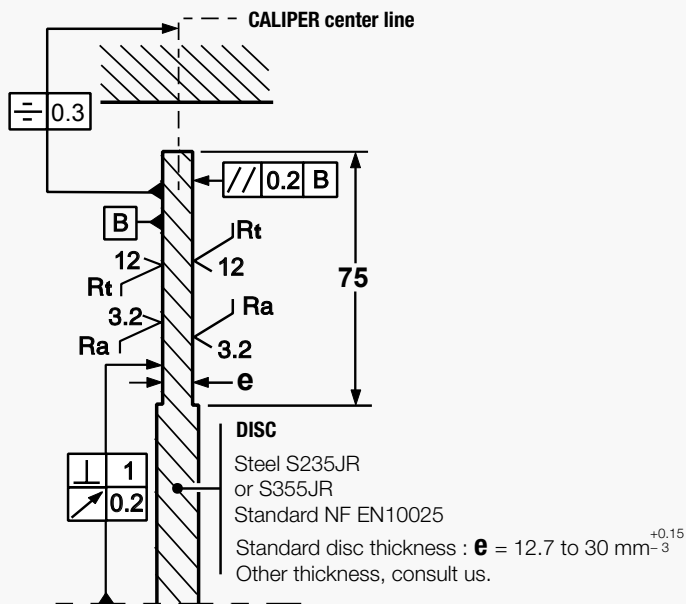


DISC BRAKE - SHS1 AND SHC1 CALIPERS

Revision number: T10099-01-F

Revision date: 10.06.2016

Installation instructions :



Electrical data:

Opening and wear inductive switches (options)

3 wires PNP NO
12 to 24 VDC 200mA
with connector M12 / 5 positions
according to standard IEC61076-2-101 / code A

Sensor PT100 (option)

Detection of the temperature threshold : $100^{\circ}\text{C} \pm 5$
- R = 136.6Ω at 95°C
- R = 138.5Ω at 100°C
- R = 140.4Ω at 105°C
Cable length = 2.5 meters
2 wires red/yellow

Torque and effort values are subject to a variation of $\pm 10\%$ - Closing time at nominal torque $\leq 0.3\text{s}$

Designation	Caliper SHS1-SHC1-		5	4	3	2	1	5	4	3	2	1
	Lining *		US2-1					ES3-7				
Braking force BF for air gap disc/lining of 2x1mm	Dynamic	N	11 000	8 000	6 000	4 000	3 000	11 000	8 000	6 000	4 000	2 000
	Static	N	9 680	7 040	5 280	3 520	2 640	9 900	7 200	5 400	3 600	1 800
Linear speed of the disc ●		m/s	≤ 10					≤ 50				
Dynamic braking torque BT (m.N) for 1 caliper and disc ØD (mm) 300 ≤ D ≤ 1000 mm		N.m	BT = BF (D/2000-0.037)									
Regulation pressure	Minimum	bar	150									
	Maximum	bar	170									
Setting pressure limit valve of HPP		bar	190									
F G			F = (0.483 x D) - 14 G = (0.129 x D) + 118									

* ES3-7: disc temperature during one braking $\leq 600^{\circ}\text{C}$

US2-1: disc temperature during one braking $\leq 100^{\circ}\text{C}$

● For higher speed, consult us.

Emergency Brakes

DISC BRAKE - SH5 CALIPER

Revision number: T03865-02-C

Revision date: 23.09.2010

Emergency brake

Fail safe

Spring application

Hydraulic release

Opening proving switches

Lining wear detector

Operating conditions :

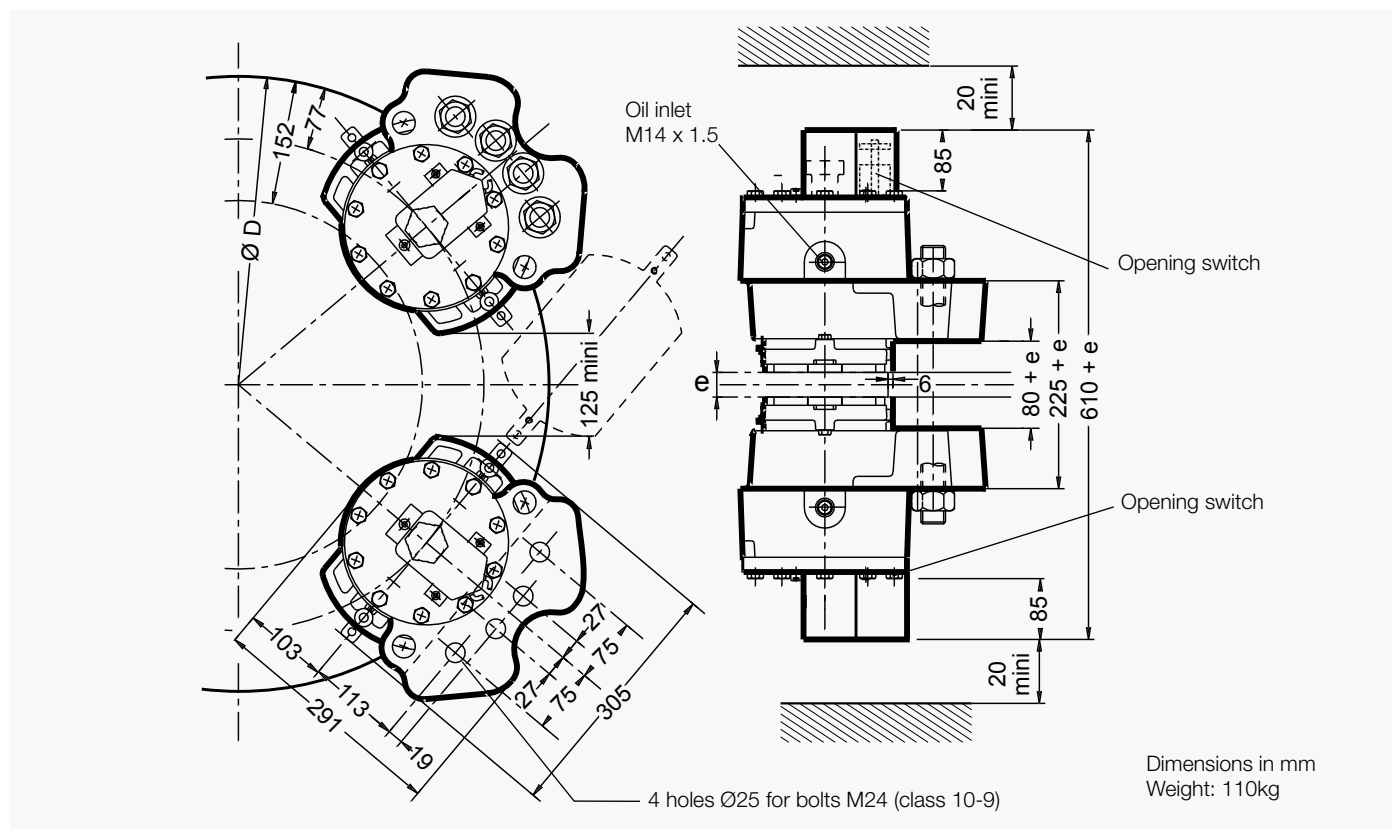
- Ambient temperature: -10°C to $+60^{\circ}\text{C}$
 - Relative humidity: $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use :

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options :

- Automatic lining wear compensation (WACS)
- Lining wear control switch
- Progressive braking system
- Marine protection
- Caliper on support with integral hydraulic power unit



Opening proving switch :

250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.

Compatible with PLC

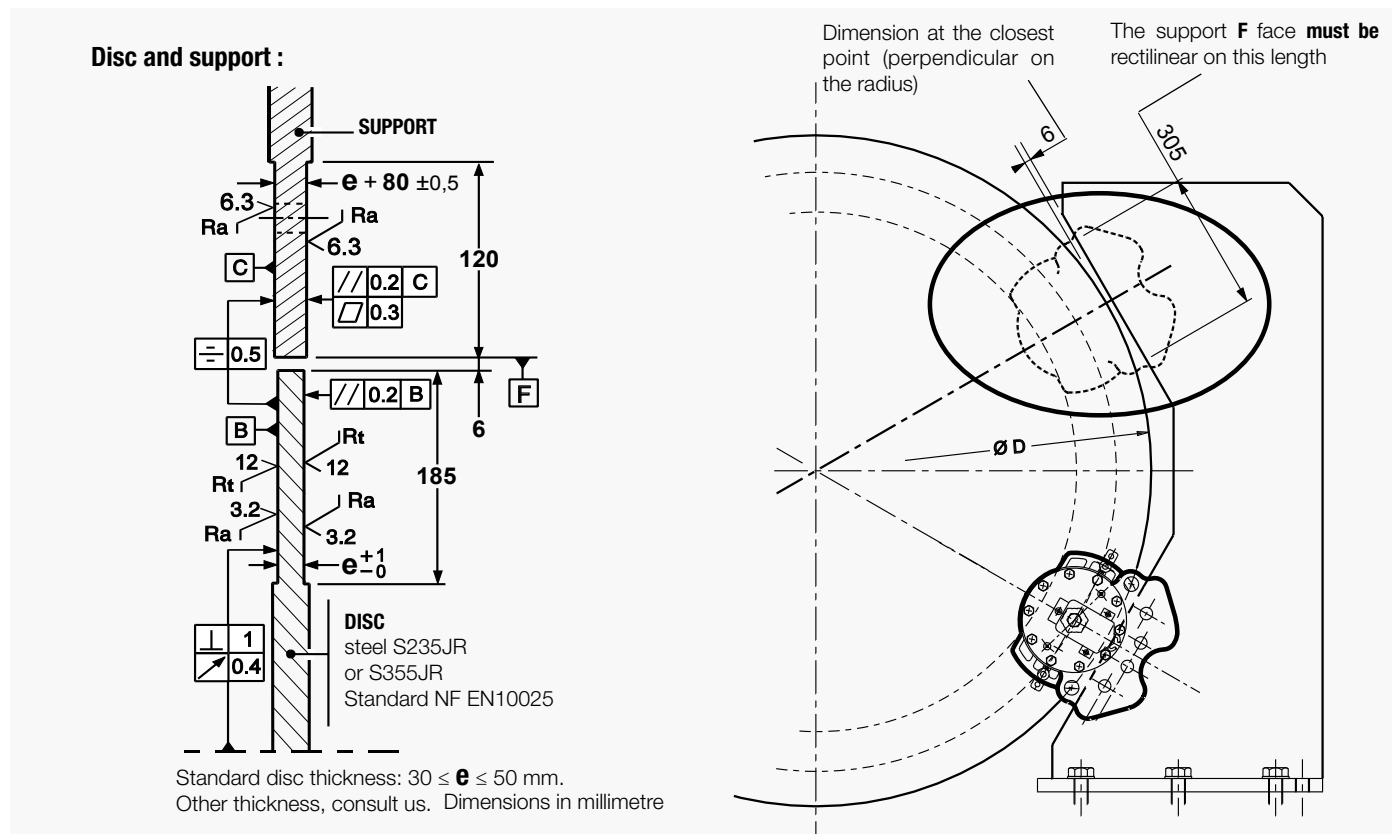
(Programmable Logic Controllers).

An opening switch used with other equipment than PLC must
not be reused with a PLC.

DISC BRAKE - SH5 CALIPER

Revision number: T03865-02-C

Revision date: 23.09.2010



Torque and effort values are subject to a variation of $\pm 10\%$

Response time at nominal torque : see the leaflet n° G08555-01

Designation	Caliper		SH5-6		SH5-5		SH5-4		SH5-3		SH5-2	
	Lining *		US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3
Braking force BF for 1mm of air gap disc/lining	Static	N	63 000	43 200	51 300	35 100	37 800	25 900	21 200	14 500	9 600	6 500
	Dynamic	N	70 000	48 000	57 000	39 100	42 000	28 800	23 600	16 200	10 700	7 300
Linear speed of the disc m/s			≤ 10	≤ 50	≤ 10	≤ 50	≤ 10	≤ 50	≤ 10	≤ 50	≤ 10	≤ 50
Dynamic braking torque BT (N.m) for 1 caliper and disc ØD (mm)	995 mm	N.m	29430	20 180	23 960	16 440	17 660	12 110	9 920	6 810	4 490	3 070
	1200 mm	N.m	36610	25 100	29 810	20 440	21 960	15 060	12 340	8 470	5 590	3 810
	1500 mm	N.m	47110	32 300	38 360	26 310	28 260	19 380	15 880	10 900	7 200	4 910
	2000 mm	N.m	64610	44 300	52 610	36 080	38 760	26 580	21 780	14 950	9 870	6 730
BT for other ØD (mm)		N.m	BT = BF (D/2000 - 0.077)									
Regulation pressure	minimum	bar	180		140		110		85		40	
	maximum	bar	200		160		140		115		60	
Setting pressure of the limit valve of hydraulic power unit		bar	210		190		165		140		80	
Total volume of oil displaced		cm³	35 for one stroke disc/lining (nominal wear and opening)									

* **US2-1:** disc temperature during one braking $\leq 150^\circ\text{C}$

WS1-3: disc temperature during one braking $\leq 600^\circ\text{C}$

US2-5: disc temperature during one braking $\leq 350^\circ\text{C}$, optional, consult us.

Emergency Brakes

DISC BRAKE - SHC5 CALIPER

Revision number: T03867-02-D

Revision date: 26.10.2011

Emergency brake
Fail to safe
Spring application
Hydraulic release
Integral hydraulic power unit
Self contained electrical system
Opening proving switches
Lining wear detector

Operating conditions:

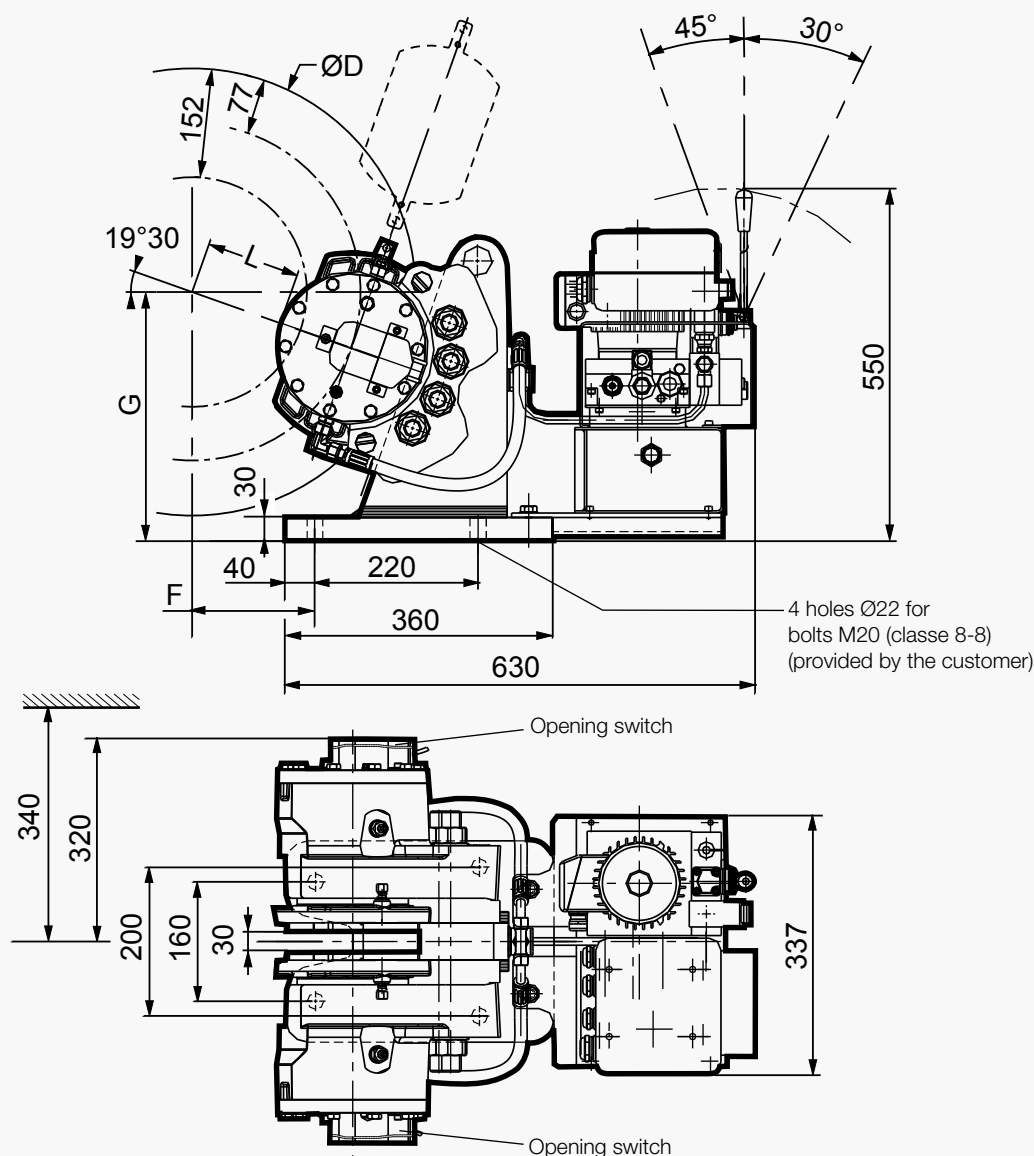
- Ambient temperature: -10°C to $+50^{\circ}\text{C}$
 - Relative humidity: $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu$
- Other conditions: consult Stromag France.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options:

- Automatic lining wear compensation (WACS)
- Lining wear control switch
- Progressive braking system
- Marine protection



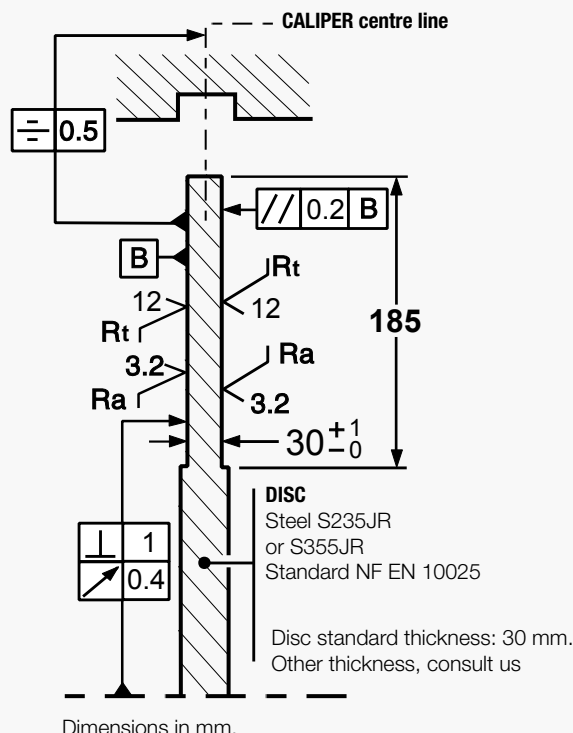
Dimensions in mm
Weight: 185 kg

DISC BRAKE - SHC5 CALIPER

Revision number: T03867-02-D

Revision date: 26.10.2011

Installation instructions



Electrical data

- **Motor voltages :**
3 phases : 230/400 VAC 50 Hz
0.37 kW. 4 poles
for mains:
220-230-240VAC ±10% 50Hz
or 380-400-415VAC ±10% 50Hz
- **Options motor :**
440 VAC 50Hz
500 VAC 50Hz
480 VAC 60Hz
575 VAC 60Hz
- Other voltages. consult us.
- Electrical casing IP55
- **Opening switch :**
250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.
Compatible with PLC
(Programmable Logic Controllers).
An opening switch used with other equipment
than PLC must not be reused with a PLC.

Torque and effort values are subject to a variation of ±10%
Response time at nominal torque : see the leaflet n° G08555-01.

Désignation	caliper		SHC5-6		SHC5-5		SHC5-4		SHC5-3		SHC5-2	
	Lining *		US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3
Braking force BF for 1mm of air gap disc/lining	Static	N	63 000	43 200	51 300	35 100	37 800	25 900	21 200	14 500	9 600	6 500
	Dynamic	N	70 000	48 000	57 000	39 100	42 000	28 800	23 600	16 200	10 700	7 300
Linear speed of the disc m/s			≤ 10	≤ 50	≤ 10	≤ 50	≤ 10	≤ 50	≤ 10	≤ 50	≤ 10	≤ 50
Dynamic braking torque BT (N.m) for 1 caliper and disc ØD (mm)	995 mm	N.m	29430	20 180	23 960	16 440	17 660	12 110	9 920	6 810	4 490	3 070
	1200 mm	N.m	36610	25 100	29 810	20 440	21 960	15 060	12 340	8 470	5 590	3 810
	1500 mm	N.m	47110	32 300	38 360	26 310	28 260	19 380	15 880	10 900	7 200	4 910
	2000 mm	N.m	64610	44 300	52 610	36 080	38 760	26 580	21 780	14 950	9 870	6 730
BT for other ØD (mm)		N.m	BT = BF (D/2000 - 0.077)									
Setting pressure of the limit valve of hydraulic power unit bar			210		190		165		140		80	
F mm			F = (0.4719 x D) - 122.5 G = (0.1652 x D) + 232.5 L = (D / 2) - 181									
G mm												
L mm												

- * **US2-1:** disc temperature during one braking ≤ 150°C
WS1-3: disc temperature during one braking ≤ 600°C
US2-5: disc temperature during one braking ≤ 350°C, optional, consult us.

Emergency Brakes

DISC BRAKE - SH9A CALIPER

Revision number: T10077-01-B

Revision date: 30.05.2013

Emergency brake
Fail safe
Spring application
Hydraulic release
Opening proving switches.

Operating conditions:

- Ambient temperature: -10°C to +60°C
- Relative humidity: $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

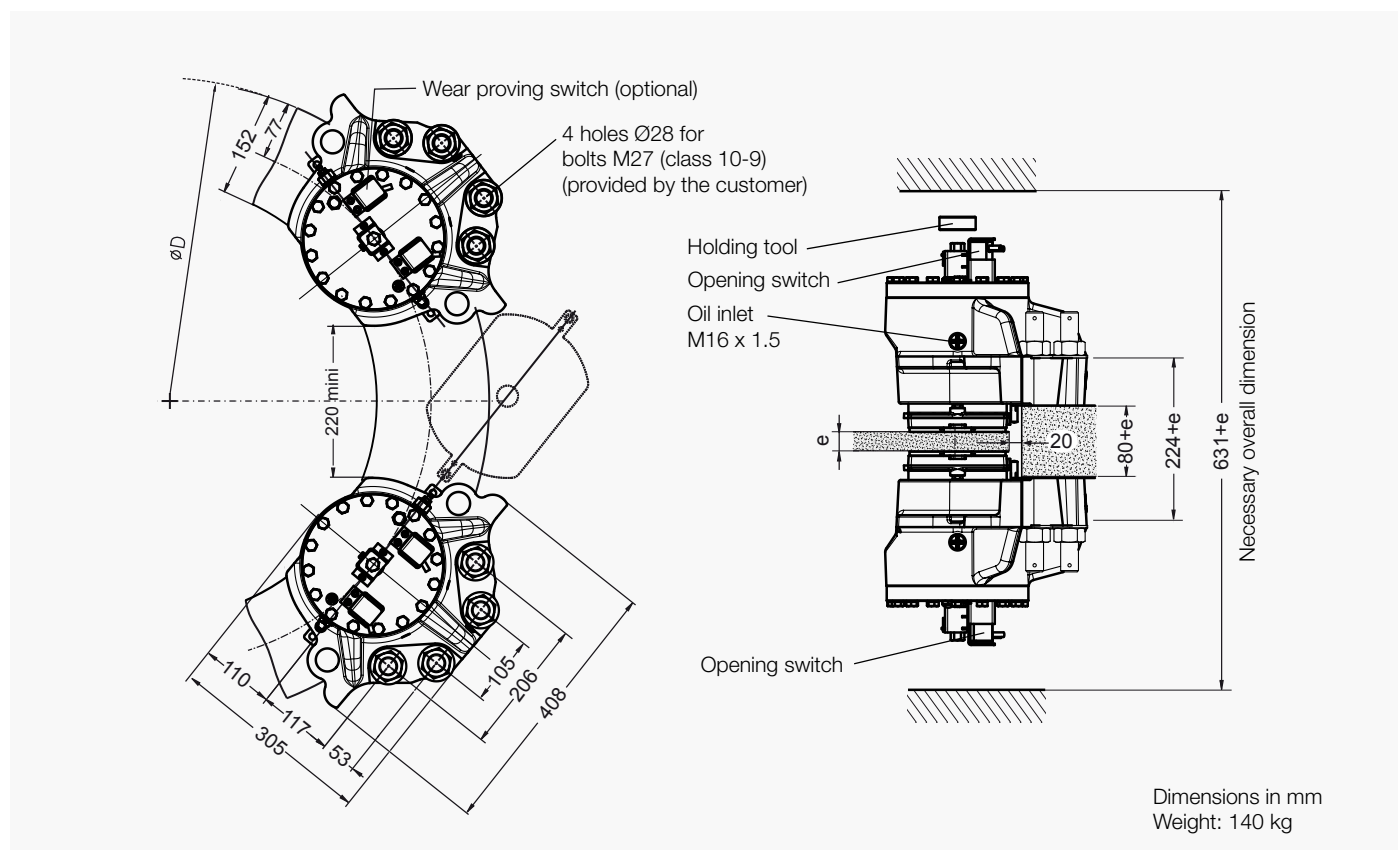
Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

- US2-1. US2-5 for low energy braking ≤ 1 MJ
- EF3-1 for high energy braking ≤ 15 MJ
- Other use, consult us

Options:

- Lining wear control switch
- Switch for P.L.C. (induction sensor)
- Marine protection
- Caliper on support with integral HPP
- Option GF



Opening proving switch:

240V 1.5A AC
250V 0.1A DC
with a 5 x 0.75mm² wire
of 5m length

Revision date: 30.05.2013

Emergency Brakes

DISC BRAKE - SHC9A CALIPER

Revision number: T10078-01-B

Revision date: 13.06.2014

Emergency brake

Fail to safe

Spring application

Hydraulic release

Integral hydraulic power unit

Self contained electrical system

Opening proving switches

Protection class C3L standard ISO12944-2

Operating conditions:

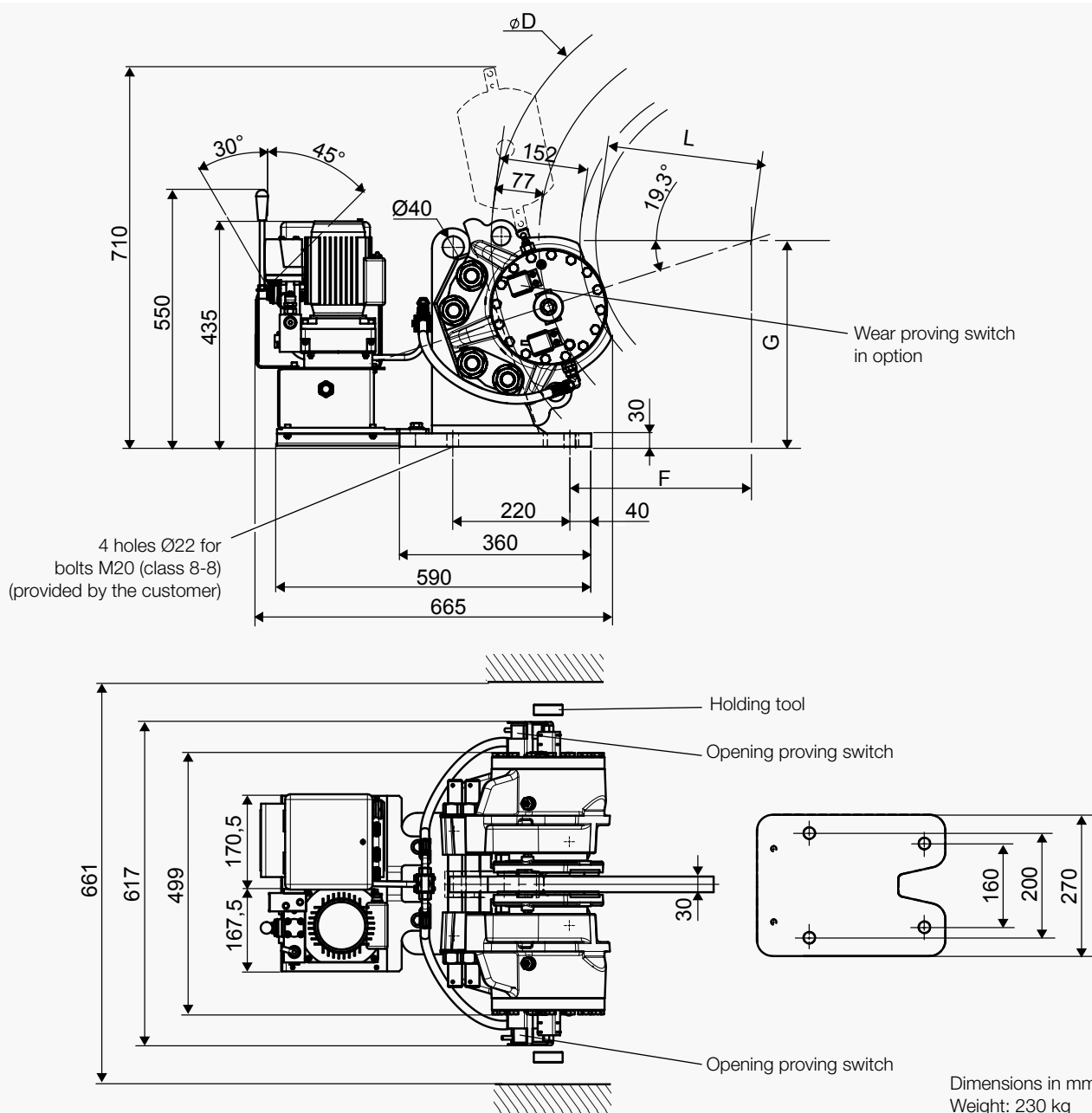
- Ambient temperature: -10°C to $+60^{\circ}\text{C}$
- Relative humidity: $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Options:

- Lining wear control switch
- Switch for P.L.C.
- Protection class C4M standard ISO12944-2

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains.
- US2-1. US2-5 for low energy braking $\leq 1 \text{ MJ}$
- EF3-1 for high energy braking $\leq 15 \text{ MJ}$
- Other use, consult us

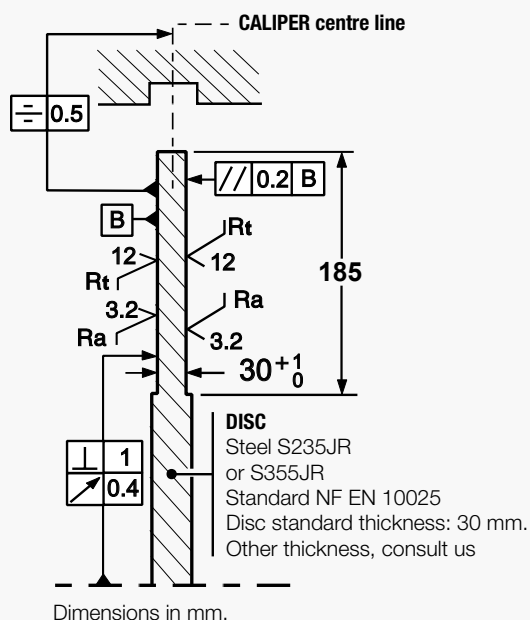


DISC BRAKE - SHC9A CALIPER

Revision number: T10078-01-B

Revision date: 13.06.2014

Installation instructions



Electrical data

- Motor voltages:
3 phases:
230/400 V $\pm 10\%$ 50 Hz
0.37 kW
for voltage of 3 phases mains:
230 V 50 Hz
or 400 V 50 Hz
or 415 V 50 Hz
or 440 V 60 Hz
or 460 V 60 Hz
- Options voltage of 3 phases mains:
440 V $\pm 10\%$ 50Hz
500 V $\pm 10\%$ 50Hz
480 V $\pm 10\%$ 60Hz
- Other voltages, consult us.
- Electrical casing IP55
- Opening switch:
240V. 1.5A AC
220V. 0.1A DC
with cable 5 x 0.75mm² length 5m

Torque and effort values are subject to a variation of $\pm 10\%$

Closing time at nominal torque $\leq 0.3s$

Designation	Caliper		SHC9A-3			SHC9A-2			SHC9A-1		
	Lining *		US2-1	US2-5	EF3-1	US2-1	US2-5	EF3-1	US2-1	US2-5	EF3-1
Braking force BF for 1mm air gap	Static	N	94 500	90 000	70 500	80 100	76 200	60 000	66 150	63 000	49 600
	Dynamic	N	105 000	100 000	78 200	89 000	84 700	66 500	73 500	70 000	55 000
Linear speed of the disc for BF		m/s	≤10	≤30	≤ 50●	≤10	≤30	≤ 50●	≤10	≤30	≤ 50●
Dynamic braking torque BT (N.m) for 1 caliper and disc ØD (mm) **	995 mm	N.m	44 150	42 050	32 880	37 420	35 620	27 960	30 910	29 440	23 130
	1500 mm	N.m	70 670	67 300	52 630	59 900	57 000	44 750	49 470	47 110	37 020
	2000 mm	N.m	96 920	92 300	72 180	82 150	78 180	61 380	67 840	64 610	50 770
BT for other ØD (mm)		N.m	BT = BF (D/2000 - 0.077)								
Regulation pressure	Minimum	bar	180			150			110		
	Maximum		200			180			140		
Setting pressure of limit valve of hydraulic power unit		bar	225			210			165		
F G L		mm mm mm	F = (0.4719 x D) - 113 G = (0.1652 x D) + 236.7 L = (D / 2) - 190								

* US2-1: disc temperature during one braking $\leq 150^\circ\text{C}$

US2-5: disc temperature during one braking $\leq 350^\circ\text{C}$

EF3-1: High energy braking, disc temperature during one braking $\leq 600^\circ\text{C}$

** For disc ØD < 995 mm, consult us

• For higher speed, consult us.

Emergency Brakes

DISC BRAKE - SH15 CALIPER

Revision number: T03905-01-B

Revision date: 01.10.2010

Emergency brake
Fail safe
Spring application
Hydraulic release
Opening proving switches
Lining wear detector

Operating conditions:

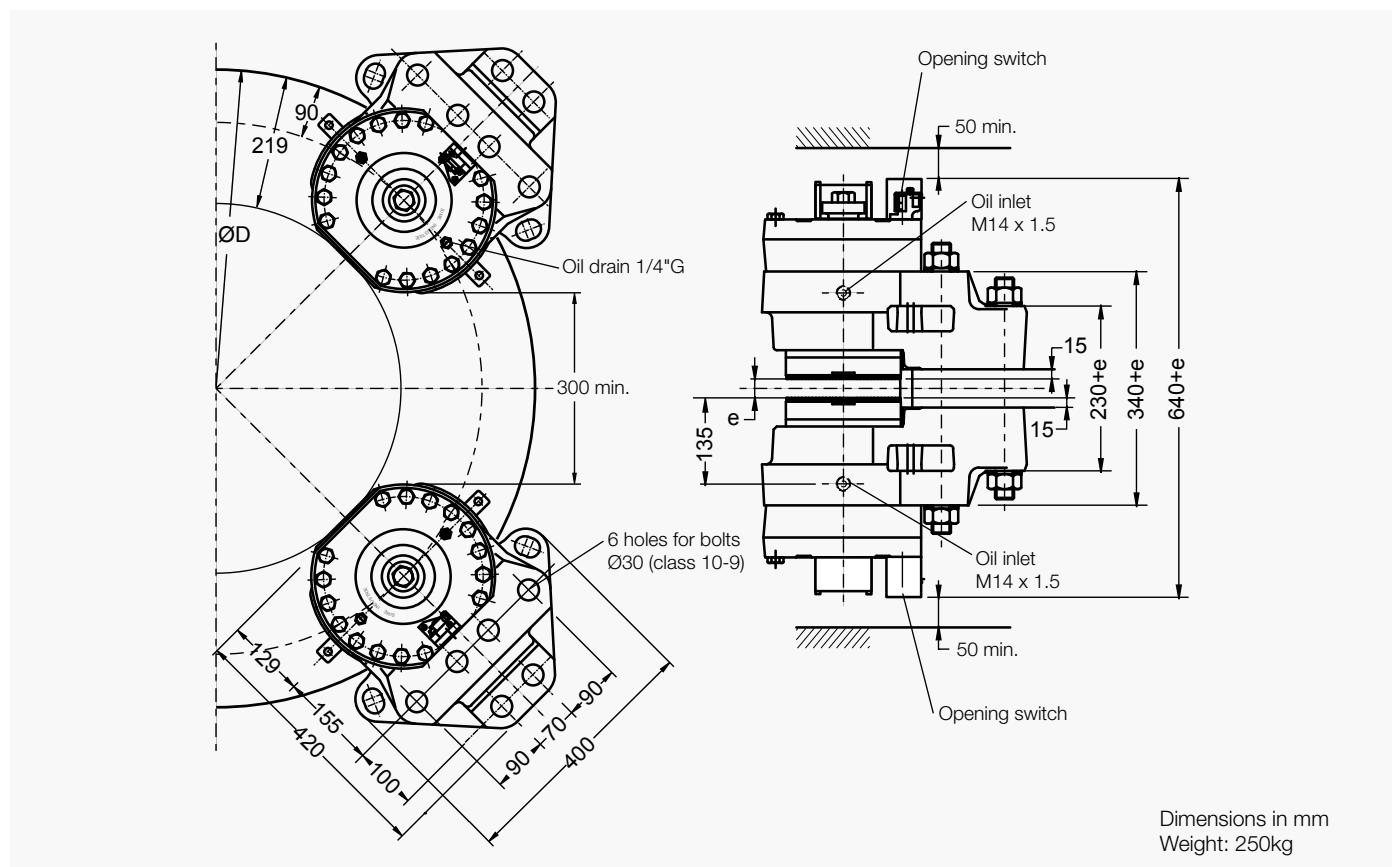
- Ambient temperature: -10°C to $+60^{\circ}\text{C}$
- Relative humidity: $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains, Other use. consult us.

Options:

- Lining wear control switch
- Progressive braking system
- Marine protection
- Caliper on support with integral hydraulic power pack



Opening proving switch :

250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.

Compatible with PLC
(Programmable Logic Controllers).

An opening switch used with other equipment than PLC must
not be reused with a PLC.

Revision date: 01.10.2010

Emergency Brakes

DISC BRAKE - SHC15 CALIPER

Revision number: T03906-03-C

Revision date: 29.08.2018

Emergency brake
Fail safe
Spring application
Hydraulic release
Integral hydraulic power pack
Opening proving switches
Lining wear detector

Operating conditions:

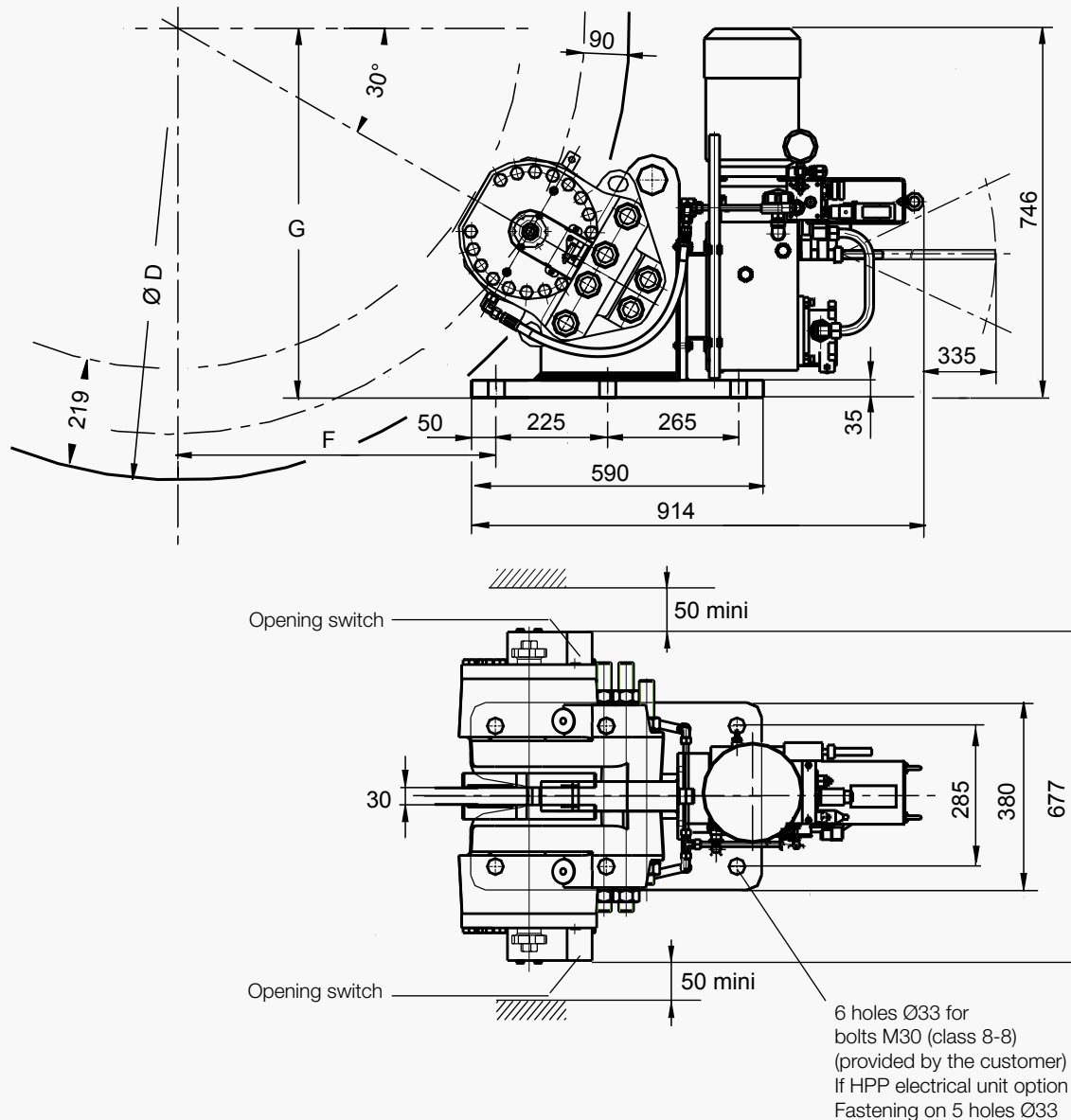
- Ambient temperature: -10°C to $+60^{\circ}\text{C}$
- Relative humidity: $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options:

- Lining wear control switch
- Progressive braking system
- Marine protection
- Self contained electric system



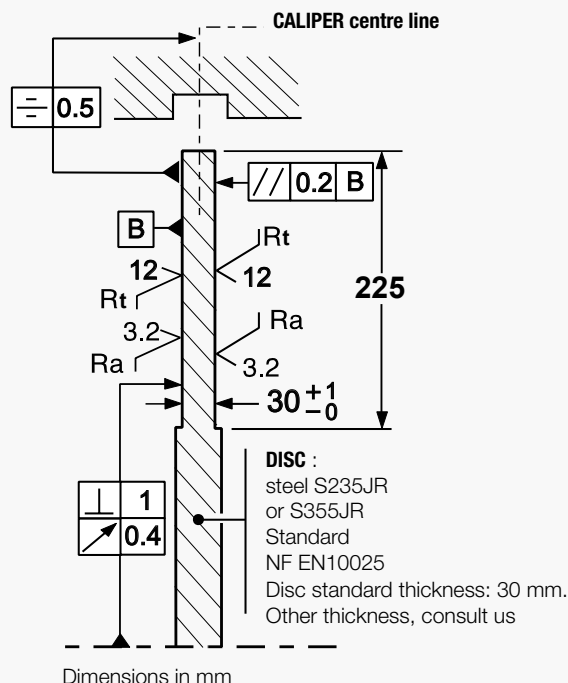
Dimensions in mm
Weight: 435kg

DISC BRAKE - SHC15 CALIPER

Revision number: T03906-03-C

Revision date: 29.08.2018

Installation instructions



Electrical data

- **Motor voltages :**
3 phases : 230/400VAC $\pm 10\%$ 50Hz
2.2kW, 4 poles
- **Options motor :**
690VAC $\pm 10\%$ 50Hz
500VAC $\pm 10\%$ 50Hz
230/400VAC $\pm 10\%$ 50Hz with PTC sensor
Other voltage, consult us.
- **Opening switch :**
250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.
Compatible with PLC
(Programmable Logic Controllers).
An opening switch used with other equipment
than PLC must not be reused with a PLC.

Torque and effort values are subject to a variation of $\pm 10\%$
Response time at nominal torque : see the leaflet n° G08555-01.

Designation	Caliper		SHC15-3		SHC15-2		SHC15-1	
	Lining *		US2-1	US2-4	US2-1	US2-4	US2-1	US2-4
Braking force BF for 1mm of air gap disc/lining	Static	N	133 000	99 000	110 000	80 000	90 000	66 000
	Dynamic	N	150 000	110 000	120 000	88 000	100 000	73 000
Linear speed of the disc	m/s		≤ 10	≤ 50	≤ 10	≤ 50	≤ 10	≤ 50
Dynamic braking torque BT (N.m) for 1 caliper and disc ØD	1000 mm	N.m	61 500	45 100	49 200	36 080	41 000	29 930
	1200 mm	N.m	76 500	56 100	62 200	44 880	51 000	37 230
	1500 mm	N.m	99 000	72 600	79 200	58 080	66 000	48 180
	2000 mm	N.m	136 500	100 100	109 200	80 080	91 000	66 430
BT for other ØD (mm)	N.m		BT = BF (D/2000 - 0.09)					
F	mm		F = (0.433 x D) - 154.2					
G	mm		G = (0.250 x D) + 286.2					
Setting pressure of limit valve of the hydraulic unit	bar		205		205		165	

- * **US2-1:** disc temperature during one braking $\leq 150^\circ\text{C}$
US2-4 : disc temperature during one braking $\leq 600^\circ\text{C}$
US2-5: disc temperature during one braking $\leq 350^\circ\text{C}$, optional, consult us.

Emergency Brakes

DISC BRAKE - SH18B CALIPER

Revision number: T03907-01-B

Revision date: 08.10.2010

Emergency brake
Fail safe
Spring application
Hydraulic release
Opening proving switches
Lining wear detector

Operating conditions:

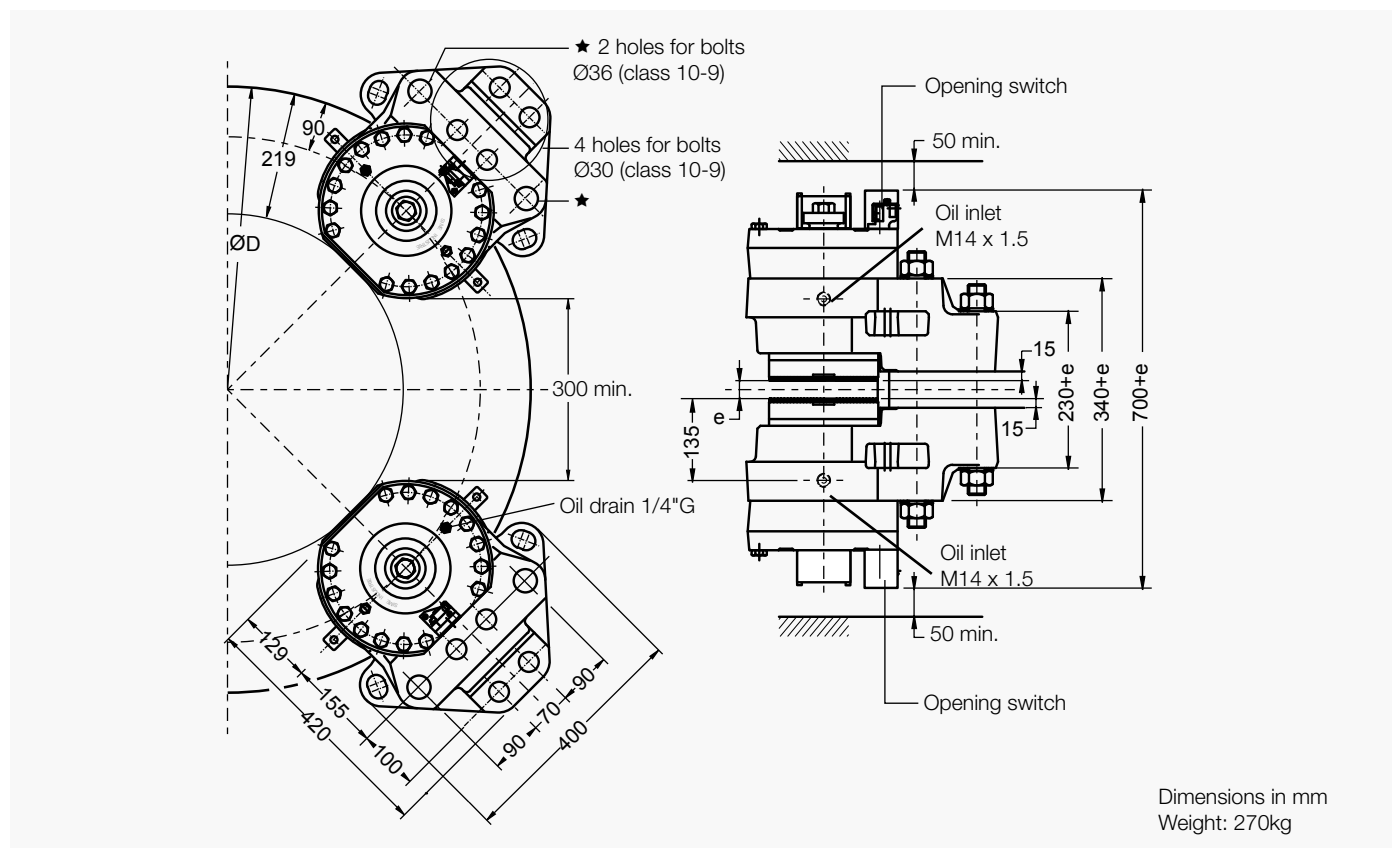
- Ambient temperature: -10°C to +60°C
- Relative humidity: $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options:

- Lining wear control switch
- Progressive braking system
- Marine protection
- Caliper on support with integral hydraulic power pack



Opening proving switch :

250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.

Compatible with PLC

(Programmable Logic Controllers).

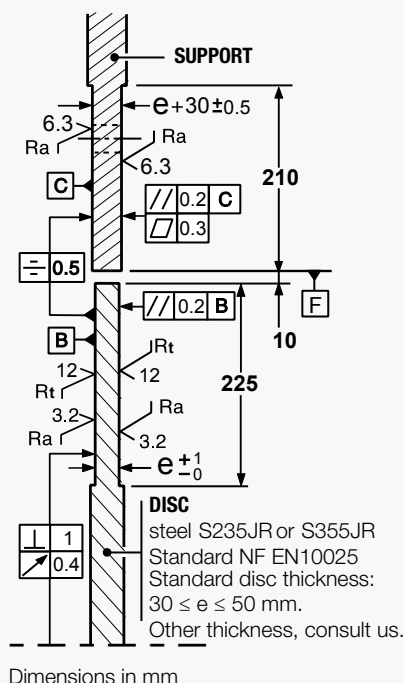
An opening switch used with other equipment
than PLC must not be reused with a PLC.

DISC BRAKE - SH18B CALIPER

Revision number: T03907-01-B

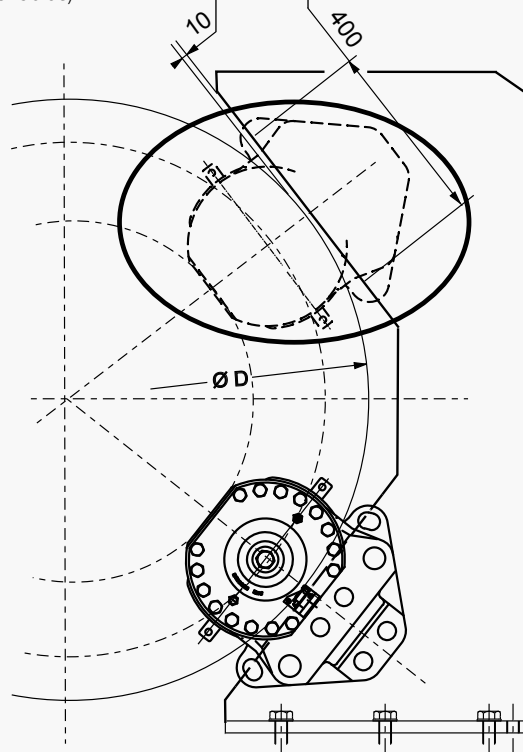
Revision date: 08.10.2010

Disc and support



Dimension at the closest point (perpendicular on the radius)

The support F face **must be** rectilinear on the length.



Torque and effort values are subject to a variation of $\pm 10\%$
Response time at nominal torque : see the leaflet n° G08555-01

Designation	Caliper		SH18B	
	Lining *		US2-1	US2-4
Braking force BF for 1mm of air gap disc/lining	Static	N	160 000	117 400
	Dynamic	N	180 000	130 500
Linear speed of the disc		m/s	≤ 10	≤ 50
Dynamic braking torque BT (N.m) for 1 caliper and disc ØD	1000 mm	N.m	73 800	53 500
	1200 mm	N.m	91 800	66 500
	1500 mm	N.m	118 800	86 100
	2000 mm	N.m	163 800	118 700
BT for other ØD (mm)		N.m	BT = BF (D/2000 - 0.09)	
Regulation pressure	minimum	bar	180	
	maximum	bar	200	
Setting pressure of limit valve of the hydraulic unit		bar	225	
Total volume of oil displaced		cm ³	85 for one stroke disc/lining (nominal wear and opening)	

* US2-1: disc temperature during one braking ≤ 150°C

US2-4: disc temperature during one braking ≤ 600°C

US2-5: disc temperature during one braking ≤ 350°C, optional, consult us.

Emergency Brakes

DISC BRAKE - SHC18B CALIPER

Revision number: T03907-03-B

Revision date: 15.10.2010

Emergency brake
Fail safe
Spring application
Hydraulic release
Integral hydraulic power pack
Opening proving switches
Lining wear detector

Operating conditions:

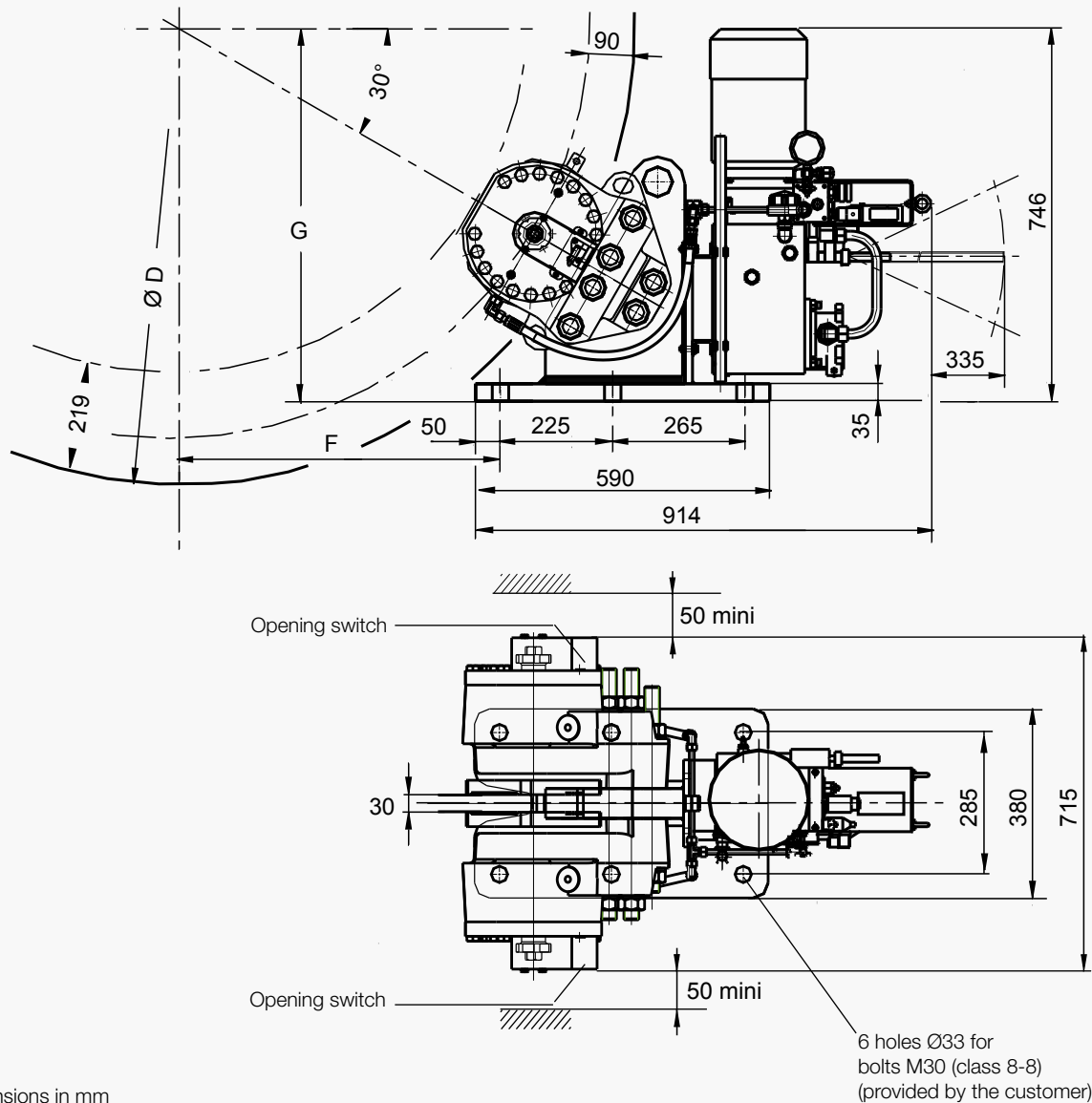
- Ambient temperature: -10°C to $+60^{\circ}\text{C}$
 - Relative humidity: $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options:

- Lining wear control switch
- Progressive braking system
- Marine protection



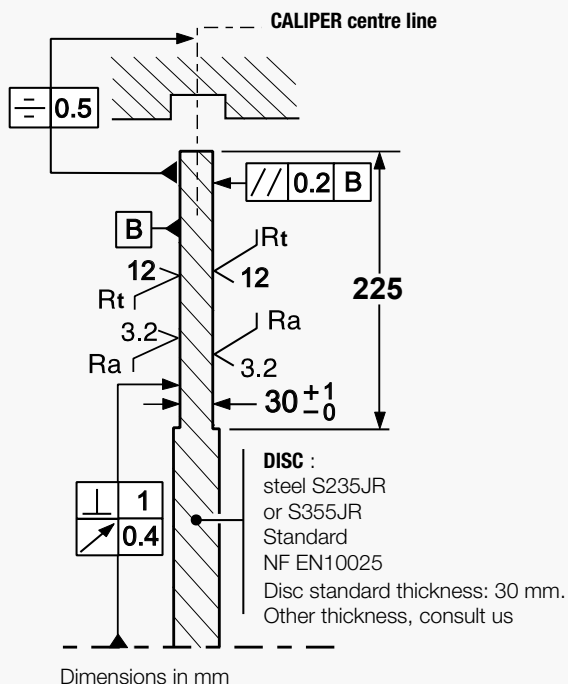
Dimensions in mm
Weight: 450kg

DISC BRAKE - SHC18B CALIPER

Revision number: T03907-03-B

Revision date: 15.10.2010

Installation instructions



Electrical data

- **Motor voltages** :
3 phases : 230/400VAC ±10% 50Hz
2.2kW. 4 poles
- **Options motor** :
690VAC ±10% 50Hz
500VAC ±10% 50Hz
230/400VAC ±10% 50Hz with PTC sensor
Other voltage, consult us.
- **Opening switch** :
250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.
220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.
Compatible with PLC
(Programmable Logic Controllers).
An opening switch used with other equipment
than PLC must not be reused with a PLC.

Torque and effort values are subject to a variation of ±10%
Response time at nominal torque : see the leaflet n° G08555-01.

Designation	Caliper		SHC18B	
	Lining *		US2-1	US2-4
Braking force BF for 1mm of air gap disc/lining	Static	N	160 000	117 400
	Dynamic	N	180 000	130 500
Linear speed of the disc		m/s	≤ 10	≤ 50
Dynamic braking torque BT (N.m) for 1 caliper and disc ØD	1000 mm	N.m	73 800	53 500
	1200 mm	N.m	91 800	66 500
	1500 mm	N.m	118 800	86 100
	2000 mm	N.m	163 800	118 700
BT for other ØD (mm)		N.m	BT = BF (D/2000 - 0.09)	
F		mm	F = (0.433 x D) - 154.2	
G		mm	G = (0.250 x D) + 286.2	
Setting pressure of limit valve of the hydraulic unit		bar	225	

* **US2-1**: disc temperature during one braking ≤ 150°C

US2-4 : disc temperature during one braking ≤ 600°C

US2-5: disc temperature during one braking ≤ 350°C, optional, consult us.

Emergency Brakes

DISC BRAKE - SH25 CALIPER

Revision number: T03915-01-B

Revision date: 21.10.2010

Emergency brake
Fail safe
Spring application
Hydraulic release
Opening proving switches
Lining wear detector

Operating conditions:

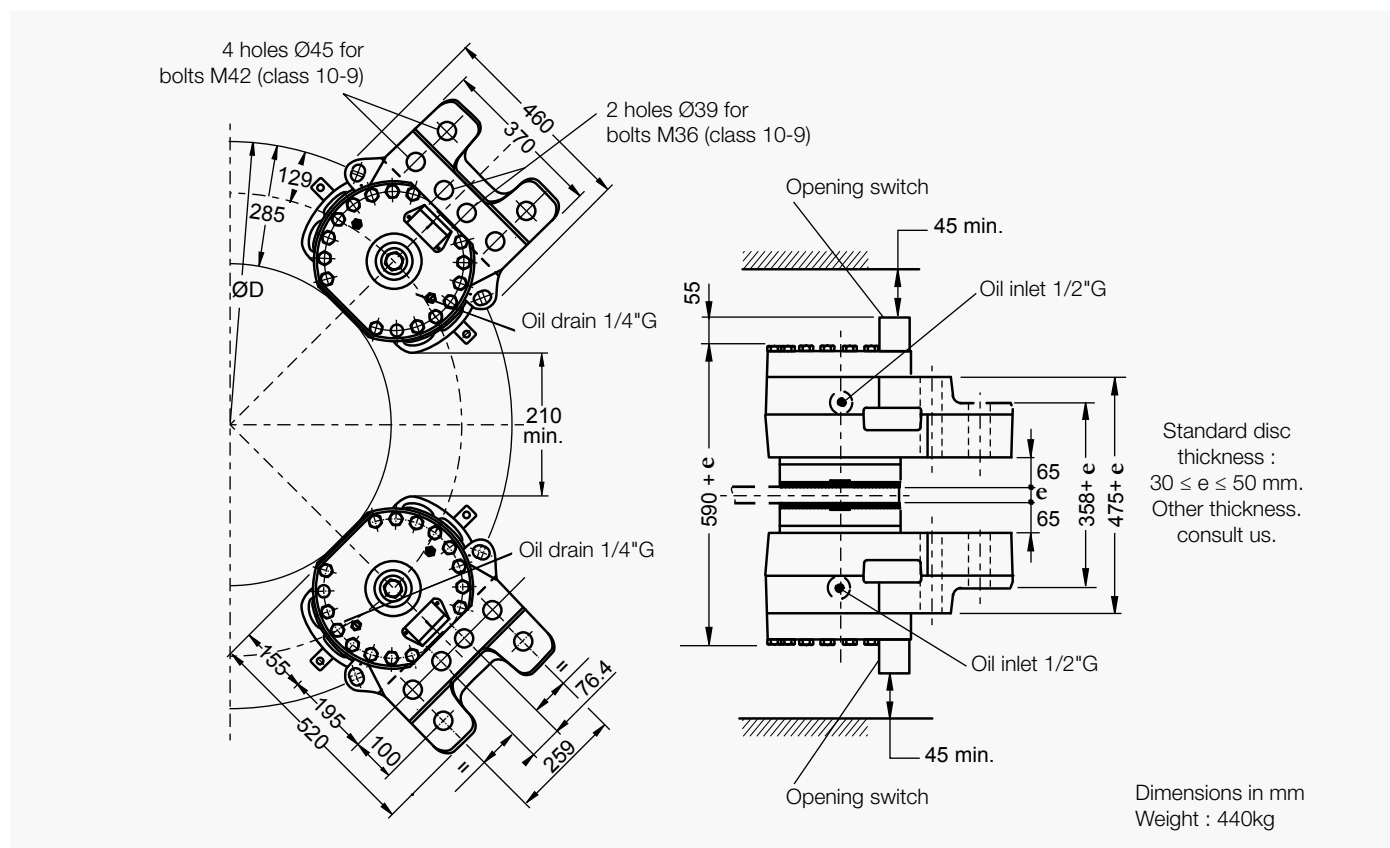
- Ambient temperature: -10°C to $+60^{\circ}\text{C}$
- Relative humidity: $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options:

- Lining wear control switch
- Progressive braking system
- Marine protection
- Caliper on support with integral hydraulic power pack



Opening proving switch :

250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.

Compatible with PLC
(Programmable Logic
Controllers).

An opening switch used with other equipment
than PLC must not be reused with a PLC.

Revision date: 21.10.2010

Emergency Brakes

DISC BRAKE - SHC25 CALIPER

Revision number: T03916-02-C

Revision date: 15.06.2011

Emergency brake
Fail safe
Spring application
Hydraulic release
Integral hydraulic power unit
Opening proving switches
Lining wear detector

Operating conditions:

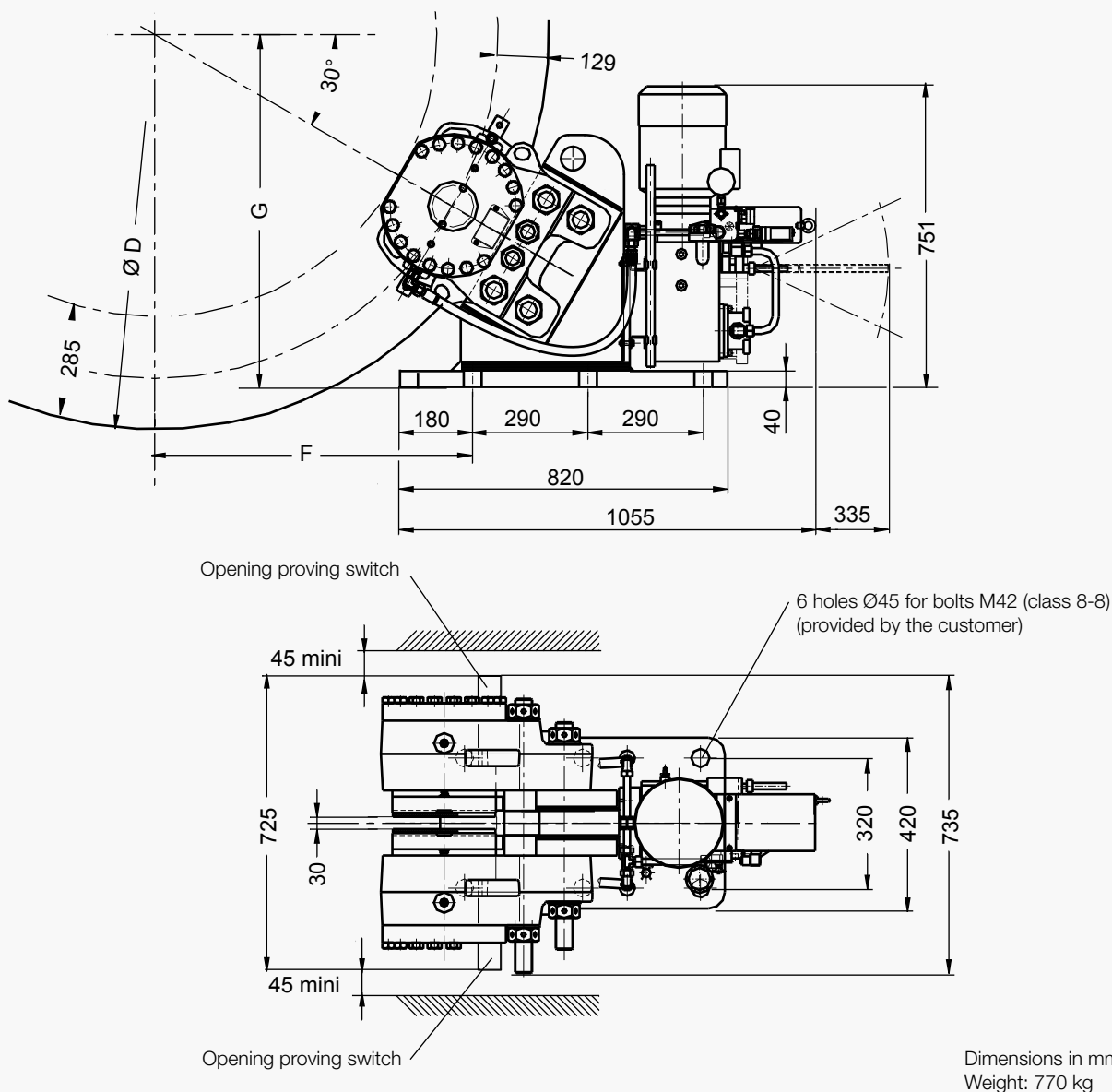
- Ambient temperature: -10°C to $+60^{\circ}\text{C}$
 - Relative humidity: $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

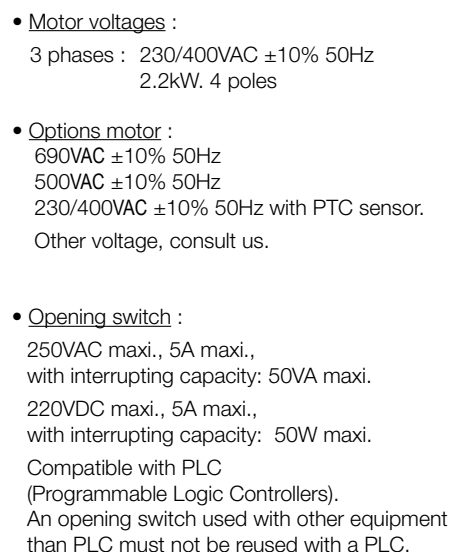
Options:

- Lining wear control switch
- Progressive braking system
- Marine protection
- Self contained electric system



Revision date: 15.06.2011

Electrical data



Designation	Caliper		SHC25-2		SHC25-1	
	Lining *		US2-1	US2-4	US2-1	US2-4
Braking force BF for 1mm of air gap disc/lining	Static	N	225 000	165 000	160 000	120 000
	Dynamic	N	250 000	184 000	180 000	134 000
Linear speed of the disc	m/s		≤ 10	≤ 50	≤ 10	≤ 50
Dynamic braking torque BF (N.m) for 1 caliper and a disc ØD (mm)	1500 mm	N.m	155 250	114 260	111 780	83 210
	2000 mm	N.m	217 750	160 260	156 780	116 710
	2500 mm	N.m	280 250	206 260	201 780	150 210
	3000 mm	N.m	342 750	252 260	246 780	183 710
BT for other ØD (mm)	N.m		BT = BF (D/2000 - 0.129)			
F	mm		F = (0.433 x D) - 62			
G	mm		G = (0.250 x D) + 390			
Maximum setting pressure limit valve of hydraulic power unit	bar		225		205	

* **US2-1** : disc temperature during one braking $\leq 150^{\circ}\text{C}$
US2-4 : disc temperature during one braking $\leq 600^{\circ}\text{C}$
US2-5 : disc temperature during one braking $\leq 350^{\circ}\text{C}$, optional, consult us.

Emergency Brakes

DISC BRAKE - SH32 CALIPER

Revision number: T10040-01-C

Revision date: 15.06.2012

Emergency brake
Fail safe
Spring application
Hydraulic release
Opening proving switches
Lining wear indicator wires

Operating conditions:

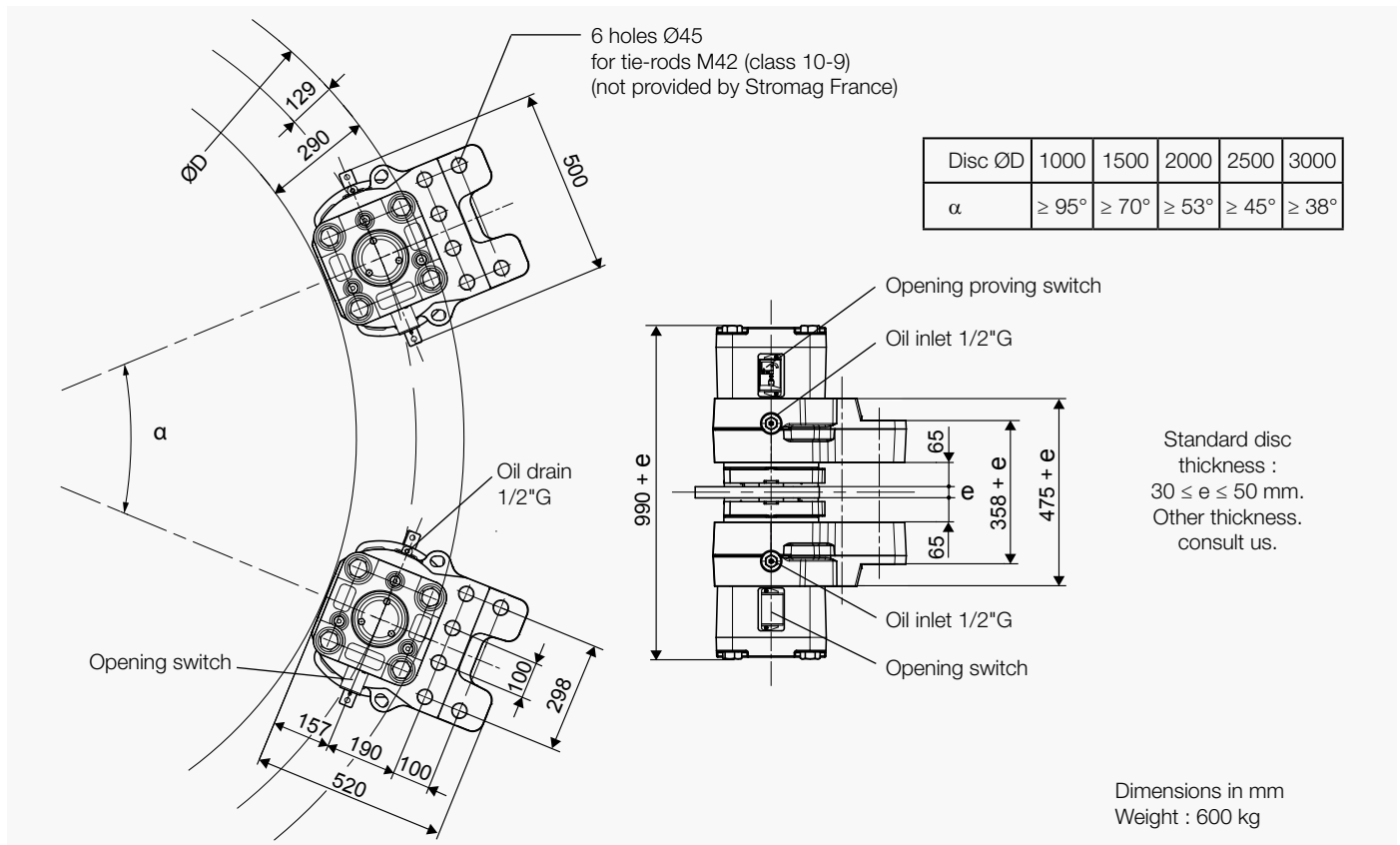
- Ambient temperature: -10°C to +60°C
 - Relative humidity: $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options:

- Lining wear proving switches
- Progressive braking system
- Marine protection



Opening proving switches

Wear proving switches (optional) :

250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.

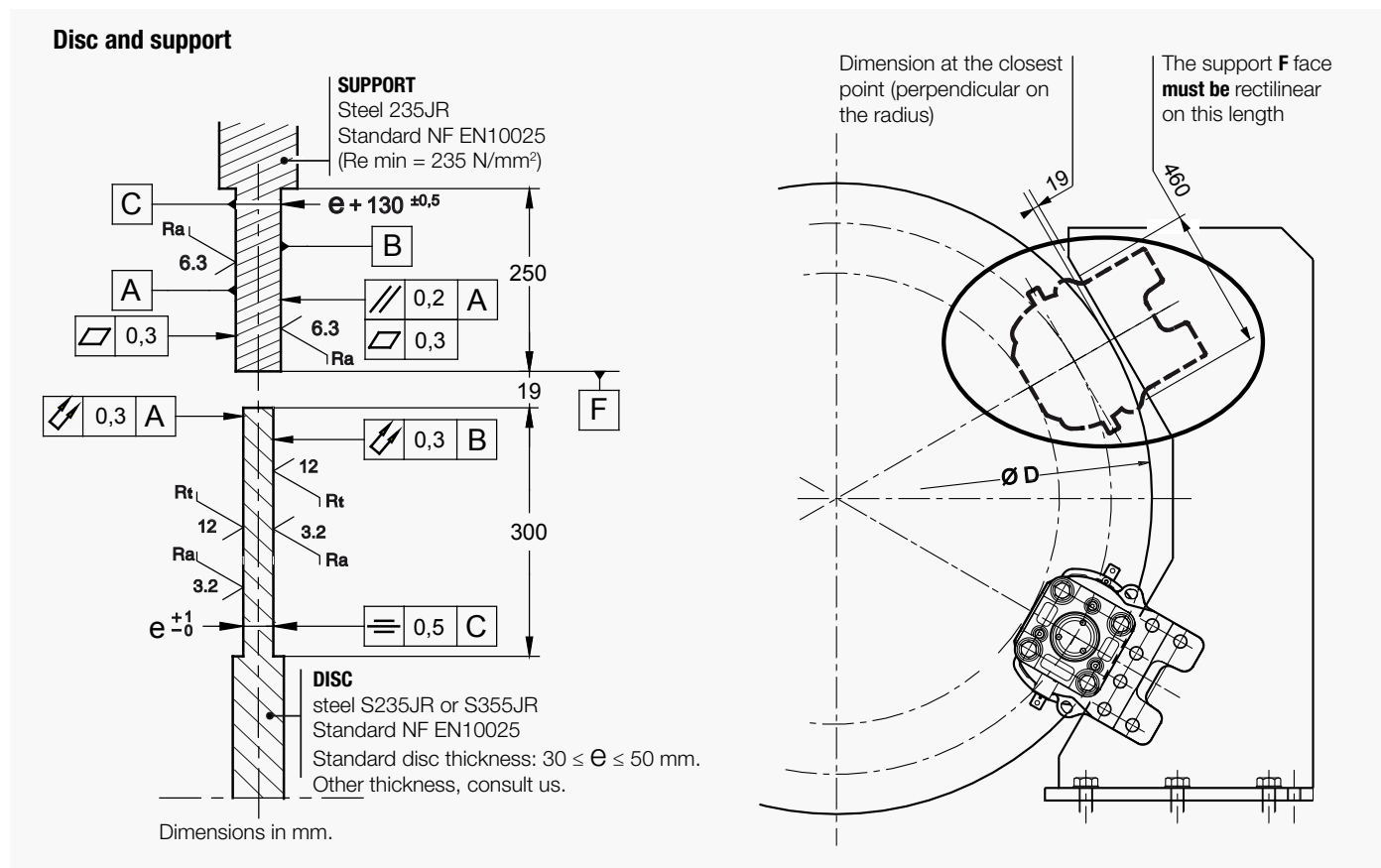
Compatible with PLC (Programmable Logic
Controllers).

An opening switch used with other equipment
than PLC must not be reused with a PLC.

DISC BRAKE - SH32 CALIPER

Revision number: T10040-01-C

Revision date: 15.06.2012



IMPORTANT

BRAKING FORCE and **TORQUE** values correspond to lining quality **US2-1** and disc steel S235JR or S355JR (standard NF EN10025), these values are subject to a variation of ±10%.

Response time at nominal torque ≤ 0.3s

Designation	Caliper		SH32
	Lining		US2-1
BRAKING FORCE BF for air gap disc/lining of 2 x 1.5 mm	Dynamic N Static N		333 800 300 000
BRAKING FORCE BF for air gap disc/lining of 2 x 2 mm	Dynamic N Static N		320 000 288 000
Linear speed of the disc	m/s		≤ 10
DYNAMIC BRAKING TORQUE BT for 1 caliper and disc ØD (mm)	N.m		BT = BF (D/2000 - 0.129)
Regulation pressure	minimum maximum	bar bar	180 200
Setting pressure limit valve of hydraulic unit	bar		225
Total volume of oil displaced for air gap disc/lining of 2 x 2 mm	cm ³		191 for one stroke disc/lining

SIME Brakes Industrial Braking Systems

Emergency Brakes

APPLICATIONS	
SHD: • TOWER CRANES - BOOM CRANES • OFFSHORE APPLICATIONS • WINDTURBINES	TH/THC9: • AERONAUTIC APPLICATIONS • PORT CRANES

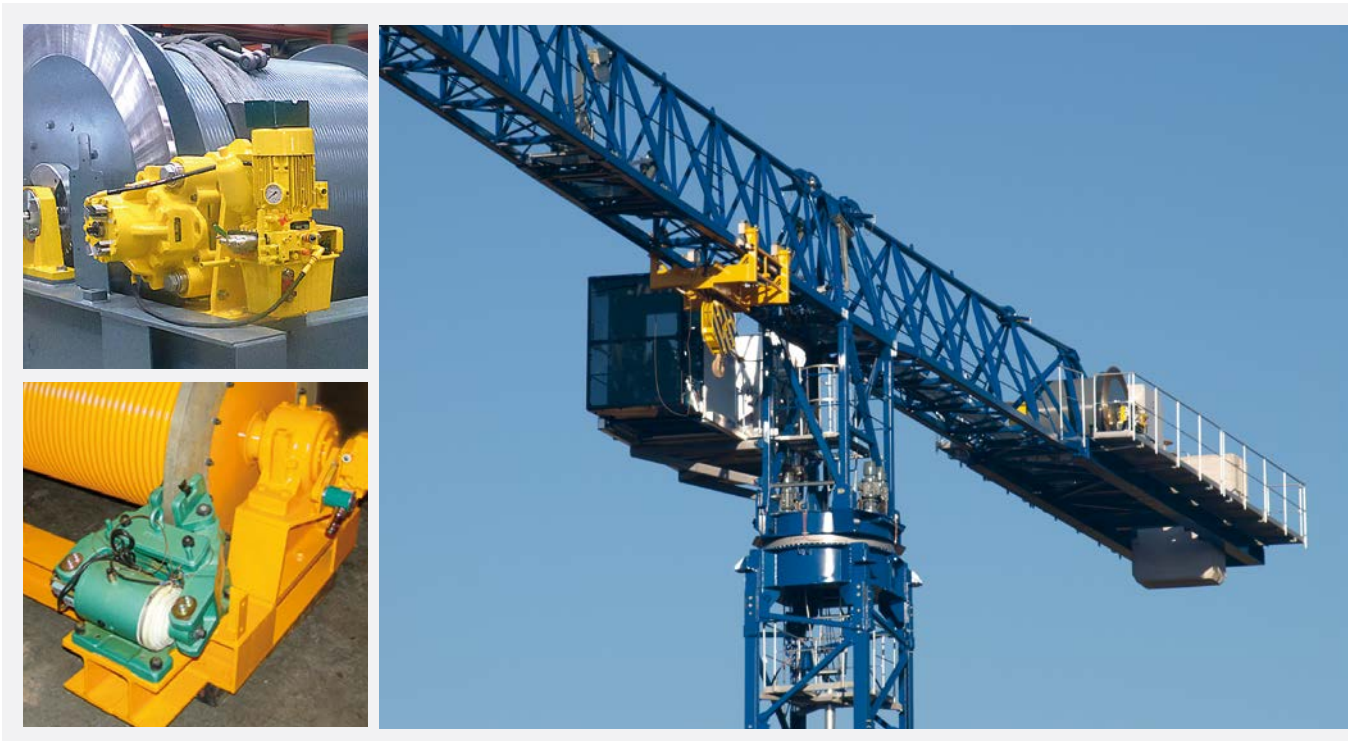


Photo courtesy of Comansa - Special project

HYDRAULIC EMERGENCY BRAKES TYPES SHD / TH

MAIN CHARACTERISTICS	OPTIONS
- FAILSAFE BRAKE BY SPRING APPLICATION. - HYDRAULIC RELEASE - OPENING PROVING SWITCH - LINING WEAR INDICATORS	LINING WEAR PROVING SWITCH



SHD

- Single-spring hydraulic caliper
- A large range from SHD1 to SHD18
- Options:
Automatic lining wear compensation
Manual release tool - Positive braking
Integrated HPP - Marine protection



TH9

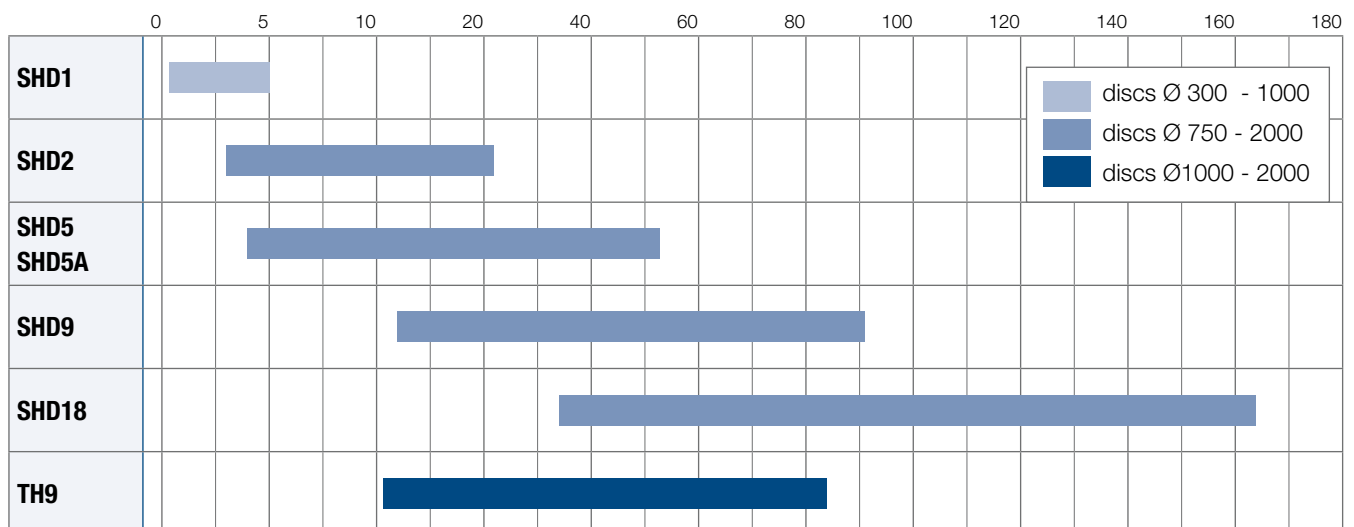
- Option :
Disc thickness 42 mm



THC9

- Caliper and Hydraulic Power Pack mounted on the same support
- Option: Electrical unit

Braking torque (kN.m)



Emergency Brakes

DISC BRAKE - SHD1 CALIPER

Revision number: T10098-01-E

Revision date: 12.01.2016

Emergency brake

Fail to safe

Spring application

Hydraulic release

Mechanical holding of the brake in open position for pads changing

Manual wear centering and compensation

Possible association with discs thickness: 12.7 (1/2"), 20 and 30mm.

Lining pads type **US2-1** or **ES3-7**

Lining pads with full wear indicators

Protection C5-M M

Operating conditions:

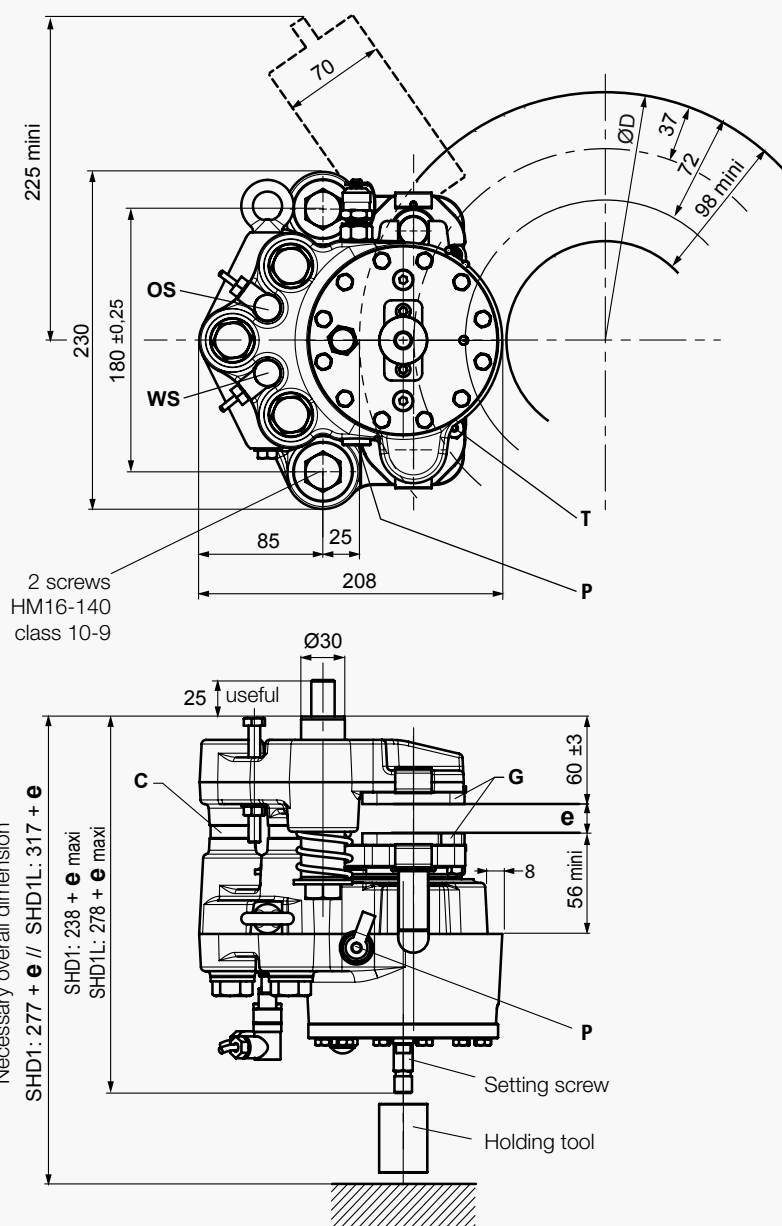
- Ambient temperature:
Dynamic braking : -30°C to +70°C
Brake applied (parking): -40°C to +70°C
 - Relative humidity: $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu\text{m}$
- Other conditions: consult us.

Use:

- The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, consult us.

Options:

- Opening proving switch (**OS**)
- Lining wear proving switch (**WS**)
- All non-standard disc thickness $> 12.7\text{mm}$ (1/2")
- Lining temperature sensor (**T**)
- SHD1L**: caliper with manual wear compensation at half wear:
 - braking force before wear = +10% maxi.
 - braking force at half wear = -10% maxi.



C = Spacers according to disc thickness
G = Linings : Thickness of new lining 8 mm
 Thickness to wear 6 mm
 Each 1 mm of wear on each side:
 manual centering and compensation
OS = Opening proving switch (option)
WS = Wear proving switch (option)
P = 2 oil ports 1/4"G
 Bleeder screw delivered separately
T = PT100 sensor (option)
ØD : from 300 to 1000 mm
e = disc thickness

Dimensions in mm

Weight = 24 kg

Electrical data

Inductive switches of opening and wear (options):

3 wires PNP NO
 12 to 24 VDC 200mA
 with connector M12 / 5 positions
 according to standard :
 IEC61076-2-101 / code A

Sensor PT100 (option)

Detection of the temperature threshold :
 100°C ± 5

- R = 136.6 Ω at 95 °C
- R = 138.5 Ω at 100°C
- R = 140.4 Ω at 105°C

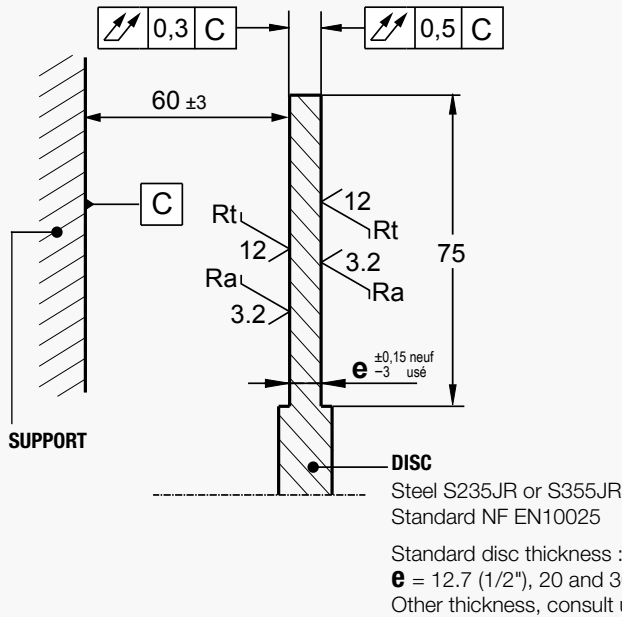
Cable length = 2.5 meters
 2 wires red/yellow

DISC BRAKE - SHD1 CALIPER

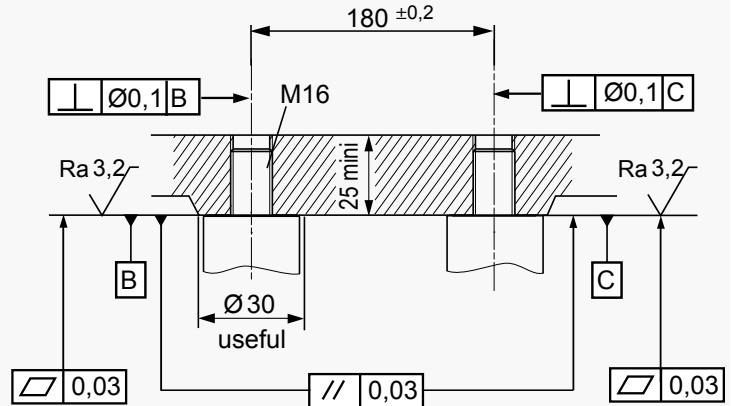
Revision number: T10098-01-E

Revision date: 12.01.2016

Installation instructions :



Support machining tolerances :



Torque and effort values are subject to a variation of $\pm 10\%$
Closing time at nominal torque $\leq 0.3s$

Designation	Caliper SHD1-		5	4	3	2	1	5	4	3	2	1
	Lining *		ES3-7					US2-1				
Braking force BF for air gap disc/lining of 2x1mm	Dynamic	N	11 000	8 000	6 000	4 000	2 000	11 000	8 000	6 000	4 000	3 000
	Static	N	9 900	7 200	5 400	3 600	1 800	9 680	7 040	5 280	3 520	2 640
Linear speed of the disc ●		m/s	≤ 50					≤ 10				
Dynamic braking torque BT (m.N) for 1 caliper and disc ØD (mm) / 300 ≤ D ≤ 1000 mm		N.m	BT = BF (D/2000-0.037)									
Regulation pressure	Minimum	bar	150									
	Maximum	bar	170									
Setting pressure limit valve of hydraulic unit		bar	190									
Total volume of oil displaced for air gap disc/lining of:	2 x 1mm (nominal opening)		5 cm³									
	2 x 2mm (wear+opening)		cm³	9 cm³								
	2 x 4mm SHD1L (wear+open.)		cm³	18 cm³								

* **ES3-7:** disc temperature during one braking $\leq 600^{\circ}\text{C}$

US2-1: disc temperature during one braking $\leq 100^{\circ}\text{C}$

● For higher speed, consult us.

Emergency Brakes

DISC BRAKE - SHD2 CALIPER

Revision number: T03851-05-B

Revision date: 04.09.2012

Spring application

Hydraulic release

Opening proving switch (compatible for PLC)

Lining wear proving switch (compatible for PLC)

Marine protection

Working conditions:

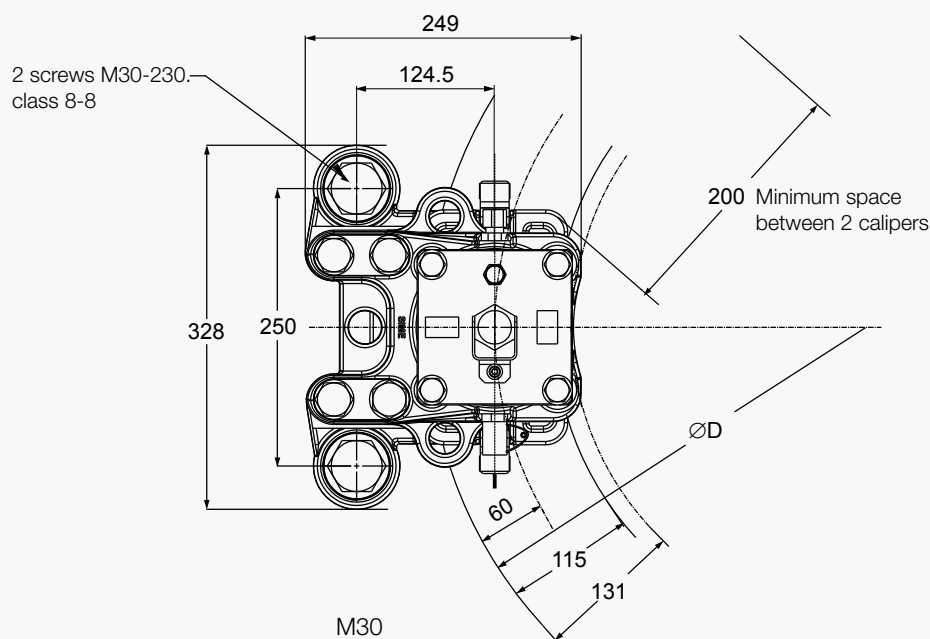
- Ambient temperature: -20°C to +60°C
- Relative humidity $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions, consult us.

Use:

- Emergency stopping brake in case of overspeed or loss of electrical supply

Options :

- Thermistors for detection of the maximum temperature of the disc

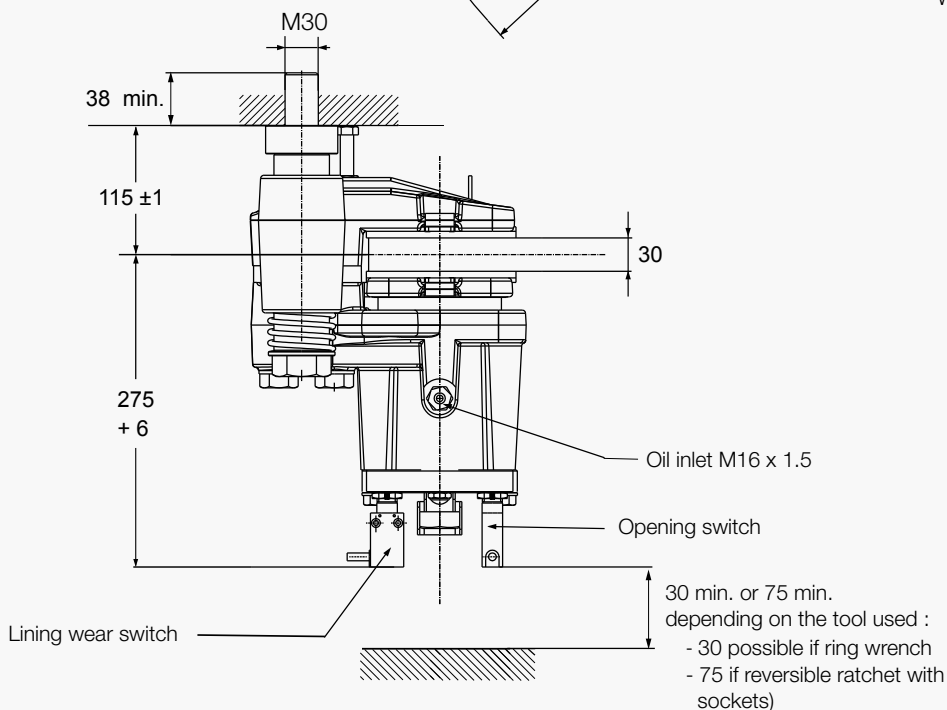


Electrical data :

- Proving switches:
240V. 5A. 50VA AC
220V. 5A. 50W CC

Dimensions in mm

Weight : 60 kg

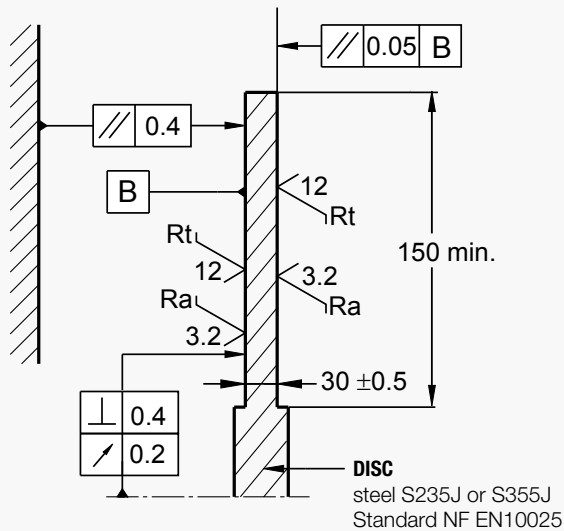


DISC BRAKE - SHD2 CALIPER

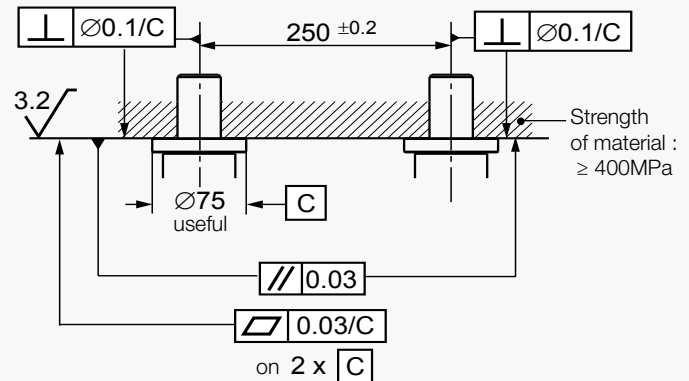
Revision number: T03851-05-B

Revision date: 04.09.2012

Installation instructions :



Support machining tolerances :



Response time at nominal torque < 0.3s
Torque and effort values are subject to a variation of ± 10%

Designation	Caliper		SHD2-3	SHD2-2	SHD2-1
	Lining		ES3-7		
Braking force BF for air gap disc/lining of 2x1mm	Dynamic	N	23 000	15 400	10 540
Linear speed of the disc ●		m/s	< 50		
Dynamic braking torque BT (m.N) for 1 caliper and disc ØD (mm)	630 mm	N.m	5 870	3 930	2 690
	710 mm	N.m	6 790	4 540	3 110
	800 mm	N.m	7 820	5 240	3 580
	1000 mm	N.m	10 120	6 780	4 640
		N.m	BT = BF (D/2000 - 0.06)		
Regulation pressure	Minimum	bar	180	110	85
	Maximum	bar	200	140	115
Setting pressure limit valve of hydraulic unit		bar	210	165	140
Total volume of oil displaced		cm ³	8 per stroke (for a nominal disc/lining stroke of 1 mm per side)		
Max. oil volume of the jack		cm ³	45		

● For higher speed, consult us.

Emergency Brakes

DISC BRAKE - SHD5 CALIPER

Revision number: T03861-08-A

Revision date: 29.11.2010

Fail safe braking
Braking by spring application
Hydraulic release
Opening proving switch
Lining wear proving switch

Working conditions:

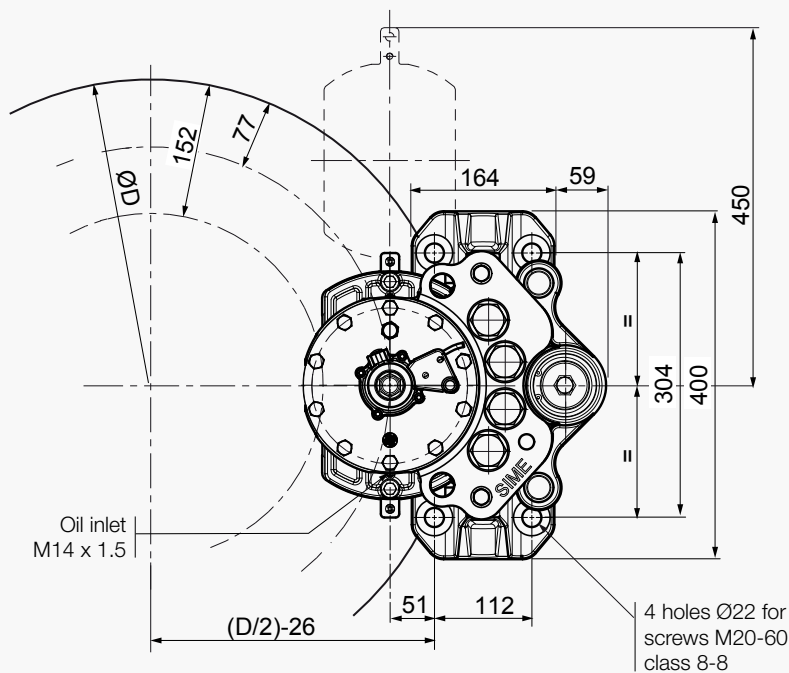
- Ambient temperature: -20°C to +60°C
- Relative humidity $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions, consult us.

Use:

- Emergency stopping brake in case of overspeed or loss of electrical supply

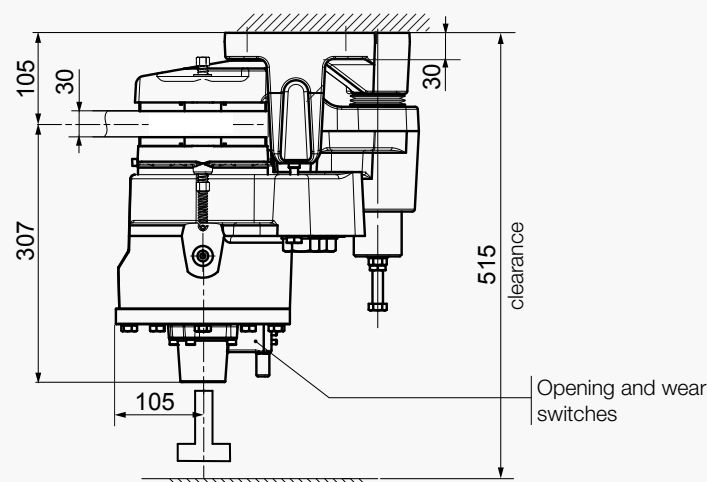
Options:

- Automatic lining wear compensation (WACS)
- Manual release tool (DM)
- Positive braking
- Detection of full lining wear
- Temperature detection of the linings
- Switch for PLC
- Marine protection



Opening and wear proving switches :
240V. 5A. 50VA AC
220V. 5A. 50W DC
2 m length cable (3 x 0.75 mm²)

Dimensions in mm
Weight: 105 kg



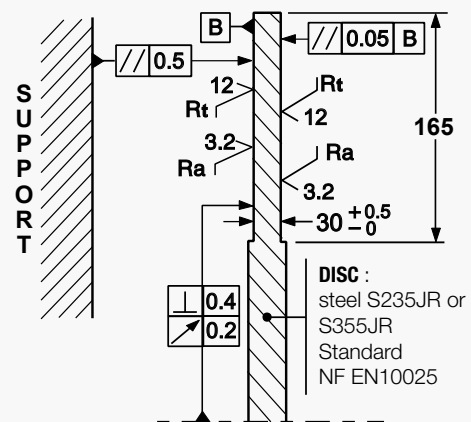
DISC BRAKE - SHD5 CALIPER

Revision number: T03861-08-A

Revision date: 29.11.2010



Installation instructions :



Torque and effort values are subject to a variation of $\pm 10\%$
Response time at nominal torque $\leq 0.3s$

Designation	Caliper		SHD5-6	SHD5-5	SHD5-4	SHD5-3	SHD5-2	SHD5-1
	Lining		WS1-3					
Braking force BF for 1.25 mm of air gap disc/lining	Dynamic	N	33 000	27 000	23 000	18 000	15 000	13 500
Linear speed of the disc for BF		m/s	< 50					
Dynamic braking torque BT (N.m) for a caliper mounted on a disc ØD (mm)	710 mm	N.m.	9 180	7 500	6 400	5 000	4 170	3 760
	1000 mm	N.m.	13 960	11 420	9 730	7 610	6 350	5 720
	1500 mm	N.m.	22 210	18 170	15 480	12 110	10 100	9 090
		N.m	BT = BF (D/2000 - 0.077)					
Regulation pressure	Min.	bar	110	110	85	60	60	60
	Max.	bar	140	140	115	80	80	80
Setting pressure limit valve hydraul. pack		bar	165	165	140	105	105	105
Total volume of oil displaced		cm ³	15.9 per stroke (for nominal disc/lining stroke of 1.25 mm per side)					
Max. oil volume of the jack		cm ³	76					

Emergency Brakes

DISC BRAKE - SHD5A-M2 CALIPER

Revision number: T10131-02-E

Revision date: 27.09.2018

Fail safe braking
Braking by spring application
Hydraulic release
Opening proximity switch
Holding tool
Detection of full lining wear
Protection level C3-H standard ISO 12944-2
VCI packing

Working conditions:

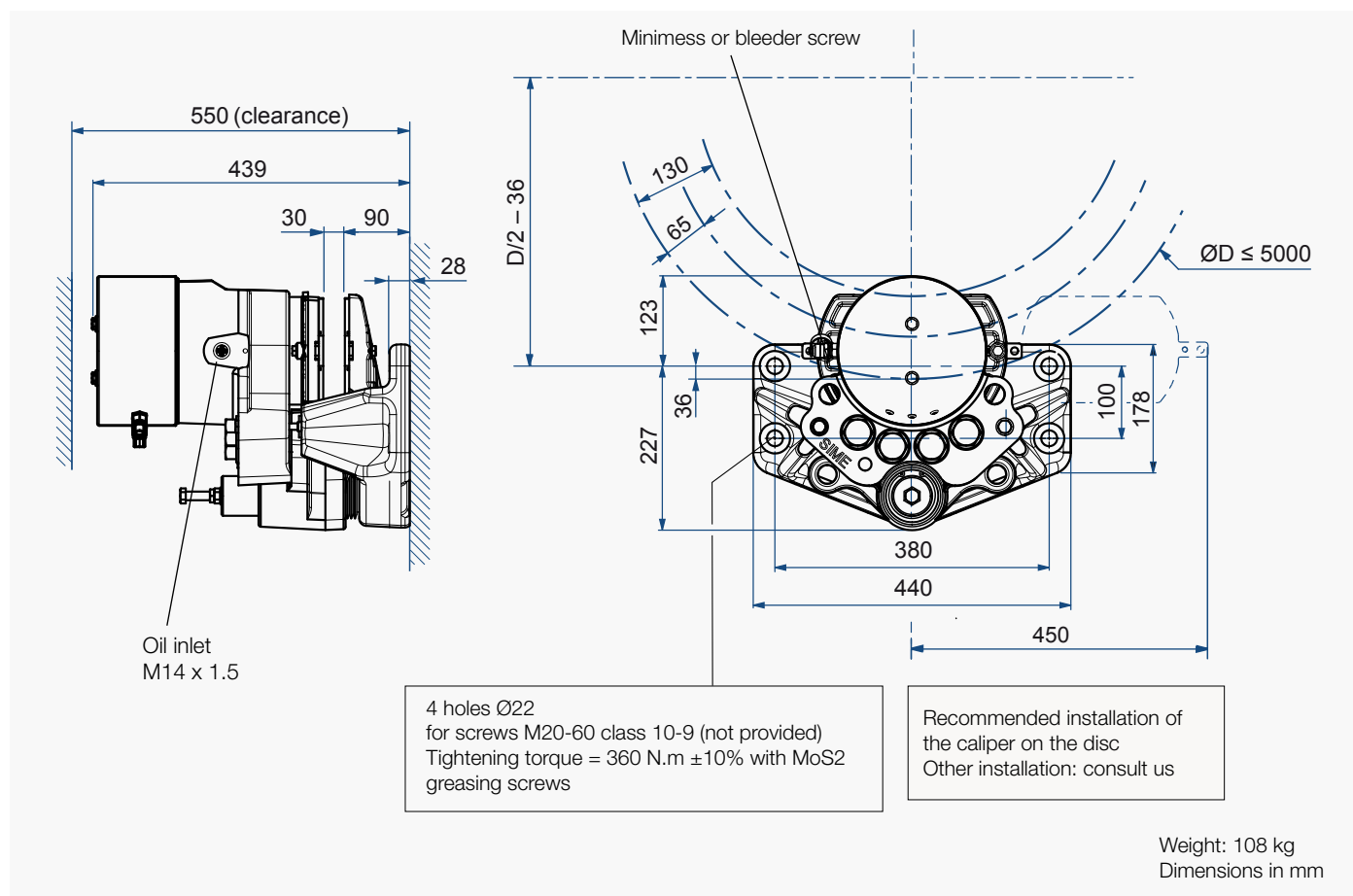
- Ambient temperature: -10°C to +60°C
- Relative humidity $\leq 70\%$
- Dust in atmosphere $\geq 65\mu$
- Other conditions: consult us.

Use:

- Emergency stopping brake in case of overspeed or loss of electrical supply
- Service life : 200 000 cycles

Options:

- Wear proximity switch
- Closing proximity switch
- Low temperature:
 - dynamic braking: -30°C to +60°C
 - brake closed (park position): -40°C to +60°C
- Protection level C5M-H



Electrical data :

Opening proximity switch:

3 wires PNP NO
10 to 58 VDC 200 mA
delivered with connector M12

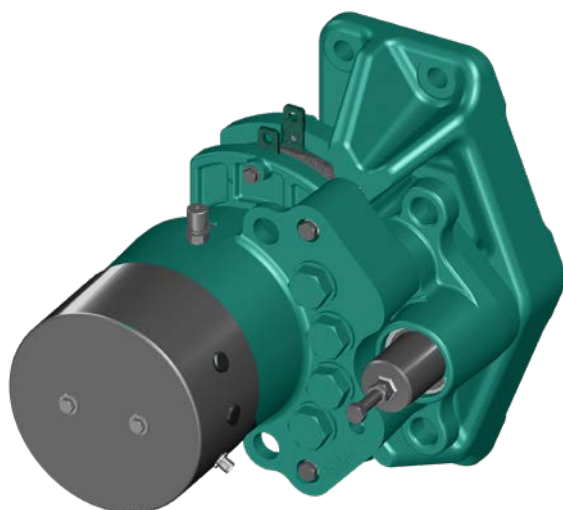
Closing and wear switches: optional



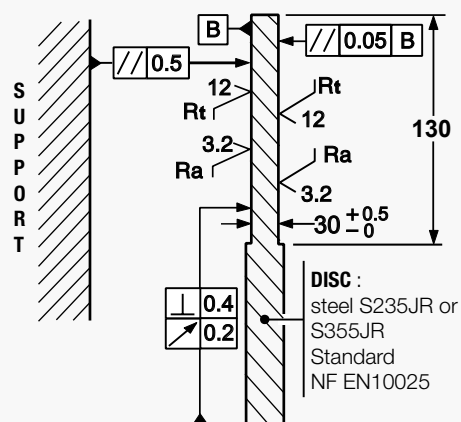
DISC BRAKE - SHD5A-M2 CALIPER

Revision number: T10131-02-E

Revision date: 27.09.2018



Installation instructions :



Torque and effort values are subject to a variation of $\pm 10\%$
Response time at nominal torque $\leq 0.3s$

Designation	Caliper SHD5A-...-M2		1	2	3	4	5	6	7	8
	Lining		US2-1							
Braking force BF for 1 mm of air gap disc/lining	Dynamic	N	15500	17700	20000	28000	33000	41000	48000	56000
	Static	N	13650	15600	17600	24650	29050	36100	42250	49300
Linear speed of the disc for BF		m/s	< 10							
Dynamic braking torque BT for a caliper mounted on a disc ØD (mm) Dmax.=1500 mm		N.m	BT = BF (D/2000 - 0.065)							
Regulation pressure	Min.	bar	60	60	85	85	110	140	140	180
	Max.	bar	80	80	115	115	140	160	160	200
Setting pressure limit valve hydraulic pack		bar	105	105	140	140	165	190	190	225
Total volume of oil displaced		cm ³	12.7 per stroke (for nominal disc/lining stroke of 1 mm per side)							
Max. oil volume of the jack		cm ³	76							

Emergency Brakes

DISC BRAKE - SHD9 CALIPER

Revision number: T10042-01-E

Revision date: 31.08.2017

Fail safe braking

Braking by spring application

Hydraulic release

Opening proximity switch for PLC

(induction sensor)

Lining wear detectors

Association with discs thickness 30 mm

Working conditions :

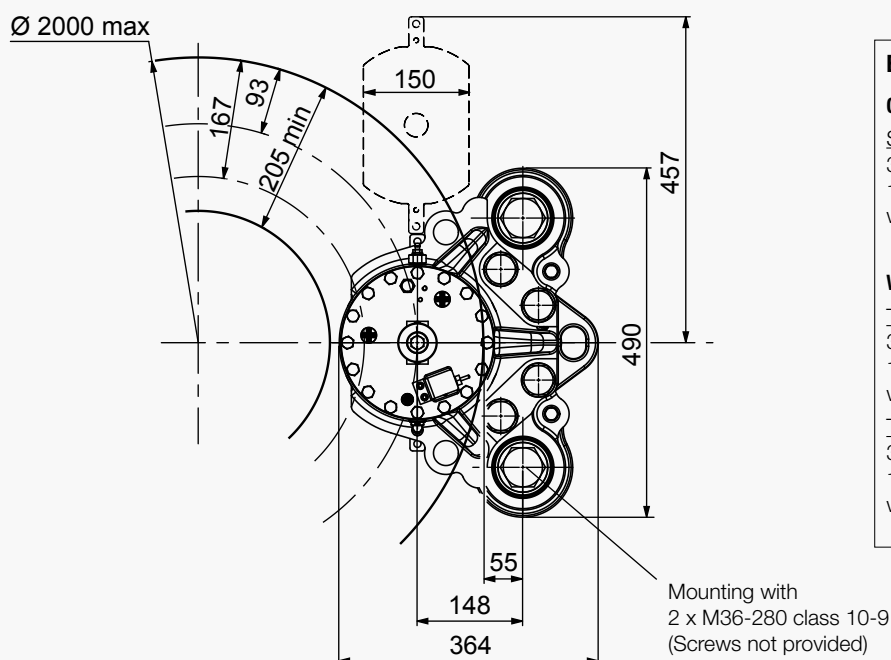
- Ambient temperature: -10°C to +60°C
 - Relative humidity $\leq 70\%$
 - Dust in atmosphere $\geq 65\mu\text{m}$
- Other conditions, consult us.

Use :

- Emergency stopping brake in case of overspeed or loss of electrical supply

Option :

- Lining wear proximity switch
- Discs thickness $24 \leq e < 30$ mm.
- Option GF :
Ambient temperature:
 - Dynamic braking : -30°C to +60°C
 - Parking braking : -40°C to +60°C
- Marine protection



Electrical data :

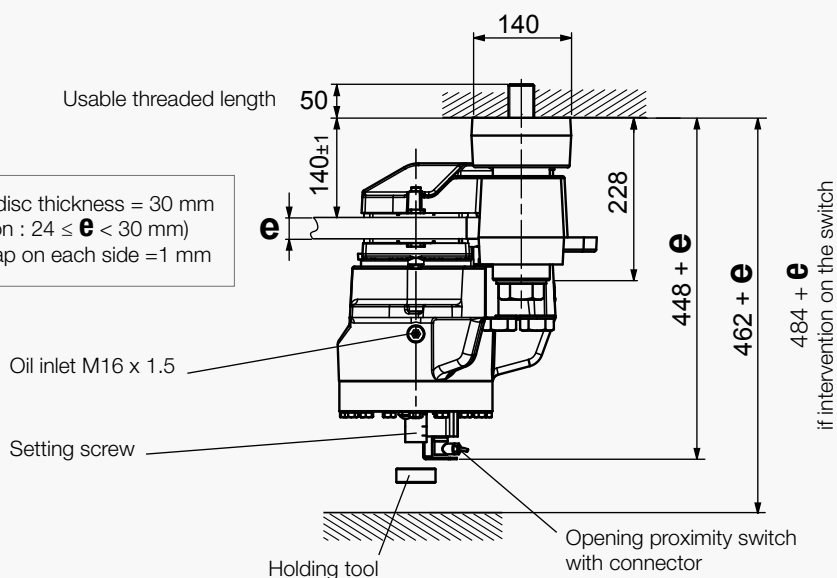
Opening proximity switch

Standard caliper and caliper option GF
3 wires PNP NO
10 to 58 VDC 200 mA
with connector M12

Wear proximity switch (option):

Temperature -10°C to +60°C
3 wires PNP NO
10 to 58 VDC 200 mA
with connector M12

Temperature -40°C to +60°C / Option GF
3 wires PNP NO
10 to 36 VDC 200 mA
with connector M12



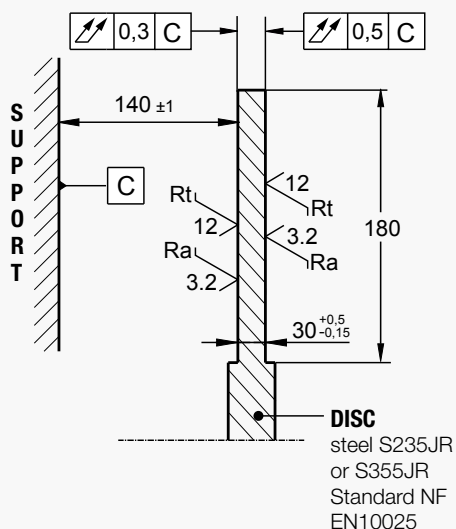
Weight: 148 kg
Dimensions in mm

DISC BRAKE - SHD9 CALIPER

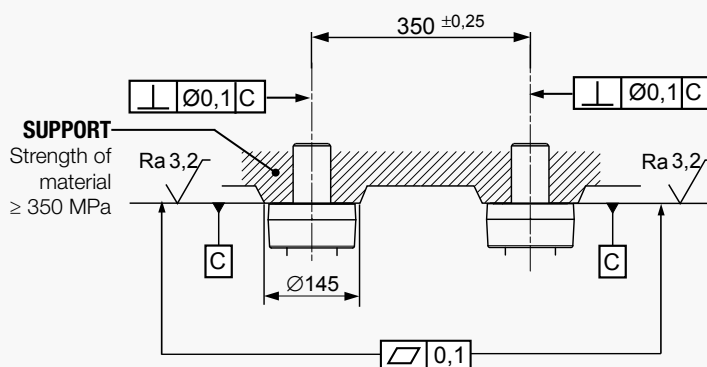
Revision number: T10042-01-E

Revision date: 31.08.2017

Installation instructions :



Support machining tolerances :



Torque and effort values are subject to a variation of $\pm 10\%$
Response time at nominal torque $\leq 0.3s$

Designation	Caliper		SHD9-6		SHD9-5		SHD9-4		SHD9-3		SHD9-2		SHD9-1	
	Lining *		US2-1	US2-5	US2-1	US2-5	US2-1	US2-5	US2-1	US2-5	US2-1	US2-5	US2-1	US2-5
Braking force BF for air gap disc/lining of 2x1mm	Dynamic	N	100 000	87 000	90 000	78 300	80 000	69 600	70 000	61 000	60 000	52 300	50 000	43 500
	Static	N	88 000	78 300	79 200	70 500	70 400	62 600	61 600	54 900	52 800	47 000	44 000	39 100
Linear speed of the disc		m/s	≤ 10											
Dynamic braking torque BT (m.N) for 1 caliper and disc ØD (mm) / D max ≤ 2000mm		N.m	BT = BF (D/2000 - 0.093)											
Regulation pressure	Minimum	bar	180		170		150		120		110		90	
	Maximum	bar	200		190		170		140		130		110	
Setting pressure limit valve of hydraulic pack		bar	220		210		190		160		160		130	
Total volume of oil displaced for air gap disc/lining of:														
2 x 1 mm (nominal opening)		cm³	28											
2 x 1.5mm (nominal opening and wear before setting)		cm³	39											

* **US2-1**: disc temperature during one braking $\leq 150^{\circ}C$
US2-5: disc temperature during one braking $\leq 350^{\circ}C$.

Emergency Brakes

DISC BRAKE - SHD18 CALIPER

Revision number: T10129-01-A

Revision date: 13.01.2017

Fail safe braking

Braking by spring application

Hydraulic release

Opening proximity switch for PLC
(induction sensor)

Full lining wear indicators

Association with discs thickness 30 mm

Protection level C3 L standard NF ISO9223

Working conditions :

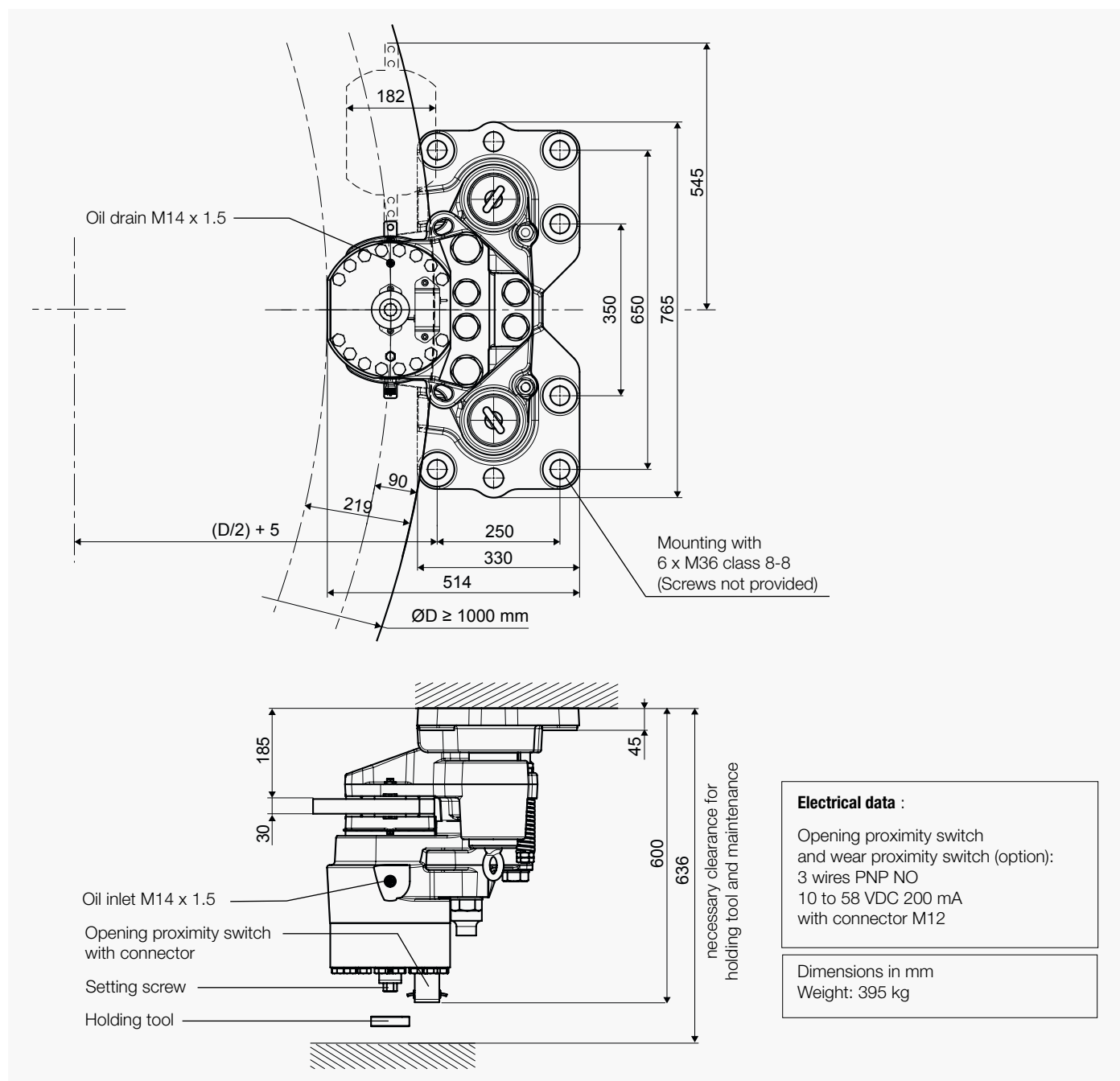
- Ambient temperature: -20°C to +60°C
 - Relative humidity ≤ 70%
 - Dust in atmosphere ≥ 70µm
- Other conditions, consult us.

Use :

- Emergency stopping brake in case of overspeed or loss of electrical supply

Option :

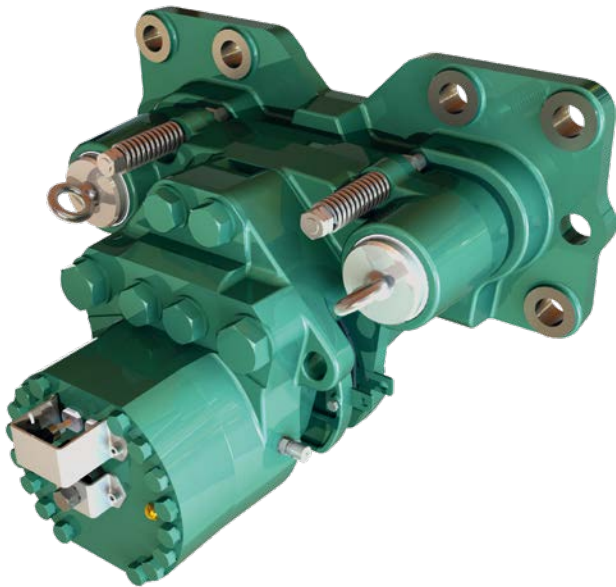
- Lining wear proximity switch
- Protection level C5-MM standard NF ISO9223



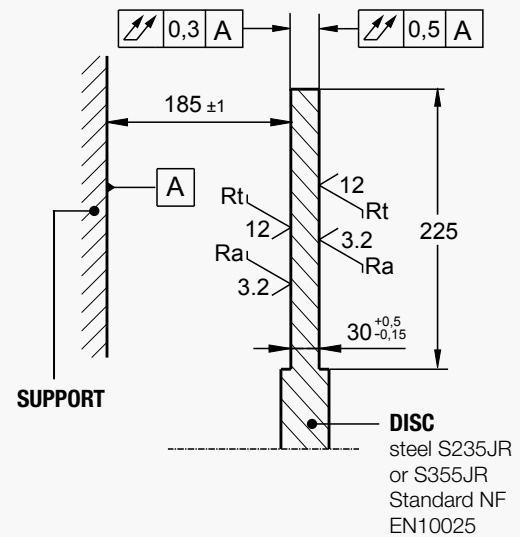
DISC BRAKE - SHD18 CALIPER

Revision number: T10129-01-A

Revision date: 13.01.2017



Installation instructions :



Torque and effort values are subject to a variation of $\pm 10\%$
Response time at nominal torque $\leq 0.3s$

Designation	Caliper		SHD18-3	SHD18-2	SHD18-1
	Lining *		US2-1		
Braking force BF for air gap disc/lining of 2x1mm	Dynamic	N	180 000	150 000	120 000
	Static	N	162 000	135 000	108 000
Linear speed of the disc		m/s	≤ 10		
Dynamic braking torque BT (m.N) for 1 caliper and disc ØD (mm) / D max ≤ 2000 mm		N.m	BT = BF (D/2000 - 0.09)		
Regulation pressure	Minimum	bar	195	160	130
	Maximum	bar	205	170	140
Setting pressure limit valve of hydraulic unit		bar	225	190	160
Total volume of oil displaced for air gap disc/lining of:					
2 x 1 mm (nominal opening)		cm ³	48		
2 x 2 mm (nominal opening + wear before setting)		cm ³	82		

* **US2-1**: disc temperature during one braking $\leq 150^{\circ}\text{C}$

Emergency Brakes

DISC BRAKE - TH9 CALIPER

Revision number: T03830-01-C

Revision date: 13.12.2010

Fail safe

Spring applied

Hydraulic release (mineral oil)

Opening proving switch

Wear proving switch

Lining wear detector

Working:

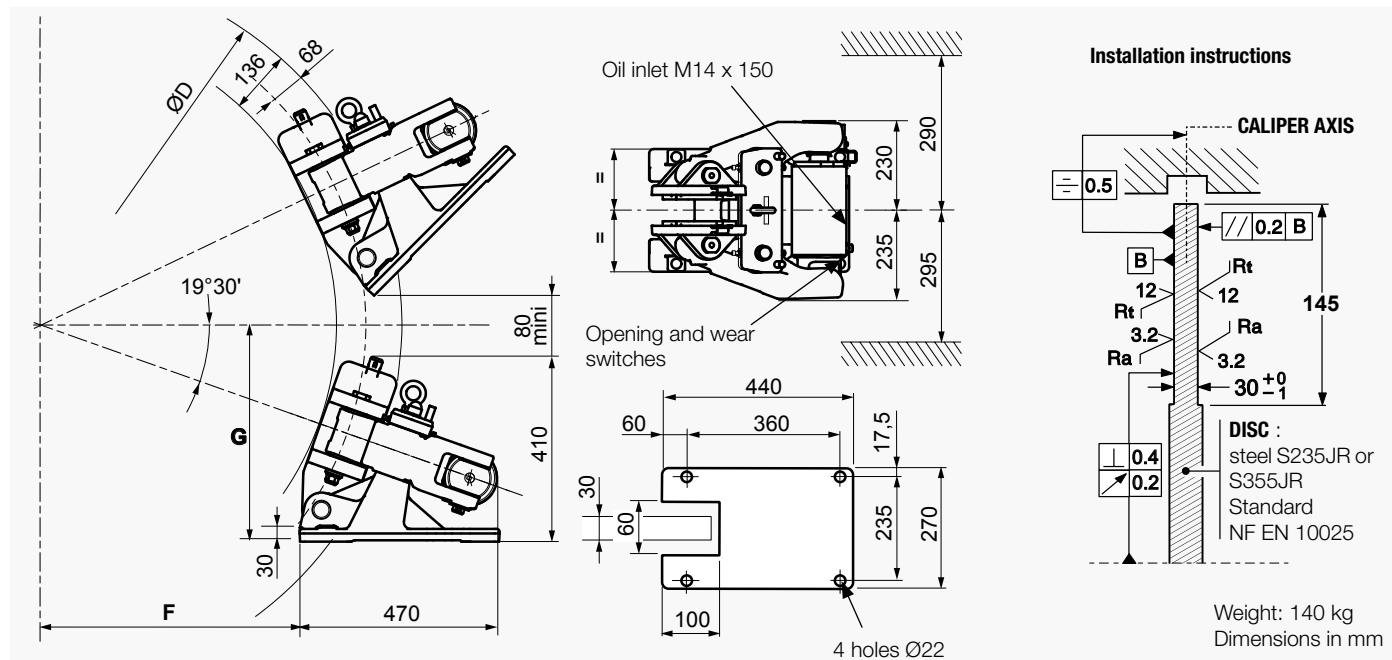
- Ambient temperature: -10°C to +60°C
- Relative humidity ≤ 70%
- Dust in atmosphere ≥ 65μ
- Other conditions, consult us.

Use:

Service brake to operate with full or variable torque
Emergency brake in case of overspeed or loss of electrical supply

Option:

Disc thickness 42 mm



Designation	Caliper		TH9-3		TH9-2		TH9-1	
	Lining *		US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3
Braking force BF for 1mm of air gap disc/lining	Static	N	81 000	54 000	52 650	38970	28 350	22 140
	Dynamic	N	90 000	60 000	58 500	43 300	31 500	24 600
Linear speed of the disc		m/s	≤10	≤50	≤10	≤50	≤10	≤50
Dynamic braking torque BT (N.m) for 1 caliper and a disc ØD (mm)	1000 mm	Nm	38 880	25 920	25 270	18 700	13 600	10 620
	1200 mm	Nm	47 880	31 920	31 120	23 030	16 750	13 080
	1500 mm	Nm	61 380	40 920	39 890	29 530	21 480	16 770
	2000 mm	Nm	83 880	55 920	54 520	40 350	29 350	22 920
BT for other ØD (mm)		Nm	BT = BF (D/2000 - 0.068)					
Positioning when D<3000mm Above it, consult us	F	mm	(0.4713 x D) - 172					
	G	mm	(0.1669 x D) + 212					
Regulation pressure	minimum	bar	140		85		60	
	maximum	bar	160		115		80	
Setting pressure limit valve of hydr. unit		bar	190		140		105	
Total volume of oil displaced		cm³	58 for one stroke disc/lining (nominal wear and opening)					

* US2-1: disc temperature during one braking ≤ 150°C

WS1-3: disc temperature during one braking ≤ 600°C

US2-5: disc temperature during one braking ≤ 350°C, optional, consult us.

Torque and force values are subject to a variation of ±10%.

Response time at nominal torque : see leaflet n° G08555-01.

Opening and wear switches :

250VAC maxi., 5A maxi.,
with interrupting capacity: 50VA maxi.

220VDC maxi., 5A maxi.,
with interrupting capacity: 50W maxi.

Compatible with PLC
(Programmable Logic Controllers).
A switch used with other equipment than PLC
must not be reused with a PLC.

Opening and wear switches are delivered
with wire 5 x 0.75mm² and length 1m each

DISC BRAKE - THC9B CALIPER

Revision number: T03836-01-C

Revision date: 24.08.2012

Fail safe

Spring application

Hydraulic release

Integral hydraulic power unit

Self contained electric system

Opening proving switch

Lining wear control switch

Lining wear detector

Operating conditions:

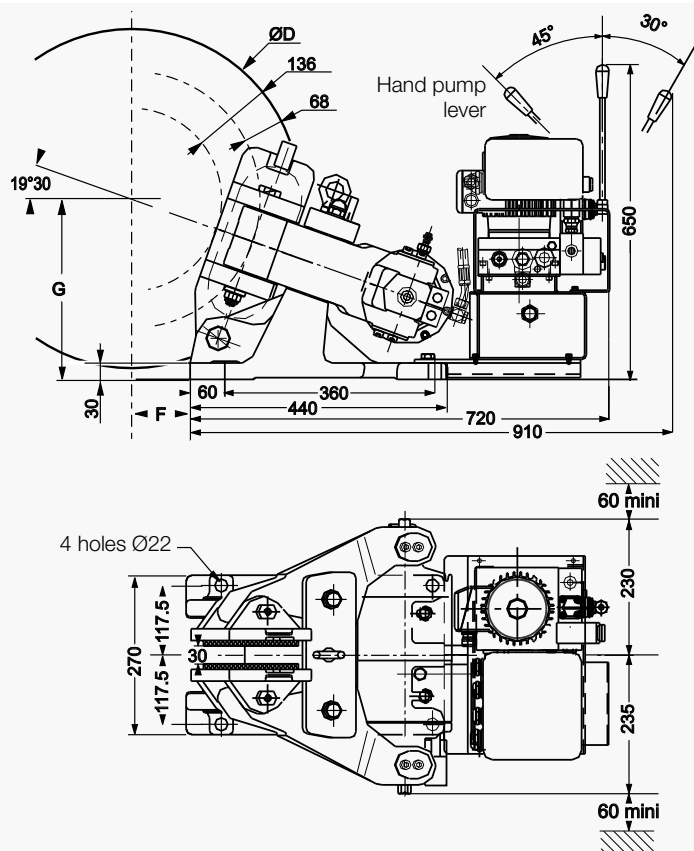
- Ambient temperature: -10°C to +60°C
- Relative humidity: ≤ 70%
- Dust in atmosphere ≥ 65µ
- Other conditions, please contact us.

Use:

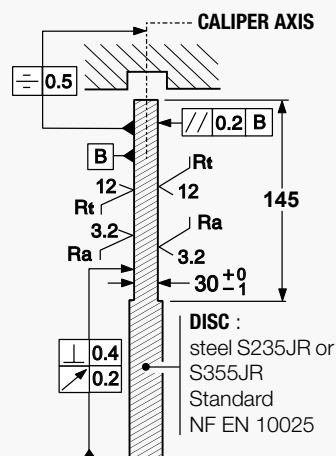
The brake should be applied only in case of emergency stop, overspeed or shutdown of electric mains. Other use, please contact us.

Options:

- Progressive braking system
- Disc thickness 42 mm



Installation instructions



Permissible inclination of the caliper :
±15° maximum regarding the horizontal.
For other mounting, please contact us.

Weight: 180 kg
Dimensions in mm

Designation	Caliper		TH9-3		TH9-2		TH9-1	
	Lining *		US2-1	WS1-3	US2-1	WS1-3	US2-1	WS1-3
Braking force BF for 1mm of air gap disc/lining	Static	N	81 000	54 000	52 650	38 970	28 350	22 140
	Dynamic	N	90 000	60 000	58 500	43 300	31 500	24 600
Linear speed of the disc		m/s	≤10	≤50	≤10	≤50	≤10	≤50
Dynamic braking torque	1000 mm	Nm	38 880	25 920	25 270	18 700	13 600	10 620
BT (N.m) for 1 caliper	1200 mm	Nm	47 880	31 920	31 120	23 030	16 750	13 080
and a disc ØD (mm)	1500 mm	Nm	61 380	40 920	39 890	29 530	21 480	16 770
	2000 mm	Nm	83 880	55 920	54 520	40 350	29 350	22 920
BT for other ØD (mm)		Nm	BT = BF (D/2000 - 0.068)					
Positioning when D<3000mm	F	mm	(0.4713 x D) - 172					
Above it, consult us	G	mm	(0.1669 x D) + 212					
Setting pressure limit valve of hydr. pack		bar	190		140		105	

* US2-1: disc temperature during one braking ≤ 150°C

WS1-3: disc temperature during one braking ≤ 600°C

US2-5: disc temperature during one braking ≤ 350°C, optional, consult us.

Electrical data:

HPP motor: 3 phases: 230/400V ±10%
50Hz 0.37kW, 4 poles

for mains: 230/400 V 50 Hz
or 415 V 50 Hz or 460 V 60 Hz

Motor option: 400/690V ±10% 50Hz
255/440V ±10% 50Hz
290/500V ±10% 50Hz
280/480V ±10% 60Hz
330/575V ±10% 60Hz

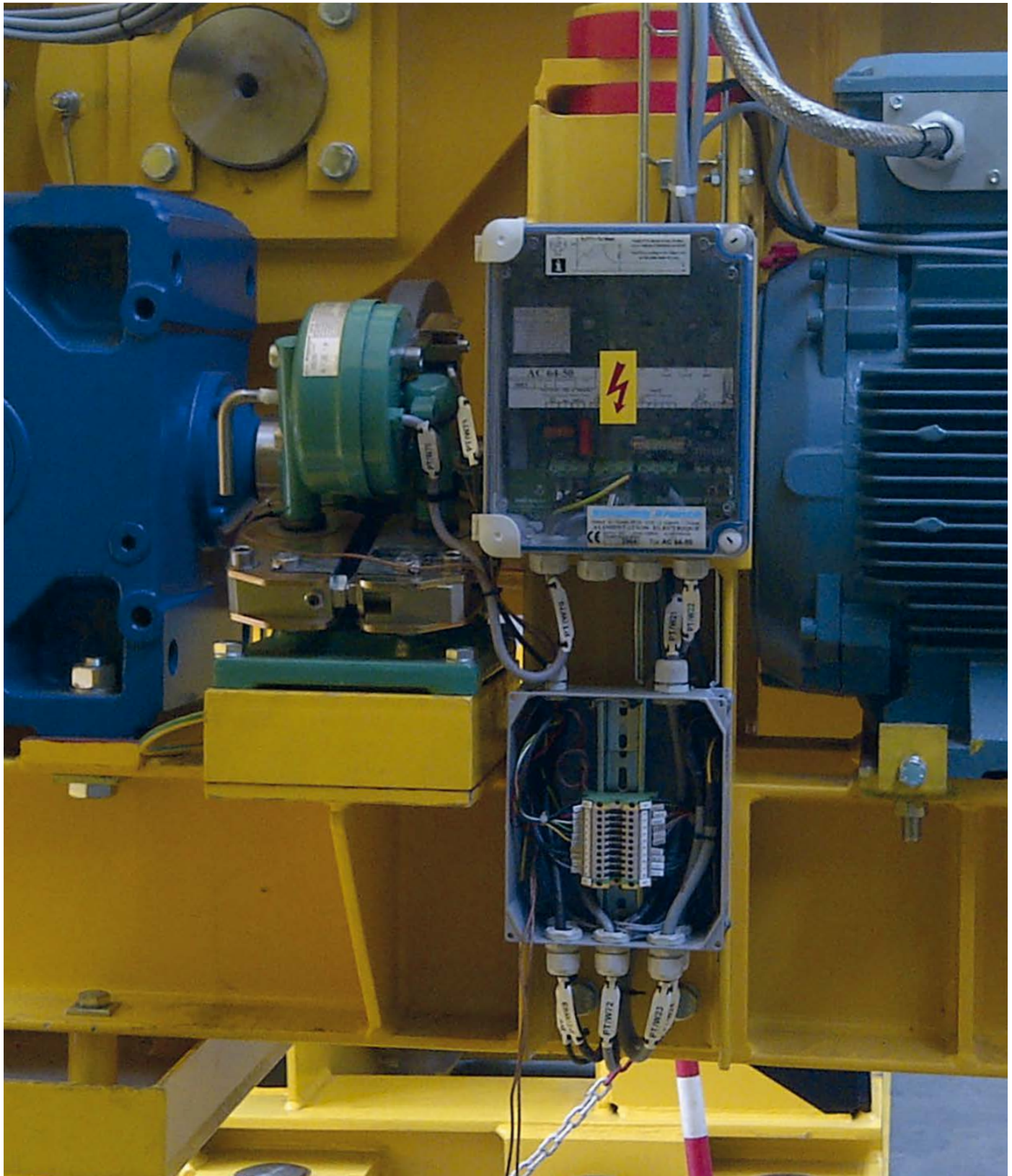
Other voltage, please contact us.
Electrical casing IP55

Opening and wear proving switches:

U mini 24V AC or DC
U maxi 250V AC ou 220 V DC
I mini 0.1A AC or DC
I maxi 5A AC or DC
interrupting capacity :
mini : 2.4VA AC or 2.4W DC
maxi : 50VA (AC) ou 50W (DC)

Electrical Power Units

ELECTRICAL POWER UNITS



MAIN CHARACTERISTICS

- DESIGNED TO GIVE OPTIMUM PERFORMANCE FROM THE ELECTROMAGNETIC CALIPERS
- AC LINE SUPPLY:
AB8, AC64, AC32, AS100, 4200 AND 4205
- DC LINE SUPPLY: DC64, DC32 AND DS100
- HIGH "CALL" VOLTAGE TO REDUCE OPENING RESPONSE TIME
- AUTOMATIC REDUCTION TO AN ECONOMICAL "HOLD" VOLTAGE
- A "CUT-OUT" CIRCUIT GIVING A VERY SHORT BRAKE ACTION



AC64 & AC32

- Simplicity of adjustment and use.
- Weights and size reduced.
- Quick diagnosis of fault through the use of 6 LEDs.
- Standard mains:
230/500 VAC, 115/220 VDC



AS100

- Other mains: 115 VAC, 500/700 VAC, 24 VDC et 48 VDC
- Available in:
 - Polycarbonate enclosure (CP): IP66, IK8
 - or Steel enclosure (CA): IP66, IK9



4200 & 4205 / AB8

- **4205** unit enables electrically controlled lowering.
- **AB8** unit is used with "E" series calipers for progressive braking torque control.

POWER UNITS	CALIPERS											
	660	650	650E	645 - 45K	5D - 5DR	5DE	4CA2	3CA2	2CA2 - 1CA2	OSA	00SA	2SA
AC64 - DC64												
AC32 - DC32												
AS100 - DS100												
4200												
4205												
AB8												

SIME Brakes Industrial Braking Systems

Electrical Power Units

DISC BRAKE - ELECTRICAL POWER UNIT AC64-50 CA

Revision number: T04560-01-D

Revision date: 20.07.2011

Compact power supply operating on alternating single or two-phase mains.
For SIME Disc Brakes with 50 V coil.
type : 660/650-5K/5D-645-45K-4WD-4CA2
Steel case

Operating Conditions:

- Casing protection standard IP66 IK09
- Ambient temperature : -20°C to +60°C

Electrical Data :

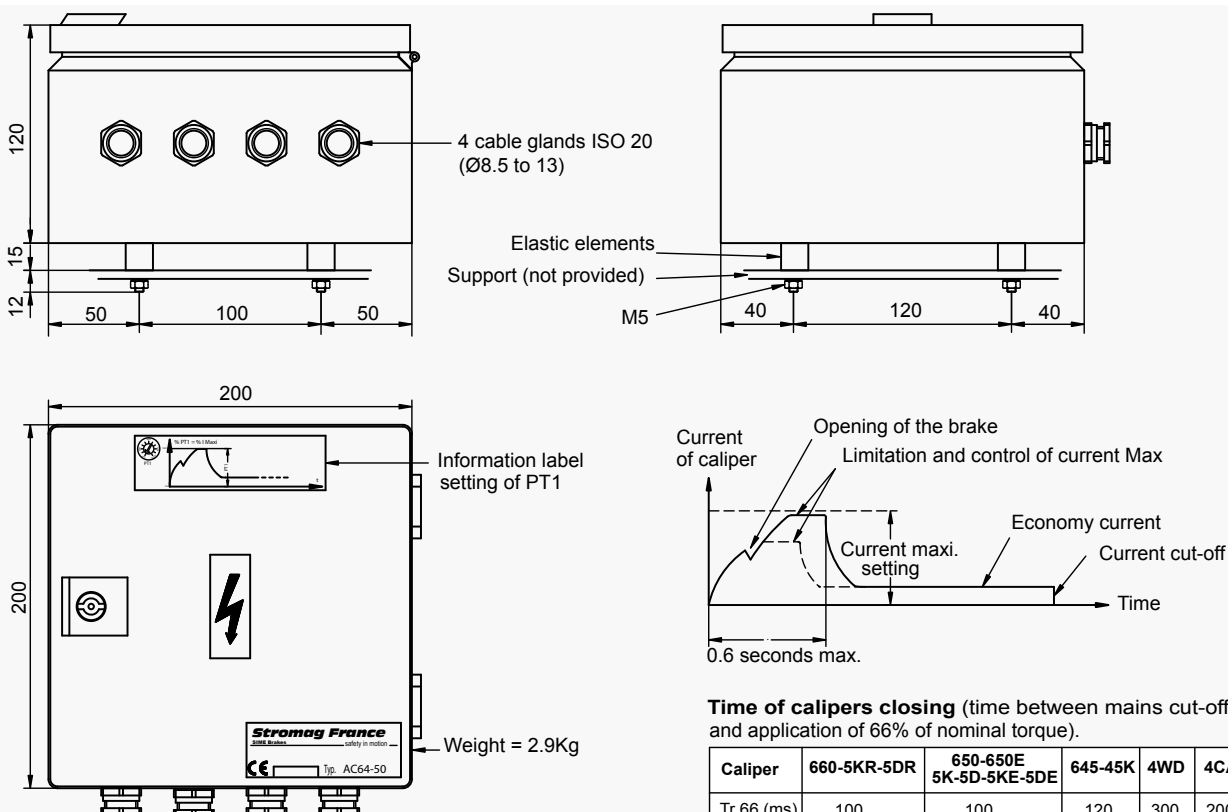
Single or two-phase mains AC
230 to 500V AC $\pm 10\%$ 50/60Hz

EC marking of conformity :

- 2006/95/EC directive BT (standard EN60204-1)
- 2004/108/EC directive CEM
(standards EN61000-6-2 EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Polycarbonate case IP66 IK08



Caliper		660-650-650E	5K-5D-5KR/DR 5KE-5DE	645	45K	4WD	4CA2
Maximum number of calipers		2	2	2	2	2	1
Resistance at 20°C per caliper		Ω	6.68	6.68	4.52	4.52	3.08
Maximum number of actuations per hour and ambient temperature θ	θ ≤ 40°C	150	1000	150	1000	60	1000
	40°C < θ ≤ 60°C	150	600	150	600	60	600
Mains current absorbed per caliper	Max	A	4	4	6	6	9
	Economy	A	0.6	0.6	0.75	0.75	1
Maximum return resistance of the cable connecting the caliper to the power supply		Ω	2	2	1	1	1 *
Max. length of the connecting cable (Power supply - caliper) for 1 caliper per cable, depending on cable section	2.5 mm²	m	100	100	50	50	50 *
	4 mm²	m	160	160	80	80	80 *
	6 mm²	m	240	240	120	120	120 *
Protection to be provided in head of control contactor on mains input	Number of caliper	1	2	1	2	1	2
	Fuse aM	A	1	2	2	4	2
	Circuit-breaker curve C	A	1	2	2	4	2

DISC BRAKE - ELECTRICAL POWER UNIT AC64-50 CP

Revision number: T04500-01-D

Revision date: 19.07.2011

Compact power supply operating on alternating single or two-phase mains.
For S Disc Brakes with 50 V coil.
type : 660/650-5K/5D-645-45K-4WD-4CA2
Polycarbonate case

Operating Conditions:

- Casing protection standard IP66 IK08
- Ambient temperature : -20°C to +60°C

Electrical Data :

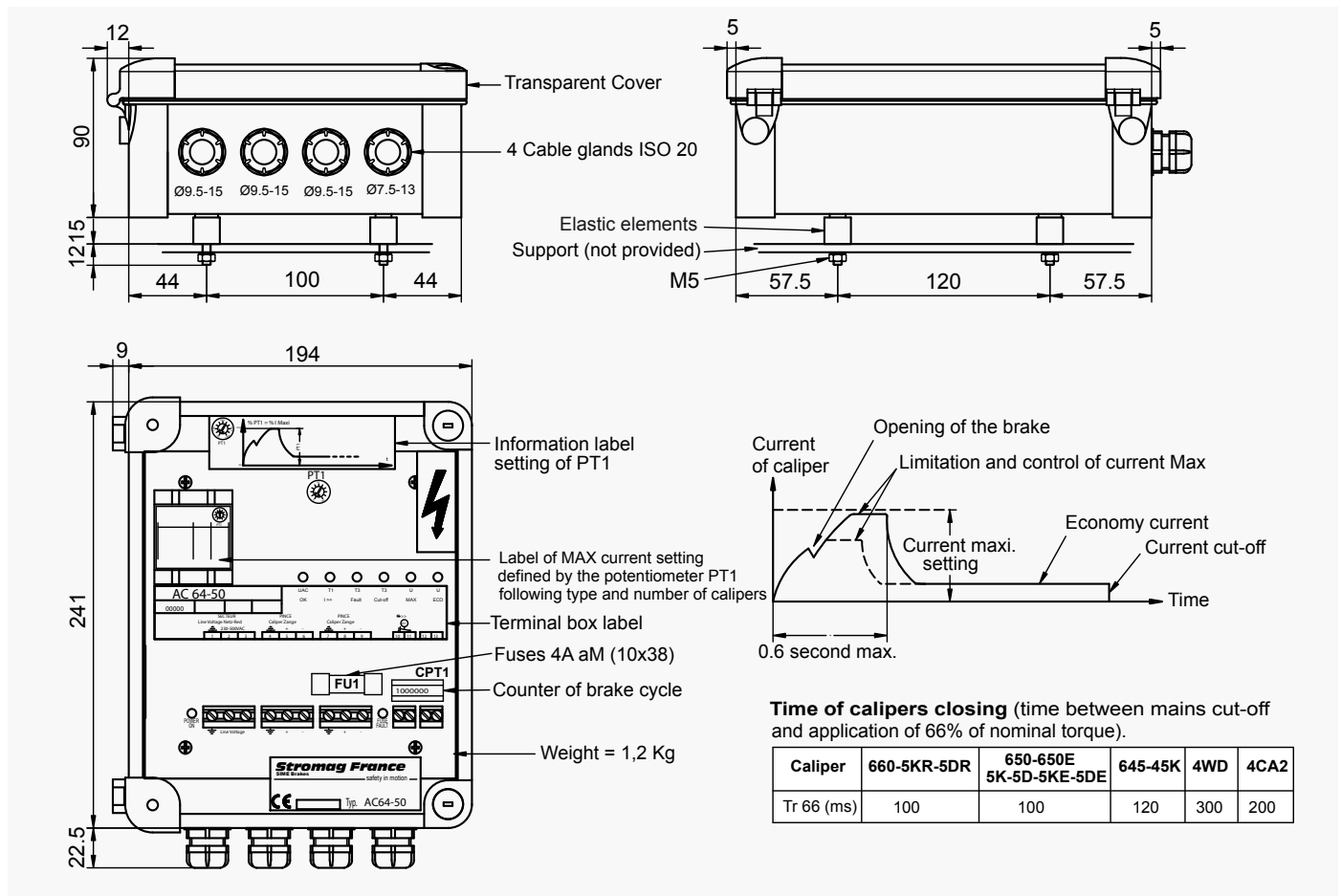
Single or two-phase mains AC
230 to 500V AC $\pm 10\%$ 50/60Hz

EC marking of conformity :

2006/95/EC directive BT (standard EN60204-1)
2004/108/EC directive CEM
(standards EN61000-6-2 EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Steel case IP66 IK09



ELECTRICAL DANGER : THIS PRODUCT IS NOT INSULATED

Control and power electronic of power supply is not insulated and is under mains voltage. The power supply must be installed by qualified personnel, used to handle this equipment type and aware of risks inherent in their utilization.

* If the ambient temperature of the caliper 4CA2 is higher than 60°C, the maximum return resistance and the maximum length of the connecting cable given in the above table must be divided by 2.

Electrical Power Units

DISC BRAKE - ELECTRICAL POWER UNIT AC32-50 CA

Revision number: T10005-02-C

Revision date: 22.02.17

Compact power supply operating on alternating single or two-phase mains.

For SIME disc brakes with 50 V coil.

type : 4CA2 - 3WD - 3CA2 - 2CA2 - 1CA2

Steel case

Operating Conditions:

- Casing protection standard IP66 IK10
- Ambient temperature : -20°C to +60°C

Electrical Data :

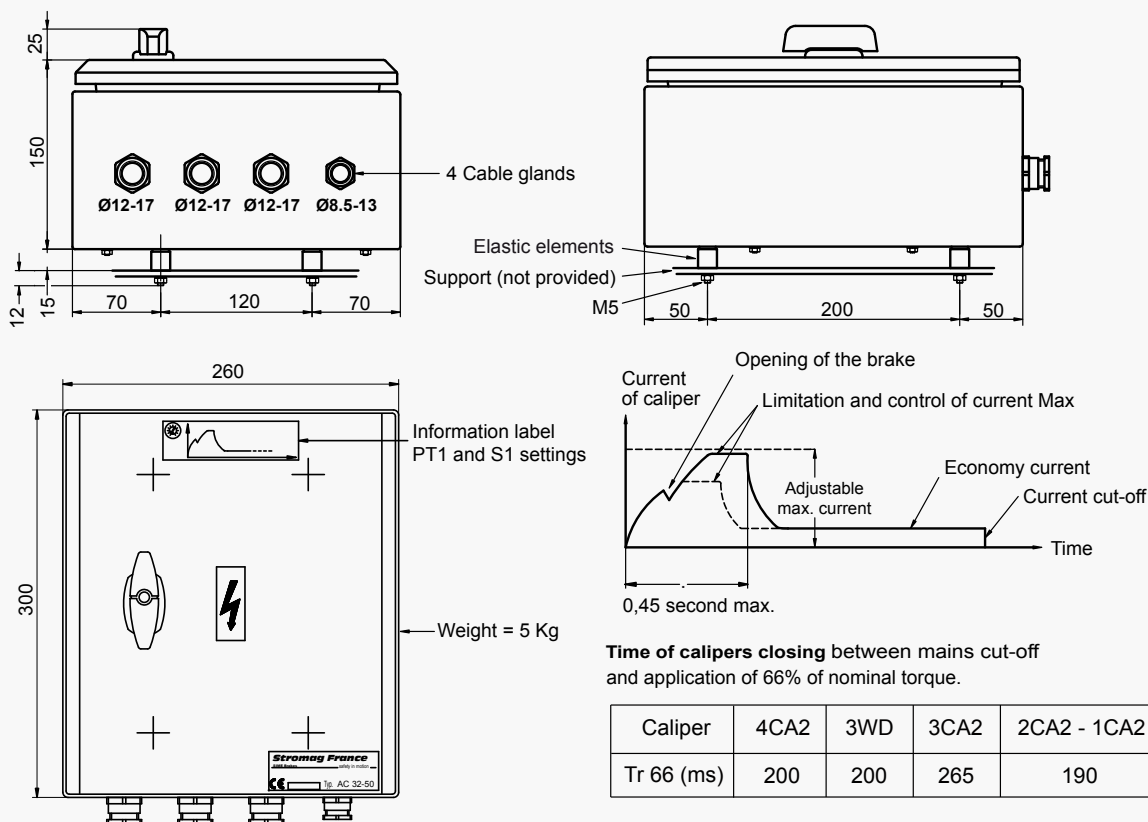
Single or two-phase mains AC
230 to 500V AC $\pm$ 10% 50/60Hz

EC marking of conformity :

- 2006/95/CE directive Low Voltage (standard EN60204-1)
- 2004/108/CE directive EMC (standards EN61000-6-2 and EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Polycarbonate case IP66 IK08



Time of calipers closing between mains cut-off and application of 66% of nominal torque.

Caliper	4CA2	3WD	3CA2	2CA2 - 1CA2
Tr 66 (ms)	200	200	265	190

Caliper		4CA2	3WD	3CA2	2CA2 1CA2	2CA2 + 20% 1CA2 + 20%
Maximum number of calipers		2	1	1	1	
Resistance at 20°C per caliper Ω		3.08	1.63	1.01	0.75	
Maximum number of actuations per hour and ambient temperature θ	$\theta \leq 40^\circ\text{C}$	1000	60	1000	1000	600
	$40^\circ\text{C} < \theta \leq 60^\circ\text{C}$	600	60	600	600	300
Mains current absorbed per caliper	Max	A 9	16	20	28.2	
	Economy	A 1	1.5	2	3.3	
Maximum connecting cable return resistance between caliper and supply unit Ω		1	0.75	1	0.5	
Maximum connecting cable length (caliper-input) according to the cable section	2.5mm ²	m 50	35	50	25	
	4mm ²	m 80	60	80	40	
	6mm ²	m 120	90	120	60	
	10mm ²	m 205	155	205	100	
Protection to be provided in head of control contactor on mains input	Fuse aM	A 6	4	6	8	
	Circuit-breaker curve C	A 8	6	10	12	

DISC BRAKE - ELECTRICAL POWER UNIT AC32-50 CP

Revision number: T10005-01-E

Revision date: 04.04.2018

Compact power supply operating on alternating single or two-phase mains.
For SIME disc brakes with 50 V coil.
type : 4CA2 - 3WD - 3CA2 - 2CA2 - 1CA2
Polycarbonate case

Operating Conditions:

- Casing protection standard IP66 IK08
- Ambient temperature : -20°C to +60°C

Electrical Data :

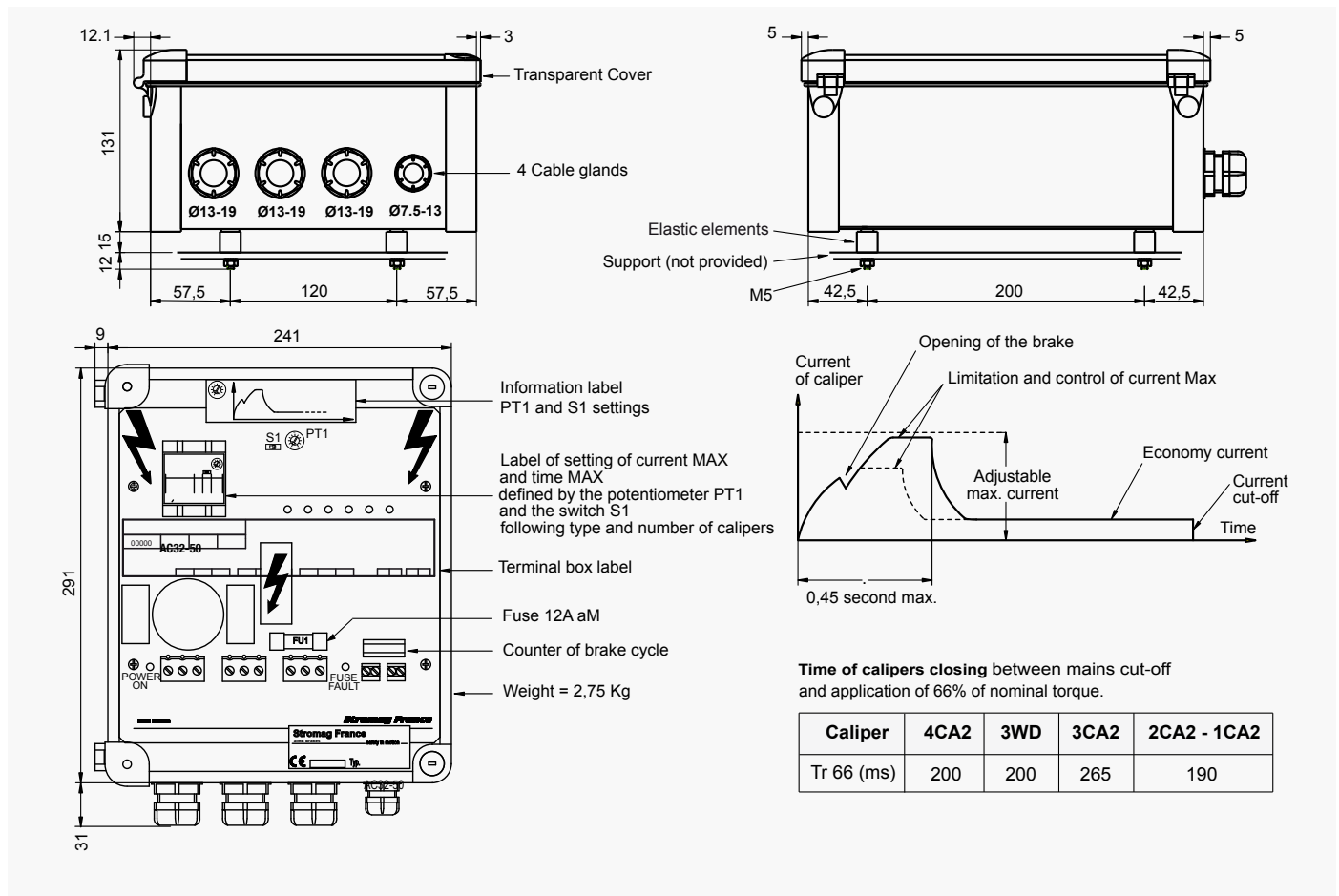
Single or two-phase mains AC
230 to 500V AC $\pm$ 10% 50/60Hz

EC marking of conformity :

- 2006/95/CE directive Low Voltage (standard EN60204-1)
- 2004/108/CE directive EMC (standards EN61000-6-2 and EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Steel case IP66 IK10



Time of calipers closing between mains cut-off and application of 66% of nominal torque.

Caliper	4CA2	3WD	3CA2	2CA2 - 1CA2
Tr 66 (ms)	200	200	265	190

ELECTRICAL DANGER : THIS PRODUCT IS NOT INSULATED

Control and power electronic of power supply is not insulated and is under mains voltage. The power supply must be installed by qualified personnel, used to handle this equipment type and aware of risks inherent in their utilization.

Electrical Power Units

DISC BRAKE - ELECTRICAL POWER UNIT AS100-50 CA

Revision number: T10035-02-B

Revision date: 19.10.2015

Compact power supply operating on alternating single or two-phase mains.
For SIME disc brakes with 50 V coil.
type : OSA - OOSA
Steel case

Electrical Data :

Single or two-phase mains AC
230 to 500V AC $\pm 10\%$ 50/60Hz

EC marking of conformity :

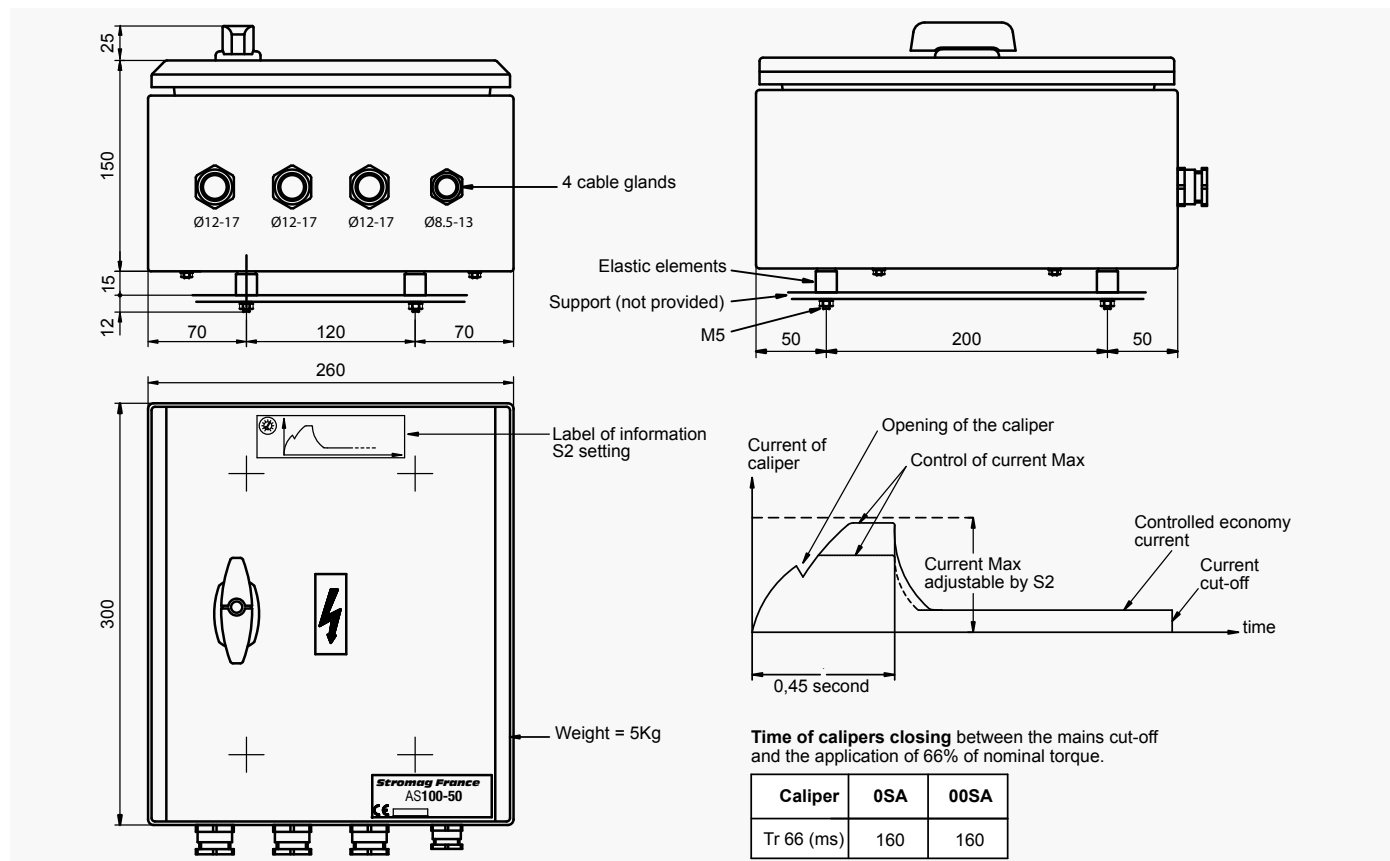
- 2006/95/CE directive Low Voltage
(standard EN60204-1)
- 2004/108/CE directive EMC
(standards EN61000-6-2 and EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Steel case IP66 IK08

Operating Conditions:

- Casing protection standard IP66 IK10
- Ambient temperature : -20°C to +60°C



Caliper			OSA		OOSA
Maximum number of calipers			1	2	1
Resistance at 20°C per electromagnet Ω			1.01	1.01	1.01
Maximum number of actuations per hour and ambient temperature θ	θ ≤60°C		100	100	100
Mains current absorbed	Max	A	28	36	36
	Economy	A	3.5	3.6	3.6
Maximum connecting cable return resistance between caliper and supply unit Ω			3.5	1	1
Maximum connecting cable length (caliper input) according to the cable section	2.5 mm² m		170	50	50
	4 mm² m		275	80	80
	6 mm² m		415	120	120
	10 mm² m		715	205	205
Protection to be provided in head of control contactor on mains input	Fuse aM	A	6	8	8
	Circuit-breaker curve C	A	16	16	16

DISC BRAKE - ELECTRICAL POWER UNIT AS100-50 CP

Revision number: T10035-01-B

Revision date: 19.10.2015

Compact power supply operating on alternating single or two-phase mains.
For SIME disc brakes with 50 V coil.
type : OSA - OOSA
Polycarbonate case

Electrical Data :

Single or two-phase mains AC
230 to 500V AC $\pm 10\%$ 50/60Hz

EC marking of conformity :

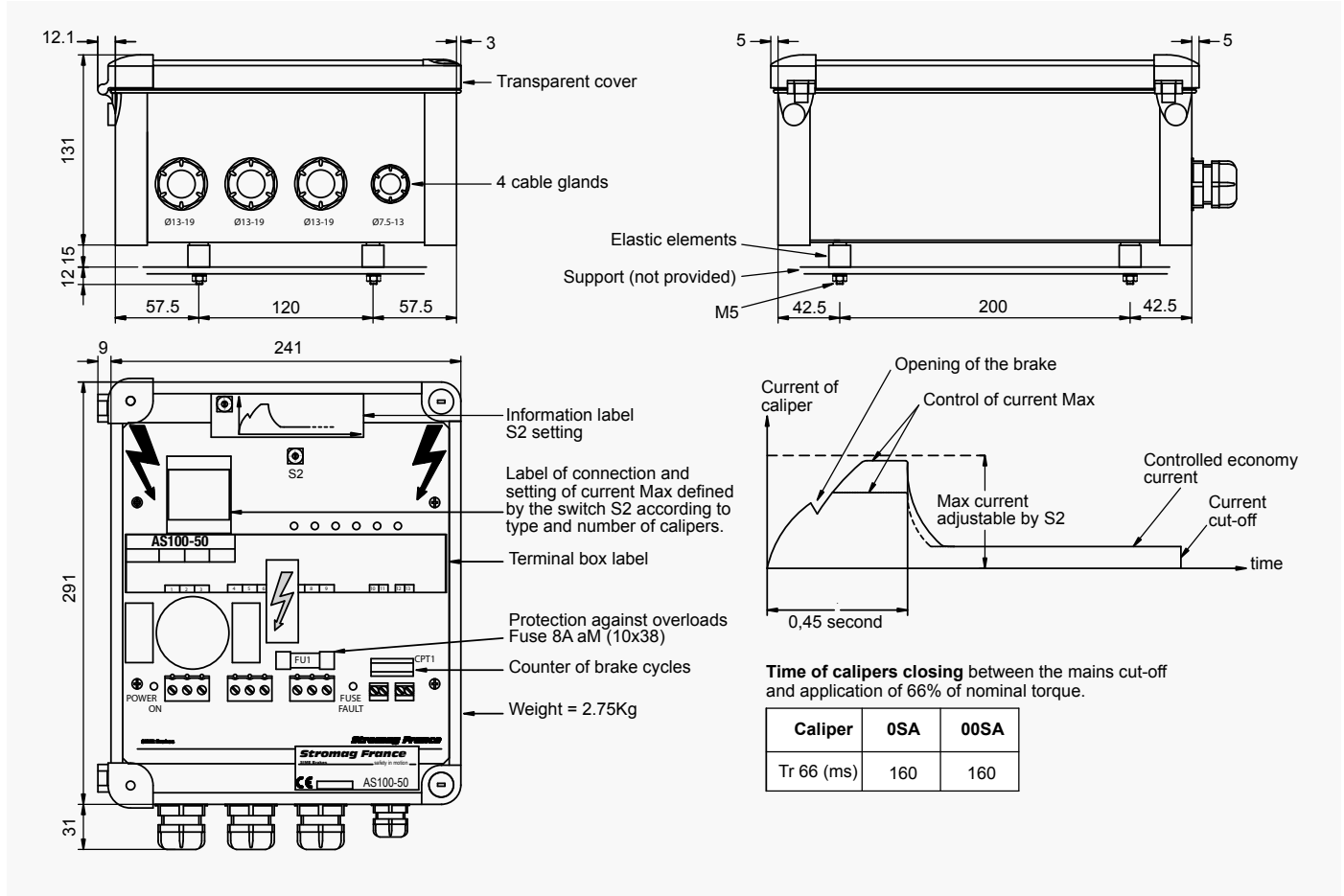
- 2006/95/CE directive Low Voltage
(standard EN60204-1)
- 2004/108/CE directive EMC
(standards EN61000-6-2 and EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Steel case IP66 IK10

Operating Conditions:

- Casing protection standard IP66 IK08
- Ambient temperature : -20°C to +60°C



ELECTRICAL DANGER : THIS PRODUCT IS NOT INSULATED

Control and power electronic of power supply is not insulated and is under mains voltage. The power supply must be installed by qualified personnel, used to handle this equipment type and aware of risks inherent in their utilization.

SIME Brakes Industrial Braking Systems

Electrical Power Units

DISC BRAKE - ELECTRICAL POWER UNIT DC64-50 CP

Revision number: T04530-01-F

Revision date: 25.02.2019

Compact power supply operating on direct mains.
For SIME disc brakes with 50V coil.
type : 660/650-5K/5D-645-45K-4WD-4CA2
Polycarbonate case

Operating conditions:

- Casing protection standard IP66 IK08
- Ambient temperature : -20°C to +60°C

Electrical data :

Mains DC : 100 to 275 V DC $\pm$ 10%
Possible operation in 115 V AC $\pm$ 20%

EC marking of conformity :

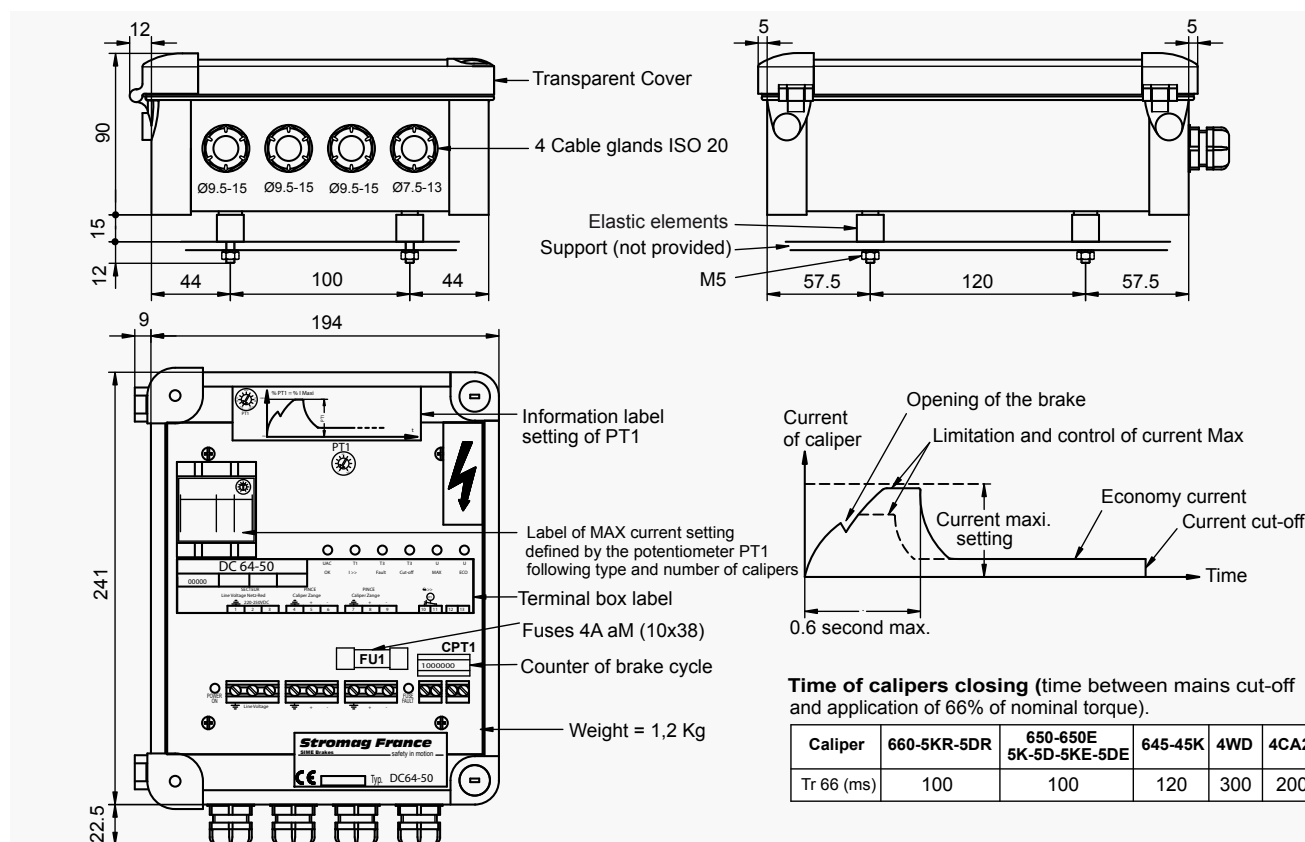
2006/95/EC directive BT (standard EN60204-1)
2004/108/EC directive CEM (EN61000-6-2 EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Steel case IP66 IK09

ELECTRICAL DANGER : THIS PRODUCT IS NOT INSULATED

Control and power electronic of power supply is not insulated and is under mains voltage.



Caliper		660-650-650E	5K-5D-5KR-5DR 5KE-5DE	645	45K	4WD	4CA2
Maximum number of calipers		2	2	2	2	2	1
Resistance at 20°C per caliper (Ω)		6.68	6.68	4.52	4.52	4.52	3.08
Maximum number of actuations per hour and ambient temperature θ	θ ≤ 40°C	150	1000	150	1000	60	1000
	40°C < θ ≤ 60°C	150	600	150	600	60	600
Mains current absorbed per caliper	Max (A)	3.5	3.5	5	5	5	9
	Economy (A)	0.4	0.4	0.5	0.5	0.5	0.75
Maximum return resistance of the cable connecting the caliper to the power supply (Ω)		2	2	1	1	1	1 *
Max. length of the connecting cable (Power supply - caliper) for 1 caliper per cable, depending on cable section	2.5 mm² (m)	100	100	50	50	50	50 *
	4 mm² (m)	160	160	80	80	80	80 *
	6 mm² (m)	240	240	120	120	120	120 *
Protection to be provided in head of control contactor on mains input	Number of caliper	1	2	1	2	1	2
	Fuse aM (A)	1	2	2	4	2	4
	Circuit-breaker curve C (A)	1	2	2	4	2	4

* If the ambient temperature of the caliper 4CA2 is higher than 60°C.

the maximum return resistance and the maximum length of the connecting cable given in the above table must be divided by 2.

DISC BRAKE - ELECTRICAL POWER UNIT DC32-50 CP

Revision number: T10007-01-G

Revision date: 09.04.2018

Compact power supply operating on direct mains.
For SIME disc brakes with 50V coil.
type : 4CA2 - 3WD - 3CA2 - 2CA2
Polycarbonate case

Electrical data :

Mains DC : 110 to 275V DC $\pm$ 10%
Possible operation in 115 V AC $\pm$ 20%

EC marking of conformity :

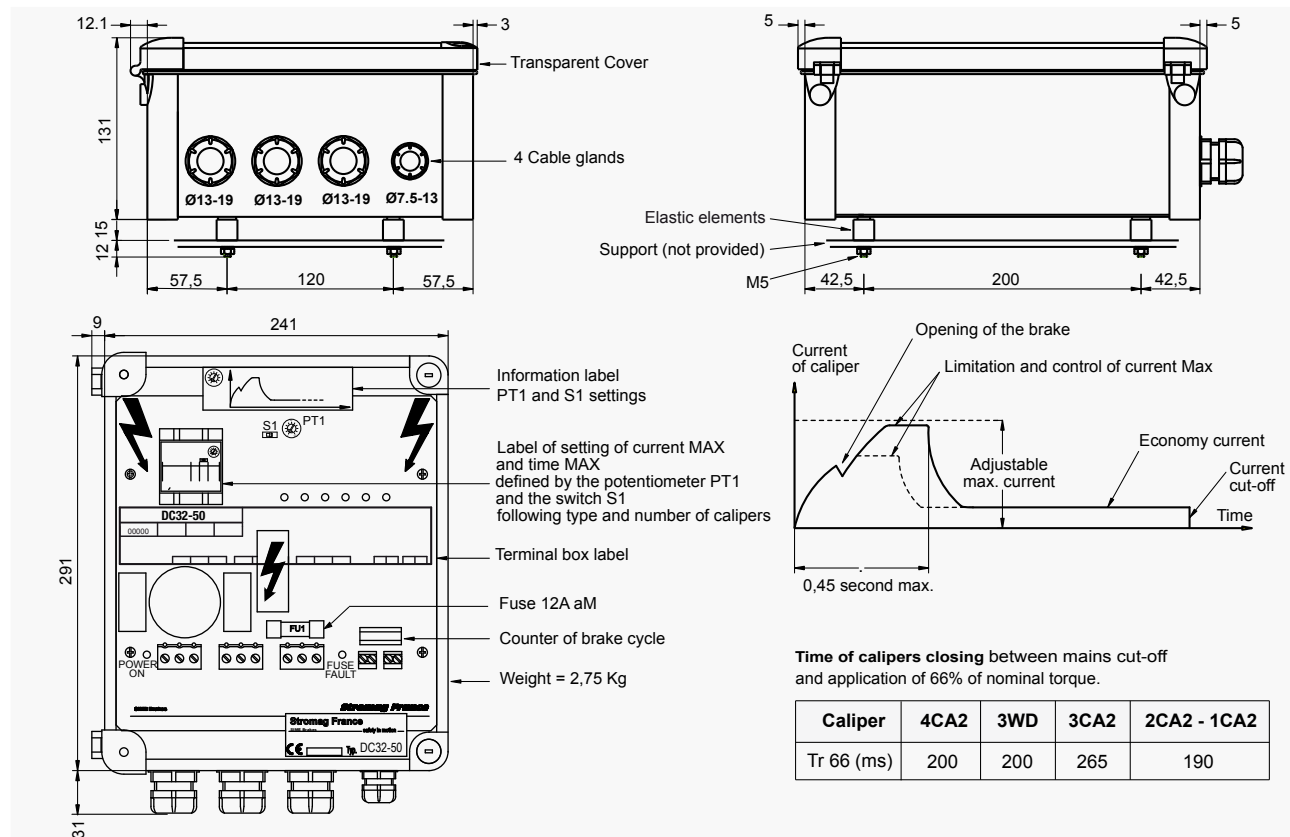
- 2006/95/CE directive Low Voltage
(standard EN60204-1)
- 2004/108/CE directive EMC
(standards EN61000-6-2 and EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper
(cannot be combined with anti-condensation)
- Anti-condensation kit
- Steel case IP66 IK10

Operating conditions:

- Casing protection standard IP66 IK08
- Ambient temperature : -20°C to +60°C



Time of calipers closing between mains cut-off and application of 66% of nominal torque.

Caliper	4CA2	3WD	3CA2	2CA2 - 1CA2
Tr 66 (ms)	200	200	265	190

ELECTRICAL DANGER : THIS PRODUCT IS NOT INSULATED

Control and power electronic of power supply is not insulated and is under mains voltage. The power supply must be installed by qualified personnel, used to handle this equipment type and aware of risks inherent in their utilization.

Caliper		4CA2	3WD	3CA2	2CA2 1CA2	2CA2 + 20% 1CA2 + 20%
Maximum number of calipers		2	1	1	1	
Resistance at 20°C per caliper	(Ω)	3.08	1.63	1.01	0.75	
Maximum number of actuations per hour and ambient temperature θ	θ ≤ 40°C	1000	60	1000	1000	600
	40°C < θ ≤ 60°C	600	60	600	600	300
Mains current absorbed per caliper	Max	(A) 9.9	18	24.1	36.9	
	Economy	(A) 1.5	1.6	1.8	2.3	
Maximum connecting cable return resistance between caliper and supply unit	(Ω)	1	0.75	1	0.5	
Max. length of the connecting cable (Power supply/caliper) for 1 caliper per cable. depending on cable section	2.5mm²	(m) 50	35	50	25	
	4mm²	(m) 80	60	80	40	
	6mm²	(m) 120	90	120	60	
	10mm²	(m) 205	155	205	100	
Protection to be provided in head of control contactor on mains input	Fuse aM	(A) 6	6	6	10	
	Circuit-breaker curve C	(A) 8	8	10	16	

Electrical Power Units

DISC BRAKE - ELECTRICAL POWER UNIT DS100-50 CP

Revision number: T10037-01-B

Revision date: 15.11.2016

Compact power supply operating on direct mains.
For SIME disc brakes with 50 V coil
type : OSA - OOSA
Polycarbonate case

Operating Conditions:

- Casing protection standard IP66 IK08
- Ambient temperature : -20°C to +60°C

Electrical Data :

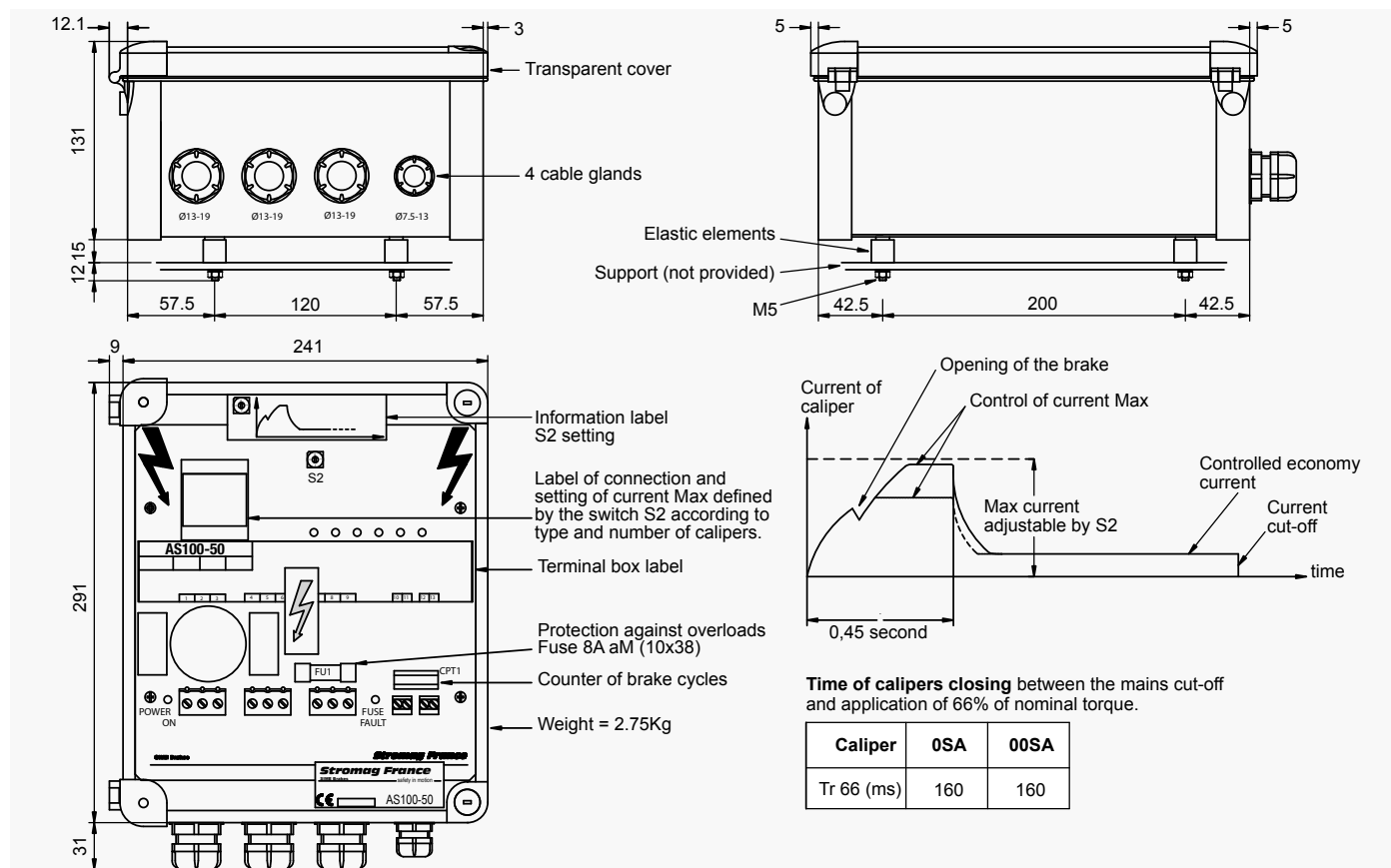
Mains DC : 110 to 275V DC $\pm$ 10%
Possible operation in 115 V AC $\pm$ 20%

EC marking of conformity :

- 2006/95/CE directive Low Voltage (standard EN60204-1)
- 2004/108/CE directive EMC (standards EN61000-6-2 and EN61000-6-4)

Options:

- Closure delay of the caliper
- Disengageable closure delay of the caliper (cannot be combined with anti-condensation)
- Anti-condensation kit
- Steel case IP66 IK10



ELECTRICAL DANGER : THIS PRODUCT IS NOT INSULATED

Control and power electronic of power supply is not insulated and is under mains voltage.

The power supply must be installed by qualified personnel, used to handle this equipment type and aware of risks inherent in their utilization.

Caliper		OSA	OSA	OOSA
Maximum number of calipers		1	2	1
Resistance at 20°C per electromagnet Ω		1.01	1.01	1.01
Maximum number of actuations per hour and ambient temperature θ	$\theta \leq 60^\circ\text{C}$	100	100	100
Mains current absorbed	Max	33	38	38
	Economy	2.6	3.3	3.3
Maximum connecting cable return resistance between caliper and supply unit Ω		3.5	1	1
Maximum connecting cable length (caliper-input) according to the cable section	2.5 mm ² m	170	50	50
	4 mm ² m	275	80	80
	6 mm ² m	415	120	120
	10 mm ² m	715	205	205
Protection to be provided in head of control contactor on mains input	Fuse aM	8	8	8
	Circuit-breaker curve C	16	16	16

DISC BRAKE - ELECTRICAL POWER UNIT TYPE 4200

Revision number: T04800-01-C

Revision date: 21.10.2015

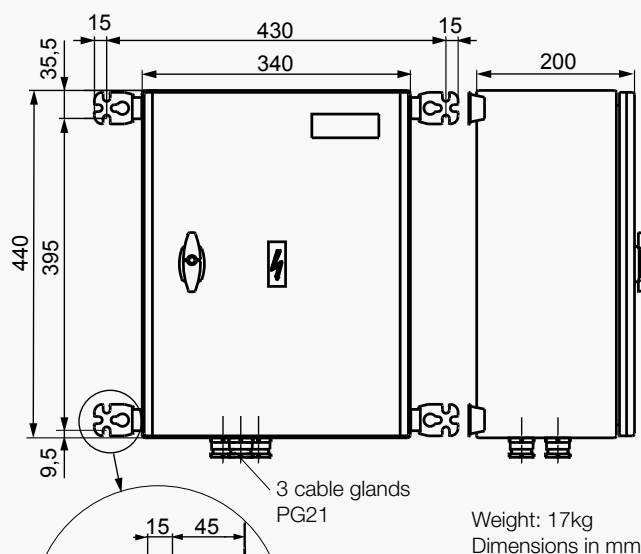
2 presentations are available:
- C for casing protected version
- P for plate mounted version

Note:
if 2 calipers are driven by the same power supply (or the 2 coils of the caliper OOSA) they must be connected in series (refer to the installation and maintenance leaflet)

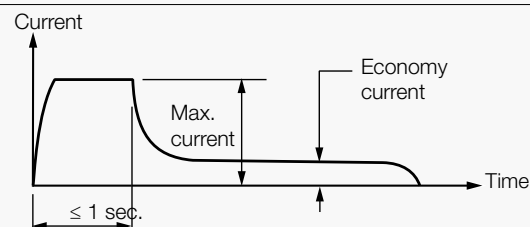
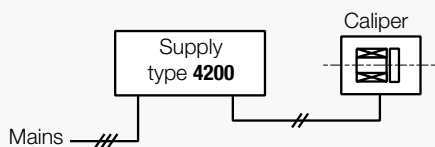
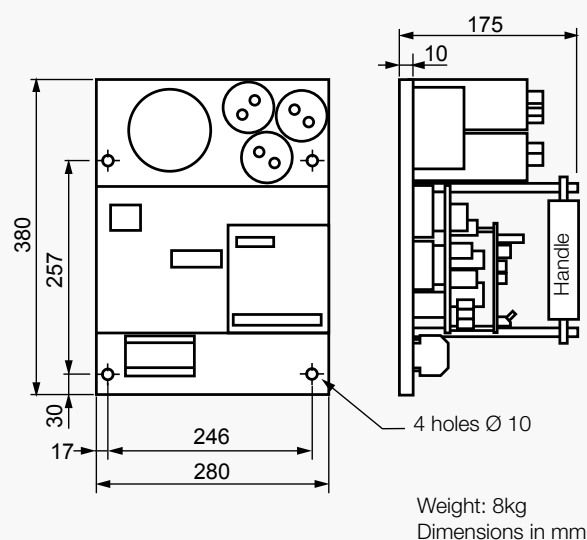
Operating conditions:

- Line voltage:
 - direct: 115V to 600VDC $\pm 10\%$
 - single or three phases: 115V to 500VAC $\pm 10\%$ 50/60Hz
- Ambiant temperature: -20°C to +55°C

Type C4200 casing protected version
(casing IP 66 standard EN60529)



Type P4200 plate mounted version
(for cabinet assembly)



CALIPER	Type Number	4CA		3CA		OSA		OOSA		2SA	
		1	2	1	2	1	2	1	2	1	2
Maximum number of actuations per hour at 40°C		700		1000		100				100	
Power consumption of the power supply	Maximum	W	1695	3215	1355	2480	2850	5380	5380	8205	15 815
	Economy	W	105	140	130	175	305	480	480	205	300
Max. connecting cable return resistance caliper to supply unit (for 1 coil)		Ω		1		1		1		1	
Delayed fuse rating to be provided between power supply and mains :											
direct :	115 VDC	A	25	25	25	25	25	25	25	35	35
	230 VDC	A	25	25	25	25	25	25	25	35	35
	400 to 600 VDC	A	25	25	25	25	25	25	25	35	35
single phase :	115 VAC	A	25	25	25	25	25	25	25	35	35
	230 VAC	A	25	25	25	25	25	25	25	35	35
	400 VAC	A	25	25	25	25	25	25	25	35	35
	500 VAC	A	25	25	25	25	25	25	25	35	35
3 phases :	230 VAC	A	25	25	25	25	25	25	25	35	35
	400 VAC	A	16	16	16	16	16	16	16	25	25
	500 VAC	A	16	16	16	16	16	16	16	25	25
Forbidden association											

Electrical Power Units

DISC BRAKE - ELECTRICAL POWER UNIT TYPE 4205

Revision number: T04810-01-B

Revision date: 21.10.2015

Designed for normal control or progressive release of electrical calipers to perform lowering maneuvers.

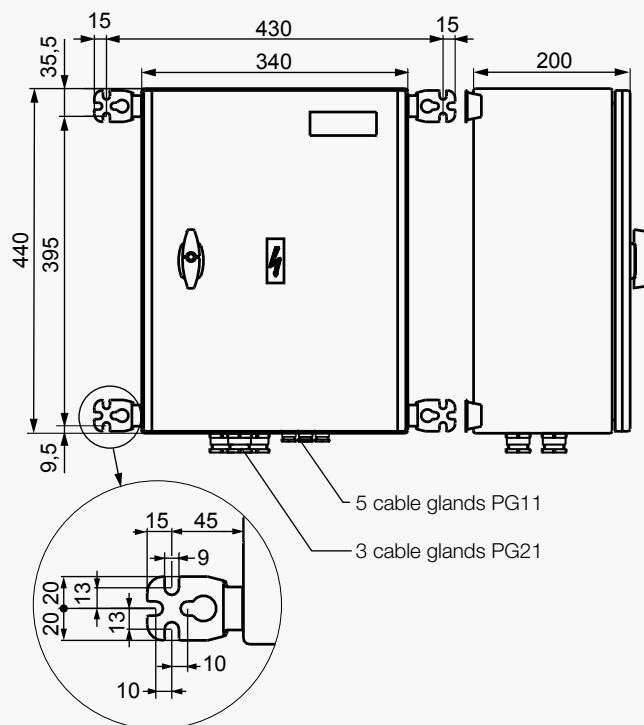
2 presentations are available:
- C for casing protected version
- P for plate mounted version

Operating conditions:

- Line voltage:
 - direct: 115V to 600VDC $\pm 10\%$
 - single or three phases: 115V to 500VAC $\pm 10\%$ 50/60Hz
- Ambiant temperature: -20°C to $+55^{\circ}\text{C}$

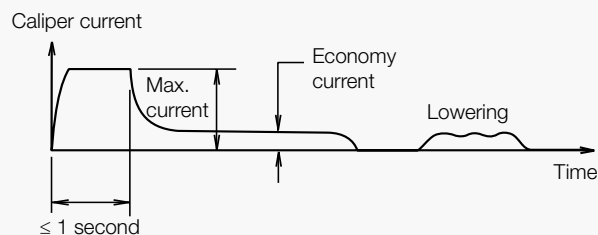
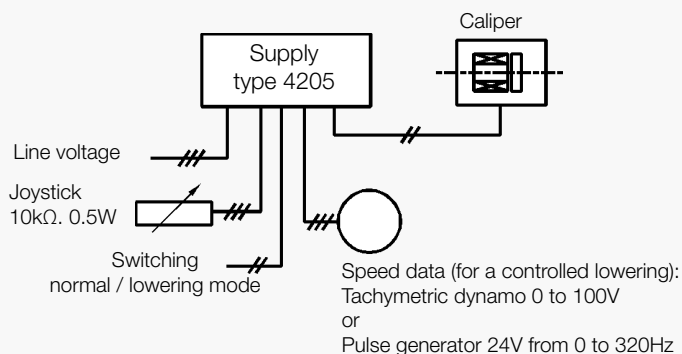
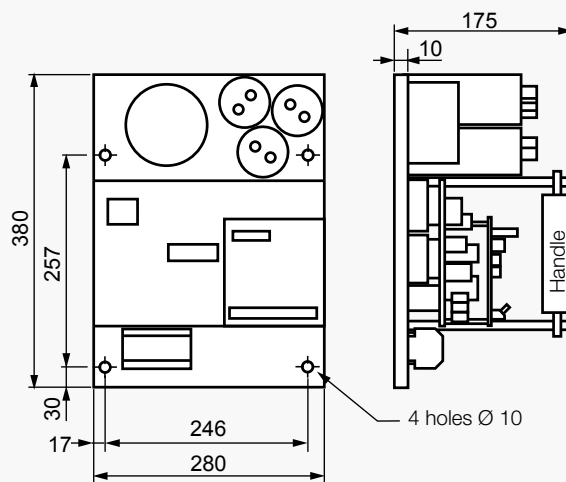
Type C4205 casing protected version (casing IP 66 EN60529)

Weight: 17kg



Type P4205 plate mounted version (for cabinet assembly)

Weight: 8kg



DISC BRAKE - ELECTRICAL POWER UNIT TYPE 4205

Revision number: T04810-01-B

Revision date: 21.10.2015

Notes:

- Lowering a load is performed manually, with or without vertical speed control, by progressively releasing the calipers (between 100% and 50% of the nominal torque)
- 2 calipers driven by the same power supply (or the 2 coils of the caliper OOSA) must be connected in series (refer to the installation and maintenance leaflet)
- For lowering with calipers 4CA2, contact us.

Note : by insulated kinematics (e.g.: a drum), the lowering command is performed only for one of the **4205** electrical supply units. This unit is called the "master".
One "master" unit can drive up to 5 "slave" units.

CALIPER			Type Number		4CA2		3CA2		OSA		OOSA	2SA	
					1	2	1	2	1	2	1	1	2
Maximum number of actuations per hour at 40°C					700		1000		100			100	
Power consumption of the power supply	Maximum	W			1695	3215	1355	2480	2850	5380	5380	8205	15 815
	Economy	W			105	140	130	175	305	480	480	205	300
Max. connecting cable return resistance caliper to supply unit (for 1 coil)			Ω		1		1		1			1	1
Delayed fuse rating to be provided between power supply and mains :													
direct :	115 VDC	A	25 		25 		25 						
	230 VDC	A	25		25		25		25			35	
	400 to 600 VDC	A	25		25		25		25			35	35
single phase :	115 VAC	A	25 		25 		25 						
	230 VAC	A	25		25		25		25			35	
	400 VAC	A	25		25		25		25			35	35
	500 VAC	A	25		25		25		25			25	25
 Forbidden association	3 phases :												
	230 VAC	A	25		25		25		25			25	
	400 VAC	A	16		16		16		16			25	25
					16		16		16			16	16

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DISC BRAKE - ELECTRICAL POWER UNIT TYPE AB8

Revision number: T04400-01-B

Revision date: 21/07/2016

Designed for control of the progressive braking effort by means of a foot pedal.

2 presentations are available:

- casing protected version C
- plate mounted version P

Matching CE markings:

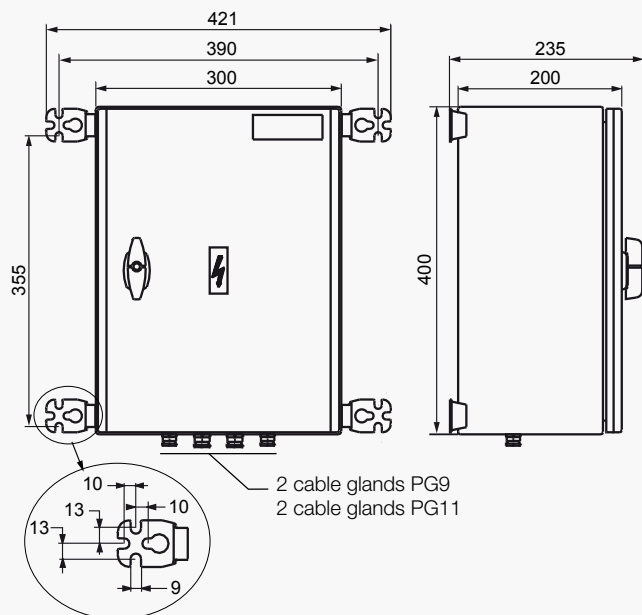
- 73/23/CEE BT directive
 - 89/336/CEE CEM directive
- (specifications EN50081-2 EN50082-2 EN6 0204-1)

Working conditions:

- Voltage(single phase)
 - 230/400V
 - or 400/415V
 - or 400/440V
 - or 400/460V
 - or 400/500V
 ± 10% 50/60Hz
- Working ambient temperature:
 - 20°C to +60°C

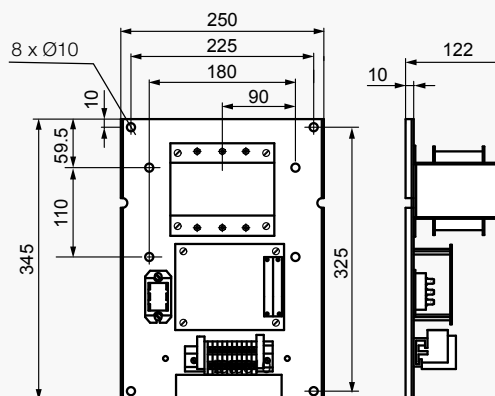
Type C AB8 protected version
(casing IP 669 standard DIN 40050)

Weight: 16 kg



Type P AB8 plate mounted version
(for cabinet assembly)

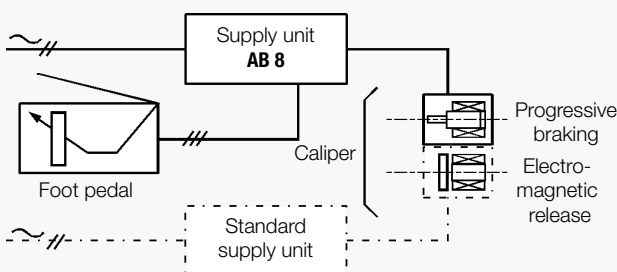
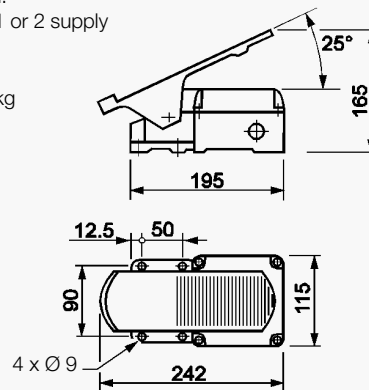
Weight : 8 kg



Control pedal:

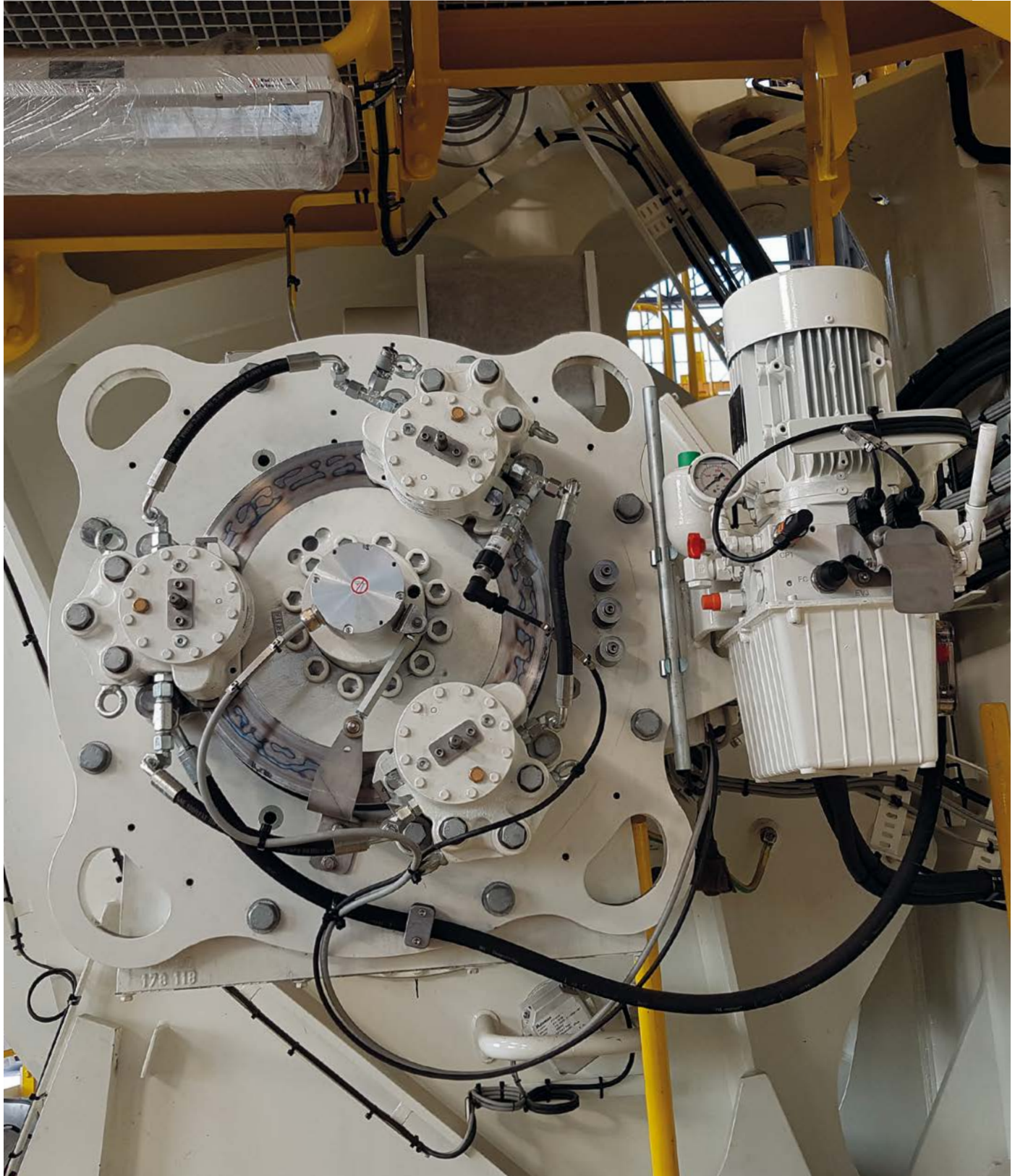
it can drive 1 or 2 supply units AB8

Weight: 1.9kg



Caliper	650 E - 5 KE - 5 DE	
Number of calipers	1	2
Power consumption in Watts for an output voltage of 20V DC	115	230
Voltage	3 to 24V DC	
Maximum connecting cable return resistance (caliper to supply unit) Ω	0.5	0.5
Primary fuse DIN "NH" type. "aM" class to be provided	230 V	1A
	400/415 V	1A
	440/460/500 V	1A
		2A

HYDRAULIC POWER PACKS



HYDRAULIC POWER PACKS	TANK	MAX. PRESSURE	ASSOCIATED CALIPERS	MAIN CHARACTERISTICS
C3BSH 	4 L	180 bars	SHD2 - SHD5 SH5 - SH9 TH9	- Vertical installation - Options: MS: Special voltages motor OP1 / Y1-3 Z1-Z2: Delayed braking R: Braking torque adjustment AF: Lowering device
CSH 	6 L	200 bars	SHD5 - SHD9	- Vertical installation - Customer-fitted solutions: - Application of full braking force - Adjustable and progressive application fo the braking force with non-application of the full braking force at beginning of the braking - Electrical indicators (clogging, oil temperature and level)
CE8L 	8 L	225 bars	SHD2 - SHD5 SH5 - SH9 SH15 - SH18B SH25 TH9	- Horizontal or vertical installation. - Options: MS / OP1 OP2: Manual lowering with dead man safety device OP3: Manual lowering with overspeed detection OP4: Indicator of the valves position CS2EV: Monitoring device of the 2 solenoid valves (OP1) Y5: Regulated braking or lowering of the load OP6: Tightness for Iron and steel industry - Drip tray for HPP mounted horizontally - Electrical power unit integrated to the HPP - Electrical indicators: clogging, oil level and temperature...
CE12L 	12 L	225 bars	SH15 - SH18B SH25 - SH32	
ST210 	63 L	225 bars	SH15 - SH18B SH25 - SH32	- Vertical installation. - Options: MS / OP1 / OP2 / OP3 / OP4 / OP6 OP9: Output pressure switch - Electrical power unit integrated to the HPP - Electrical indicators: clogging, oil level and temperature...

Hydraulic Power Packs

DISC BRAKE - C3BSH-ATH2 HYDRAULIC POWER PACK

Revision number: T05226-01-E

Revision date: 20.02.2014

Association with 1 caliper of **TH9**, **SH5** or **SH9A** range.

Maximal utilization pressure : 225 bars

Reservoir maximum oil volume : 4 L

Integrated electrical unit

Operating conditions:

- Ambient temperature: -10°C to +50°C
- Relative humidity: ≤ 70%
- Dust in atmosphere ≥ 65µm
- Protection required against vertically falling water

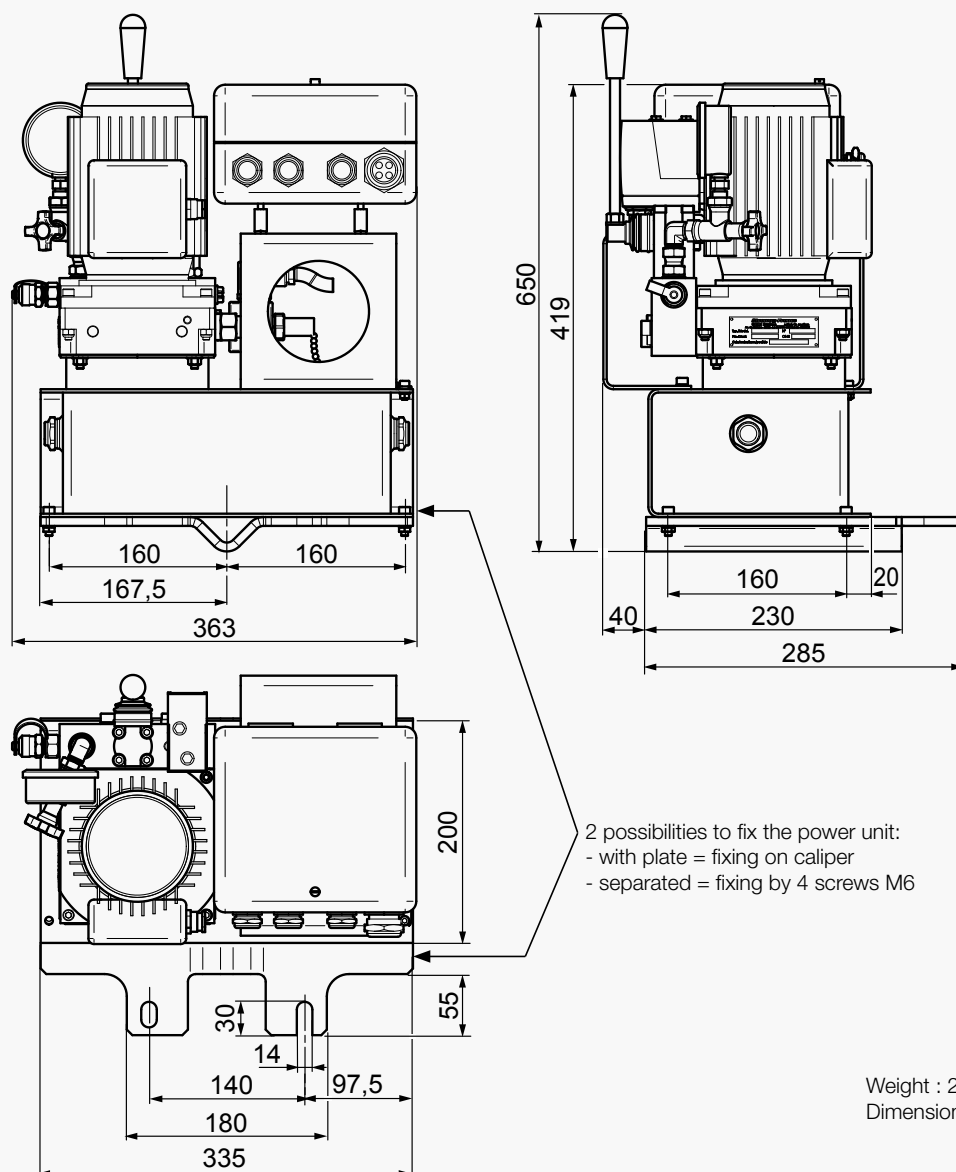
Other conditions: consult us.

Use:

- Frequency of operation : 100 op. / hour maxi.
Except for SH5-6 and SH9-3 calipers :
frequency of operation : 60 op. /hour maxi.

Options:

- MS** Special motor
- OP1** Enhanced security return circuit by 2 solenoid valves
- R** Braking torque adjustment
- AF** Manual lowering with a dead man safety design
- OP6** Tight HPP for iron and steel industry
- Y1-3** Caliper closing with stepped braking torque application
- Z1-Z2** Delayed braking



Weight : 27 kg without oil
Dimensions in mm

DISC BRAKE - C3BSH-ATH2 HYDRAULIC POWER PACK

Revision number: T05226-01-E

Revision date: 20.02.2014



Electrical data

Motor M100

230/400VAC 50Hz 0.37 kW
4 poles 1500rpm

For mains 3 phases

Frequency 50 Hz

220-230-240VAC $\pm 10\%$ 50Hz

380-400-415VAC $\pm 10\%$ 50Hz

Frequency 60 Hz

480VAC $\pm 10\%$ 60Hz

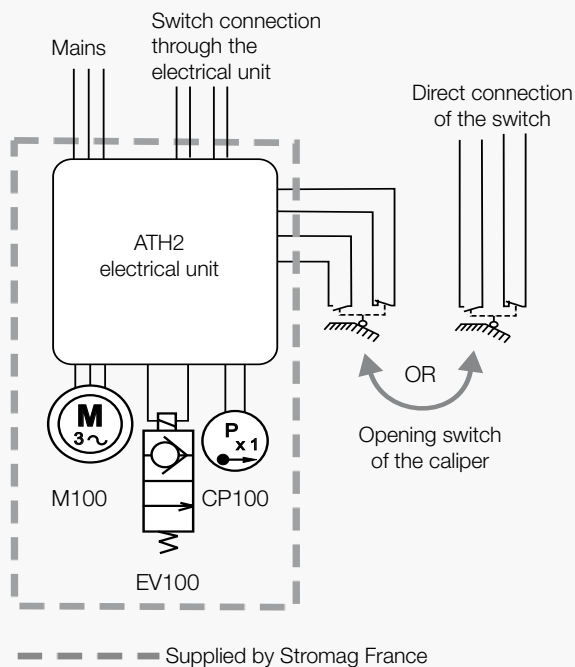
Solenoid valve EV100

Coil under 48 VRAC

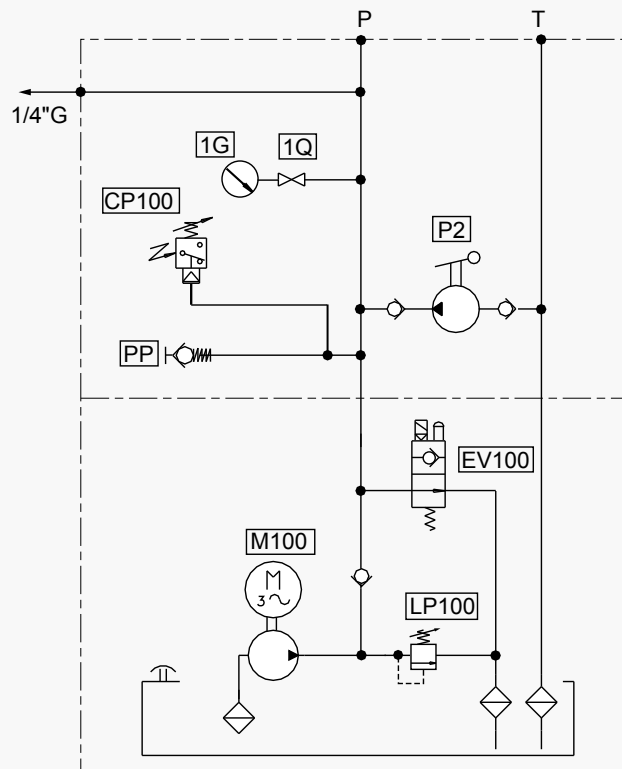
Pressure switch CP100

- Protection: IP 65
- 240 V AC. 1.5 A
- 250 V DC - 0.1 A

Electrical unit connections



Flow diagram



Hydraulic Power Packs

DISC BRAKE - CSH-02 / CSH-09 / CSH-10 HPP

Revision number: T10123-02-F

Revision date: 14.11.2018

Association with 1 or 2 caliper(s): see table 1
Motor 0.75 kW at 1500 rpm
Maximal utilization pressure : see table 1
Electrical indicators of oil temperature and level (OP7-8)
Vertical installation
Soft-Braking :

Allow progressive and adjustable application of the braking force and non-application of the full braking force at the beginning of braking.

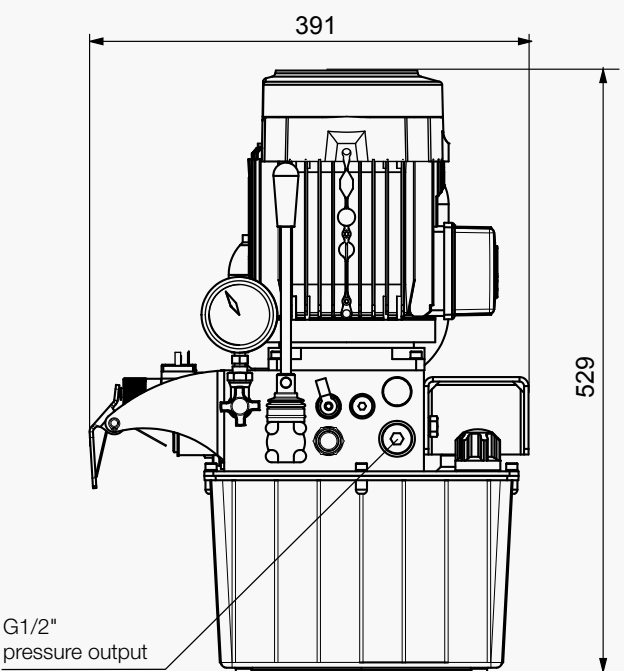
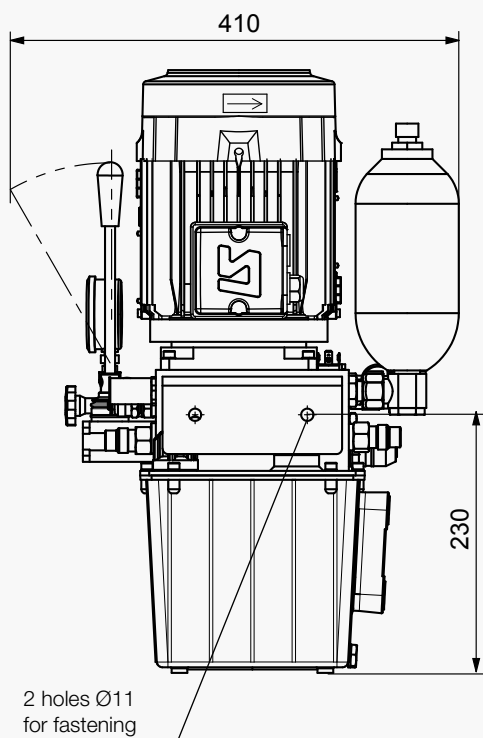
Operating conditions:

- Ambient temperature: -10°C to +50°C
- Relative humidity: ≤ 100%
- C4M L anti-corrosive protection level (according to ISO12944 standards)
- IP55 tightness level

Other conditions: consult us.

Use:

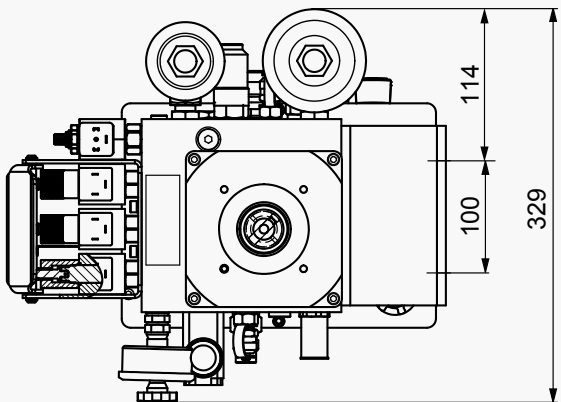
- Service life : 200 000 operations
- Frequency of operation : 60 op. / hour maxi.



Dimensions in mm
Weight without oil: 62 kg
Tank volume: 6 L

Table 1

HPP	Max. utilization Pressure	Association with the caliper
CSH-02	190 bar	SHD9-4-03
CSH-09	225 bar	SHD9-6-06
CSH-10	215 bar	SHD5A-8-M2-08

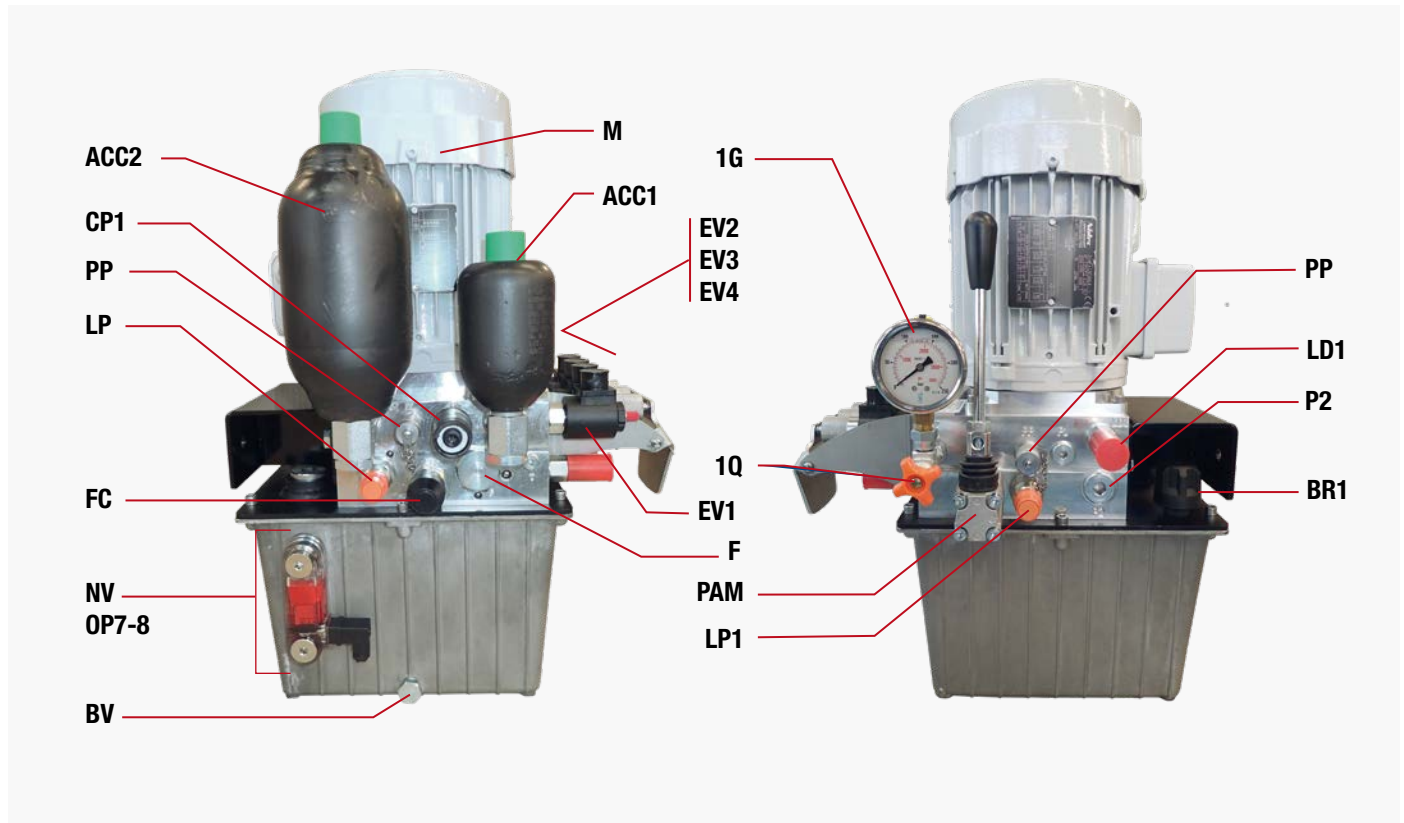


View without the motor

DISC BRAKE - CSH-02 / CSH-09 / CSH-10 HPP

Revision number: T10123-02-F

Revision date: 14.11.2018



Electrical data:

Motor M

230/400VAC 50Hz 0.75 kW
4 poles 1500rpm

For mains 3 phases
Frequency 50 Hz
220-230-240VAC $\pm 10\%$ 50Hz
380-400-415VAC $\pm 10\%$ 50Hz
Frequency 60 Hz
265-277-290VAC $\pm 10\%$ 60Hz
440-460-480VAC $\pm 10\%$ 60Hz

Pressure switch CP1

- Electrical design : DC PNP
- Operating voltage : 9.6...32 VDC
- Current consumption : < 25 mA
- Insulation resistance : > 100 M Ω
- Current rating : 500 mA
- 2 switching outputs normally open / closed complementary
- Connector M12 / 5 positions in accordance with IEC61076-2-101 standard / code A (not delivered)

Solenoid valves EV1-EV2-EV3-EV4

Coil under 24VDC with rectifier
DIN connector not provided

Electrical indicators of oil temperature and level OP7-8

Integrated to the visual oil level, the electrical indicators provide a temperature signal by means of a thermostat (NC) preset at 70°C (OP7) and a minimum oil level electric signal (INV) (OP8).

Electric part is completely separate from oil and insulated.

- Power commutable in DC : 40 W
- Power commutable in AC : 40 V.A.
- Current strength in DC - AC : 2 A
- Commutable voltage : 230 VDC/VAC
- Connector provided

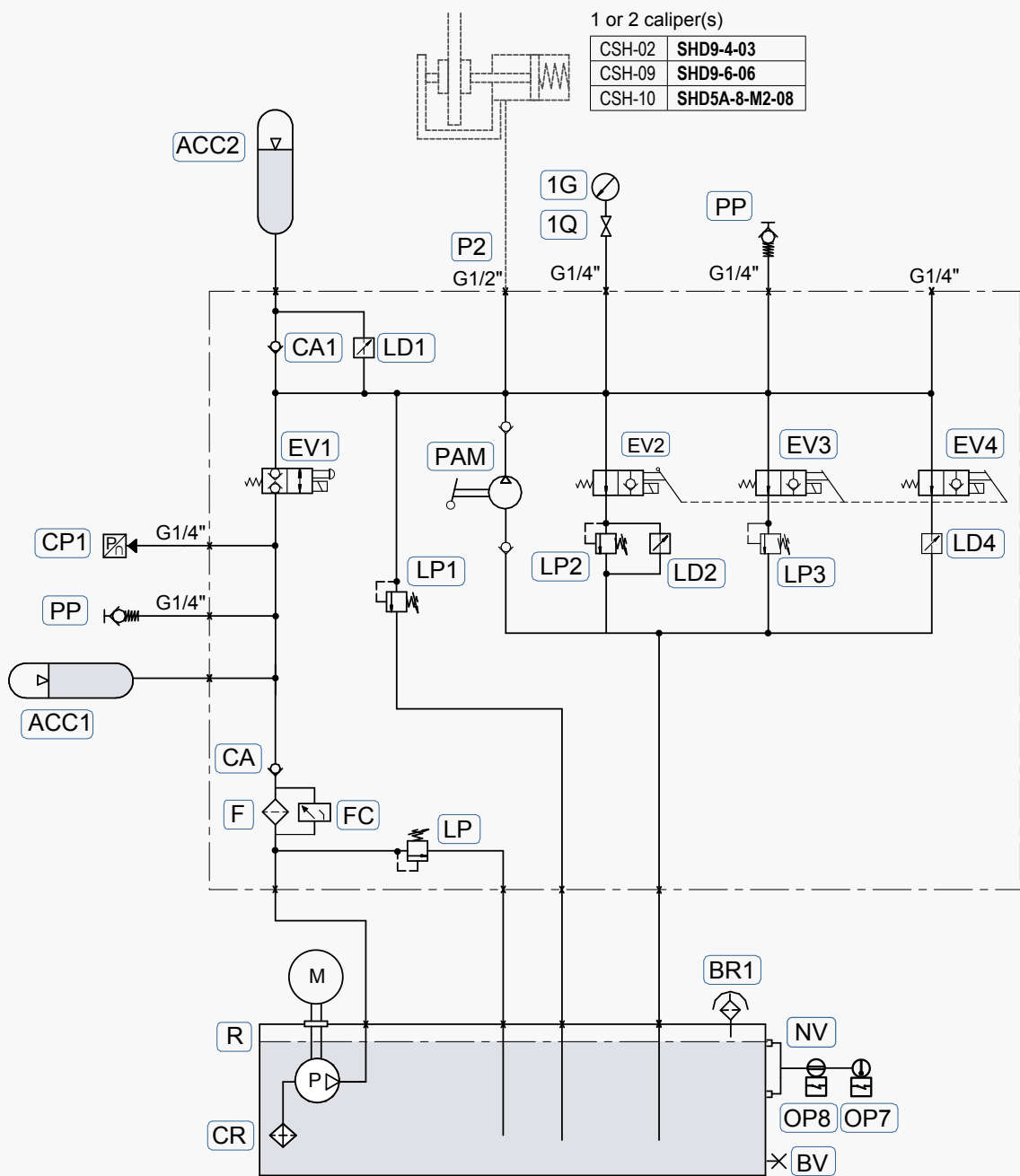
Hydraulic Power Packs

DISC BRAKE - CSH-02 / CSH-09 / CSH-10 HPP

Revision number: T10123-02-F

Revision date: 14.11.2018

Flow diagram



SIME Brakes Industrial Braking Systems

Hydraulic Power Packs

DISC BRAKE - CE8L HYDRAULIC POWER PACK

Revision number: T05570-01-D

Revision date: 26.02.2015

Maximal utilization pressure : 225 bars
Reservoir maximum oil volume : 8 L
Vertical or horizontal installation

Operating conditions:

- Ambient temperature: -10°C to +60°C
- Relative humidity: ≤ 70%
- Dust in atmosphere ≥ 65µm
- Protection required against vertically falling waters

Other conditions: consult us.

Use:

- Frequency of operation : 100 op. / hour maxi.

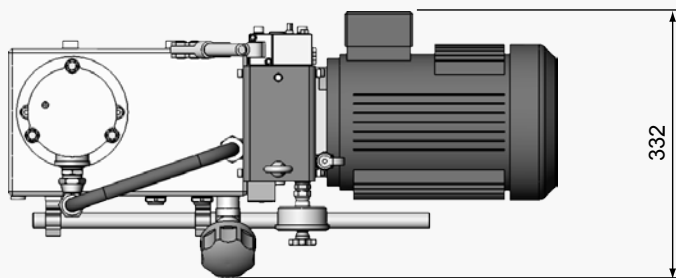
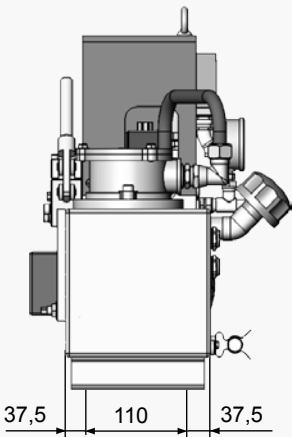
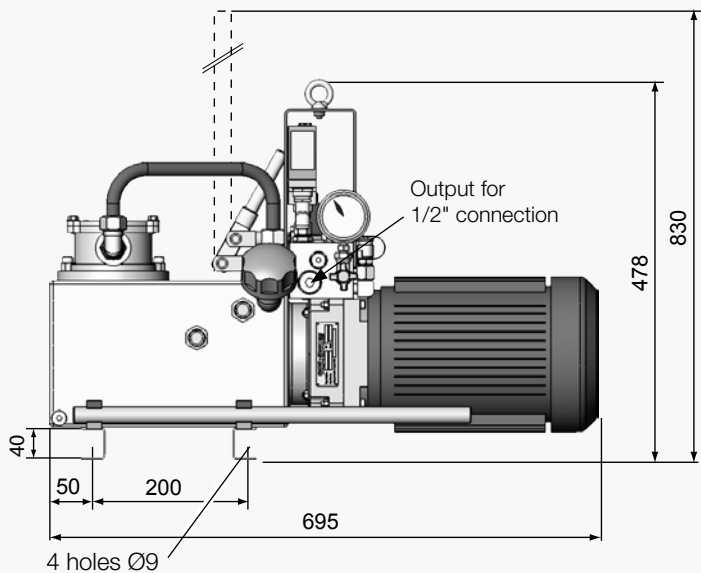
Association with the calipers :

CE8L-20	SH25-2. SH18B. SH9-3. SH5-6
CE8L-18	SH15-3. SH9-2
CE8L-16	SH25-1. SH15-2. SH5-5. TH9-3
CE8L-14	SH15-1. SH9-1. SH5-4
CE8L-11	SH5-3. TH9-2

Options :

MS	Motor 290/500VAC 50Hz or Motor 230/400 VAC with PTC sensor
EVS	EV coils voltage different from the standard
K1 or K2	Integrated electrical power unit
OP1	Enhanced security return circuit by 2 solenoid valves
CS2EV	Monitoring device of the 2 solenoid valves (of OP1)
OP1-OP2	Manual lowering with a dead man safety device.

OP1-OP3	Manual lowering with overspeed safety by solenoid valve 24VDC.
OP4	Indicator switch of the position of the control valve(s)
OP5	Visual or electrical clogging Indicator
OP6	HPP for iron and steel industry
OP8	Electrical indicator of oil minimum level
OP10	Drip tray for horizontal HPP
RV	Drain valve for reservoir
Y5	Regulated braking

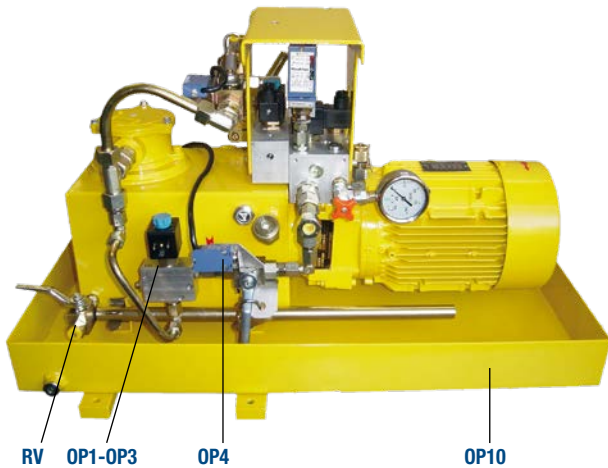


Weight : 54 kg without oil
Representation: CE8L-H
(horizontal position)
Dimensions in mm

DISC BRAKE - CE8L HYDRAULIC POWER PACK

Revision number: T05570-01-D

Revision date: 26.02.2015



Electrical data:

Motor M

230/400VAC 50Hz 2.2 kW
4 poles 1500rpm

For mains 3 phases

Frequency 50 Hz

220-230-240VAC $\pm 10\%$ 50Hz

380-400-415VAC $\pm 10\%$ 50Hz

Frequency 60 Hz

480VAC $\pm 10\%$ 60Hz

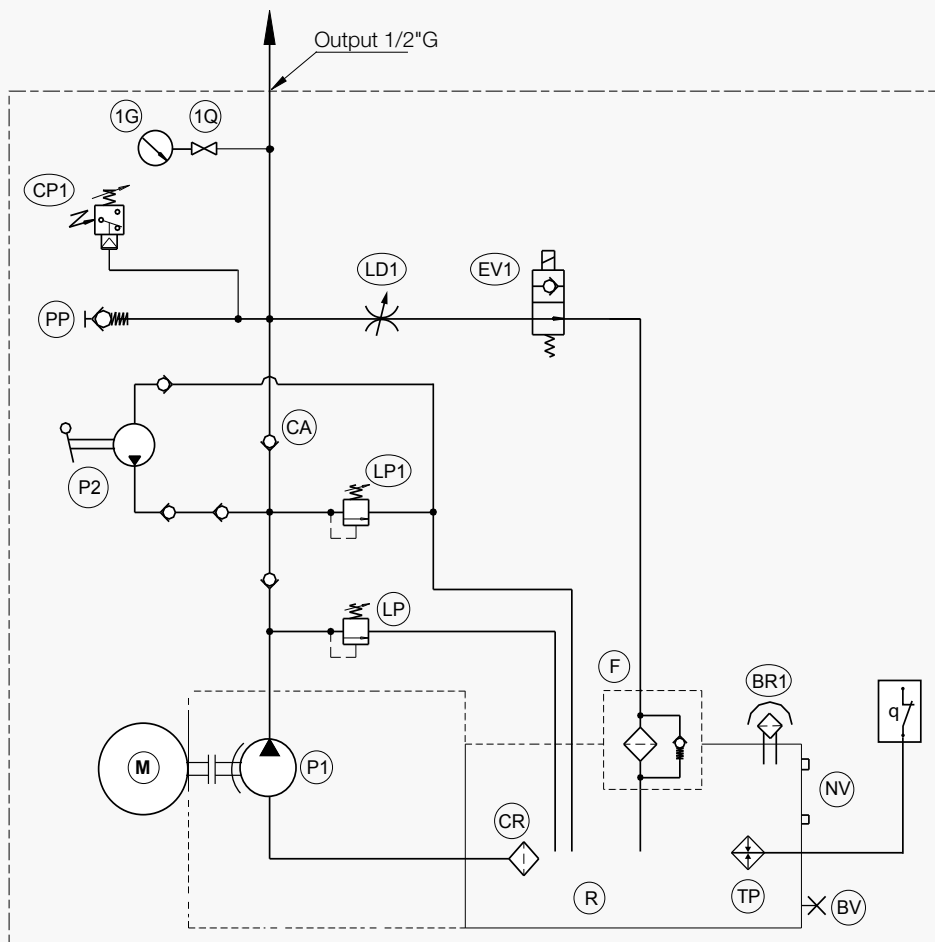
Solenoid valve EV1

Coil under 230VRAC 50 or 60 Hz
single phase. 20W
Protection IP55

Pressure switch CP1

- Single-pole and snap-acting contact "OC"
- Protection: IP 66
- 240 V AC. 1.5 A
- 250 V DC. 0.1 A

Flow diagram



Hydraulic Power Packs

DISC BRAKE - CE12L HYDRAULIC POWER PACK

Revision number: T10001-01-F

Revision date: 26.02.2015

Maximal utilization pressure : 225 bars

Reservoir maximum oil volume : 12 L

Vertical or horizontal installation

Operating conditions:

- Ambient temperature: -20°C to +60°C
- Relative humidity: ≤ 100%
- Dust in atmosphere ≥ 30µm
- Protection required against vertically falling waters

Other conditions: consult us.

Use:

- Frequency of operation : 100 op. / hour maxi.

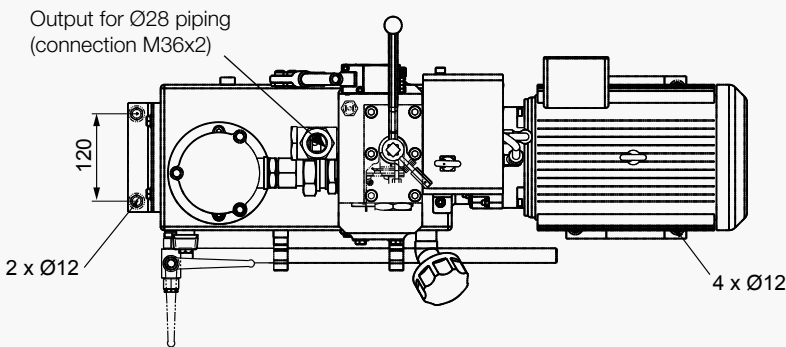
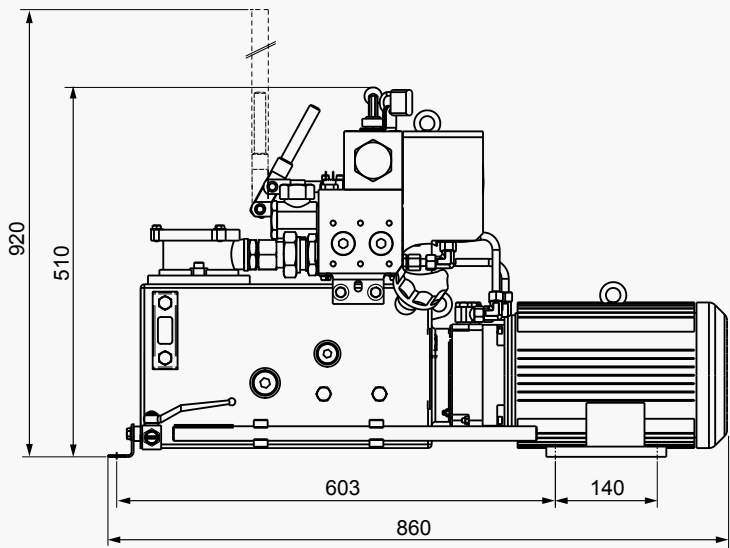
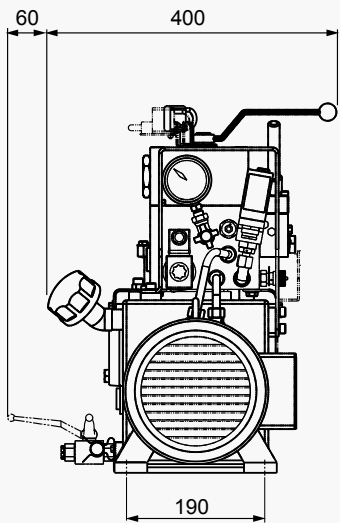
Association with the calipers :

CE12L-20	SH25-2. SH18B
CE12L-18	SH15-3
CE12L-16	SH25-1. SH15-2
CE12L-14	SH15-1

Options :

MS	Motor 500VAC 50Hz or Motor 230/400 VAC with PTC sensor
EVS	EV coils voltage different from the standard
K4	Integrated electrical power unit
OP1	Enhanced security return circuit by 2 solenoid valves
CS2EV	Monitoring device of the 2 solenoid valves (of OP1)
OP1-OP2	Manual lowering with a dead man safety device.

OP1-OP3	Manual lowering with overspeed safety by solenoid valve 24VDC.
OP4	Indicator switch of the position of the control valve(s)
OP5	Visual (OP5) or electrical (OP5E) clogging Indicator
OP6	HPP for iron and steel industry
OP7	Electrical indicator of oil temperature
OP8	Electrical indicator of oil minimum level
OP10	Drip tray for horizontal HPP
Y5	Regulated braking

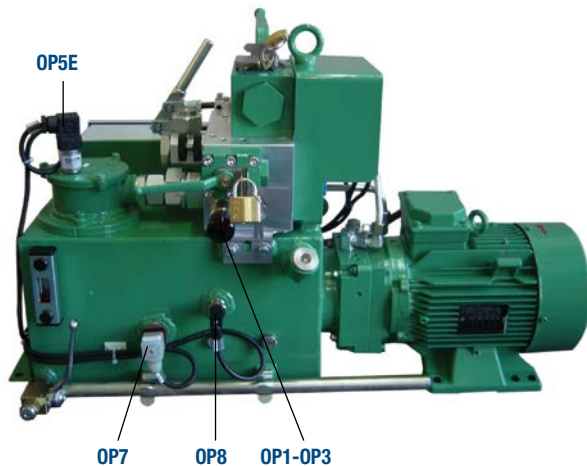


Weight : 66 kg without oil
Model : CE12L-H
(horizontal position)
Dimensions in mm

DISC BRAKE - CE12L HYDRAULIC POWER PACK

Revision number: T10001-01-F

Revision date: 26.02.2015



Electrical data:

Motor M

230/400VAC 50Hz 4 kW
4 poles 3000rpm

For mains 3 phases

Frequency 50 Hz

220-230-240VAC $\pm 10\%$ 50Hz

380-400-415VAC $\pm 10\%$ 50Hz

Frequency 60 Hz

220-230-240VAC $\pm 10\%$ 60Hz

440-460-480VAC $\pm 10\%$ 60Hz

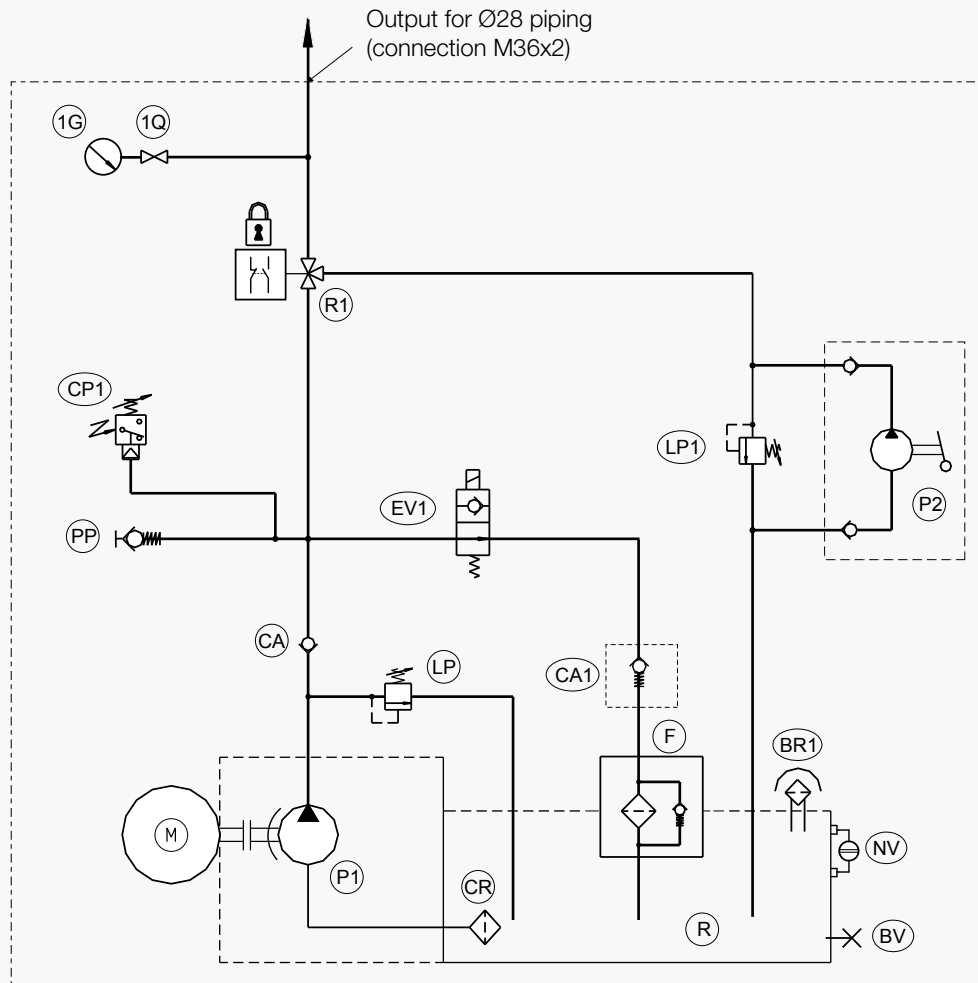
Solenoid valve EV1

Coil under 230V/RAC 50 or 60 Hz
single phase, 20W
Protection IP55

Pressure switch CP1

- Single-pole and snap-acting contact "OC"
- Protection: IP 66
- 240 V AC. 1.5 A
- 250 V DC. 0.1 A

Flow diagram



Hydraulic Power Packs

DISC BRAKE - ST210 HYDRAULIC POWER PACK

Revision number: T05100-01-A

Revision date: 20.04.2002

Maximal utilization pressure : 225 bars

Reservoir volume : 78 L :

minimum oil volume = 42 L

maximum oil volume = 63 L

Operating conditions:

- Ambient temperature: -10°C to +50°C
- Relative humidity: ≤ 70%
- Particle size ≥ 40µm
- Protection required against direct harm such as vertical falling waters, sea spray or flams.

Other conditions: consult us.

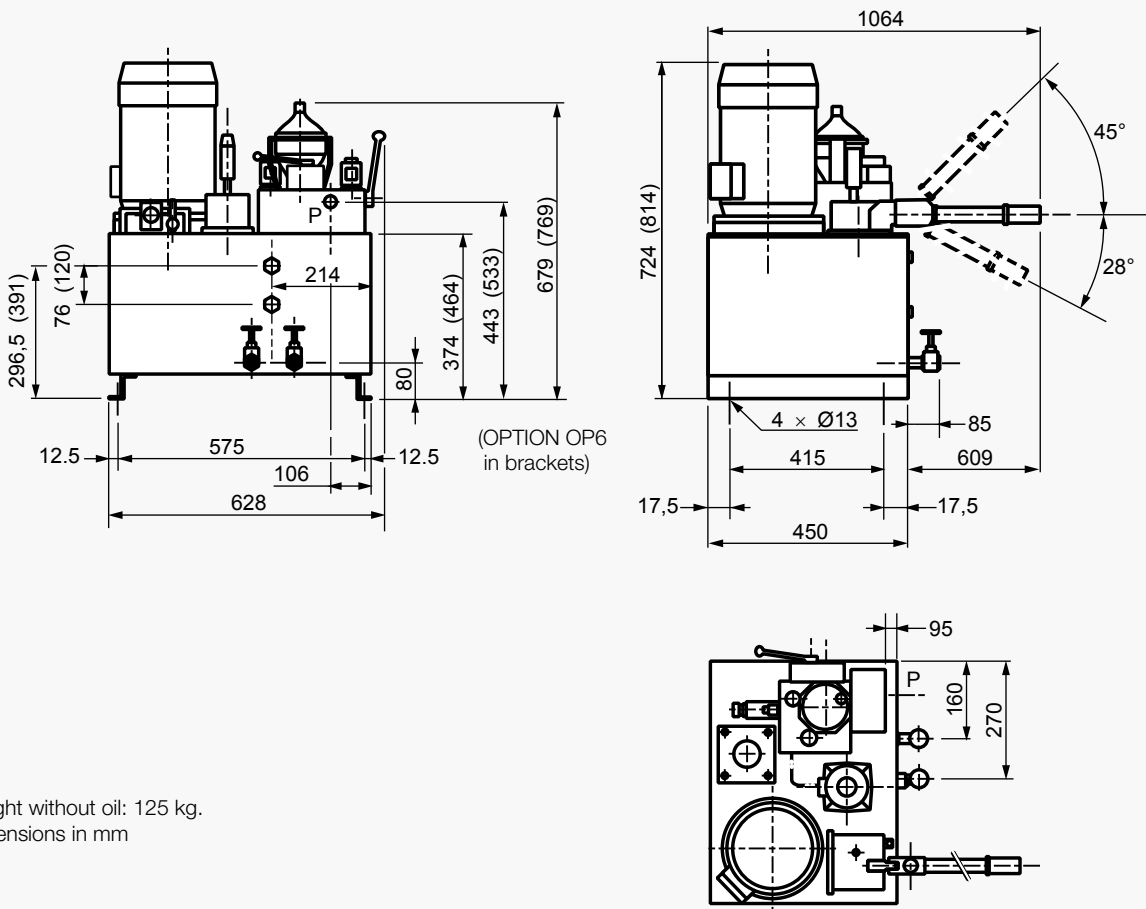
Association with the calipers :

ST210-20	SH25-2. SH18B
ST210-17	SH15-3
ST210-15	SH25-1
ST210-13	SH15-2
ST210-10	SH15-1

Options :

MS	50 Hz : 240/415 V - 500 V 60 Hz : 260/460 V - 254/440 V
EVS	EV coils voltage different from the standard
K	Electrical unit (consult us)
OP1	Enhanced security return circuit by 2 solenoid valves
OP1-OP2	Manual lowering with a dead man safety device.
OP1-OP3	Manual lowering with overspeed safety by solenoid valve 24VDC.

OP4	Indicator switch of the position of the control valve(s)
OP5	Visual (OP5) or electrical (OP5E) clogging Indicator
OP6	HPP for iron and steel industry
OP7	Electrical indicator of oil temperature
OP8	Electrical indicator of oil minimum level
OP9	Output pressure switch

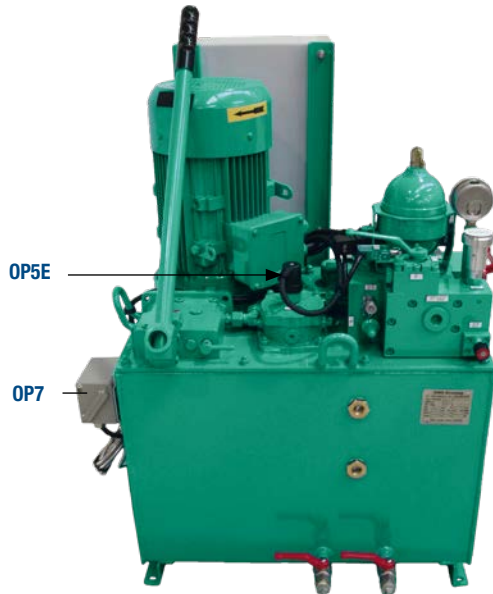


Weight without oil: 125 kg.
Dimensions in mm

DISC BRAKE - ST210 HYDRAULIC POWER PACK

Revision number: T05100-01-A

Revision date: 20.04.2002



Electrical data:

Motor

230/400VAC $\pm 5\%$ 50Hz 4 kW
280/480VAC $\pm 5\%$ 60Hz
4 poles 3000 rpm
Protection: IP 55 classe F

Solenoid valves

- Power: 17 W, coil class H.
- 12 and 24 VDC.
- 24VRAC, 110VRAC and 220VRAC

Pressure switch

- Cable gland PG11
- Protection: IP 65
- Watertight housing
- Terminal box

For mains 3 phases

Frequency 50 Hz

220-230-240VAC $\pm 10\%$ 50Hz

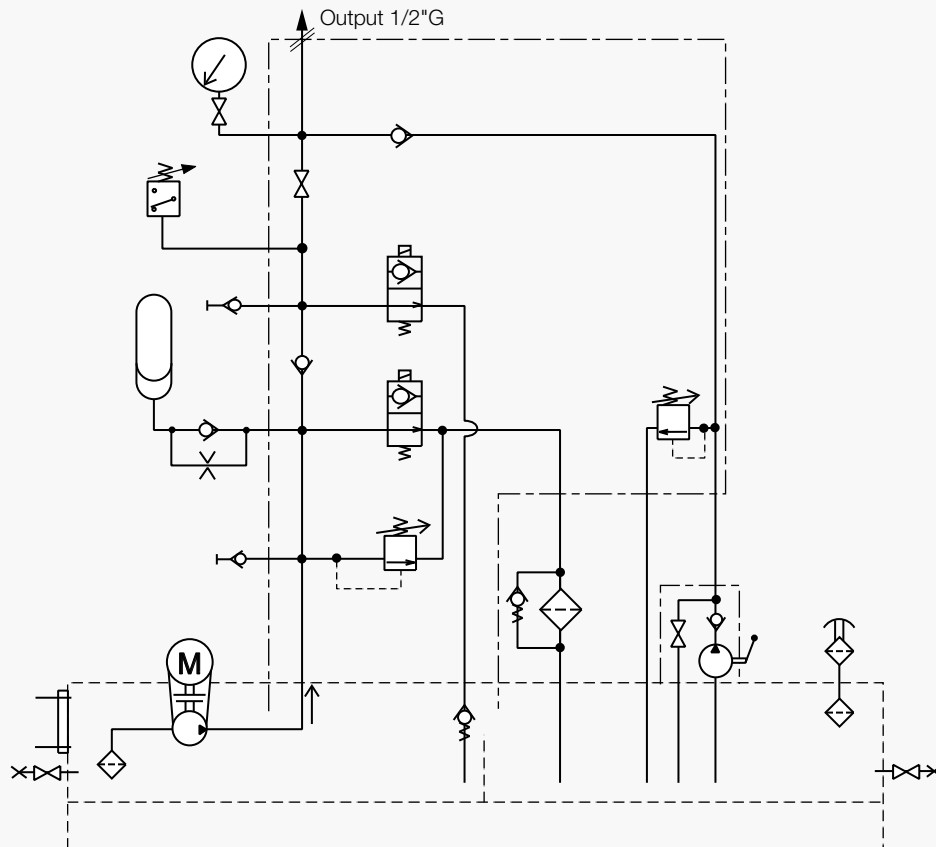
380-400-415VAC $\pm 10\%$ 50Hz

Frequency 60 Hz

220-230-240VAC $\pm 10\%$ 60Hz

440-460-480VAC $\pm 10\%$ 60Hz

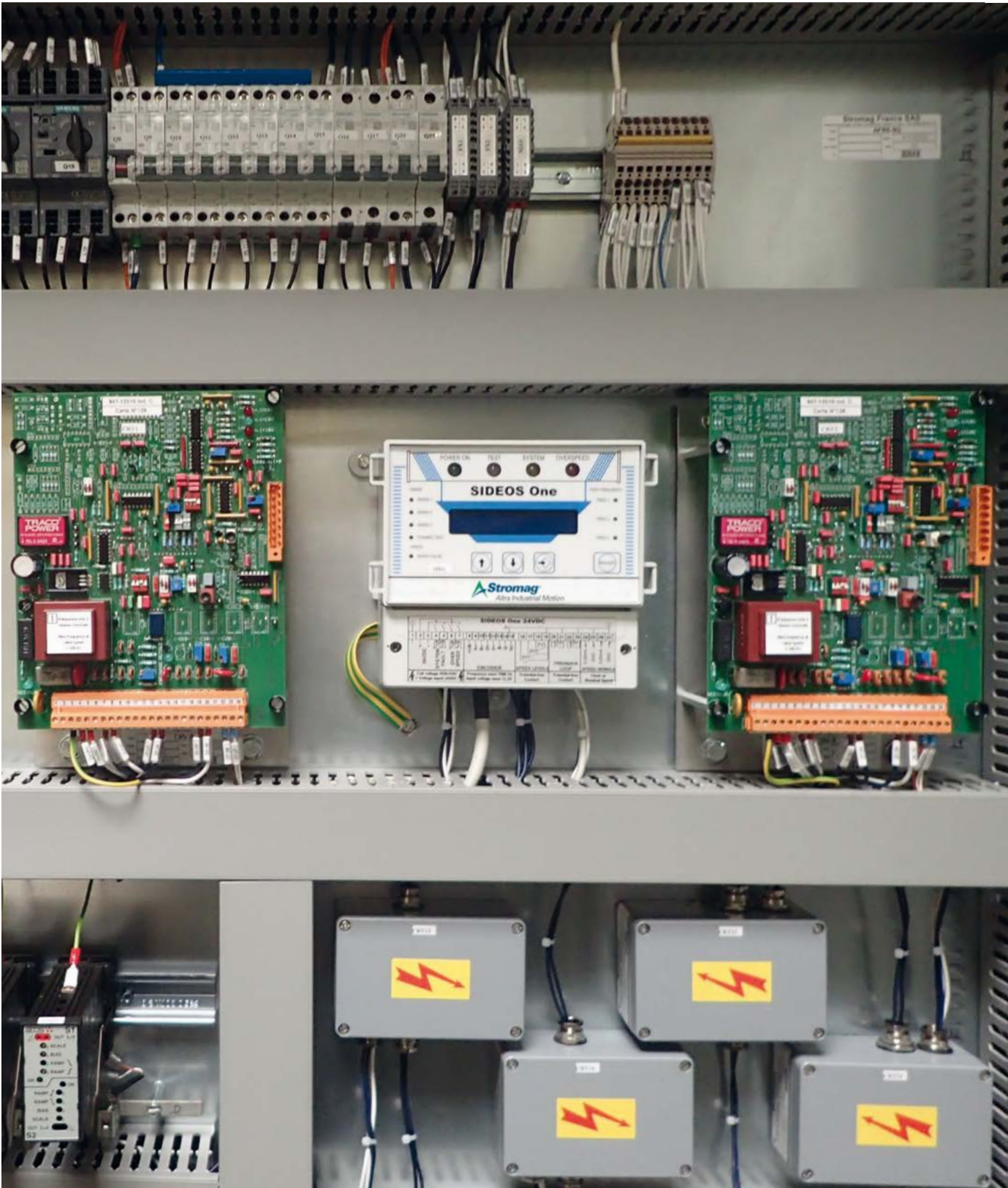
Flow diagram



SIME Brakes Industrial Braking Systems

Safety Systems

CONTROL AND SAFETY SYSTEMS

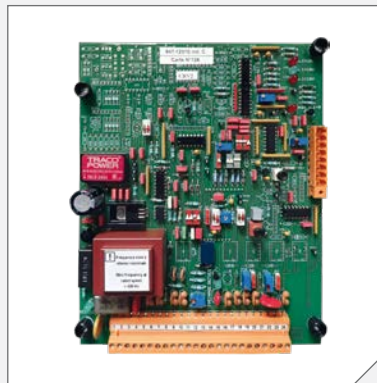


BRAKING SOLUTIONS FOR	APPLICATIONS
• MONITORING THE HOISTING SPEED • REGULATED DECELERATION • SPEED REGULATION CONTROL • CONSTANT DECELERATION • SAFETY PERFORMANCE LEVEL PL d to PL e	• MASS TRANSPORTS : CABLEWAY, PASSENGERS ELEVATORS FUNICULARS, CHAIRLIFTS... • STEEL INDUSTRY LADLE CRANE • BELT CONVEYORS



SIDEOS One

- SAFETY SYSTEM
- configurable and secure module for speed monitoring.
- fitted with an efficient auto-control system.



CRD® / CRV®

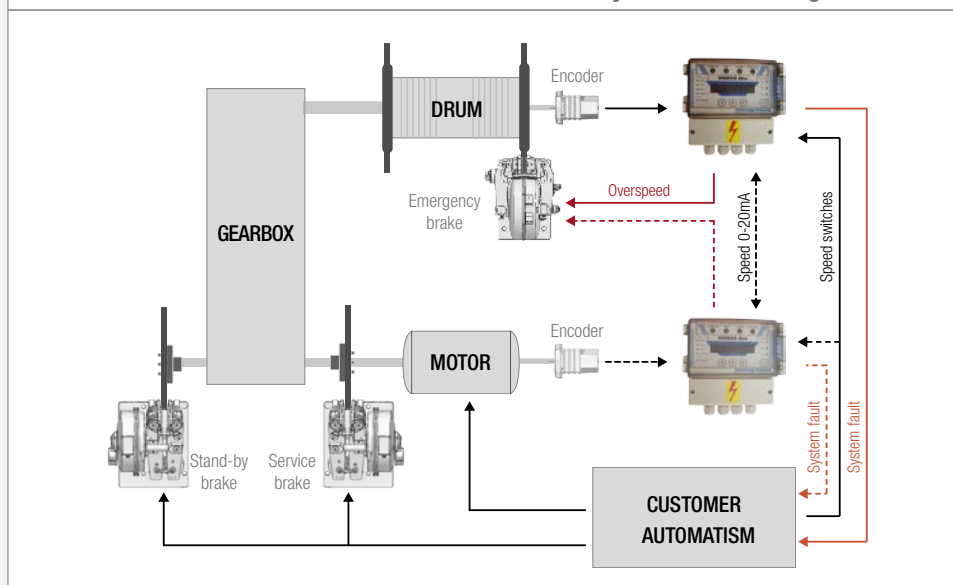
- CONTROL SYSTEMS
- speed regulation with **CRV®** module.
- setting of the deceleration rate on the **CRD®** module.



AFR5

- MONITORING. CONTROL SYSTEMS for regulated braking.
- SAFETY SYSTEMS adapted to the customer installation.
- includes **SIDEOS One** and **CRD®** modules

ASSOCIATION OF 2 SIDEOS One - Detection of any kinematic linkage break



Safety Systems

SAFETY SYSTEMS - SIDEOS ONE

Revision number: M10054-01-E

Revision date: 16.11.2018

Configurable and secure system for speed monitoring: redundant design and fault detection system (DC>99%) which secure the overall operation of the overspeed detection system.

Conform to the machine security standards :

NF EN ISO 13489-1
Performance level PL=d to PL=e
Category : 2 to 4
MTTFd = high DC = high

Operating conditions :

- Ambient temperature : -20°C to +60°C
- IP65 protected electrical casing

Electrical data :

- 2 versions
AC : 115/230 VAC $\pm$ 10% 50/60Hz or
DC : 24 VDC $\pm$ 15%
- Other voltages : consult us

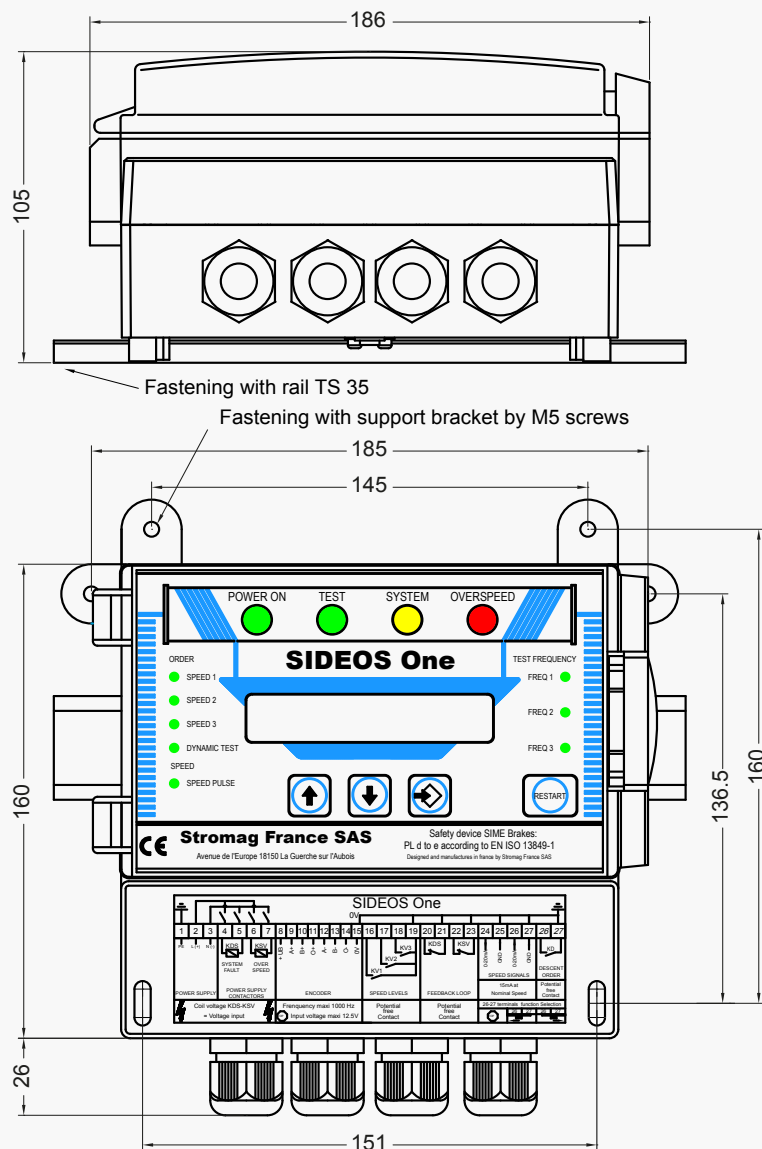
EC marking of conformity :

- 2006/42/EC directive Machine
- 2014/35/UE Low voltage directive (standard NF EN 60204-1)
- 2014/30/UE EMC directive (standards NF EN 61000-6-2. NF EN 61000-6-4)

Options :

- Steel casing IP66 IK10
- Contact module

The **SIDEOS One** can be installed in a control enclosure on an DIN rail of 35mm, or fixed with M5 screws, see the drawing below.



4 cable glands ISO20 cable Ø 6 to 12

In case of heavy vibrations, it is recommended to fasten the **SIDEOS One** on elastic buffers.

SAFETY SYSTEMS - SIDEOS ONE

Revision number: M10054-01-E

Revision date: 16.11.2018

The **SIDEOS One** is a configurable system for speed monitoring designed to secure the lifting of a handling equipment.

> It is set according to:

- The lifting characteristics • Number of encoder pulses per revolution • Nominal speed of lifting in rpm • Deceleration time	Parameters NC NS DT
- The selected functions • Speed thresholds to monitor • Dynamic Slipping • Break of the kinematic chain • Encoder monitoring	SP1-SP2-SP3 TS TS and DS RC
- The number of pulses to confirm an Overspeed • Validation Overspeed 1, Static and Dynamic Slippings • Validation Overspeed 2 • Validation Overspeed 3 and kinematic chain break	VS1 VS2 VS3



Access to the parameters is protected by a locking mode.

> It receives:

- The speed signal(s) of the installation
- The functional orders of the lifting control of the handling equipment

> It monitors:	and detects, in case of wrong operation:
- the lifting speed(s)	- an Overspeed
- the lifting stop (deceleration)	- a Static Slipping
- the lifting stop positioning	- a Static Slipping
- the lifting operation direction	- a Dynamic Slipping
- the lifting kinematic chain	- a Differential Speed
- the encoder	- an encoder fault
- the functional orders of the control	- a Speed contact fault
- the output contactors or relays	- a contactor fault

> When it detects a fault, it pilots:

- the opening of the independent output contactors, their power contacts being inserted in the supply circuit of the safety brakes.

> It secures the global operation of the speed monitoring system by means of:

- its redundant internal and external design and its monitoring system (DC > 99%) which allow the detection of all the internal and external failures.

**It allows to obtain
a secured speed monitoring system
Category 2 PL d up to Category 4 PL e
according to the standard NF EN ISO 13849-1.**

> It signals the triggering origin:

- via the alphanumeric display
- an auxiliary contact of the output contactors

> It records:

- The opening of the output contactors or relays and this even in case of power cut
- The 3 last Fault message

> It releases:

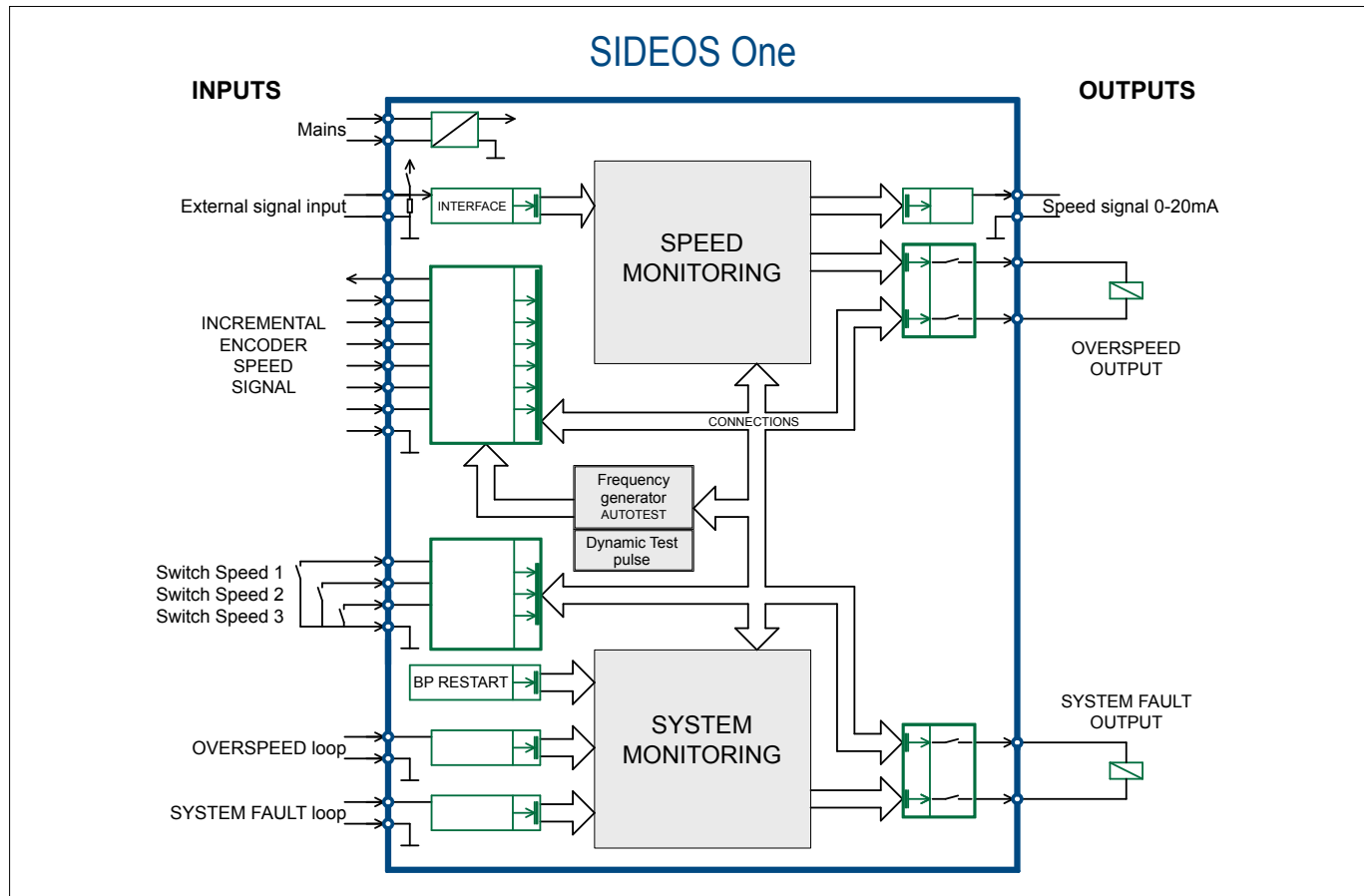
- the fault when the RESTART button is manually actuated, this action allows the control system to receive a distinct starting order.

SAFETY SYSTEMS - SIDEOS ONE

Revision number: M10054-01-E

Revision date: 16.11.2018

Internal design



> External failures

The monitoring system of the **SIDEOS One** is designed to detect all the external signals failures by means of a redundant or logic treatment of the input signals.

It secures the operation of the speeds inputs, the contacts inputs, the System Fault outputs and the Overspeed outputs (DCavg>99%).

> Internal failures

The **SIDEOS One** detects all the internal faults (DCavg>99%), either during the operation, or during the AUTOTEST.

Faults, detected only during the AUTOTEST, do not lead to loss the safety function thanks to the redundant internal design.

It ensures :

- a cross-monitoring of its internal operation
- a dynamic test of the overspeed function every 360 pulses of the encoder
- the control of validity of the memories

> Cut-off and safe connection of the System Fault and Overspeed outputs supply

The **SIDEOS One** system, that cuts off the supply of the System Fault and Overspeed outputs, is designed to switch off the output supply whatever the fault present on the output.

> Autotest

The Autotest triggers automatically at power on (time 1.5s) or at a manual starting-up (RESTART) following a triggering of a **SIDEOS One** output (time 1s).

The AUTOTEST allows a global checking and ensures the **SIDEOS One** to operate correctly, if the AUTOTEST is validated.

Safety Systems

DISC BRAKE - CONSTANT DECELERATION CRD MODULE

Revision number: M08950-01-C

Revision date: 03.06.2015

1 - PRESENTATION

The **CRD®** module, combined with **5KE. 650E. TY5. TH** and **SH** type brakes allows a constant deceleration regulated braking (fig. 1) whatever the speed, the load and the kind of load, driving or resisting.

Applications: cableways, chairlifts, funiculars, lifts, belt conveyors, transporters ...

2 - PRINCIPLE

CRD® system (fig. 2) consists of:

- 1 or more brakes (progressive brakes type **5KE. 650E. TY5. TH** and **SH**).
- 1 hydraulic pack (**STE210Y5. CE8L-RY5**) or 1 electric power supply (AB8. ATP2. ATP24).
- 1 (or more) speed sensors (tachometric dynamo..).
- 1 **CRD®** module, it may be integrated into an **AFR5** enclosure supplied by Stromag France.

Two **CRD®** versions exist:

- **CRD-R**: a deceleration regulation board (fig.8) monitors power units type AB8, ATP2, ATP24 or an electronic amplifier for a proportional pressure limiter of an hydraulic power unit, customer supply the reference speed signal.
- **CRD-RC**: to the regulation board is connected a deceleration control board, fully independant from the regulation board (power supply. speed signal. scale and command).

Fig. 1

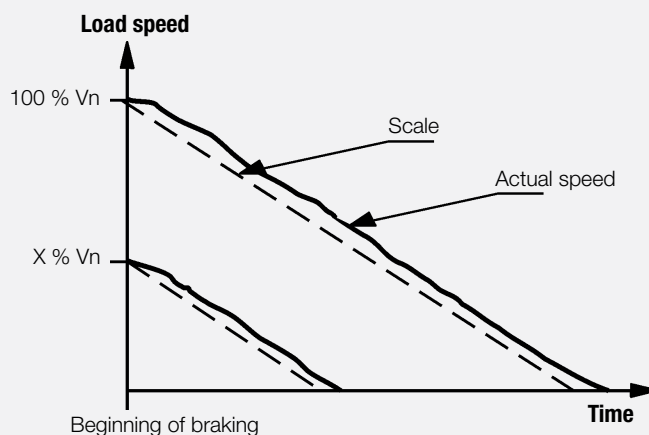
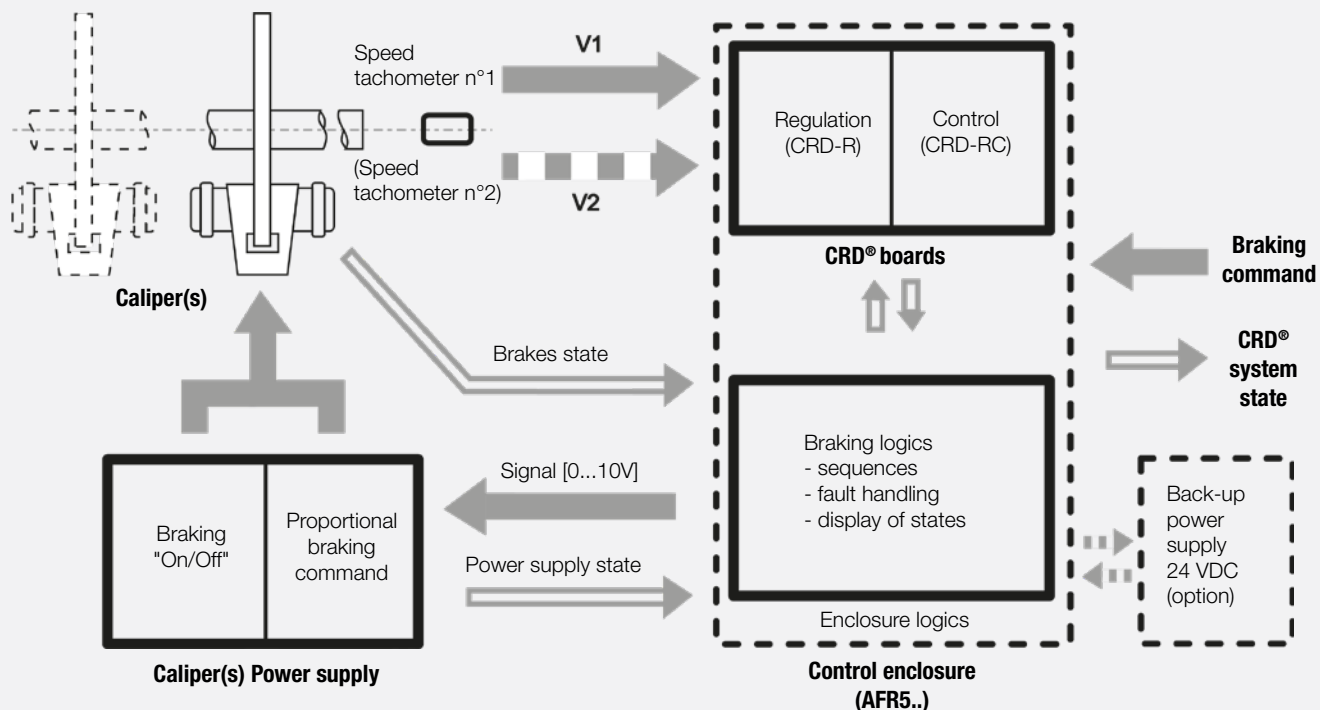


Fig. 2



DISC BRAKE - CONSTANT DECELERATION CRD MODULE

Revision number: M08950-01-C

Revision date: 03.06.2015

3 - OPERATION

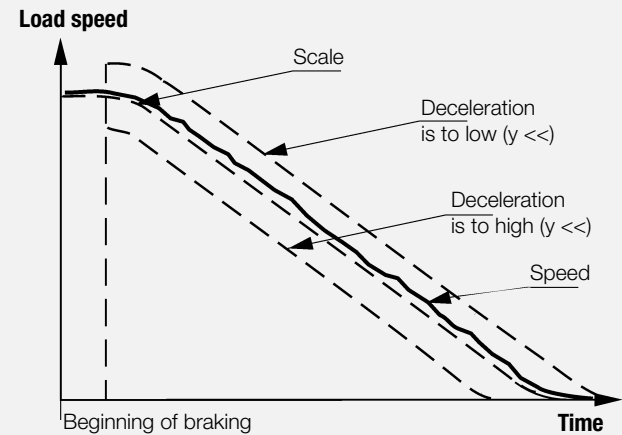
3-1 Deceleration regulation

CRD® module allows a deceleration regulation according to a scale at the time of a normal or an emergency braking.

3-2 Deceleration control (CRD-RC version only)

Using a second speed sensor connected to "deceleration fault control board" insures that first board operating is correct (detected mis-functioning: braking is too low or too high. mechanical shaft or gear box failure. failure of a speed sensor or damaged wires).

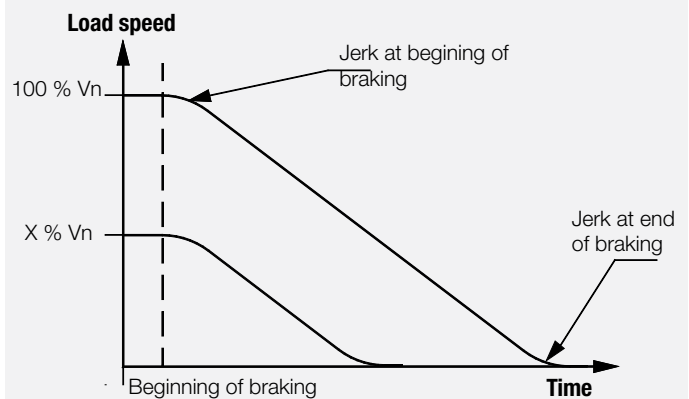
Fig. 3



3-3 "S" curve deceleration

CRD® module allows user to select JERKS at begining and/or end of braking; duration of these "S" curves may be adjusted.

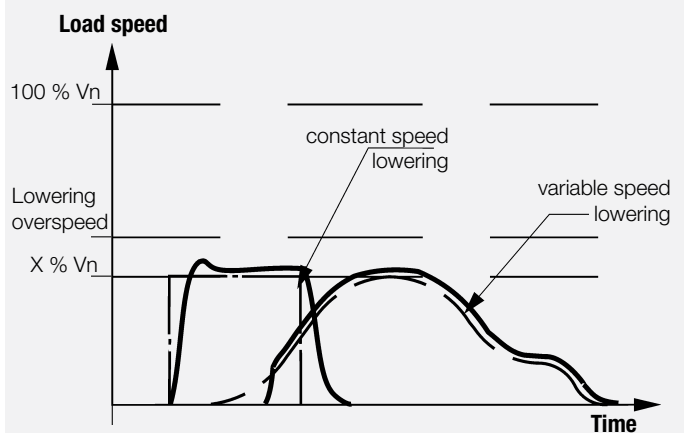
Fig. 4



3-4 Lowering

CRD® module provides lowering function (load is let down on command after a full successful braking. for security purpose) to X % of nominal speed (setting between 5 and 20%), at constant speed, or at variable speed (operator controlled auto "0" recentering joystick).

Fig. 5



Safety Systems

DISC BRAKE - CONSTANT DECELERATION CRD MODULE

Revision number: M08950-01-C

Revision date: 03.06.2015

4 - PHYSICAL CHARACTERISTICS OF CRD® MODULE

This equipment receives speed signal from the speed sensor(s) and delivers an output signal (0...10V.) while following an internal or external speed scale. board(s) are:

4-1 In separate casing

- **dimensions:** see fig. 6a (CRD-R) & fig. 6b (CRD-RC); Location - enclosure must be installed onto a vertical support - will allow natural ventilation.
- **Environment:** Ambient temperature: -10°C to +50°C.
- The IP 559 casing is equipped with 5 cable glands PG 11 (CRD-R) or 5 cable glands PG 11 and 4 cable glands PG 9 (CRD-RC).
- **Mains power supply:** 230V AC $\pm 10\%$ 50/60Hz or 24V DC (20 to 30 V DC). Power consumption: 5W maxi. per board.

4-2 Inside control casing

- **dimensions:** see fig. 7a (CRD-R) & fig. 7b (CRD-RC);
- **Environment:** Ambient temperature: -10°C to +50°C.
- **Mains power supply:** 230V AC $\pm 10\%$ 50/60Hz or 24V DC (20 to 30 V DC). Power consumption: 5W maxi. per board.

5 - EQUIPMENT

Necessary equipment for braking will include:

5-1 Brakes

1.2. 4.... electrohydraulic calipers (type **TY5**, **TH** or **SH**) or electromagnetic (type **650E**, **5KE**).

5-2 Electric power supply (case of electromagnetic brakes)

Power supply associated to the brake will be capable of braking regulation (type **AC64-50** associated with **AB8** module).

5-3 Hydraulic power pack (hydraulic brakes SH or TH type)

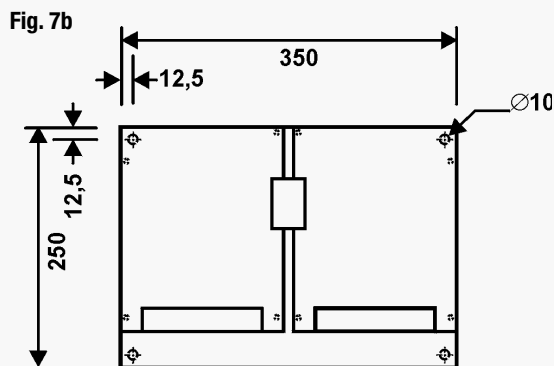
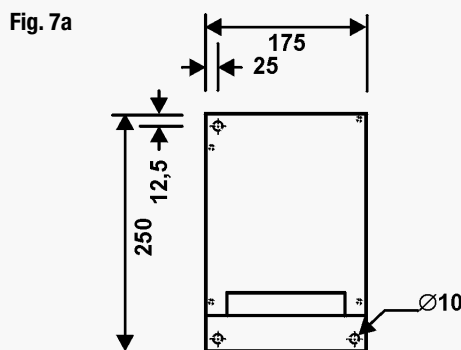
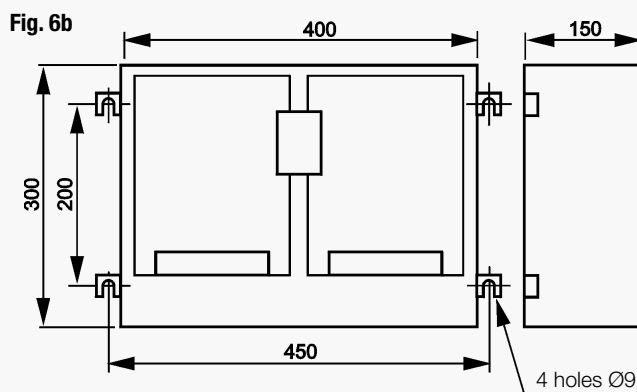
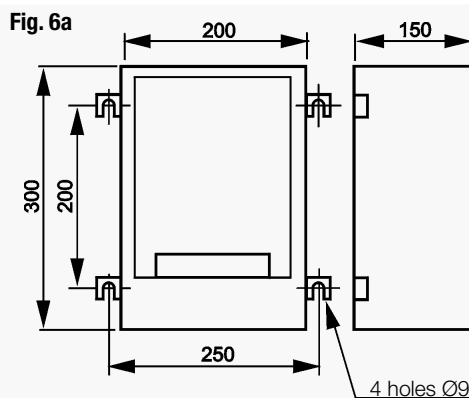
Hydraulic power pack will be capable of regulating deceleration (for example: **STE 210 Y5** with proportional pressure limiter). An alternate motor may optionally be added (24 V. DC) to the main motor supplied by Mains, allowing deceleration regulation in case of Mains failure (**M2** option).

5-4 AFR5 Control casing (SH and TH brakes)

Initiate deceleration regulation, controls its logics and faults to keep all electrical components secure.

5-5 Back-up power supply (M2 option)

In case of mains failure, the need for deceleration regulation may involve installing a back-up power supply - Stromag France or customer supplied.



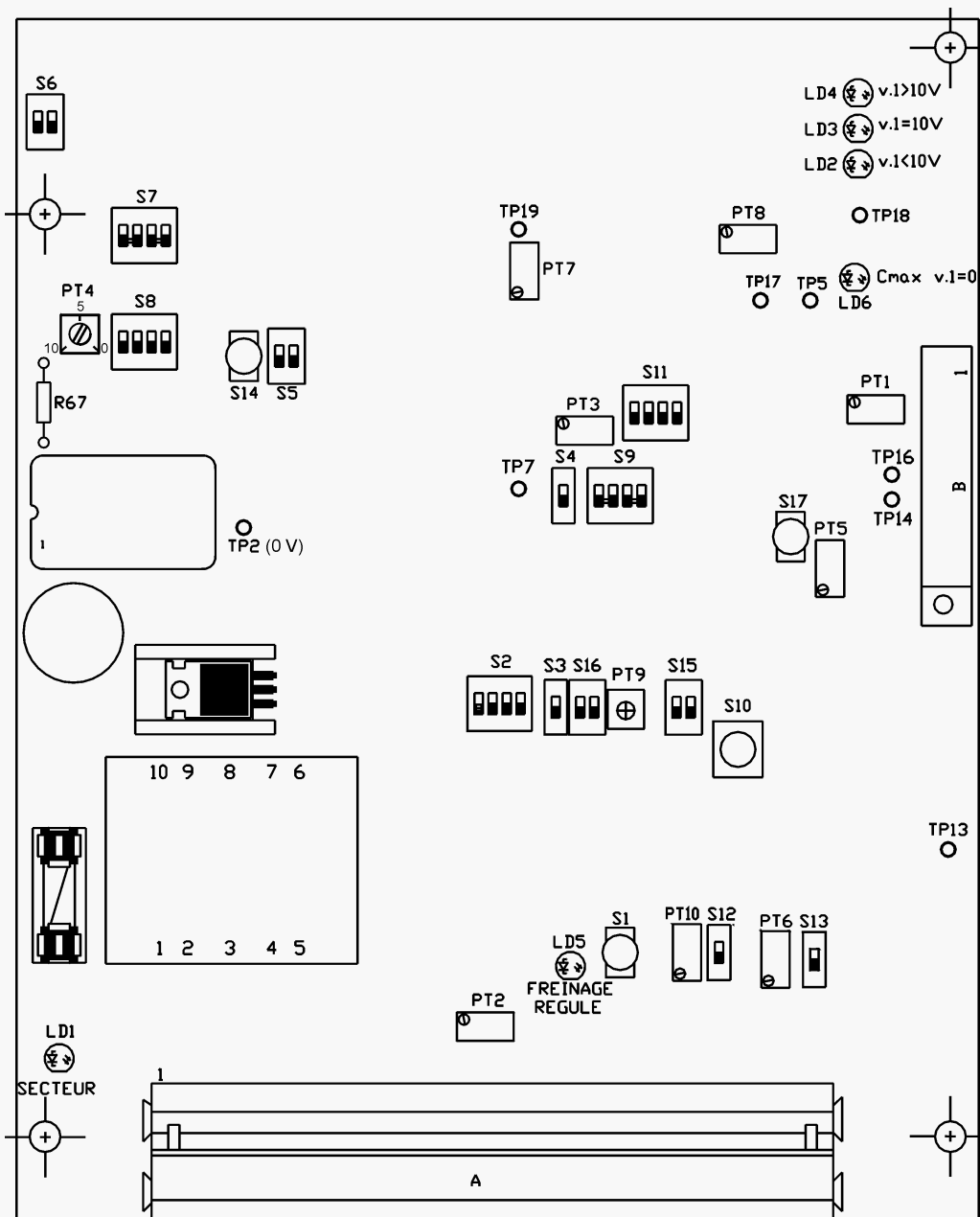
DISC BRAKE - CONSTANT DECELERATION CRD MODULE

Revision number: M08950-01-C

Revision date: 03.06.2015

Fig. 8

DECELERATION REGULATION BOARD



Switches list

- S1: ramp simulation (green push button)
- S2: speed signal frequency range
- S3: speed signal selection: voltage or frequency
- S4: selection of speed signal amplification
- S5: speed signal filtration
- S6: "S" curve/jerk at beginning of ramp
- S7: "S" curve/jerk at end of ramp
- S8: ramp time
- S9: regulation amplification = function P
- S10: TP16 output manual command to 10V. (black push button)
- S11: regulation filtration = fonction I
- S12: AB8 or ATP output selection
- S13: internal/external lowering potentiometer selection
- S14: fault simulation (red push button)
- S15: regulation filtration = fonction I
- S16: regulation derivative : fonction D
- S17: TP16 output manual command to 0.3V (+ action on S10) (black push button)

Potentiometers list

- PT1: (factory setting)
- PT2: speed signal adjustment
- PT3: speed signal amplification
- PT4: ramp time fine tuning
- PT5: "bias" lock
- PT6: internal potentiometer for "external scale"
- PT7: brake running-up (forecast of hydraulical delay)
- PT8: speed is nil setting
- PT9: function D adjustment
- PT10: adjustment of the maximum value of the external potentiometer

Safety Systems

DISC BRAKE - SPEED REGULATION CRV MODULE

Revision number: M08955-01-B

Revision date: 03.06.2015

1 - PRESENTATION

Speed regulation with **CRV**, in combination with brakes type **5KE**, **650E**, **TY5**, **TH** and **SH**, provides a regulated speed braking whatever the load quantity and load specificity, pulling or resisting.

Use: lowering, speed regulation.

Applications: cableways, chairlifts, funiculars, lifts, belt conveyors, transporters, cranes, etc...

2 - PRINCIPLE

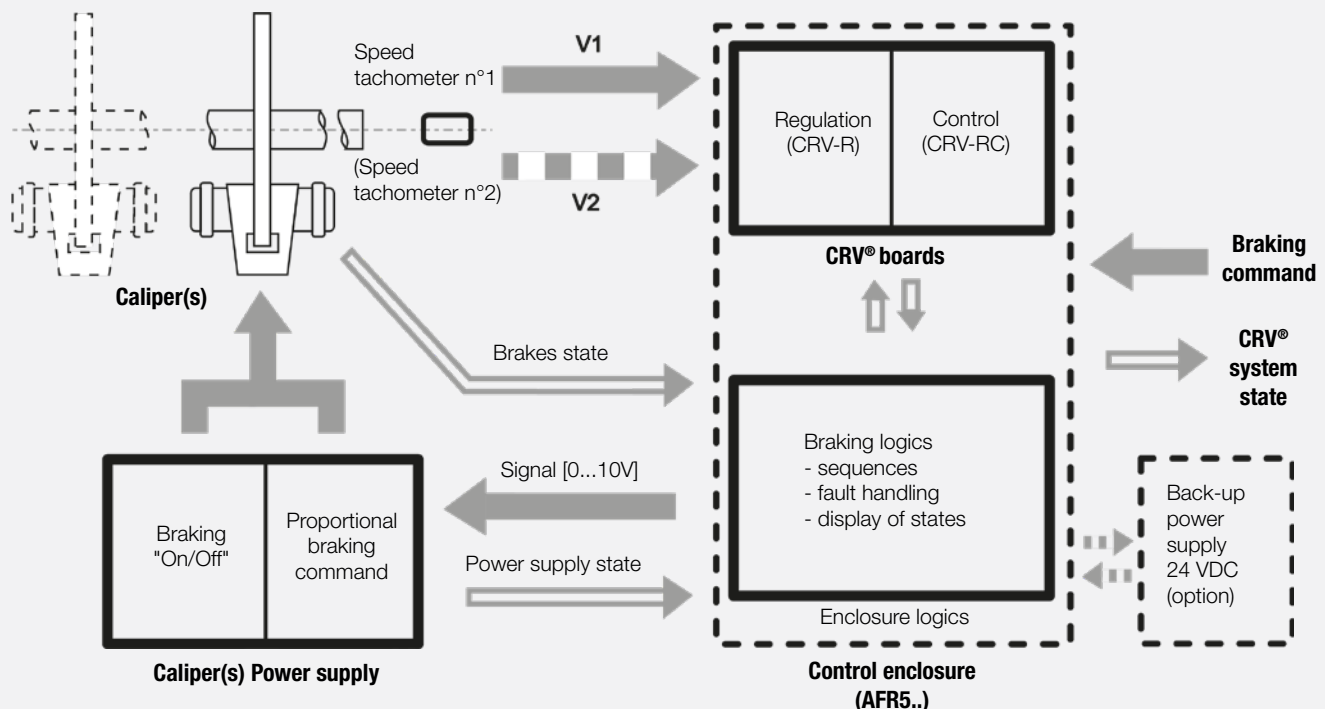
CRV system (fig. 1) consists of:

- 1 or more brakes (progressive brakes type **5KE**, **650E**, **TY5**, **TH** and **SH**);
- 1 hydraulic pack (**STE210Y5**, **CE8L-RY5**) or 1 electric power supply (AB8, ATP2, ATP24).
- 1 (or more) speed sensors (tachometric dynamo..).
- 1 **CRV** module, it may be integrated into an AFR5 enclosure supplied by Stromag France.

Two **CRV®** versions exist:

- **CRV-R**: a speed regulation board (fig. 8) monitors power units type AB8, ATP2, ATP24 or an electronic amplifier for a proportional pressure limiter of an hydraulic power unit ; customer supply the reference speed signal.
- **CRV-RC**: to the regulation board is connected a speed control board, fully independant from the regulation board (power supply, speed signal, scale and command).

Fig. 2



DISC BRAKE - SPEED REGULATION CRV MODULE

Revision number: M08955-01-B

Revision date: 03.06.2015

3 - OPERATION

3-1 Lowering - fig.2

CRV module allows choosing a lowering (regulated load lowering after stop. for security purpose) at X % of nominal speed, (setting between 5 and 20%), at constant speed, or at variable speed (potentiometer with automatic "0" restoring adjusted by operator).

3-2 Speed regulation - fig.3

CRV module allows a speed regulation set at X% of nominal speed (constant speed, factory set between 5 and 100% of nominal speed), failure of a speed sensor or damaged wires).

3-3 Speed control (CRV-RC only)

Using an additional speed sensor connected to "speed control" board allows a monitoring of the regulation (detected anomalies: speed too high or too low, mechanical breakdown of shafts or gearbox, speed sensor anomaly or damaged wiring).

Fig. 2

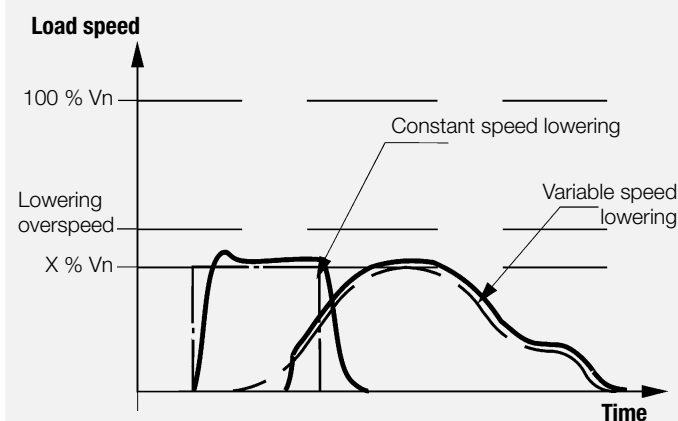
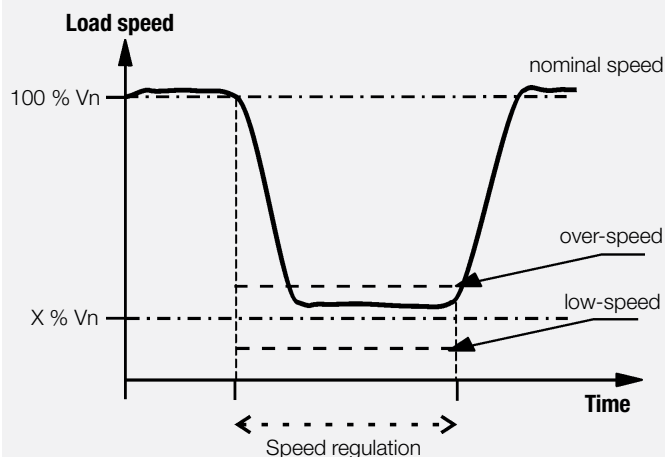


Fig. 3



Safety Systems

DISC BRAKE - SPEED REGULATION CRV MODULE

Revision number: M08955-01-B

Revision date: 03.06.2015

4 - PHYSICAL CHARACTERISTICS OF CRV® MODULE

This equipment receives speed signal from the speed sensor(s) and delivers an output signal (0...10V) while following an internal or external speed scale. board(s) are:

4-1 In separate casing

- **dimensions:** see fig. 4 (CRV-R) & fig. 5 (CRV-RC); Location - enclosure must be installed onto a vertical support - will allow natural ventilation.
- **Environment:** Ambient temperature: -10°C to +50°C.
- The IP 559 casing is equipped with 5 cable glands PG 11 (CRV-R) or 5 cable glands PG 11 and 4 cable glands PG 9 (CRV-RC).
- **Mains power supply:** 230V AC $\pm 10\%$ 50/60Hz or 24V DC (20 to 30 V DC). Power consumption: 5W maxi. per board.

4-2 Inside control casing

- **dimensions:** see fig. 6 (CRV-R) & fig. 7 (CRV-RC);
- **Environment:** Ambient temperature: -10°C to +50°C.
- **Mains power supply:** 230V AC $\pm 10\%$ 50/60Hz or 24V DC (20 to 30 V DC). Power consumption: 5W maxi. per board.

5 - EQUIPMENT

Necessary equipment for braking will include:

5-1 Brakes

1.2. 4.... electrohydraulic calipers (type **TY5**, **TH** or **SH**) or electromagnetic (type **650E**, **5KE**).

5-2 Electric power supply (case of electromagnetic brakes)

Power supply associated to the brake will be capable of braking regulation (type **AC64-50** associated with **AB8** module).

5-3 Hydraulic power pack (hydraulic brakes SH or TH type)

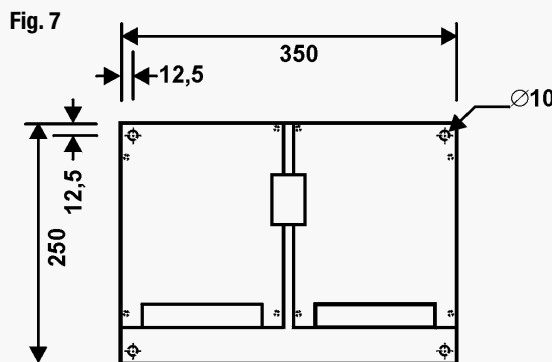
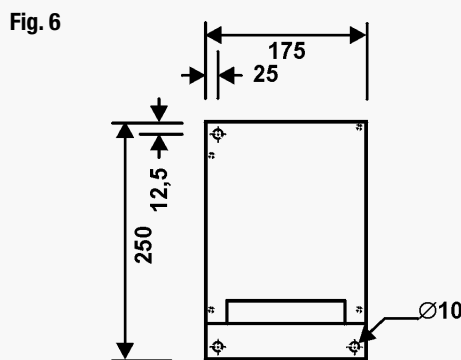
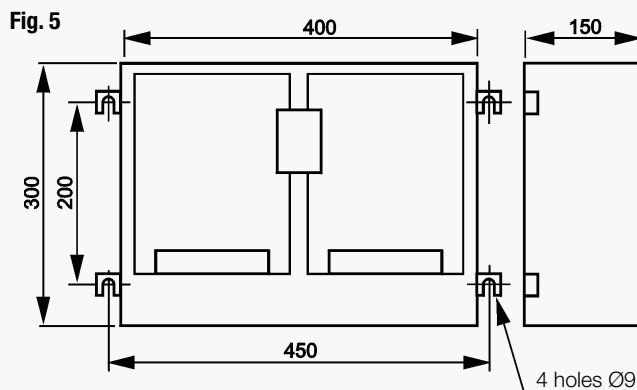
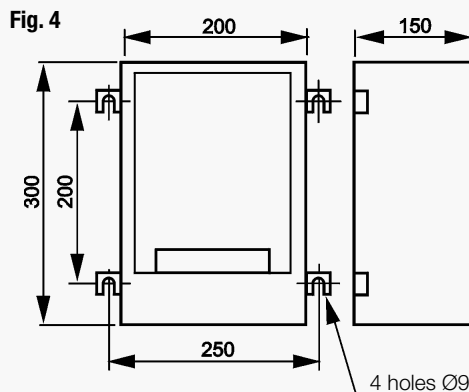
Hydraulic power pack will be capable of regulating deceleration (for example: **STE 210 Y5** or **CE8L-Y5** with proportional pressure limiter). On the **STE210Y5**, to the main motor supplied by Mains, an alternate motor may optionally be added (24 V. DC) to the main motor supplied by Mains, allowing speed regulation in case of Mains failure (**M2** option).

5-4 AFR5 Control casing (SH and TH brakes)

Initiate speed regulation, controls its logics and faults to keep all electrical components secure.

5-5 Back-up power supply (M2 option)

In case of mains failure, the need for speed regulation may involve installing a back-up power supply - Stromag France or customer supplied.



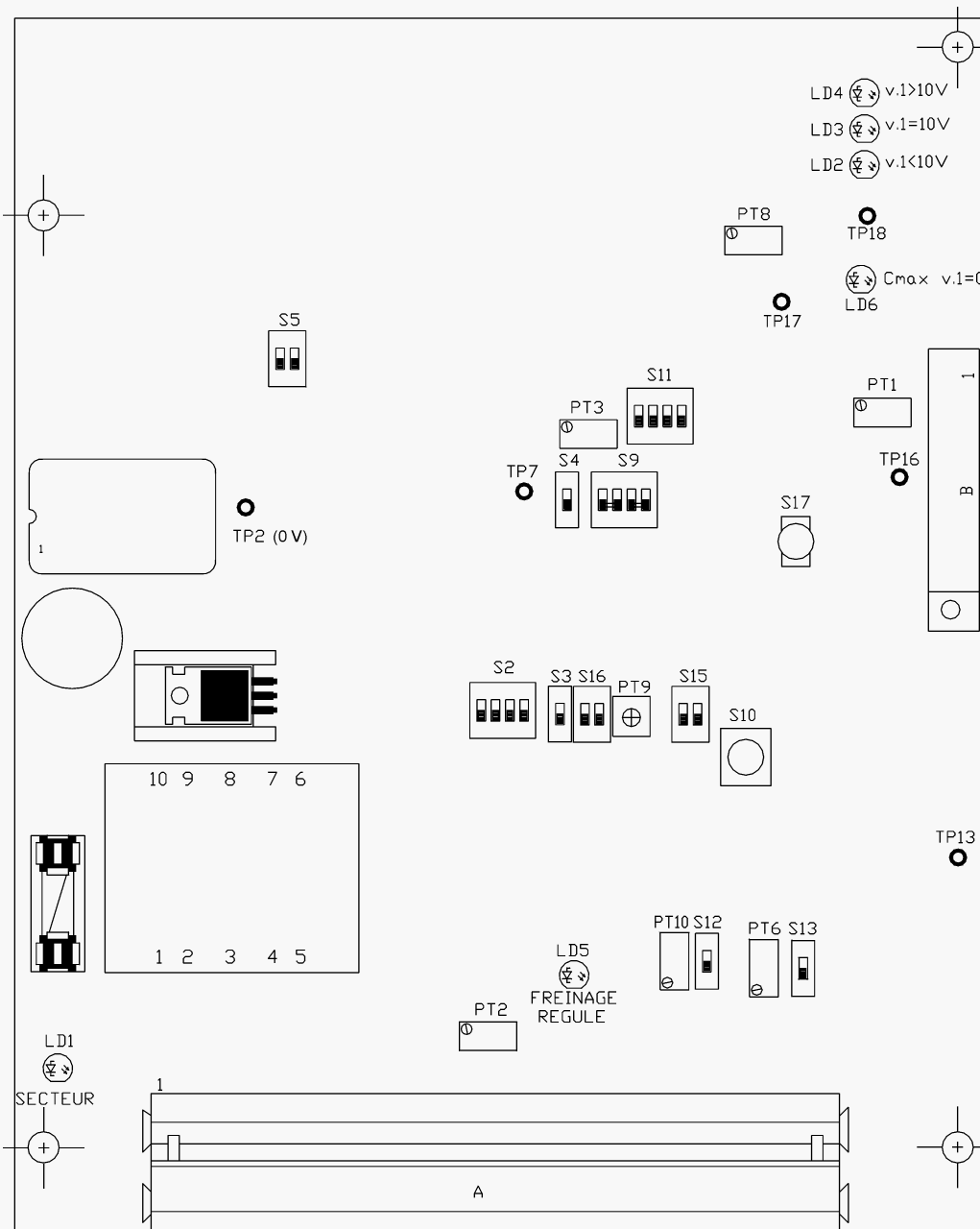
DISC BRAKE - SPEED REGULATION CRV MODULE

Revision number: M08955-01-B

Revision date: 03.06.2015

Fig. 8

SPEED REGULATION BOARD



Switches list

- S2: speed signal frequency range
- S3: speed signal selection: voltage or frequency
- S4: selection of speed signal amplification
- S5: speed signal filtration
- S9: regulation amplification = function P
- S10: TP16 output manual command to 10V. (black push button)
- S11: regulation filtration = fonction I
- S12: AB8 or ATP output selection
- S13: internal/external lowering potentiometer selection
- S15: regulation filtration = fonction I
- S16: regulation derivative = fonction D
- S17: TP16 output manual command to 0.3 V + action on S10 (black pushbutton)

Potentiometers list

- PT1: (factory setting)
- PT2: speed signal adjustment
- PT3: speed signal amplification
- PT6: internal potentiometer for scale
- PT8: speed is nil setting
- PT9: Ajustment of function D
- PT10: Maximum value adjustment of the external potentiometer

Safety Systems

DISC BRAKE - AFR5 CONTROL ENCLOSURES

Revision number: M10105-01-E

Revision date: 03.06.2015

AFR5 control enclosures are designed for controlling and monitoring regulated braking systems.

They allow different braking modes :

- Constant deceleration (**CRD®** module)
ex. : Cableway : Pic du Midi (Bagnères de Bigorre)
- Constant deceleration and speed regulation (**CRD®** module)
ex. : Passengers elevator : Eiffel Tower in Paris
- Normal operation (AoN) and speed regulation for load lowering (**CRV®** module)
ex. : Steel industry ladle crane : HKM (Deutschland)

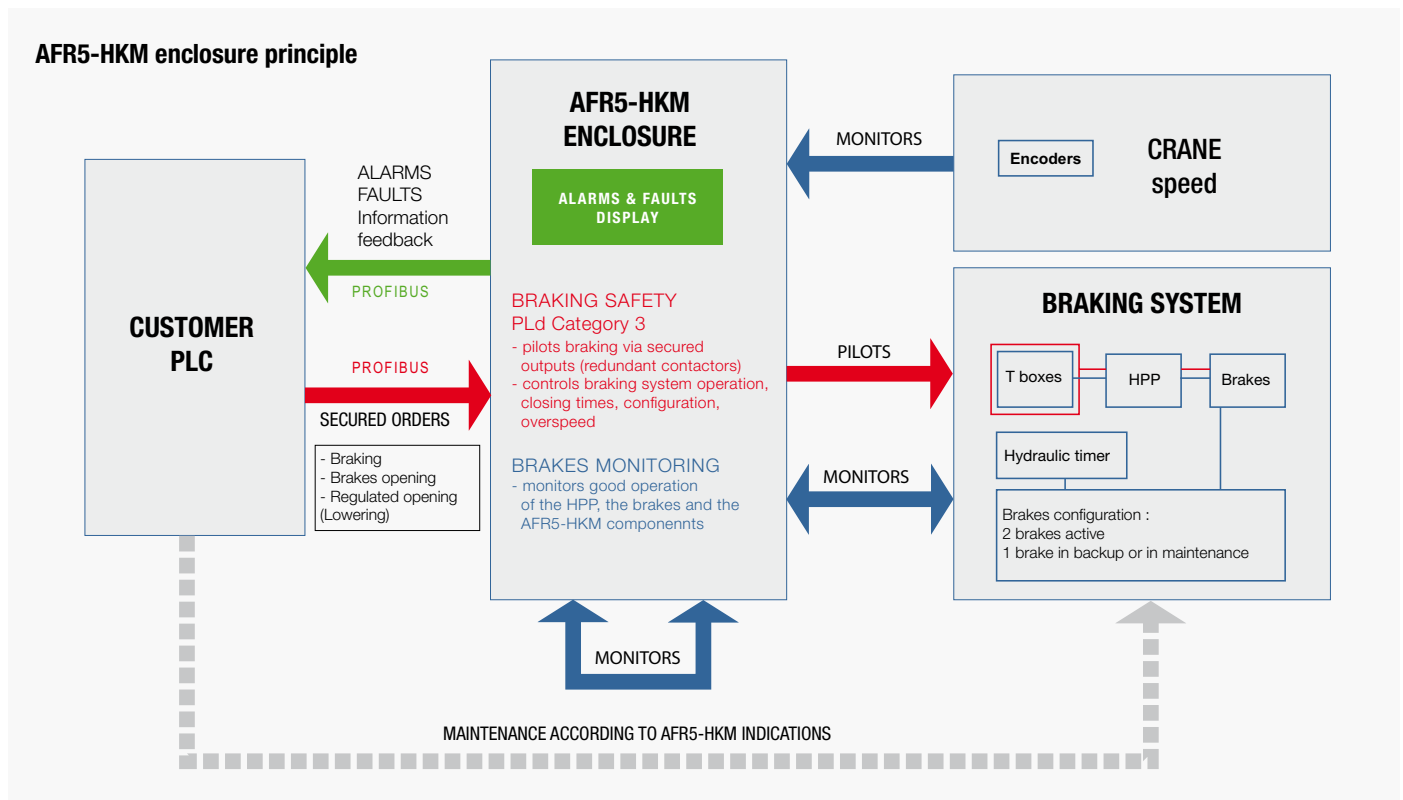
They can be designed to ensure a safety performance level up to PL d to the braking system.

They can includes :

- an Ethernet line towards the customer PLC,
- the braking management in case of power supply loss or regulated braking fault,
- the speed monitoring (**SIDEOS One**),
- the control of standby brakes or/and Hydraulic Power Packs to ensure the operation continuity in case of failure of one part of the braking system,
- a Human Machine Interface or Module.



Here is, for example, the diagram of the AFR5-HKM enclosure :
All or Nothing braking - Load lowering - Performance level PLd - Standby brakes - Data transmission to the customer PLC via ProFibus and secured ProFiBus.

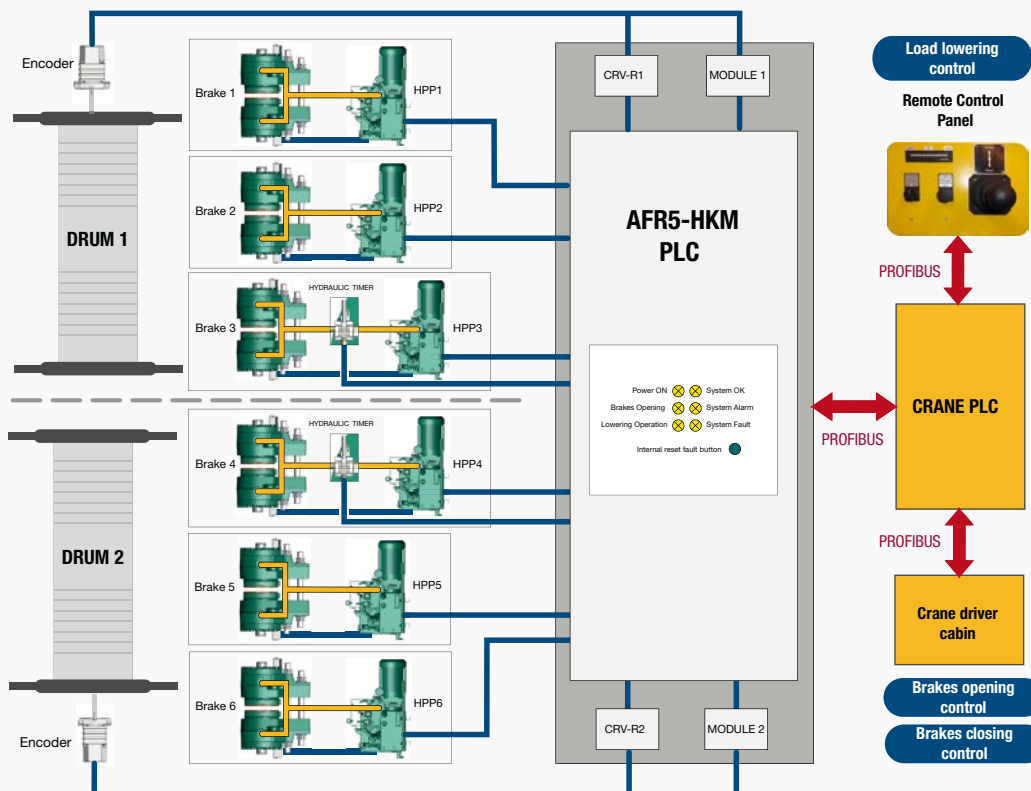
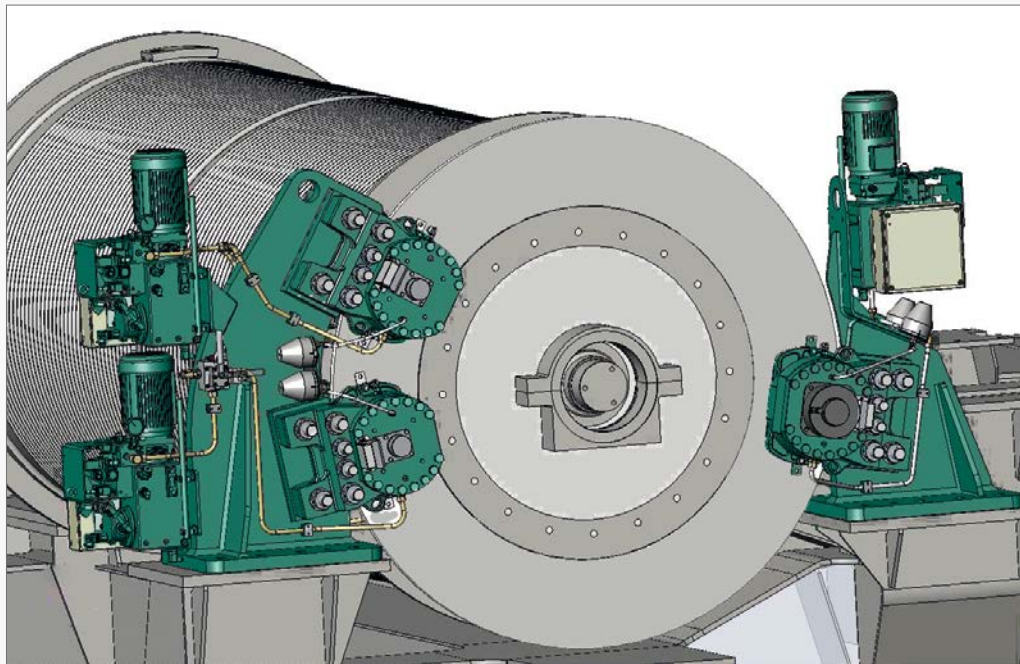


DISC BRAKE - AFR5 CONTROL ENCLOSURES

Revision number: M10105-01-E

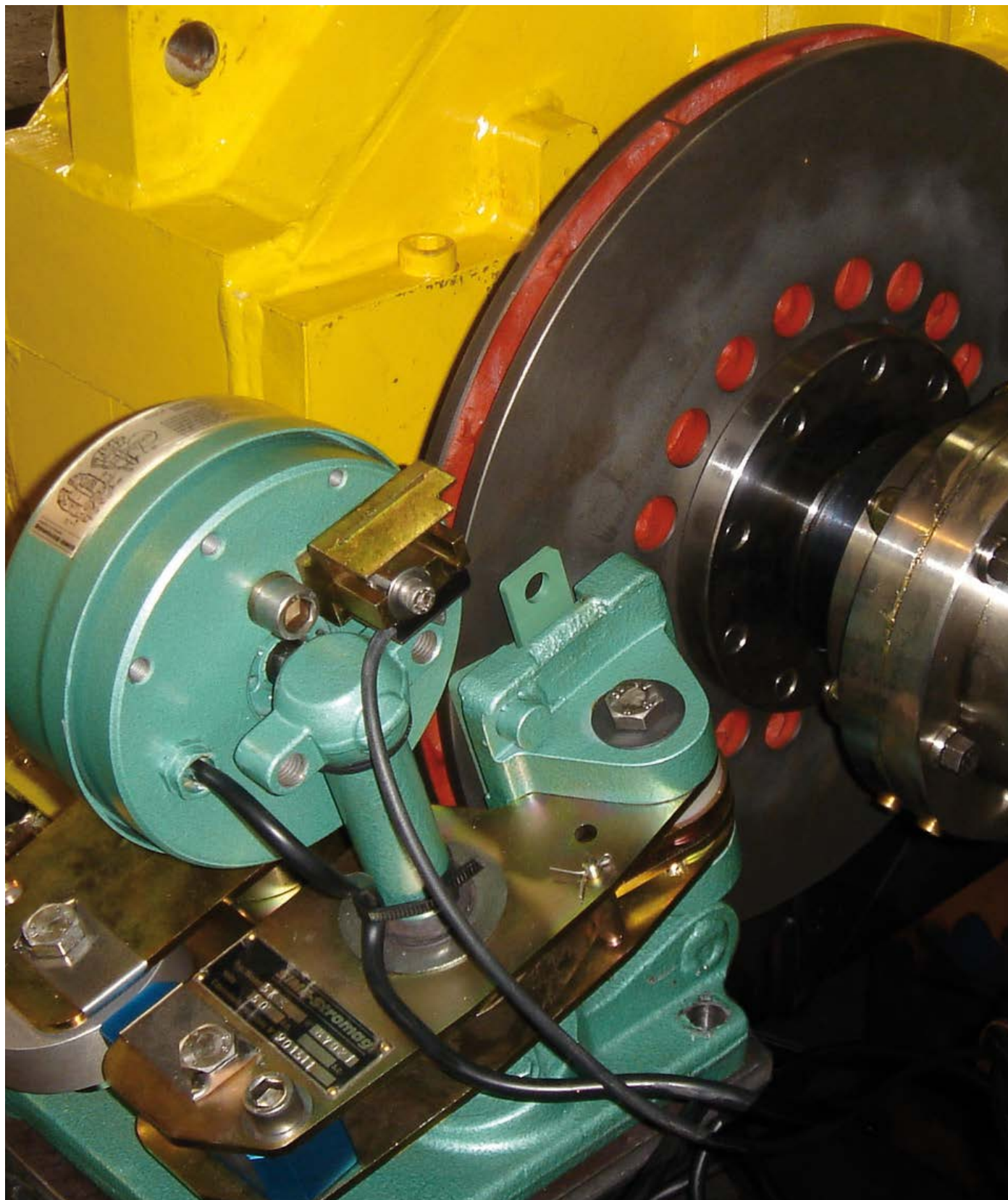
Revision date: 03.06.2015

HKM Braking System monitored and controlled by AFR5-HKM enclosure



Discs & Drums

DISCS & DRUMS



MAIN CHARACTERISTICS

- DISCS ARE AVAILABLE ALONE OR WITH HUBS
- ALL DISCS CAN BE ASSOCIATED WITH THE DIFFERENT TYPES OF FLEXIBLE COUPLINGS
- DESIGNED TO RUN AT PERMANENT TEMPERATURE OF 200°C
- DRUMS ARE AVAILABLE ALONE OR WITH HUB
- DRUMS ARE ASSOCIATED WITH THE SIME BRAKES TYPES FNS AND SDB STANDARD DIN 15435



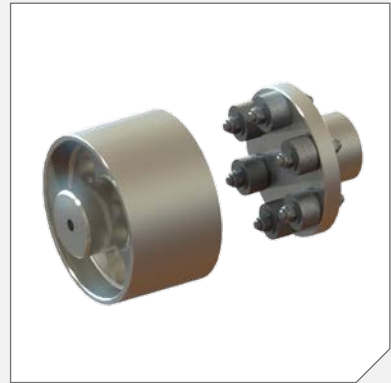
MONOBLOC & SOLID DISCS

- for low energy applications.



AUTO-VENTILATED DISCS

- comply with NF S 472 B standard.
- for high frequency and heavy duty braking cycles.
- high capacity of energy dissipation.



DRUMS

- flanged hub fitted with rubber bushes.
- uniform distribution of loads, even in case of misalignment.
- reduction of resonance effects at critical velocity.

Discs thicknesses and diameters

DISCS	Diameter →	Ø 175	Ø 220	Ø 260	Ø 315	Ø 355	Ø 395	Ø 445	Ø 495	Ø 550	Ø 625	Ø 705	Ø 795	Ø 995
SOLID	Th. 15 mm													
MONOBLOC	Th. 30 mm													
VENTILATED	Th. 30 mm													
	Th. 42 mm													

Drums widths and diameters

DRUMS	Diameter	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400	Ø 500	Ø 630	Ø 710
	Width	60	75	95	118	150	190	236	265

Discs & Drums

DISC BRAKE - DISCS

Revision number: T08020-01-F

Revision date: 27.07.2017

DISCS OF BRAKES CHARACTERISTICS

1 - Dimensions

Refer to leaflets "Technical data and dimensions" relevant to the type of disc used.

For a new disc, the tolerance of the thickness dimension is :

± 0.15

2 - Materials

Ventilated discs : Cast iron type EN-GJS-400-18-LT ou EN-GJS-350-22

Solid discs : Steel S355 K2

Hubs : Steel 25/34/42CrMo4

3 - Surface quality of the contact zone with lining (table 1)

Friction surface : Ra 1.6 to 3.2 in all directions

Centring zone : Idem

4 - Balancing

Only bare discs (except monoblocs).

Discs are balanced in "static" quality G6.3 :

- at the speed of 1800 rpm for discs $\varnothing \leq 550$ mm.

- at the maximum speed indicated in the "technical data" leaflets for discs $\varnothing > 550$ mm

The correction area is placed between the hub and the little diameter of the friction surface (see table 1).

For balancing with hub, with half-coupling or at high speed, consult us.

Table 1 - Dimensions of the friction surface

EXTERNAL DIAMETER	INNER DIAMETER				
	Thickness 15	Thickness 30			Thickness 42
	Monobloc disc	Monobloc disc	Ventilated disc	Solid disc	Ventilated disc
175	85	---	---	---	---
220	105	90	---	---	---
260	132	136	---	---	---
315	130	180	165	130	---
355	---	---	206	155	---
395	157	---	246	246	---
445	207	---	216	185	---
495	300	---	256	256	---
550	350	---	325	314	---
625	430	---	387	387	370
705	---	---	462	462	---
795	---	---	542	542	542
995	---	---	---	600	745

DISC BRAKE - DISCS

Revision number: T08020-01-F

Revision date: 27.07.2017

5 - Wear limit before the replacement of the disc

DANGER !

In case of an excessive wear of the disc the brake can operate out of its nominal range of setting and consequently lead to a loss of braking force.



The table 2 sums up the discs minimum thicknesses as before their replacement.

Table 2

Type of disc	Thickness unused (± 0.15) mm	Minimum thickness before replacement mm	Minimum web before replacement mm
Monobloc discs	30	27	6.5
Ventilated discs	30	27	6
	42	39	with core of 16 : 11 with core of 23 : 8
Solid discs	15	13	
	30	27	
	42	39	

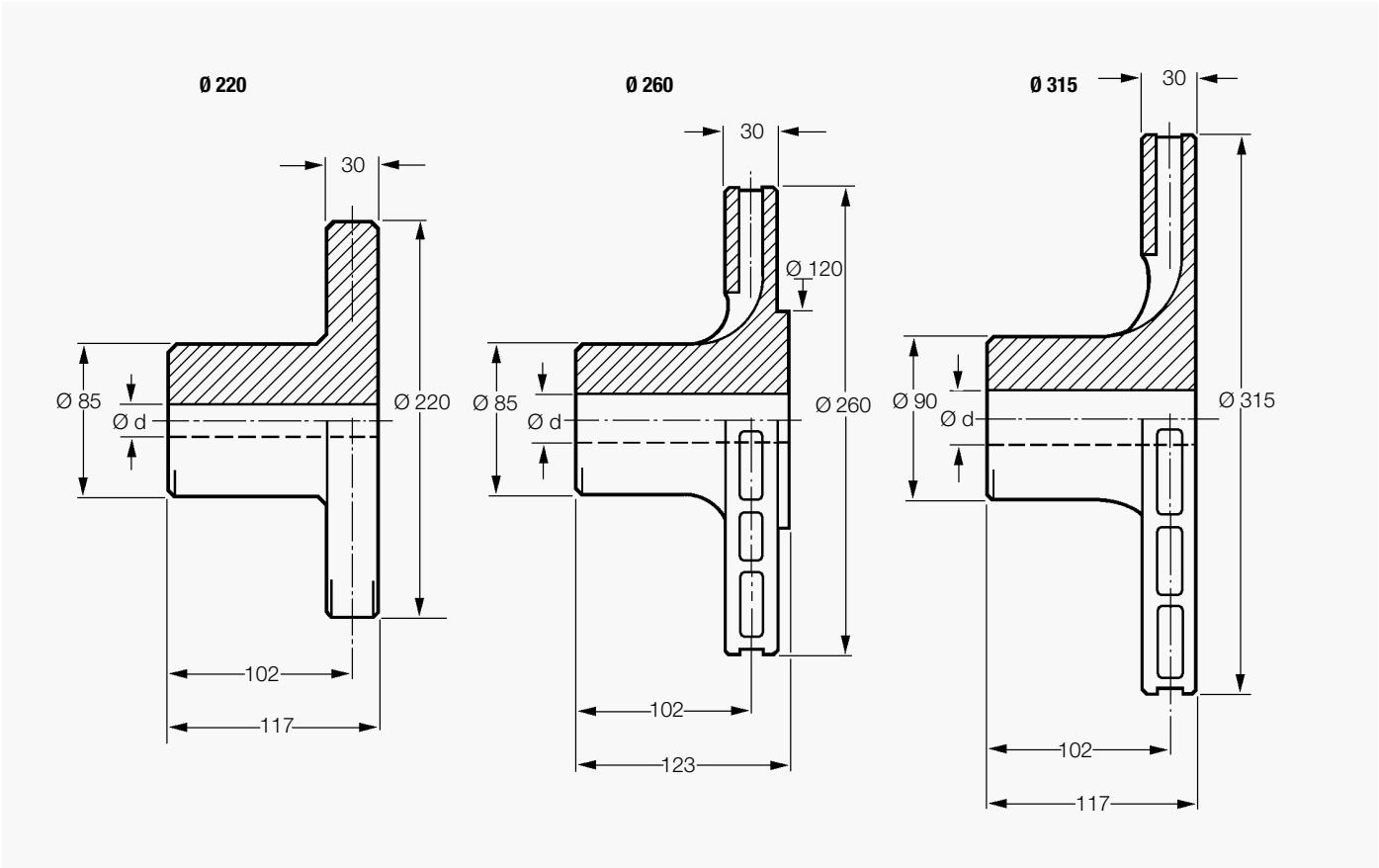
Discs & Drums

DISC BRAKE - MONOBLOC DISCS

Revision number: T02160-01-A

Revision date: 02.05.2003

Diametres: 220, 260 and 315 mm.
Thickness: 30 mm.



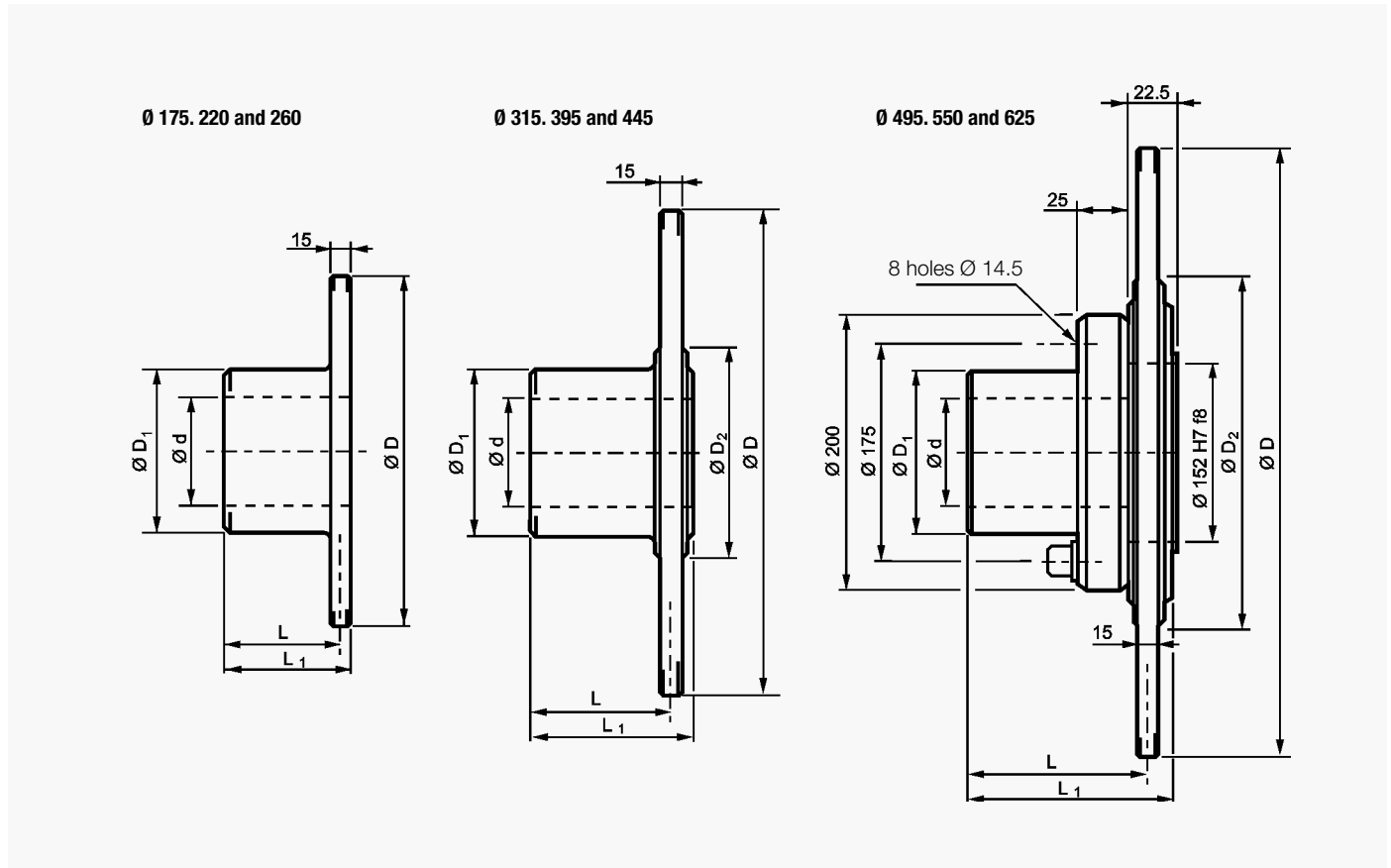
Designation		Ø	220 M 30	260 M 30	315 M30
J		kg/m²	0.055	0.070	0.14
Weight		kg	11.2	10	12
Maximum speed		rpm	4300	3600	3000
d max.	keyed	mm	55	55	60
	shrink fit	mm	55	55	60

DISC BRAKE - SOLID DISCS

Revision number: T02100-01-A

Revision date: 01.03.2001

Thickness: 15 mm



Designation		175 P 15	220 P 15	260 P 15	315 P 15	395 P 15	445 P 15	495 P 15	550 P 15	625 P 15
J	kg/m ²	0.01	0.03	0.06	0.13	0.30	0.48	0.77	1.16	1.93
Weight	kg	4	7.6	13	18	24	28	43	49	59
Maximum speed	tr/mn	5000	4300	3600	3000	2400	2100	1900	1800	1500
D	mm	175	220	260	315	395	445	495	550	625
D ₁	mm	75	95	120	120	120	120	150	150	150
D ₂	mm	-	-	-	130	200	207	257	312	387
L	mm	55	65	85	102	102	102	135	135	135
L ₁	mm	62.5	72.5	92.5	117	117	117	150	150	150
d max.	keyed	mm	0-40	0-55	0-75	0-75	0-75	0-100	0-100	0-100
	shrink fit	mm	40	65	80	80	80	100	100	100

Discs & Drums

DISC BRAKE - VENTILATED AND SOLID DISCS

Revision number: T02220-01-B

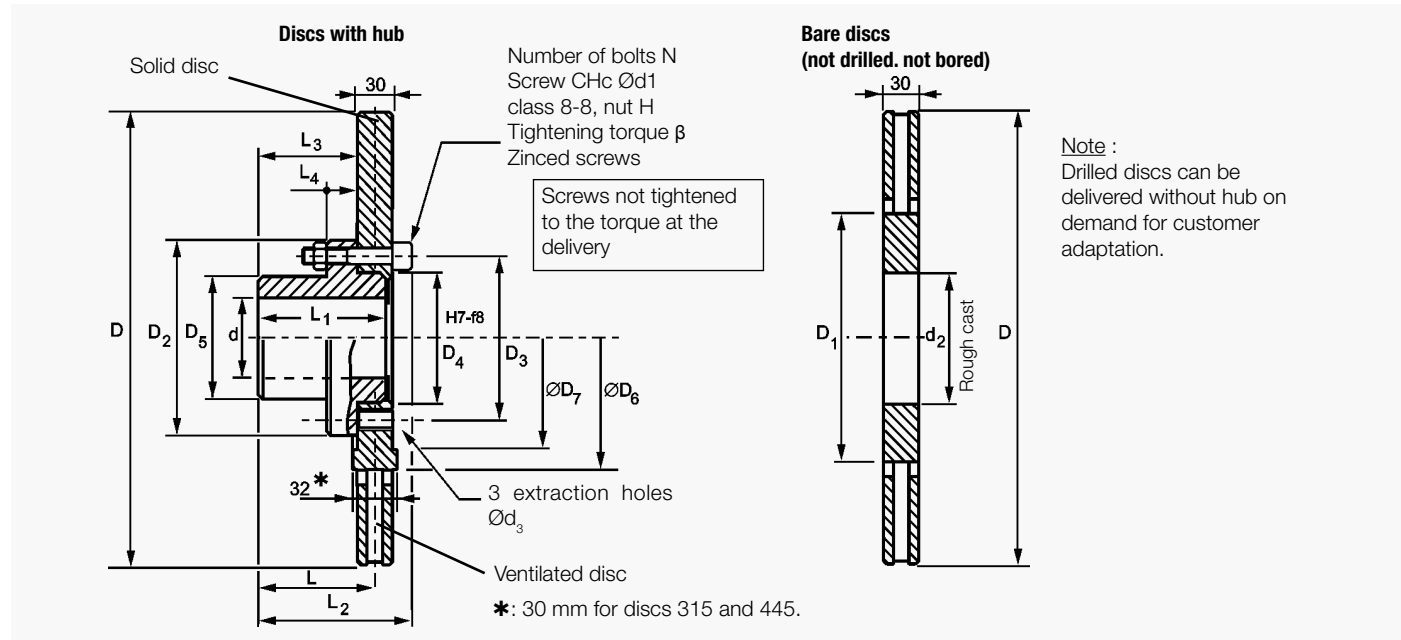
Revision date: 26.11.2010

Diameter from 315 to 995 mm for solid discs P30
Diameter from 315 to 795 mm for ventilated discs V30
Thickness : 30mm

Material of discs and hubs
Protection of discs
Balancing

see leaflet T08020-01

Note : hubs are not balanced.



Designation			Type	315		355		395		445		495	
				P30	V30	P30	V30	P30	V30	P30	V30	P30	V30
J	Disc + hub	kg.m²	0.234	0.148	0.379	0.243	0.588	0.352	0.94	0.581	1.492	0.968	
	Bare disc	kg.m²	0.225	0.139	0.362	0.226	0.56	0.324	0.896	0.537	1.367	0.843	
Weight	Disc + hub	kg	21.7	14.7	27.5	18.5	34	23	46.5	31.5	65	47	
	Bare disc	kg	17	10	21	12	27	16	34	19	41	23	
Maximum speed		rpm	3000		2700		2400		2100		1900		
Maximum braking torque ■		N.m	1720		2987		4594		8798		14321		
D		mm	315		355		395		445		495		
D1		mm	139		172		177		184		230		
D2		mm	125		145		165		175		220		
D3		mm	105		125		140		146		190		
D4		mm	85		105		115		120		160		
D5		mm	80		95		105		110		150		
D6		mm	-	-	-	173	-	246	-	-	-	256	
D7		mm	-	-	-	151	-	171	-	-	-	226	
L		mm	102		102		102		135		135		
L1		mm	107		107		107		140		140		
L2		mm	127		129		131		166		168		
L3		mm	87		87		87		120		120		
L4		mm	28		28		28		30		38		
Bore	keyed maxi. d ** shrink fit	mm	50		60		70		75		100		
maxi. d **		mm	50		60		70		75		100		
d1		mm	M10		M12		M14		M16		M18		
d2		mm	76.5		96.5		106.5		111.5		151.5		
d3		mm	M10		M12		M14		M16		M18		
N			9		9		9		12		12		
Tightening torque β		N.m	49		86		135		210		290		

■ Maximum braking torque allowed by the bolts of disc and hub assembling.



ATTENTION !

The torque transmissible by shaft and keying must be checked.

** Tolerance on d and keying on Customer demand.

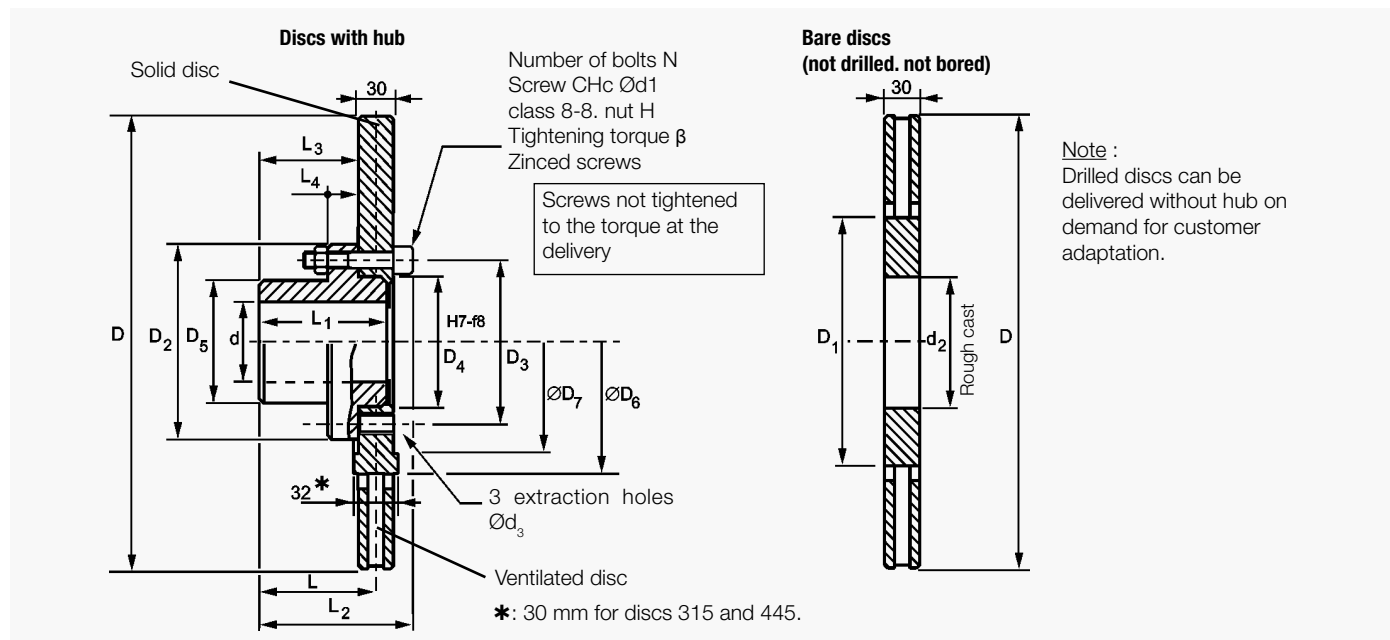
DISC BRAKE - VENTILATED AND SOLID DISCS

Revision number: T02220-01-B

Revision date: 26.11.2010

Diameter from 315 to 995 mm for solid discs P30
Diameter from 315 to 795 mm for ventilated discs V30
Thickness : 30mm

Material of discs and hubs
Protection of discs
Balancing
see leaflet T08020-01
Note : hubs are not balanced.



Designation			Type	550		625		705		795		995
				P30	V30	P30	V30	P30	V30	P30	V30	P30
J	Disc + hub	kg.m²	2.22	1.28	3.676	2.23	5.99	3.76	9.72	6.14	23.86	
	Bare disc	kg.m²	2.09	1.15	3.506	2.06	5.69	3.46	9.23	5.65	22.51	
Weight	Disc + hub	kg	76	53	87.5	60.5	105	72	175.5	135.5	243	
	Bare disc	kg	52	29	68	41	86	53	110	70	170	
Maximum speed		rpm	1800		1500		1300		1200		900	
Maximum braking torque ■		N.m	14321		19915		27905		36384		73897	
D		mm	550		625		705		795		995	
D1		mm	275		343		418		498		-	
D2		mm	220		235		265		300		380	
D3		mm	190		205		230		260		330	
D4		mm	160		170		195		220		280	
D5		mm	150		150		180		210		260	
D6		mm	-	314	-	387	-	462	-	542	-	
D7		mm	-	226	-	246	-	271	-	310	-	
L		mm	135		135		135		135		135	
L1		mm	140		140		140		140		140	
L2		mm	168		170		172		174		174	
L3		mm	120		120		120		120		120	
L4		mm	38		38		40		40		40	
Bore	keyed maxi. d *** shrink fit	mm	100		100		125		140		180	
		mm	100		100		125		140		180	
d1		mm	M18		M20		M22		M24		M30	
d2		mm	151.5		161.5		185.5		211.5		211.5	
d3		mm	M18		M20		M22		M24		M30	
N			12		12		12		12		12	
Tightening torque β		N.m	290		410		550		710		1450	

■ Maximum braking torque allowed by the bolts of disc and hub assembling.



ATTENTION !
The torque transmissible by shaft and keying must be checked.

*** Tolerance on d and keying on Customer demand.

Discs & Drums

DISC BRAKE - VENTILATED AND SOLID DISCS

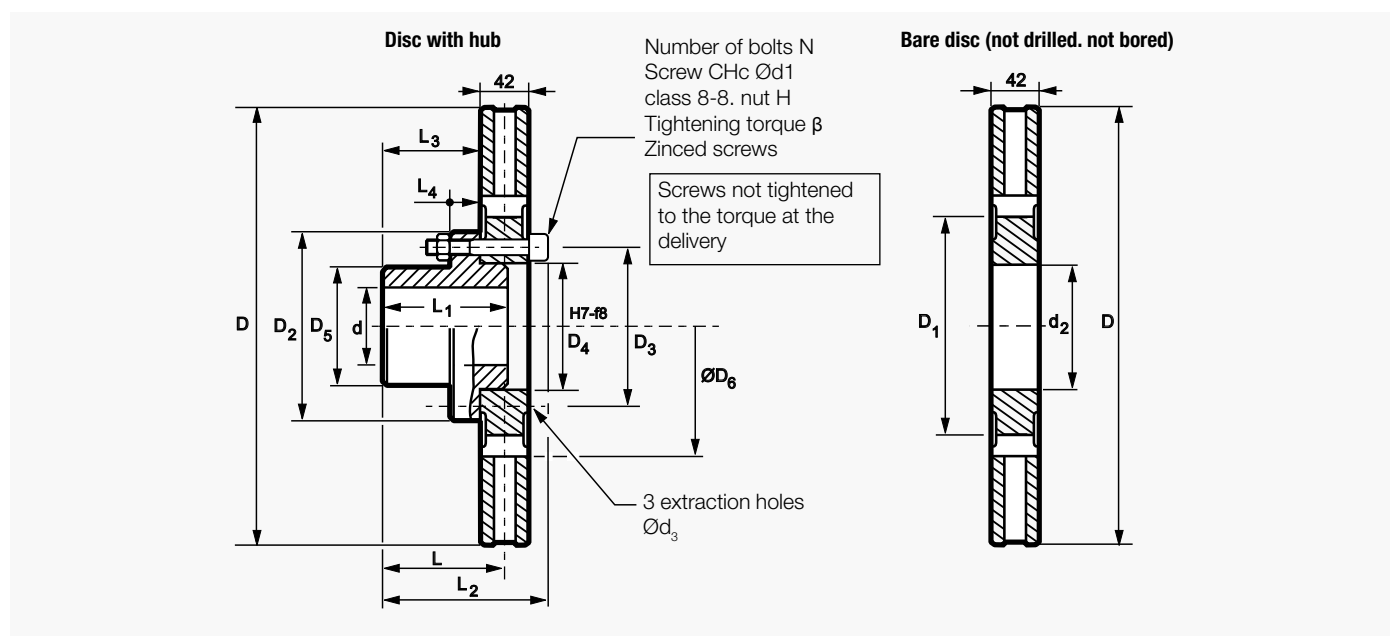
Revision number: T02220-01-B

Revision date: 26.11.2010

Diameter 625 - 795 - 995
Thickness : 42mm

Material of discs and hubs
Protection of discs
Balancing
Note : hubs are not balanced.

see leaflet T08020-01



Designation	Type		625V42	795V42	995V42
J	Disc + hub	kg.m²	2.92	7.85	21.3
	Bare disc	kg.m²	2,5	6,5	20
Weight	Disc + hub	kg	90	150	250
	Bare disc	kg	45	77	177
Maximum speed		tr/mn	1500	1200	900
Maximul braking torque ■		N.m	36 384	73 897	73 897
D		mm	625	795	995
D1		mm	302	486	694
D2		mm	300	380	380
D3		mm	260	330	330
D4		mm	220	280	280
D5		mm	210	260	260
D6		mm	370	542	745
D7		mm	-	-	-
L		mm	141	141	141
L1		mm	140	140	140
L2		mm	186	186	186
L3		mm	120	120	120
L4		mm	40	40	40
Bore		mm	40-140	40-180	40-180
maxi. d **	keyed	mm	140	180	180
d1	shrink fit	mm	M24	M30	M30
d2		mm	211	211	211
d3		mm	M24	M30	M30
N			12	12	12
Tightening torque β		N.m	710	1450	1450

■ Maximum braking torque allowed by the bolts of disc and hub assembling.



ATTENTION !

The torque transmissible by shaft and keying must be checked.

** Tolerance on d and keying on Customer demand.

Discs & Drums

DISC BRAKE - VENTILATED / SOLID DISCS - LONG HUBS

Revision number: T02222-01-D

Revision date: 07.01.2014

For TDXB and FAV brakes

MLP - diameter from 355 to 995 mm for solid discs P30

MLV - diameter from 355 to 795 mm for ventilated discs V30

Thickness : 30mm

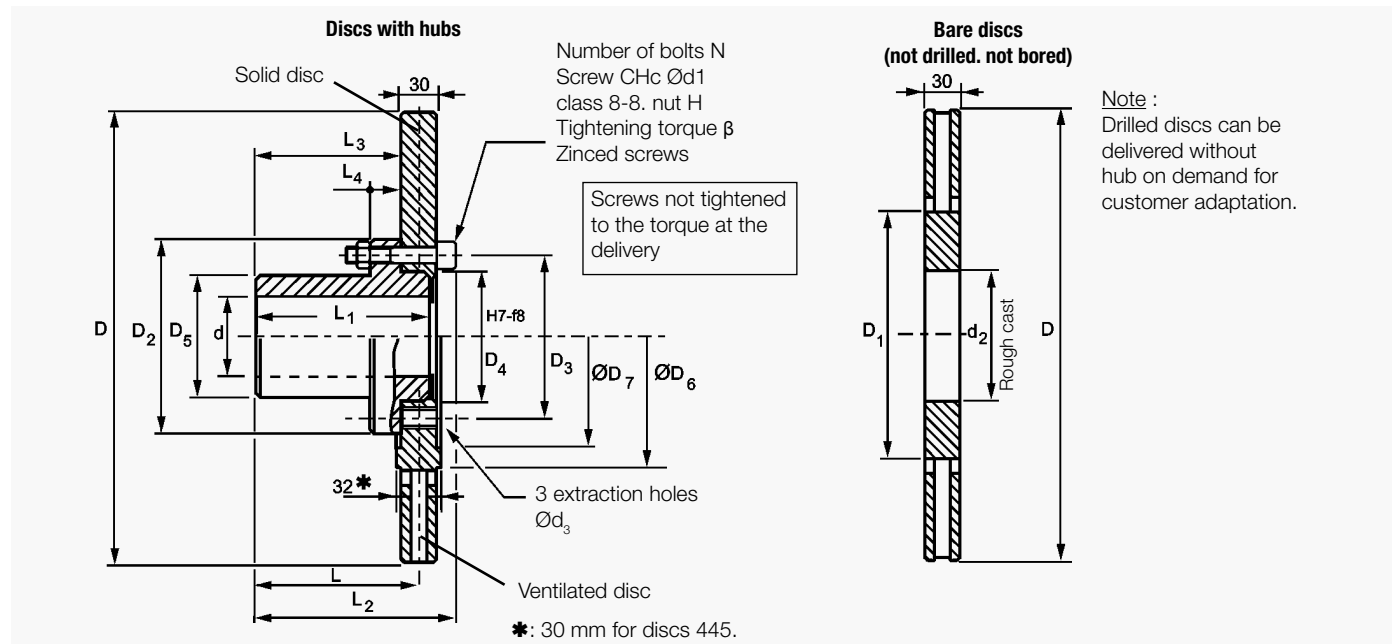
Material of discs and hubs

Protection of discs

Balancing

see leaflet T08020-01

Note : hubs are not balanced.



Designation			Type	315		355		395		445		495		550	
				P30	V30	P30	V30	P30	V30	P30	V30	P30	V30	P30	V30
J	Disc + hub	kg.m²	0.245	0.159	0.382	0.246	0.593	0.357	0.946	0.587	1.515	0.991	2.243	1.303	
	Bare disc	kg.m²	0.225	0.139	0.362	0.226	0.56	0.324	0.896	0.537	1.367	0.843	2.09	1.15	
Weight	Disc + hub	kg	22.5	15.5	30.5	21.5	37.6	26.6	51	36	73	55	84	61	
	Bare disc	kg	17	10	21	12	27	16	34	19	41	23	52	29	
Maximum speed		rpm	3000		2700		2400		2100		1900		1800		
Maximum braking torque ■		N.m	1720		2987		4594		8798		14321		14321		
D		mm	315		355		395		445		495		550		
D1		mm	139		172		177		184		230		275		
D2		mm	125		145		165		175		220		220		
D3		mm	105		125		140		146		190		190		
D4		mm	85		105		115		120		160		160		
D5		mm	80		95		105		110		150		150		
D6		mm	-	-	-	173	-	246	-	-	-	256	-	314	
D7		mm	-	-	-	151	-	171	-	-	-	226	-	226	
L		mm	135		155		155		195		195		195		
L1		mm	140		160		160		200		200		200		
L2		mm	160		182		182		226		228		228		
L3		mm	120		140		140		180		180		180		
L4		mm	28		28		28		30		38		38		
Bore maximum d keyed **		mm	50		60		70		75		100		100		
d1		mm	M10		M12		M14		M16		M18		M18		
d2		mm	76.5		96.5		106.5		111.5		151.5		151.5		
d3		mm	M10		M12		M14		M16		M18		M18		
N			9		9		9		12		12		12		
Tightening torque β		N.m	49		86		135		210		290		290		

■ Maximum braking torque allowed by the bolts of disc and hub assembling.



ATTENTION !

The torque transmissible by shaft and keying must be checked.

** Tolerance on d and keying on Customer demand.

DISC BRAKE - VENTILATED / SOLID DISCS - LONG HUBS

Revision number: T02222-01-D

Revision date: 07.01.2014

For TDXB and FAV brakes

MLP - diameter from 355 to 995 mm for solid discs P30
MLV - diameter from 355 to 795 mm for ventilated discs V30
Thickness : 30mm

Material of discs and hubs

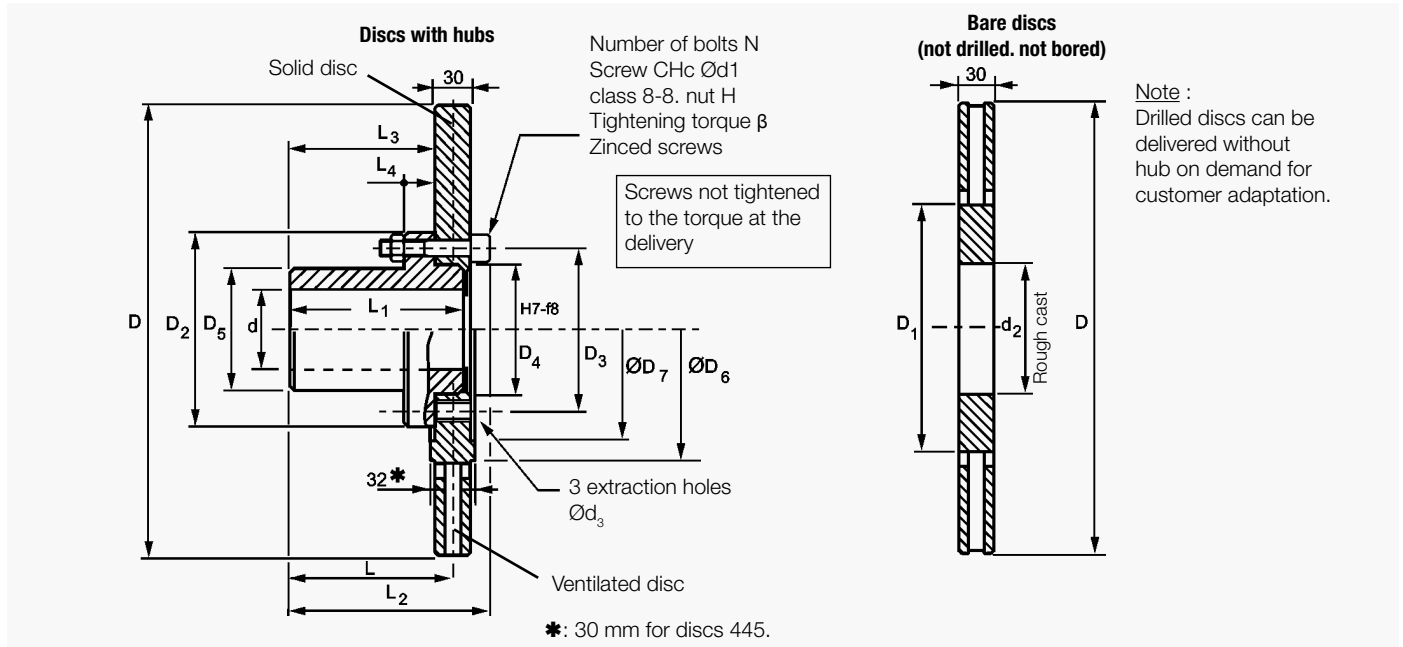
Protection of discs

Balancing

Note : hubs are not balanced.

see leaflet T08020-01

The discs 625-2 and 705-2 are with the same hub and fixing than 795.



Designation		Type	625		625-2		705		705-2		795		995
			P30	V30	P30	V30	P30	V30	P30	V30	P30	V30	P30
J	Disc + hub	kg.m²	3.699	2.253	4.02	2.574	6.038	3.808	6.13	3.9	9.802	6.222	23.9
	Bare disc	kg.m²	3.506	2.06	3.45	2.004	5.69	3.46	5.62	3.39	9.23	5.65	22.5
Weight	Disc + hub	kg	96	69	116.5	89.5	117	84	136	103	191	151	271
	Bare disc	kg	68	41	63	36	86	53	82.5	49.5	110	70	170
Maximum speed		rpm	1500		1500		1300		1300		1200		900
Maximum braking torque ■		N.m	19915		36384		27905		36384		36384		73897
D		mm	625		625		705		705		795		995
D1		mm	343		343		418		418		498		-
D2		mm	235		300		265		300		300		380
D3		mm	205		260		230		260		260		330
D4		mm	170		220		195		220		220		280
D5		mm	150		210		180		210		210		260
D6		mm	-	387	-	387	-	462	-	462	-	542	-
D7		mm	-	246	-	305	-	271	-	440	-	310	-
L		mm	195		195		195		195		195		235
L1		mm	200		200		200		200		200		244
L2		mm	230		234		232		234		234		280
L3		mm	180		180		180		180		180		220
L4		mm	38		40		40		40		40		50
Bore maximum d keyed **		mm	100		140		125		140		140		180
d1		mm	M20		M24		M22		M24		M24		M30
d2		mm	161.5		161.5		185.5		185.5		211.5		211.5
d3		mm	M20		M24		M22		M24		M24		M30
N			12		12		12		12		12		12
Tightening torque β		N.m	410		710		550		710		710		1450

■ Maximum braking torque allowed by the bolts of disc and hub assembling.



ATTENTION !

The torque transmissible by shaft and keying must be checked.

** Tolerance on d and keying on Customer demand.

Discs & Drums

DRUM BRAKE - DRUMS SERIE PB & PB-C

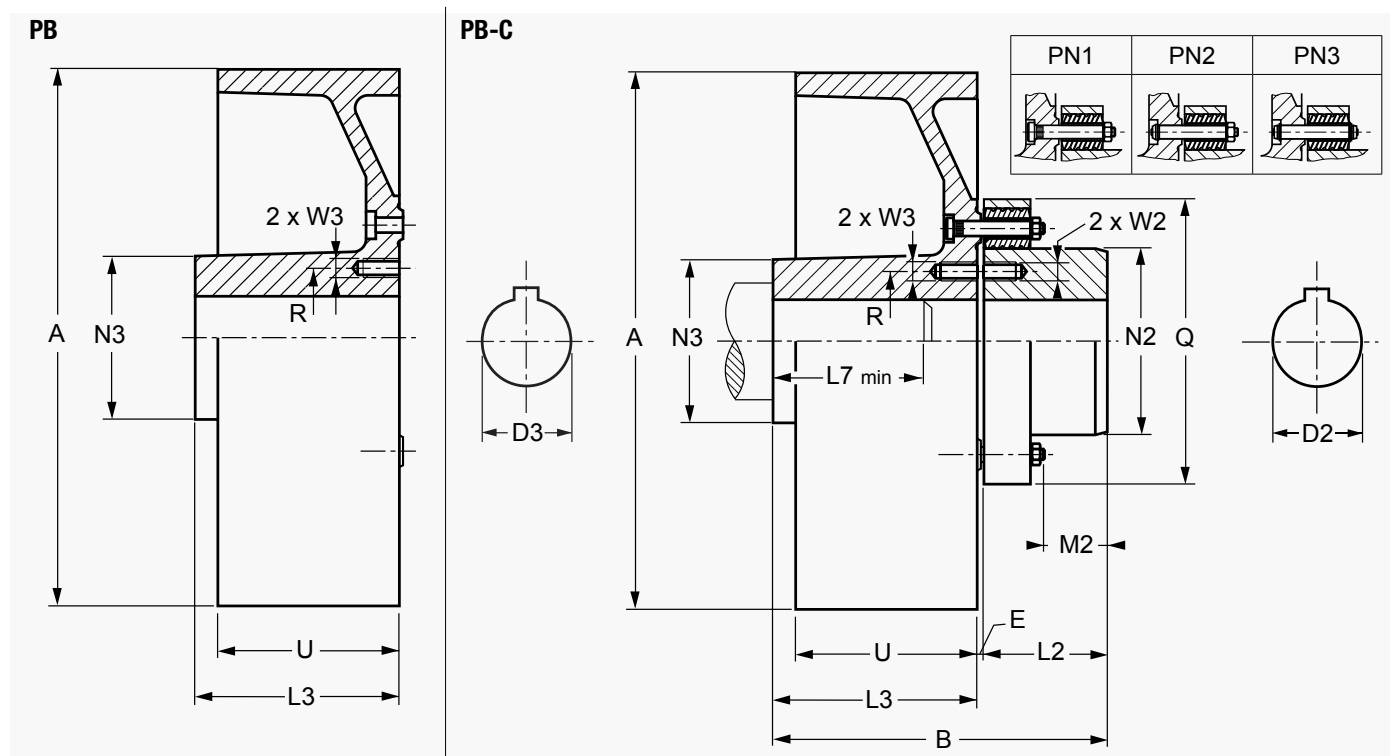
Revision number: T01350-01-C

Revision date: 25.05.2018

Drums material :

ØA ≤ 400 mm : EN-GJL-250

ØA > 400 mm : EN-GJS-500-7



Designation		PB or PB-C...	200	250	315	400	500	630	710
J □	coupling + drum	kgm ²	0.062	0.156	0.426	1.310	4.02	10.82	21.45
	drum alone	kgm ²	0.052	0.137	0.393	1.229	3.718	10.518	19.958
Weight □	coupling + drum	kg	16.1	27.7	43.5	83	160	235	415
	drum alone	kg	12.5	22.6	35.9	70.1	130.5	205.5	333.4
Nominal torque		Nm	400	630	1000	2500	6100	6100	21000
Rotation speed nmax. *		rpm	3400	2750	2200	1700	2200	1800	1500
Dimensions in mm	A		200	250	315	400	500	630	710
	B		183.5	223.5	248.5	299	404	429	515.5
	E		3.5	3.5	3.5	4	4	4	5.5
	L2		60	75	90	110	150	150	220
	L3		120	145	155	185	250	275	290
	L7 min		72	87	93	110	150	165	175
	M2		21.5	36.5	51.5	51	91	91	148
	N2		95	116	127	160	202	202	290
	N3		95	116	127	160	202	202	195
	Q		155	175	200	245	315	315	460
	U		75	95	118	150	190	236	265
	R2		80	95	105	135	165	165	232
	R3		80	95	105	135	165	165	165
	W2		M8	M10	M10	M12	M12	M12	M20
	W3		M10	M12	M12	M16	M20	M20	M20
Bores in mm	D2	min / max ○	19/60	28/75	35/80	35/100	100/125	100/125	140/200
	D3	min / max ○	19/60	28/75	28/80	35/100	45/125	55/125	55/125
Pins	Number / size		6 / PN1	8 / PN1	10 / PN1	9 / PN2	16 / PN2	16 / PN2	18 / PN3

Without specification on the order, couplings are delivered without boring.

* For speeds > nmax.. consult us.

□ For maximum bore.

○ Maximum bores for keyways according to ISO R773.

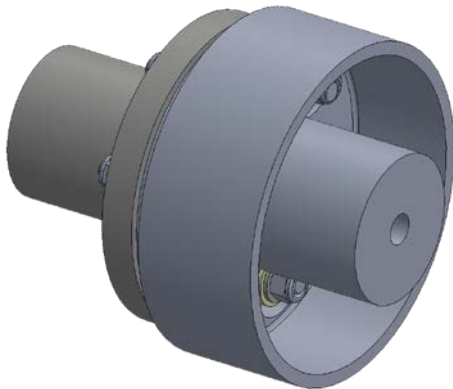
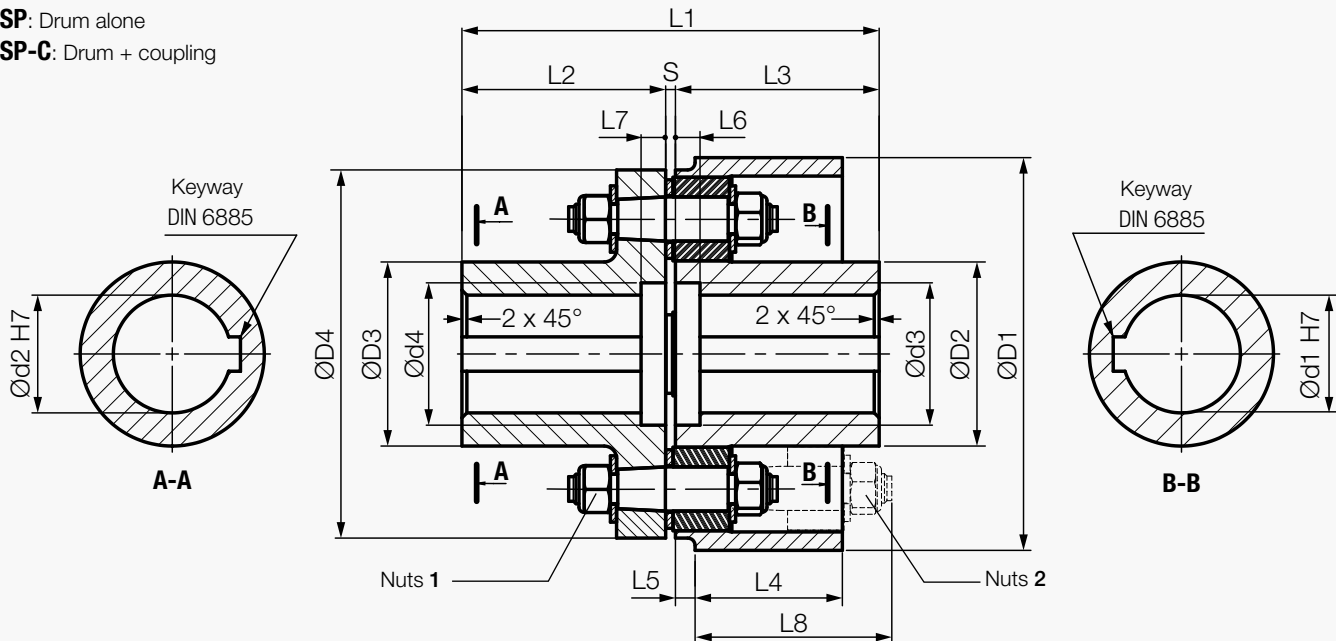
DRUM BRAKE - DRUMS SERIE SP & SP-C

Revision number: T10145-01-B

Revision date: 24.11.2017

SP: Drum alone

SP-C: Drum + coupling

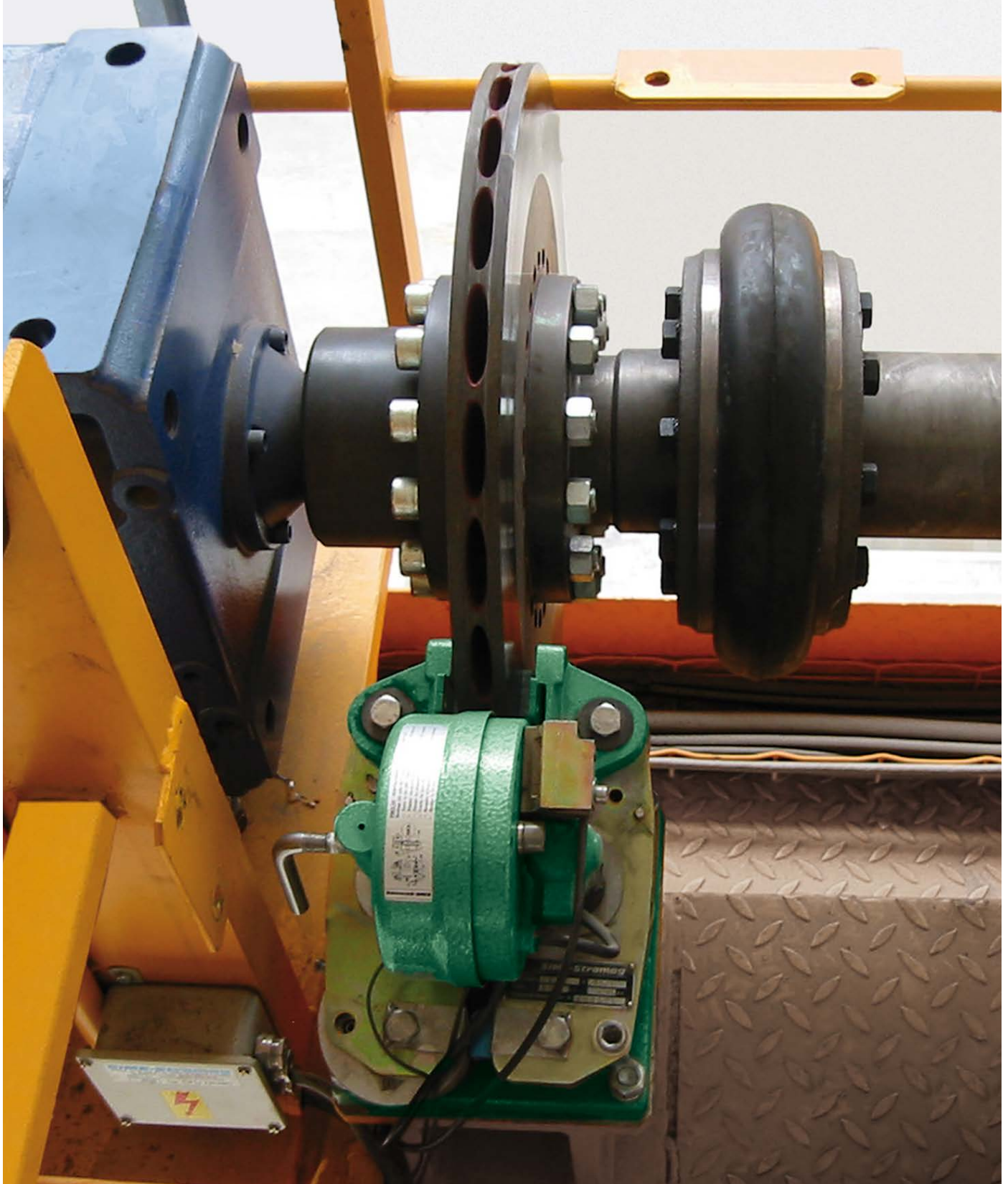


Des igation	SP... or SP-C...	160	200	250	315	400	500
Weight *	kg	10.8	20.2	36	63	112	189
Inertia *	kgm ²	0,026	0,067	0,195	0,54	1,850	4,900
T_{CN}	Nm	270	550	1000	2000	3500	6500
T_{Cmax.}	Nm	540	1100	2000	4000	7000	13000
Speed max.	rpm	4800	3900	3200	2500	2000	1600
Dimensions in mm	ØD1	160	200	250	315	400	500
	ØD2	75	90	110	145	170	200
	ØD3	75	90	110	145	170	200
	ØD4	150	185	225	280	335	410
	Ød1 min.	—	25	30	40	50	60
	Ød1 max.	48	55	65	90	100	120
	Ød2 min.	—	25	30	40	50	60
	Ød2 max.	48	55	65	90	100	120
	Ød3	58	66	83	104	120	140
	Ød4	58	66	83	104	120	140
	L1	170	224	294	311	355	386
	L2	83	110	145	153	175	190
	L3	83	110	145	153	175	190
	L4	60	75	95	118	150	190
	L5	8	10	10	15	0	0
	L6	10	15	17	23	30	30
	L7	10	15	17	23	30	30
	L8	150	165	195	220	250	290
	S	4	4	4	5	5	6
Tightening Torque	Nuts 1 N.m	15	15	40	40	240	240
	Nuts 2 N.m	15	15	40	40	240	240

* drum + coupling

Disc Couplings

DISC COUPLINGS



MAIN CHARACTERISTICS	OPTIONS
• IN ASSOCIATION WITH OUR MONOBLOC, SOLID AND VENTILATED DISCS • 3 TYPES OF DISC COUPLINGS FOR A COMPLETE BRAKING SYSTEM SOLUTION	• LONG HUB ON MOTOR SIDE : SDKL .. SVKL .. SMLDF • LONG HUB ON GEAR BOX SIDE : SDF-ML • LONG HUBS ON MOTOR AND GEAR BOX SIDES : SDKL/SVKL-ML .. SMLDF-ML

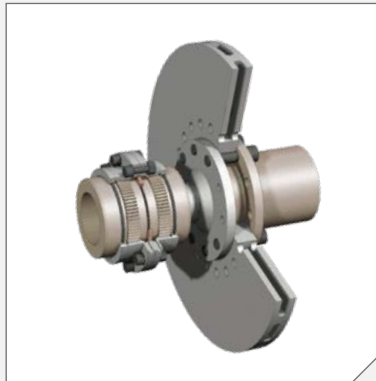


PERIFLEX

- Highly-flexible rubber-fabric couplings
- Precise workmanship
- Monobloc. solid and ventilated discs : th.15 - 30 mm. Ø 175 - 795
- Torque range: 50 to 15.000 Nm
- Ambient temperature: -50°C to +80°C

Benefits include

- Compensate extremely large offsets in every direction
- Allow radial mounting and dismantling without moving the machines
- Make torque transmission free from backlash
- Absorb torque peaks and damp occuring vibrations

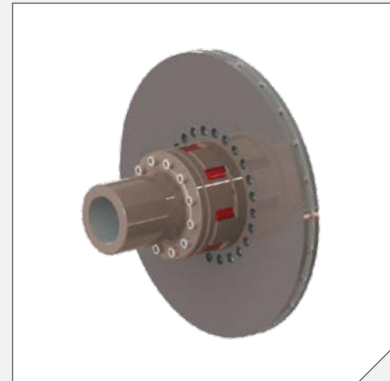


SDF

- All steel coupling
- Two flanged sleeves with internal spur gear teeth
- Solid and ventilated discs : th. 30 mm. Ø 315 - 995
- Torque range: 1.500 to 36.700 Nm
- High misalignments = 1°30' per gear
- Ambient temperature: -20°C to +100°C

Benefits include

- Disc mounting and dismantling without moving the machines back
- Closely controlled quality of the gearing profile for minimum end float and best alignment



E - SVKL - SDKL

- Highly-Flexible coupling
- Fitted with a cam ring and a flexible element (shore A or shore D).
- Discs : **E**: th.15 - 30 mm. Ø 175 - 625
SVKL/SDKL: th. 30 mm. Ø 315 - 795
- Torque range:
 - **E**: 200 to 3100 Nm
 - **SVKL/SDKL**: 630 to 39700 Nm
- Ambient temperatures:
 - **E**: -40°C to +120°C
 - **SVKL/SDKL**: -25°C to +80°C

Benefits include

- Easy assembly
- Easy dismantling of the complete coupling and cam Ring
- Damping of torsional vibrations
- Noise reduction and shock load accomodation
- No lubrication requirements

Disc Couplings

DISC BRAKE - FLEXIBLE DISC COUPLING PNF-PNQ-PND

Revision number: T02805-01-D

Revision date: 15.05.2012

Flexible coupling **PNF, PNQ** and **PND** series

Discs thickness: 30mm

Rubber element and disc can be both removed without moving motor or gearbox back.

Use:

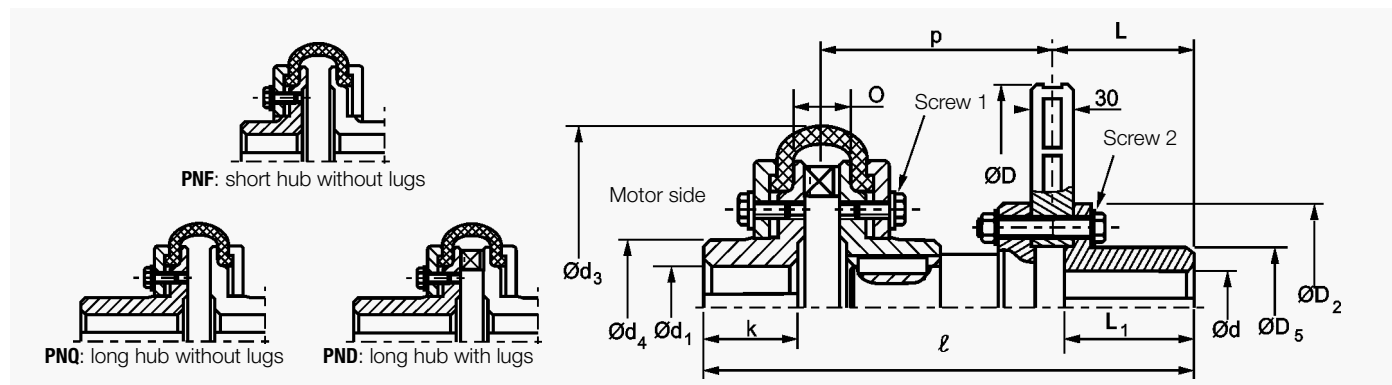
PNF and PNQ for horizontal motions only.

PND with lugs, compulsory for hoisting.

Option:

Solid Disc

Screws 1 and 2 not tightened to the torque at the delivery



Designation			Disc	315V30		355V30			395V30			445V30				495V30					
Coupling PNF, PNQ and PND			25	50	25	50	100	50	100	200	100-1	100-2	200-1	200-2	100-1	100-2	200-1	200-2	300-1	300-2	
Assembly	Nominal torque Cn	N.m	300	600	300	600	1200	600	1200	2500	1200	1200	2500	2500	1200	1200	2500	2500	4000	4000	
	Coupling Maximum torque Cmax	N.m	900	1800	900	1800	3600	1800	3600	7500	3600	3600	7500	7500	3600	3600	7500	7500	12000	12000	
	For use with calipers type		650-5K	645-5K	650	5K 650	645	645-5K			645-5K	4CA2	645-5K	4CA2	645-5K	4CA2	645-5K	4CA2	645-5K	4CA2	
	Maximum speed	tr/mn	3000	2500	2700	2500	2500	2400	2400	2000	2100	2100	2000	2000	1900	1900	1900	1900	1900	1900	
	J:																				
	PNF	kgm ²	0.180	0.240	0.283	0.333	0.456	0.370	0.589	1.08	0.776	0.656	1.475	1.545	1.266	1.272	1.655	1.68	1.60	1.62	
	PNQ	kgm ²	0.182	0.252	0.286	0.344	0.483	0.382	0.616	1.116	0.803	0.683	1.516	1.586	1.293	1.299	1.696	1.721	1.64	1.65	
PND	kgm ²	0.187	0.267	0.291	0.360	0.512	0.397	0.645	1.140	0.832	0.71	1.541	1.61	1.322	1.328	1.721	1.746	1.66	1.67		
Weight:																					
PNF	kg	29.3	35.5	34.8	43	57	45.5	63	93	74	71	94	96	95	98.5	118	128	128.5	131		
PNQ	kg	31.3	38.5	36.8	46	67	48.5	73	103	84	81	104	106	105	108.5	128	138.5	140	142.5		
PND	kg	32.4	40.7	37.9	48.2	68.7	50.7	74.7	107.5	85.7	82.7	108.5	110.5	106.7	110	132.5	142.5	141.5	144		
ℓ																					
PNF	mm	315	350	315	340	380	340	380	402	413	515	435	568	400	443	435	525	562	582		
PNQ, PND	mm	366	393	366	383	445	383	445	467	478	580	500	633	465	508	500	590	622	642		
Disc	D	mm	315			355			395			445					495				
	D ₂	mm	125			145			165			175					220				
	D ₅	mm	80			95			105			110					150				
	L	mm	102			102			102			135					135				
	L ₁	mm	107			107			107			140					140				
	d max. keyed	mm	50			60			70			70					100				
	d max. for shrink fit	mm	50			60			70			70					100				
Coupling	d ₃	mm	210	263	210	263	310	263	310	370	310	310	370	370	310	310	370	370	402	402	
	d ₄	mm	80	95	80	95	125	95	125	150	125	125	150	150	125	125	150	150	160	160	
	k PNF	mm	59	67	59	67	75	67	75	85	75	75	85	85	75	75	85	85	95	95	
	k PNQ, PND	mm	110	110	110	110	140	110	140	150	140	140	150	150	140	140	150	150	155	155	
	O	mm	38	44	38	44	42	44	42	48	42	42	46	46	42	42	46	46	50	50	
	p	mm	138	161	138	151	178	151	178	192.5	178	280	192.5	325.5	165	208	192.5	282.5	305	325	
	d ₁ max. keyed PNF	mm	55	65	55	65	90	65	90	100	90	90	100	100	90	90	100	100	110	110	
	d ₁ max. keyed PNQ	mm	55	65	55	65	90	65	90	100	90	90	100	100	90	90	100	100	110	110	
	d ₁ max. keyed PND	mm	55	65	55	65	85	65	85	100	85	85	100	100	85	85	100	100	110	110	
	d ₁ max. for shrink fit	mm	50	60	50	60	80	60	80	90	80	80	90	90	80	80	90	90	100	100	
	Tightening torque on screw 1		N.m	20	25	20	25	45	25	45	55	45	45	55	55	45	45	55	55	60	60
	Tightening torque on screw 2		N.m	49	49	86	86	86	135	135	135	210	210	210	210	290	290	290	290	290	290
Maximum permissible torque Ct and working conditions (ambient temperature ≤ 40°C)			>300 start/h : Ct=Cn/2.5 ≤300 start/h à 120 start/h : Ct=Cn/2 ≤120 start/h : Ct=Cn/1.5										NOTA : For shrink fit, k and ℓ are modified (consult us) At the delivery, screws 1 and 2 are not tightened to the torque In each case : engine start coupling Cd<Cmax								

DISC BRAKE - FLEXIBLE DISC COUPLING PNF-PNQ-PND

Revision number: T02805-01-D

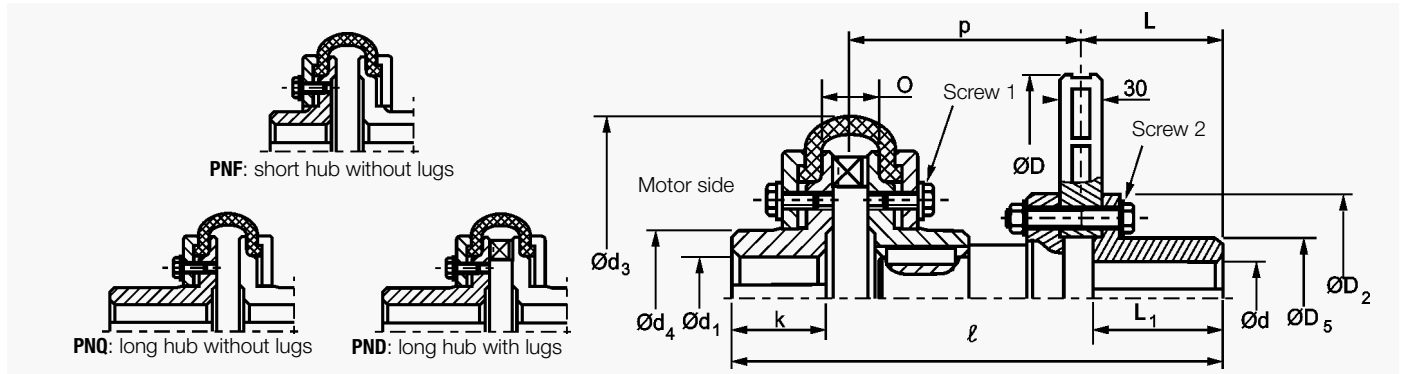
Revision date: 15.05.2012

Flexible coupling **PNF**, **PNQ** and **PND** series
Discs thickness: 30mm
Rubber element and disc can be both removed
without moving motor or gearbox back.

Use:
PNF and PNQ for horizontal motions only.
PND with lugs, compulsory for hoisting.

Option:
Solid Disc

Screws 1 and 2 not tightened to
the torque at the delivery



Designation				Disc	550 V 30						625 V 30			705 V 30		795 V 30		
Coupling PNF, PNQ and PND				100	200-1	200-2	300-1	300-2	300-3	200	300	400	400	800	400	800	1500	
Assembly	Coupling Nominal torque	Cn	N.m	1200	2500	2500	4000	4000	4000	2500	4000	6000	6000	10000	6000	10000	15000	
	Coupling Maximum torque	Cmax	N.m	3600	7500	7500	12000	12000	12000	7500	12000	18000	18000	30000	18000	30000	45000	
	For use with calipers type			645 5K	645 5K	4CA2	645 5K	4CA2	3CA2	4CA2	3CA2		3CA2		3CA2			
	Maximum speed			tr/mn	1800	1800	1800	1800	1800	1500	1500	1500	1300	1250	1200	1200	900	
	J:																	
	PNF	kgm²		1.68	2.03	2.04	1.95	1.97	1.99	2.49	3.34	4.15	5.43	7.39	7.85	9.82	17.92	
	PNQ	kgm²		1.70	2.07	2.08	1.98	2.00	2.03	2.53	3.38	4.25	5.52	7.54	7.95	9.96	18.17	
	PND	kgm²		1.73	2.10	2.11	2.00	2.03	2.06	2.56	3.40	4.33	5.61	7.81	8.05	10.24	18.42	
Weight:																		
	PNF	kg		101	124	126	123	131.5	134.5	137	151	182	191	258	207	283	587	
	PNQ	kg		111	134.5	136.5	134	142.5	145.5	147.5	162.5	202	211	281	227	305.5	623.5	
PND	kg		112.7	138.5	140.5	136	144.5	148.5	151.5	164	206	215	297.5	231	322.5	641.5		
ℓ																		
	PNF	mm		400	435	450	470	535	580	450	470	575	495	635	495	635	810	
PNQ, PND	mm		465	500	515	530	595	640	515	530	655	575	715	575	715	905		
Disc	D	mm	550						625			705		795				
	D ₂	mm	220						235			265		300				
	D ₅	mm	150						150			180		210				
	L	mm	135						135			135		135				
	L ₁	mm	140						140			140		140				
	d max. keyed	mm	100						100			120		130				
	d max. for shrink fit	mm	100						100			120		130				
Coupling	d ₃	mm	310	370	370	402	402	402	370	402	450	450	550	450	550	700		
	d ₄	mm	125	150	150	160	160	160	150	160	180	180	210	180	210	270		
	k PNF	mm	75	85	85	95	95	95	85	95	110	110	130	110	130	160		
	k PNQ, PND	mm	140	150	150	155	155	155	150	155	190	190	210	190	210	255		
	O	mm	42	46	46	50	50	50	46	50	70	70	120	70	120	150		
	p	mm	165	192.5	207.5	213	278	323	207.5	213	300	220	320	220	320	400		
	d ₁ max. keyed PNF	mm	90	100	100	110	110	110	100	110	110	110	130	110	130	18		
	d ₁ max. keyed PNQ	mm	90	100	100	110	110	110	100	110	120	120	120	120	140	180		
	d ₁ max. keyed PND	mm	90	100	100	110	110	110	100	110	120	120	120	120	140	180		
	d ₁ max. for shrink fit	mm	80	90	90	100	100	100	80	100	105	105	120	105	120	170		
Tightening torque for screw 1			N.m	45	55	55	60	60	60	55	60	110	110	200	110	200	240	
Tightening torque for screw 2			N.m	290	290	290	290	290	290	410	410	410	550	550	710	710	710	
Maximum permissible torque Ct and working conditions (ambient temperature ≤ 40°C)				>300 start/h : Ct=Cn/2.5 ≤300 start/h à 120 start/h : Ct=Cn/2 ≤120 start/h : Ct=Cn/1.5						NOTA : For shrink fit, k and ℓ are modified (consult us) At the delivery, screws 1 and 2 are not tightened to the torque In each case : engine start coupling Cd<Cmax								

Disc Couplings

DISC BRAKE - FLEXIBLE DISC COUPLING PNK

Revision number: T02561-01-B

Revision date: 25.11.2010

Flexible coupling **PNK** series

Solid disc thickness 15 mm

Rubber element and disc can both be removed without disturbing motor or gearbox

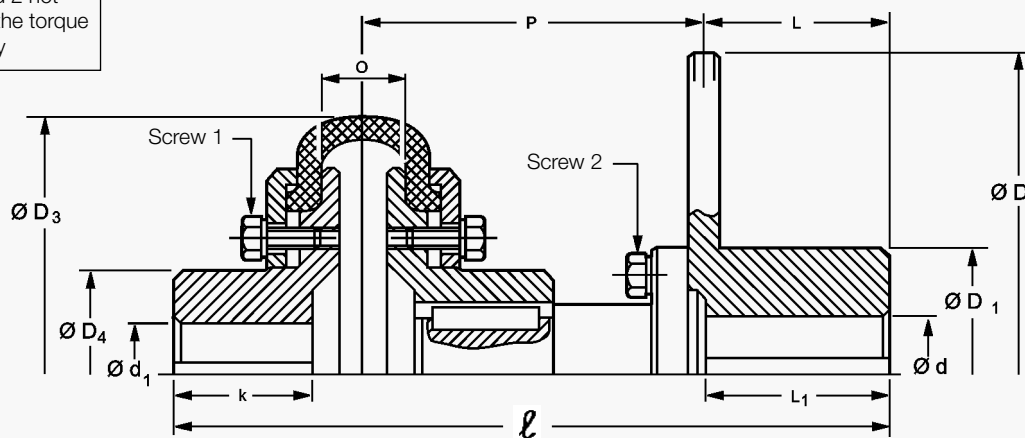
Without lug.

Use:

For horizontal motions

For hoist motions, please consult us.

Screws 1 and 2 not tightened to the torque at the delivery



Designation			Disc	175P15			220P15			260P15		315P15		395P15		445P15		495P15	550P15	625P15	
Flexible coupling PNK				2	6	16	2	6	16	6	16	16	40	40	63	40	63	63	125	125	160
Assembly	Coupling			50	100	200	50	100	200	100	200	200	400	400	800	400	800	800	1600	1600	2000
	Nominal torque Cn	Nm		150	300	600	150	300	600	300	600	600	1200	1200	2400	1200	2400	2400	4800	4800	6000
	Max. torque Cmax	Nm																			
	combined caliper			660		650		660		650		660		645		650		645		645	
	Maximum speed	tr/mn		5000	5000	4000	4300	4300	4000	3600	3600	3000	3000	2400	2400	2100	2100	1900	1800	1500	1500
	J kgm² Fl. coupling and disc			0.011	0.013	0.023	0.030	0.042	0.045	0.066	0.076	0.146	0.168	0.338	0.408	0.520	0.595	0.89	1.42	2.19	2.58
Weight	kg		6	7.4	11	9.4	11.6	15.3	18	21.4	26	31.5	38.5	46	42	51	69	89	100	120	
	ℓ	mm	185	215	250	195	225	250	245	265	295	340	340	370	340	370	410	460	460	435	
Disc	D	mm		175			220			260		315		395		445		495	550	625	
	D ₁	mm		75			95			120		120		120		120		150	150	150	
	L	mm		55			65			85		102		102		102		135	135	135	
	L	mm		58.5			68.5			88.5		112		112		112		145	145	145	
	Bore d	mm		40			55			75		75		75		75		100	100	100	
	max. shrink fit *	mm		35			50			65		65		65		65		90	90	90	
Flexible coupling	D ₃	mm	104	136	178	104	136	178	136	178	178	210	210	263	210	263	263	310	310	370	
	D ₄	mm	40	55	70	40	55	70	55	70	70	92	92	107	92	107	107	140	140	150	
	k	mm	30	45	50	30	45	50	45	50	50	65	65	75	65	75	75	100	100	85	
	O	mm	16	18	35	16	18	35	18	35	35	38	38	44	38	44	44	42	42	46	
	P	mm	95	105	130	95	105	120	105	115	128	158	158	173	158	173	180	205	205	192.5	
	Bore max. d ₁ keyed shrink fit *	mm	28	38	48	28	38	48	38	48	48	65	65	75	65	75	75	100	100	100	
			28	38	42	28	38	42	38	42	42	60	60	70	60	70	70	90	90	90	
Tightening torque in Nm	Screw 1	mm	4	6	15	4	6	15	6	15	15	20	20	25	20	25	25	45	45	55	
	Screw 2	mm	25	25	25	25	25	25	25	25	49	69	86	120	86	120	210	210	210	295	
Max. transmissible torque (Ct) and working conditions (ambient temperature ≤ 40°C)			> 300 starts/ hour: Ct = Cn / 2.5 ≤ 300 starts/ hour to 120 starts/ hour: Ct = Cn / 2 ≤ 120 starts/ hour: Ct = Cn / 1.5									* For shrink fit, dimensions k and ℓ are altered (consult us) In each case, motor starting torque Cd<Cmax									

DISC BRAKE - FLEXIBLE DISC COUPLING PNM

Revision number: T02661-01-B

Revision date: 25.11.2010

Coupling **PNM** series

Monobloc disc with thickness: 30mm

Rubber element and disc can both be removed without moving motor or gearbox back

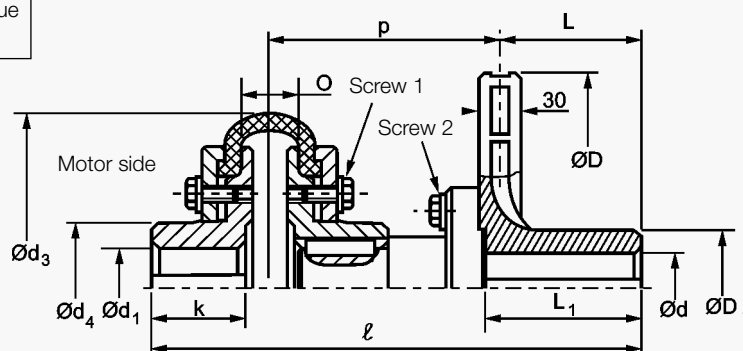
Without lug

Use:

For horizontal motions.

For hoist motions, consult us.

Screws 1 and 2 not tightened to the torque at the delivery



Designation		Disc	220M30			260M30			315M30		
		Coupling PNM	2	6	16	6	16	40	16	40	63
Assembly	Nominal coupling torque Cn	Nm	50	100	200	100	200	400	200	400	800
	Maximum coupling torque Cmax	Nm	150	300	600	300	600	1200	600	1200	2400
	For use with calipers		650 - 5D			650 - 5D			650 - 5D - 5K		
	Maximum speed	tr/mn	4300	4300	4000	3600	3600	3600	3000	3000	3000
	J	kgm²	0.056	0.06	0.07	0.072	0.085	0.107	0.155	0.178	0.248
Disc	Weight	kg	13	15.2	19	15	18.4	22.5	20	25.5	33.5
	ℓ	mm	244.5	277	309.5	275.5	295.5	332	295	340	358
Coupling	D	mm	220			260			315		
	D ₁	mm	85			85			90		
	L	mm	102			102			102		
	L ₁	mm	112			112			112		
	d min.	mm	20			30			35		
Coupling	d max. keyed	mm	55			55			60		
	d ₃	mm	104	136	178	136	178	210	178	210	263
	d ₄	mm	40	55	70	55	70	92	70	92	107
	k	mm	30	45	50	45	50	65	45	65	75
	O	mm	16	18	35	18	35	38	35	38	44
	p	mm	107.5	120	142.5	118.5	128.5	150	128	158	161
	d ₁ max. keyed	mm	28	38	48	38	48	65	48	65	75
	Tightening torque of screws 1	Nm	4	6	15	6	15	20	20	20	20
	Tightening torque of screws 2	Nm	25	25	25	25	25	69	49	69	69
	Maximum permissible torque Ct and working conditions (ambient temperature ≤ 40°C)		>300 start/h : Ct=Cn/2.5 ≤300 start/h at 120 start/h : Ct=Cn/2 ≤120 start/h : Ct=Cn/1.5						In each case, motor starting torque Cd < Cmax Other versions, consult us.		

Disc Couplings

DISC BRAKE - GEAR DISC COUPLING SDF

Revision number: T10004-01-C

Revision date: 03.02.2010

Gear coupling type **SDF**

Solid discs (**P**) and ventilated discs (**V**)
thickness 30mm

Disc mounting and dismounting without
moving the machines back.

Stromag provides also the couplings:

SDF-ML with long hub on gear box side

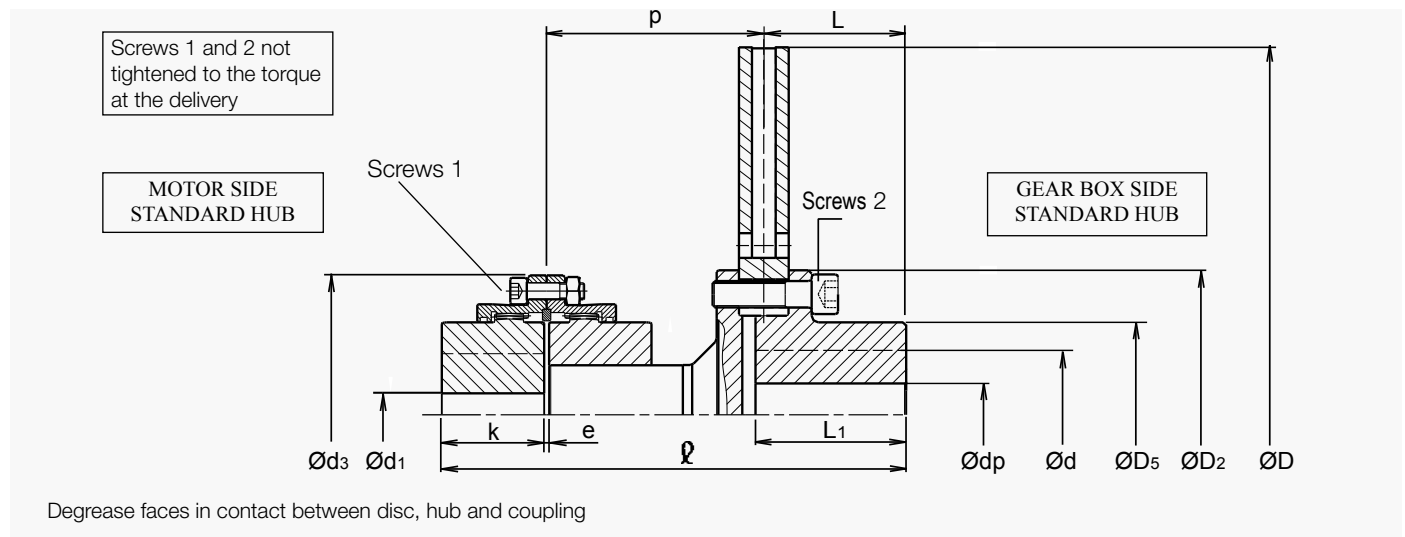
SMLDF with long hub on motor side

SMLDF-ML with long hub on each side,
consult us.

Hub and coupling : oiling protection.

Material and balancing of the discs : see
the discs "technical data" leaflet

In standard, only the disc is balanced.
The assembly is balanced on demand.
(parts angularly matched).



Designation				Disc	315 P30/V30		355 P30/V30		395 P30/V30			
				SDF	68		68		68		80	
Assembly	J	P30	V30	kg.m²	0.246	0.16	0.391	0.255	0.604	0.368	0.622	0.386
	Weight	P30	V30	kg	32	25	39	30	47.5	36.5	53	42
	Ø			mm	274		274		274		286	
	Maximum speed			rpm	3000		2700		2400			
	Maximum braking torque			N.m	Tb ≤ Tp (Tb = maximum braking torque. Tp = maximum peak torque)							
	For use with calipers				Check that D – D2 > width of the caliper braking surface (ex.: 4CA2 and 3CA2 not associated to discs D < 445) Check that the caliper nominal braking torque is ≤ Tp							
Disc	D		mm	315			355				395	
	D2		mm	124			145				165	
	D5		mm	82			100				112	
	L		mm	102			102				102	
	L1		mm	107			107				107	
	dp		mm	--			--				--	
	d maximum keyed		mm	55			70				75	
	d max. shrink fit		mm	50			60				70	
	Tightening torque screw 2 *		N.m	49			86				135	
Coupling	d3		mm	140			140			140		169
	e		mm	3			3			3		3
	k		mm	50			50			50		62
	p		mm	120.5			120.5			120.5		120.5
	d1 maximum keyed		mm	68			68			68		80
	d1 max. shrink fit		mm	63			63			63		75
	Tightening torque screws 1 *		N.m	33			33			33		60
	Maximum peak torque (Tp)			N.m	1500		2200		2200			
	Transmissible torque (Tt)			N.m	750		1100		1100			
In every case : Ts < Tp (Ts : motor starting torque)												

*: greased under head and on thread

DISC BRAKE - GEAR DISC COUPLING SDF

Revision number: T10004-01-C

Revision date: 03.02.2010

Gear coupling type **SDF**

Solid discs (**P**) and ventilated discs (**V**)
thickness 30mm

Disc mounting and dismounting without
moving the machines back.

Stromag provides also the couplings:

SDF-ML with long hub on gear box side

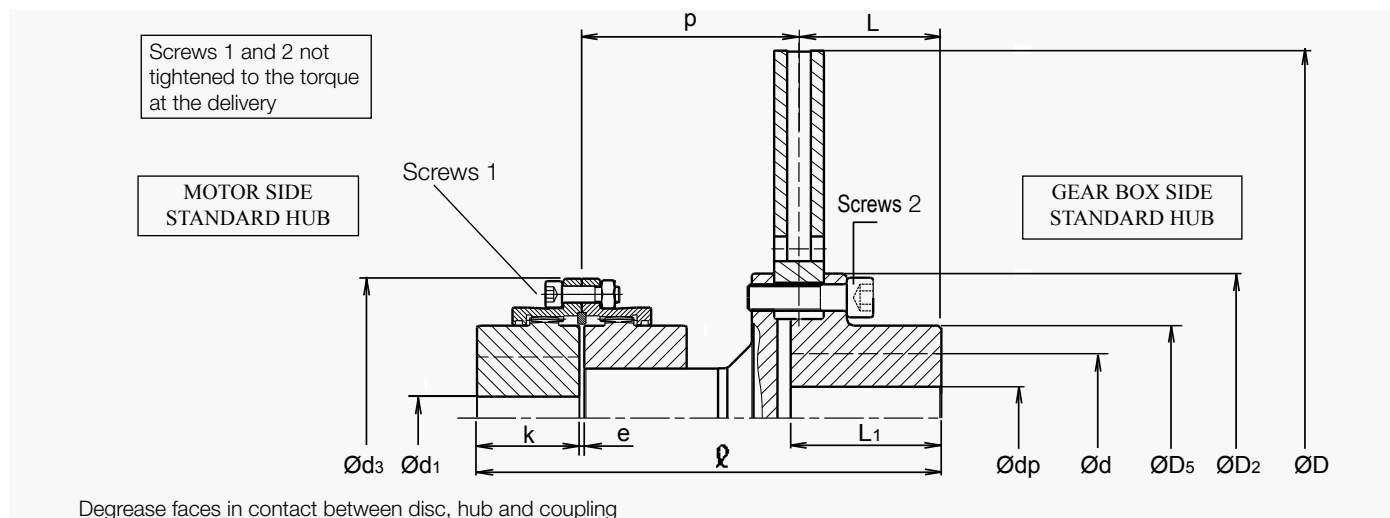
SMLDF with long hub on motor side

SMLDF-ML with long hub on each side,
consult us.

Hub and coupling : oiling protection.

Material and balancing of the discs : see
the discs "technical data" leaflet

In standard, only the disc is balanced.
The assembly is balanced on demand.
(parts angularly matched).



Designation				Disc SDF	705 P30/V30								795 P30/V30							
					115		135		150		170		135		150		170			
Assembly	J	P30	V30	kg.m²	6.165	3.935	6.37	4.14	6.655	4.425	7.153	4.923	10.092	6.512	10.378	6.798	10.872	7.292		
	Weight	P30	V30	kg	173	140	196	163	223	190	259	226	233	193	260	220	295	255		
	ℓ			mm	410		441		483		513		441		483		513			
	Maximum speed			rpm	1300								1200							
	Maximum braking torque			N.m	Tb ≤ Tp (Tb = maximum braking torque. Tp = maximum peak torque)															
Disc	For use with calipers				Check that D – D2 > width of the caliper braking surface (ex.: 4CA2 and 3CA2 not associated to discs D < 445) Check that the caliper nominal braking torque is ≤ Tp															
	D		mm	705								795								
	D2		mm	268								300								
	D5		mm	190								216								
	L		mm	135								135								
	L1		mm	140								140								
	dp		mm	30								30								
	d maximum keyed		mm	135								150								
	d max. shrink fit		mm	120								135								
Tightening torque screw 2 *			N.m	550								710								
Coupling	d3		mm	228		266		298		330		266		298		330				
	e		mm	5		6		6		8		6		6		8				
	k		mm	90		105		120		135		105		120		135				
	p		mm	182.5		198		225		239		198		225		239				
	d1 maximum keyed		mm	115		135		150		170		135		150		170				
	d1 max. shrink fit		mm	106		125		140		160		125		140		160				
	Tightening torque screws 1 *			N.m	95		171		235		235		171		235		235			
	Maximum peak torque (Tp)			N.m	9400		13800		25300		29200		13800		25300		36700			
Transmissible torque (Tt)			N.m	4700		6900		12650		14600		6900		12650		18350				
In every case : Ts < Tp (Ts : motor starting torque)																				

*: greased under head and on thread

Disc Couplings

DISC BRAKE - GEAR DISC COUPLING SDF

Revision number: T10004-01-C

Revision date: 03.02.2010

Gear coupling type **SDF**

Solid discs (**P**) and ventilated discs (**V**)
thickness 30mm

Disc mounting and dismounting without
moving the machines back.

Stromag provides also the couplings:

SDF-ML with long hub on gear box side

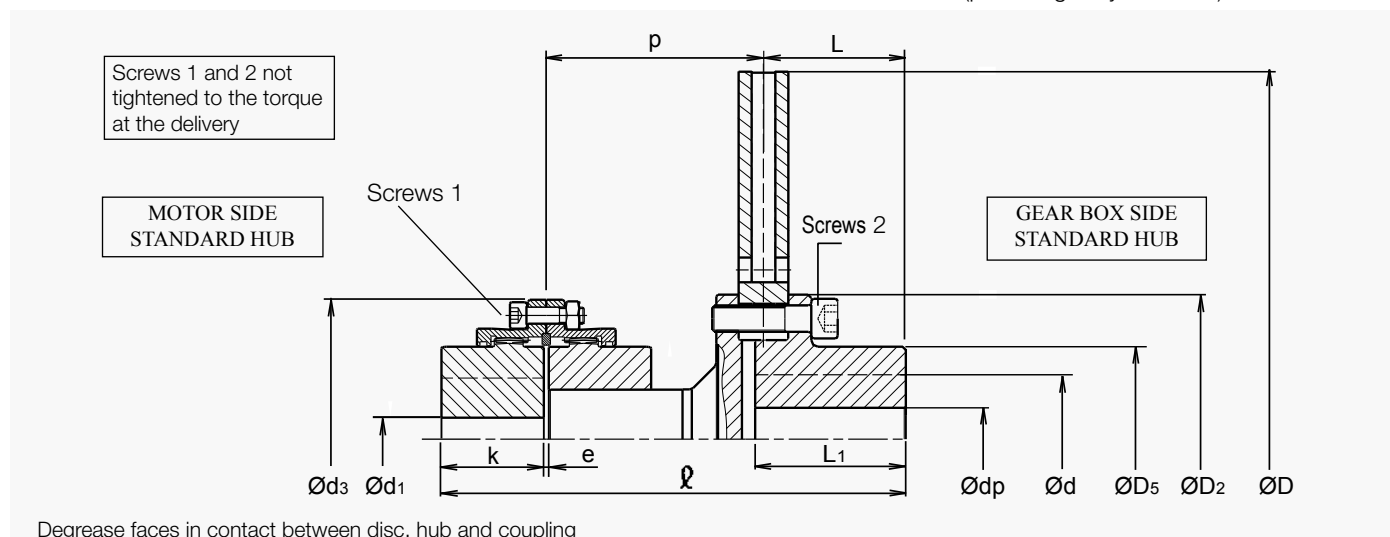
SMLDF with long hub on motor side

SMLDF-ML with long hub on each side,
consult us.

Hub and coupling : oiling protection.

Material and balancing of the discs : see
the discs "technical data" leaflet

In standard, only the disc is balanced.
The assembly is balanced on demand.
(parts angularly matched).



Designation				Disc SDF	550 P30/V30						625 P30/V30							
					80		100		115		100		115		135		150	
Assembly	J	P30	V30	kg.m ²	2.247	1.307	2.297	1.357	2.387	1.447	3.775	2.329	3.863	2.417	4.065	2.619	4.352	2.906
	Weight	P30	V30	kg	97	74	108	85	123	100	131	104	145	118	167	140	195	168
	Ø			mm	347		380		410		380		410		441		483	
	Maximum speed			rpm	1800						1500							
	Maximum braking torque			N.m	Tb ≤ Tp (Tb = maximum braking torque. Tp = maximum peak torque)													
For use with calipers					Check that D – D2 > width of the caliper braking surface (ex.: 4CA2 and 3CA2 not associated to discs D < 445) Check that the caliper nominal braking torque is ≤ Tp													
Disc	D		mm		550						625							
	D2		mm		218						238							
	D5		mm		155						168							
	L		mm		135						135							
	L1		mm		140						140							
	dp		mm		30						30							
	d maximum keyed		mm		110						120							
	d max. shrink fit		mm		100						105							
	Tightening torque screw 2 *		N.m		290						410							
Coupling	d3		mm		169		200		228		200		228		266		298	
	e		mm		3		5		5		5		5		6		6	
	k		mm		62		76		90		76		90		105		120	
	p		mm		148.5		166.5		182.5		166.5		182.5		198		225	
	d1 maximum keyed		mm		80		100		115		100		115		135		150	
	d1 max. shrink fit		mm		75		92		106		92		106		125		140	
	Tightening torque screws 1 *		N.m		60		60		95		60		95		171		235	
	Maximum peak torque (Tp)			N.m	3800		6000		9400		6000		9400		13800		20700	
	Transmissible torque (Tt)			N.m	1900		3000		4700		3000		4700		6900		10350	
	In every case : Ts < Tp (Ts : motor starting torque)																	

*: greased under head and on thread

DISC BRAKE - GEAR DISC COUPLING SDF

Revision number: T10004-01-C

Revision date: 03.02.2010

Gear coupling type **SDF**

Solid discs (**P**) and ventilated discs (**V**)
thickness 30mm

Disc mounting and dismounting without
moving the machines back.

Stromag provides also the couplings:

SDF-ML with long hub on gear box side

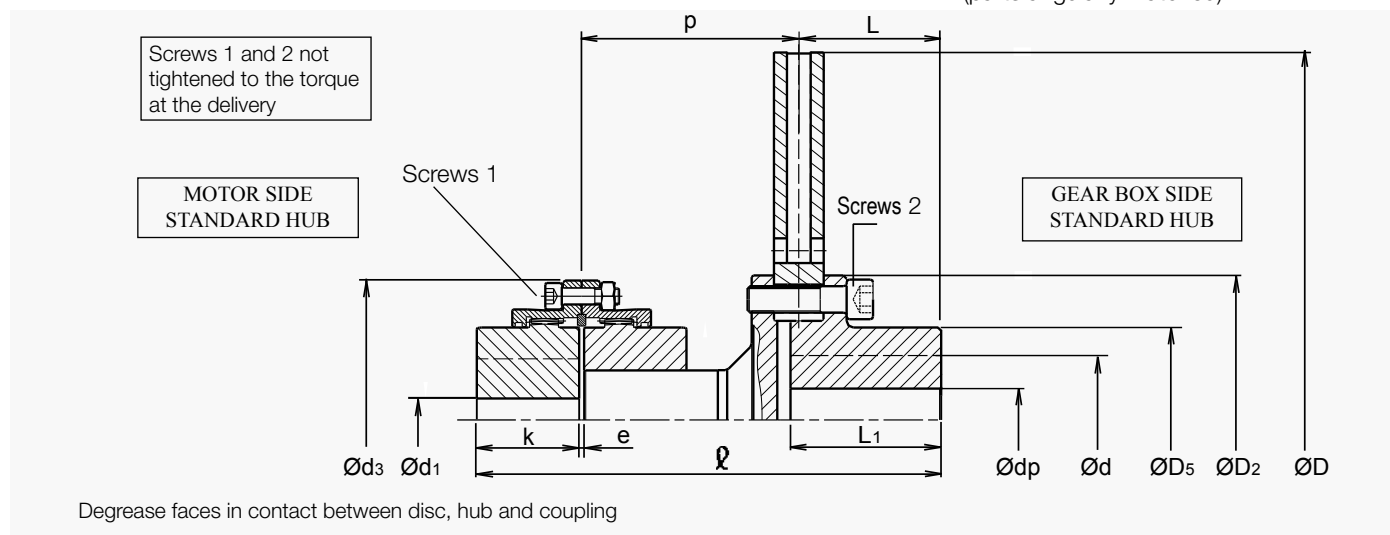
SMLDF with long hub on motor side

SMLDF-ML with long hub on each side,
consult us.

Hub and coupling : oiling protection.

Material and balancing of the discs : see
the discs "technical data" leaflet

In standard, only the disc is balanced.
The assembly is balanced on demand.
(parts angularly matched).



Designation				Disc SDF	705 P30/V30								795 P30/V30							
					115		135		150		170		135		150		170			
Assembly	J	P30	V30	kg.m²	6.165	3.935	6.37	4.14	6.655	4.425	7.153	4.923	10.092	6.512	10.378	6.798	10.872	7.292		
	Weight	P30	V30	kg	173	140	196	163	223	190	259	226	233	193	260	220	295	255		
	Ø	mm			410		441		483		513		441		483		513			
	Maximum speed			rpm	1300								1200							
	Maximum braking torque			N.m	Tb ≤ Tp (Tb = maximum braking torque. Tp = maximum peak torque)															
For use with calipers				Check that D – D2 > width of the caliper braking surface (ex.: 4CA2 and 3CA2 not associated to discs D < 445) Check that the caliper nominal braking torque is ≤ Tp																
Disc	D	mm			705								795							
	D2	mm			268								300							
	D5	mm			190								216							
	L	mm			135								135							
	L1	mm			140								140							
	dp	mm			30								30							
	d maximum keyed	mm			135								150							
	d max. shrink fit	mm			120								135							
	Tightening torque screw 2 *	N.m			550								710							
Coupling	d3	mm			228		266		298		330		266		298		330			
	e	mm			5		6		6		8		6		6		8			
	k	mm			90		105		120		135		105		120		135			
	p	mm			182.5		198		225		239		198		225		239			
	d1 maximum keyed	mm			115		135		150		170		135		150		170			
	d1 max. shrink fit	mm			106		125		140		160		125		140		160			
	Tightening torque screws 1 *	N.m			95		171		235		235		171		235		235			
	Maximum peak torque (Tp)			N.m	9400		13800		25300		29200		13800		25300		36700			
	Transmissible torque (Tt)			N.m	4700		6900		12650		14600		6900		12650		18350			
	In every case : Ts < Tp (Ts : motor starting torque)																			

*: greased under head and on thread

Disc Couplings

DISC BRAKE - FLEXIBLE DISC COUPLING E

Revision number: T02580-01-B

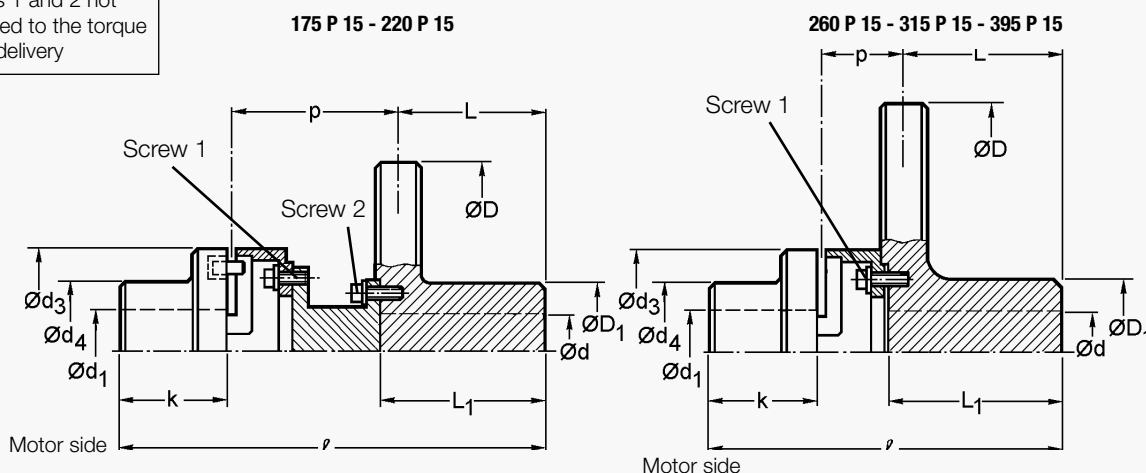
Revision date: 25.11.2010

Flexible coupling "NORMEX" E series

Solid discs Ø 175 to 395

Disc thickness: 15 mm

Screws 1 and 2 not tightened to the torque at the delivery



Degrease faces in contact between disc and coupling.

Designation		Disc type		175 P 15		220 P 15		260 P 15		315 P 15			395 P 15		
		Coupling		97	112	112	128	112	128	112	128	148	128	148	168
Assembly	J	kgm ²		0.017	0.019	0.038	0.042	0.065	0.070	0.13	0.135	0.14	0.31	0.315	0.335
	Weight	kg		8	9.5	12.5	15.5	18	21	22	24	28	30	34	39
	For use with caliper	Type		660-650		660-650		660-650		660-650			660-650		
	Maximum speed	t/mn		5000		4 300		3 600		3 000			2 400		
	ℓ	mm		183	244	211	244	190	201	214.5	225.5	230	225.5	230	245
Disc	D	mm		175	175	220	220	260	260	315	315	315	395	395	395
	D ₁	mm		75	75	95	95	120	120	120	120	120	120	120	120
	L	mm		55	55	65	65	85	85	102	102	102	102	102	102
	L ₁	mm		58.5	58.5	68.5	68.5	88.5	88.5	113	113	112	112	112	112
	d max. keyed	mm		44		55		55		60		65	60	65	
	d max. for shrink fit	mm		40		55		55		60		65	60	65	
Coupling	d ₃	mm		97	112	112	128	112	128	112	128	148	128	148	168
	d ₄	mm		69	79	79	90	79	90	79	90	107	90	107	124
	k	mm		50	60	60	70	60	70	60	70	80	70	80	90
	p	mm		76.5	127.25	84.25	107.25	43.25	44.25	50.75	51.75	46.25	51.75	46.25	51.25
	d ₁ max. keyed	mm		42	48	48	55	48	55	48	55	65	55	65	75
	Peak max. torque (Cp)	Nm		200	310	310	500	310	500	310	500	800	500	800	1300
	Max. permissible torque (Ct) and working conditions (Ambient temperature ≤ 40 °C)			150 starts/ hour 300 starts/ hour 600 starts/ hour		8 h/24 h - Ct ≤ Cp/2.5 8 h/24 h - Ct ≤ Cp/3.2 8 h/24 h - Ct ≤ Cp/4		In every case: Cd < Cp (Cd motor starting torque) (Ct: motor nominal torque)							
	Tightening torque on screws (1) and (2) *	Nm		10	25	25	25	25	25	25	25	49	25	49	86

*: stopped with normal glue

DISC BRAKE - FLEXIBLE DISC COUPLING E

Revision number: T02580-01-B

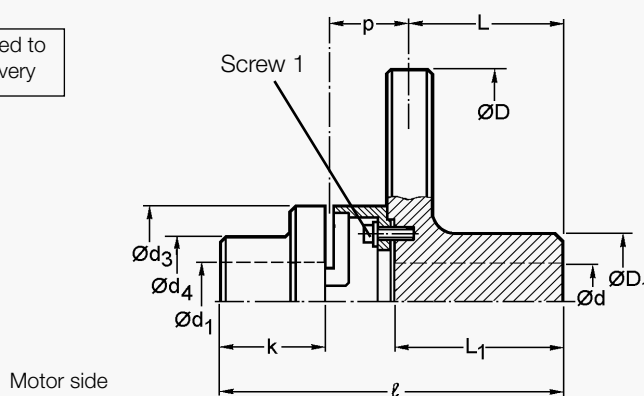
Revision date: 25.11.2010

Flexible coupling "NORMEX" E series

Solid discs Ø 445 to 625

Disc thickness: 15 mm

Screws 1 not tightened to the torque at the delivery



Degrease faces in contact between disc and coupling.

Designation		Disc type	445 P 15				495 P 15			550 P 15				625 P 15		
		Coupling	128	148	168	194	148	168	194	148	168	194	214	168	194	214
Assembly	J	kgm ²	0.49	0.495	0.515	0.55	0.785	0.815	0.84	1.175	1.205	1.23	1.30	1.975	2	2.07
	Weight	kg	33	37	43	51	52	58	66	58	64	72	80	74	82	90
	For use with caliper	Type	660-650-645				660-650-645			660-650-645				660-650-645		
	ℓ	mm	225.5	230	245	260	263	278	293	263	278	293	308	278	293	308
Disc	D	mm	445	445	445	445	495	495	495	550	550	550	550	625	625	625
	D ₁	mm	120	120	120	120	150	150	150	150	150	150	150	150	150	150
	L ₁	mm	102	102	102	102	135	135	135	135	135	135	135	135	135	135
	L ₁	mm	112	112	112	112	145	145	145	145	145	145	145	145	145	145
	d max. keyed	mm	60	65		65	65	70	70	65	70	70	90	70	70	90
	d max. for shrink fit	mm	60	65		65	65	70	70	65	70	70	90	70	70	90
Coupling	d ₃	mm	128	148	168	194	148	168	194	148	168	194	214	168	194	214
	d ₄	mm	90	107	124	140	107	124	140	107	124	140	157	124	140	157
	k	mm	70	80	90	100	80	90	100	80	90	100	110	90	100	110
	p	mm	51.75	46.25	51.25	56.25	46.25	51.25	56.25	46.25	51.25	56.25	61	51.25	56.25	61
	d ₁ max. keyed	mm	55	65	75	85	65	75	85	65	75	85	95	75	85	95
	Peak max. torque (Cp)	Nm	500	800	1300	2000	800	800	2000	2000	1300	2000	3100	1300	2000	3100
	Max. permissible torque (Ct) and working conditions (Ambient temperature ≤ 40 °C)		150 starts / hour 8 h/24 h - Ct ≤ Cp/2.5 300 starts / hour 8 h/24 h - Ct ≤ Cp/3.2 600 starts / hour 8 h/24 h - Ct ≤ Cp/4										In every case: Cd < Cp (Cd motor starting torque) (Ct: motor nominal torque)			
	Tightening torque on screw (1) *	Nm	25	49	86	86	49	86	86	49	86	86	135	86	86	135

*: stopped with normal glue

Disc Couplings

DISC BRAKE - FLEXIBLE DISC COUPLING E

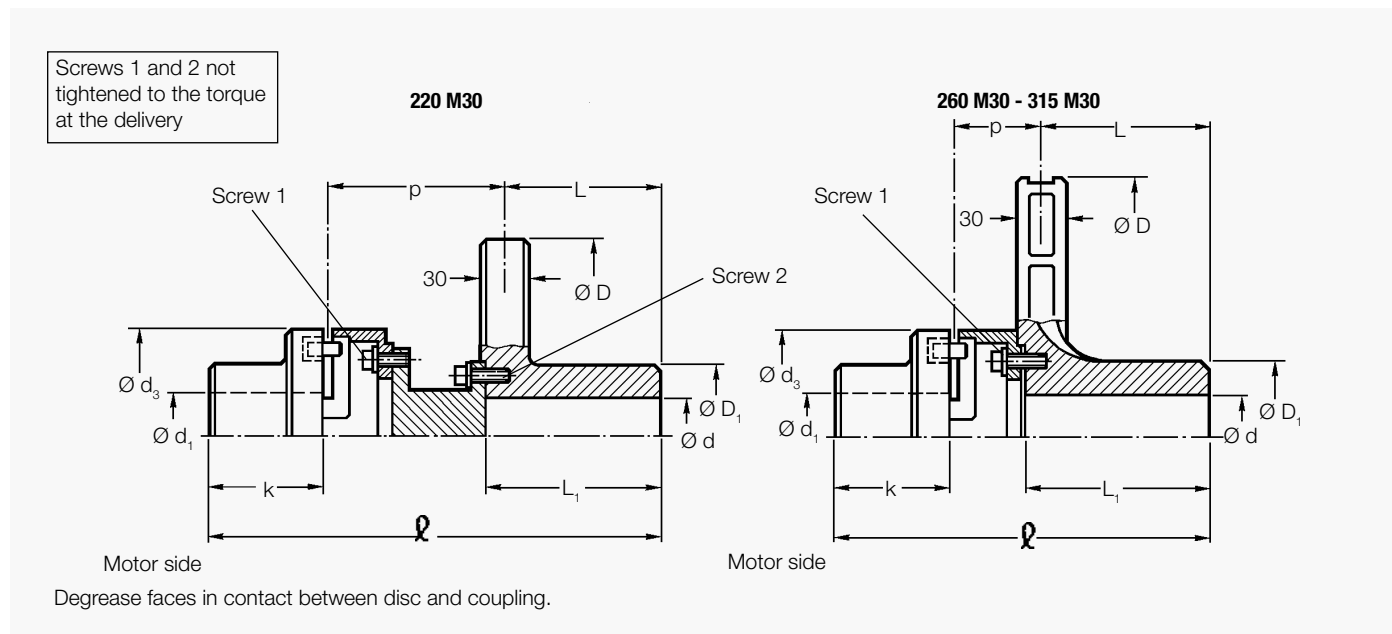
Revision number: T02680-01-B

Revision date: 25.11.2010

Flexible coupling E series

Monobloc discs Ø 220 - 260 - 315

Disc thickness: 30 mm



Designation		Disc Flexible coupling		220 M 30		260 M 30		315 M 30		
				112	128	112	128	112	128	148
Assembly	J	kgm ²		0.063	0.067	0.078	0.09	0.145	0.155	0.160
	Weight	kg		16.2	19.2	15	18	17	20	24.5
	For use with calipers	Type		650-5D		650-5D		650-5D-5K		650-5D
	Maximum speed	r.p.m.		4 300		3 600		3 000		
Disc	Ø	mm		313.5	323.5	220.5	231.5	231.5	225.5	230
	D	mm		220		260		315		
	D ₁	mm		85		85		90		
	L	mm		102		102		102		
	L ₁	mm		113		120		113		
	d (pilot bore)	mm		20		30		35		
	d maxi keyed	mm		55		55		60		
Coupling Pb75	d maxi shrink fitted	mm		55		55		60		
	k	mm		60	70	60	70	60	70	80
	p	mm		149.75	149.75	56.75	57.75	50.75	51.75	46.25
	d ₃	mm		112	128	112	128	112	128	148
	d ₁ maxi keyed	mm		48	55	48	55	48	55	65
	d ₁ maxi shrink fitted	mm		-	-	-	-	-	-	-
	Peak maxi. torque (Cp)	N.m		310	500	310	500	310	500	800
	Transmissible torque (Ct) and working conditions (ambient temperature ≤ 40°C) (Ct: motor nominal torque)			150 starts/hour 300 starts/hour 600 starts/hour (in every case: Cd < Cp)		8 h/24 h - Ct ≤ Cp/2.5 8 h/24 h - Ct ≤ Cp/3.2 8 h/24 h - Ct ≤ Cp/4		(Cd: motor starting torque)		
	Tightening torque of screws (1) and (2) *	Nm		20	20	20	20	20	20	44

*: stopped with normal glue

Disc Couplings

DISC BRAKE - FLEXIBLE DISC COUPLING SVKL AND SDKL

Revision number: T10152-01-E

Revision date: 07.03.2019

Flexible couplings series **SVKL** and **SDKL**

Long hub on motor side

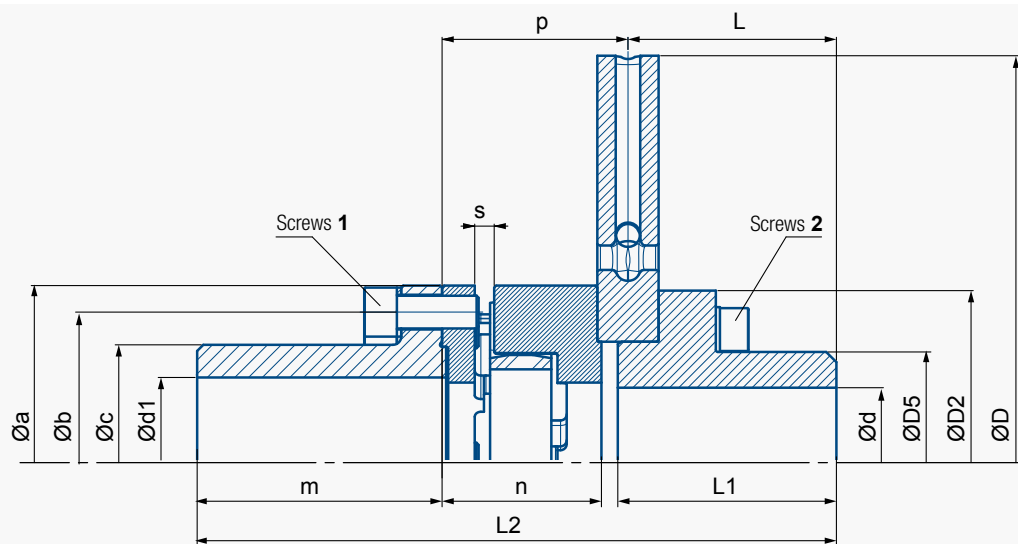
Ventilated Discs thickness : **30 mm**

Disc mounting and dismounting without moving the machines back

- Rubber element **V**
 - Rubber element **D**
- (specify type of rubber element with order)

Option:

- Solid disc



Degrease faces in contact between disc and coupling.

Flexible couplings SVKL / SDKL			125	145		170		200	230			
Disc diameter (th. 30)			315	315	355	395	445	445	495	550		
ASSEMBLY	J with ventilated disc	kg.m²	0.17	0.18	0.27	0.42	0.68	0.73	1.2	1.74		
	J with solid disc	kg.m²	0.26	0.27	0.41	0.66	1.04	1.09	1.22	2.68		
	Max. weight bored	kg	27	31	37	48	57	63	96	107		
	Maximum speed	r.p.m.	3000	3000	2700	2400	2100	2100	1800	1800		
DISC	L2		286.5	298	298	331.5	364.5	364.5	412.5	412.5		
	ØD	mm	315	315	355	395	445	445	495	550		
	ØD2	mm	125	125	145	165	175	175	220	220		
	ØD5	mm	80	80	95	105	110	110	150	150		
	Ød max keyed or shrink fit	mm	50	50	60	70	70	70	100	100		
COUPLING	L	mm	102	102	102	102	135	135	135	135		
	L1	mm	107	107	107	107	140	140	140	140		
	Øa	mm	125	145	145	170	170	200	230	230		
	Øb	mm	105	125	125	144	144	165	190	190		
	Øc	mm	80	100	100	112	112	126	140	140		
	Ød1 max keyed	mm	55	70	70	80	80	90	100	100		
	m	mm	110.5	110.5		140.5		130.5	169.5			
	n	mm	61	72.5		76		86	95			
	p	mm	76	87.5		91		101	110			
	s	mm	6	6.5		7.5		8.5	9.5			
	Max. torque	Rubber element V	630	1050	1050	1660	1660	2880	4500	4500		
	Tkmax in Nm	D	1110	1800	1800	2850	2850	4950	7740	7740		
Transmissible torque (Tk _n) (Tk _n : motor nominal torque)			Tk _n ≤ Tkmax/k		k min.	Temperature	k=3	< 40°C	k=4	< 80°C	k=6	≤ 80°C
			Ts< Tkmax			Rate		≤ 120 starts/h		≤ 240 starts/h		≤ 600 starts/h
Tightening torque *	Screws 1	Nm	48	84	84	204	204	204	285	285		
	Screws 2	Nm	48	48	84	133	204	204	285	285		

* Screws class 10.9 greased with molybdenum bisulphide grease under the head and in threads.
Tightening tool dispersion = ±10%

Ts: motor starting torque. In all cases, Ts < Tk_{max}

DISC BRAKE - FLEXIBLE DISC COUPLING SVKL AND SDKL

Revision number: T10152-01-E

Revision date: 07.03.2019

Flexible couplings series **SVKL** and **SDKL**

Long hub on motor side

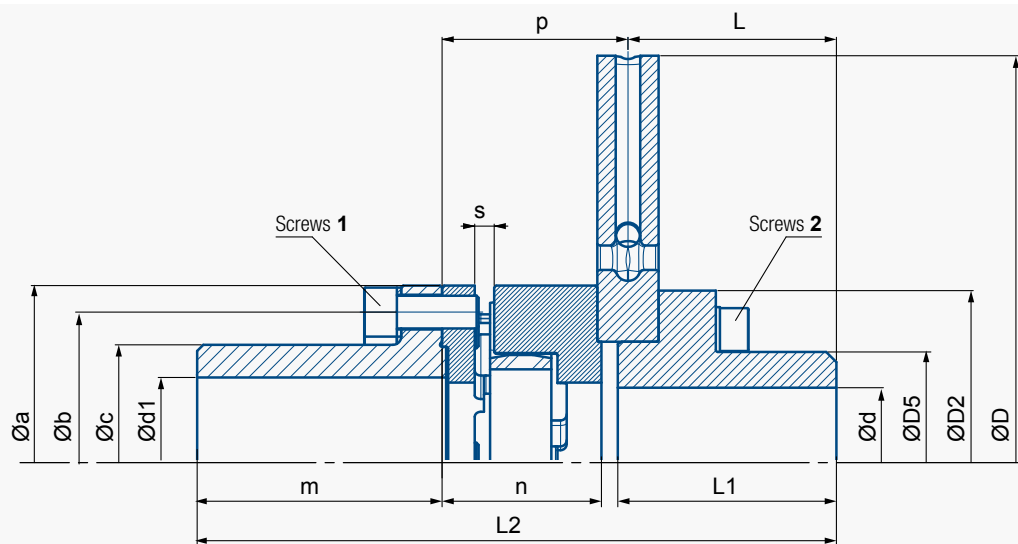
Ventilated Discs thickness : **30 mm**

Disc mounting and dismounting without moving the machines back

- Rubber element **V**
 - Rubber element **D**
- (specify type of rubber element with order)

Option:

- Solid disc



Degrease faces in contact between disc and coupling.

Flexible couplings SVKL / SDKL			260			300				400		
Disc diameter (th. 30)			550	625	705	625-2	705	705-2	795	705	795	
ASSEMBLY	J with ventilated disc	kg.m²	1.97	2.77	4.66	4.52	5.09	5.23	7.86	7.44	10.21	
	J with solid disc	kg.m²	2.91	4.22	6.89	5.23	7.32	7.81	11.44	9.67	13.79	
	Max. weight bored	kg	120	140	170	185	215	229.5	250	300	356	
	Maximum speed	r.p.m.	1800	1500	1300	1500	1300	1300	1200	1300	1200	
	L2		469	469	469	480	480	480	480	576.5	576.5	
DISC	ØD	mm	550	625	705	625	705	705	795	705	795	
	ØD2	mm	220	235	265	300	265	300	300	265	300	
	ØD5	mm	150	150	180	210	180	210	210	180	210	
	Ød max keyed or shrink fit	mm	100	100	120	130	120	130	130	120	130	
COUPLING	L	mm	135	135	135	135	135	135	135	135	135	
	L1	mm	140	140	140	140	140	140	140	140	140	
	Øa	mm	260	260	260	300	300	300	300	400	400	
	Øb	mm	220	220	220	260	260	260	260	335	335	
	Øc	mm	168	168	168	190	190	190	190	240	240	
	Ød1 max keyed	mm	120	120	120	125	125	125	125	150	150	
	m	mm	209.5			209.5				289.5		
	n	mm	111.5			122.5				139		
	p	mm	126.5			137.5				154		
	s	mm	9.5			10.5				10.5		
	Max. torque	Rubber element V	7200	7200	7200	10400	10400	10400	10400	23400	23400	
	Tkmax in Nm	D	11940	11940	11940	17550	17550	17550	17550	30360	39700	
	Transmissible torque (Tk) (Tk _n : motor nominal torque)			Tk _n ≤ Tk _{max} /k Ts < Tk _{max}		k min.	Temperature Rate	k=3	< 40°C ≤ 120 starts/h	k=4	< 80°C ≤ 240 starts/h	k=6
Tightening torque *	Screws 1	Nm	541	541	541	685	685	685	685	1364	1364	
	Screws 2	Nm	285	398	541	541	541	685	685	541	685	

* Screws class 10.9 greased with molybdenum bisulphide grease under the head and in threads.
Tightening tool dispersion = ±10%

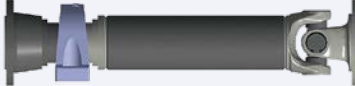
Ts: motor starting torque. In all cases, Ts < Tkmax

Cardan Shafts

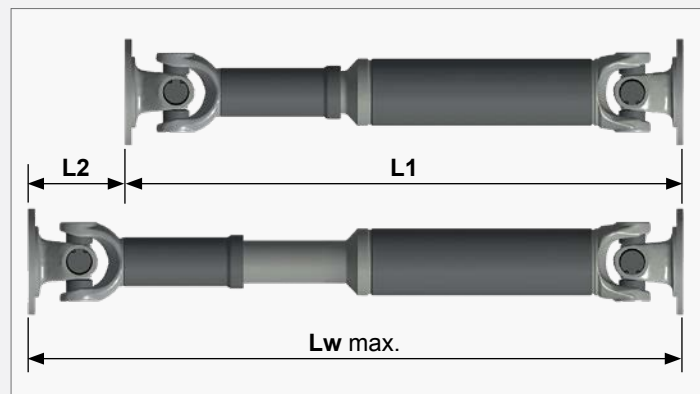
CARDAN SHAFTS



MAIN CHARACTERISTICS	ADVANTAGES
- TRANSMISSION OF AN ANGULAR ROTATION - COUPLING OF 2 ROTATING NON-ALIGNED SHAFTS	- MAINTENANCE FREE - do not need lubrication - FEWER FAILURES - closed system without loss of grease and without penetration of water and dirt - LONG SERVICE LIFE - SAE or involute splines: optimization in accordance with size and utilization of the cardan shaft

Type	Design	Description
ACS-100		With length compensation
ACS-105		With length compensation in double-flange design
ACS-110		Short couple shaft
ACS-130		Tube shaft without length compensation
ACS-135		Tube shaft without length compensation in double-flange design
ACS-160		Intermediate shaft
ACS-220		Intermediate tube shaft

L1 = compressed length
L2 = maximum possible length compensation
Lw max. = maximum possible working length
 Optimal working length = **Lw opt.** = **L1 + ½ L2**



Cardan Shafts

ACCESSORIES - CARDAN SHAFTS TYPE ACS

Revision number: T10155-01-B

Revision date: 05.11.2018

Cardan Shaft Sizes

Size	Swing diameter mm	Bearing torque Nm	Feature
1	up to 76	up to 600	One-piece bearing yokes Length compensation with involute spline Flange yoke with DIN or SAE connection
2	100 - 144	1.400 - 6.000	One-piece bearing yokes Length compensation with involute spline Flange yoke with DIN, SAE or cross-serrated connection Maintenance-free U-joints
3	158 - 204	8.800 - 20.000	One-piece bearing yokes Length compensation with involute spline or straight flank spline (SAE) Application-related spline coating Flange yoke with DIN, SAE or cross-serrated connection, as well as with face key Maintenance-free U-joints
4	220 - 315	26.000 – 143.000	One-piece bearing yokes Length compensation with involute spline or straight flank spline (SAE) Application-related spline coating Flange yoke with DIN, face key or Hirth-serration Maintenance-free U-joints
5	350 - 620	210.000 – 1.250.000	One-piece bearing yokes Length compensation with involute spline or straight flank spline (SAE) Application-related spline coating Flange yoke with DIN, face key or Hirth-serration Double flange design
6	from 680	from 1.950.000	One-piece bearing yokes Length compensation with straight flank spline (SAE) Application-related spline coating Flange yoke with face key or Hirth-serration Double flange design

ACCESSORIES - CARDAN SHAFTS TYPE ACS

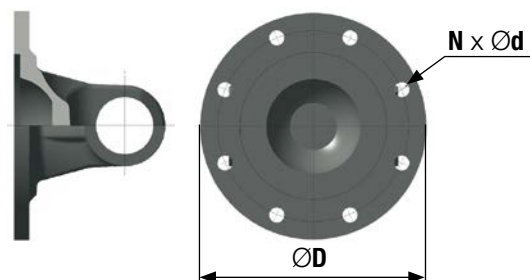
Revision number: T10155-01-B

Revision date: 05.11.2018

Series 1, 2 and 3

Series			1	2			3				
Size			07600	10000	11600	12600	14400	15800	17200	17800	20400
DESIGN	Bearing Torque Nm		600	1.400	3.000	5.300	6.000	8.800	12.500	17.000	20.000
	Reversing Fatigue Torque Nm		300	700	1.500	2.300	2.900	4.400	5.100	8.500	11.000
	Joint Performance Factor Nm		220	660	990	1.780	2.070	2.400	3.500	4.600	6.800
	Swing Diameter mm		76	100	116	126	144	158	172	178	204
		L1 min	250	421	451	536	572	630	566	661	746
		L2 min	40	110	110	110	110	180	110	110	110
		tube size	50	50 / 76,2	70 / 90	90	100	100	120	120	140
		L1 min	214	240	290	340	409	400	430	450	480
		L2 min	15	15	30	40	45	35	40	40	40
		L1 max	249	420	450	535	571	559	565	660	745
		L2 max	40	110	110	110	110	110	110	110	110
		L1 min	190	218	278	309	369	355	400	353	440
		tube size	50	50 / 76,2	70 / 90	90	100	120	120	120	140
CONNECTIONS (ØD-N-Ød)			75-6-6	90-4-8	100-6-8	120-8-10	150-8-12	150-8-12	180-8-14	180-8-14	180-8-14
			90-4-8	100-6-8	120-8-8	150-8-12	180-8-14	180-8-14	180-8-16	180-8-16	180-8-16
				100-8-8	120-8-10	180-8-10		180-8-16	180-10-16	180-10-16	180-10-16
				120-8-8	150-8-10	180-8-14		180-10-16	225-8-16	225-8-16	225-8-16
				120-8-10	150-8-12					250-8-18	250-8-18
			87-4-8	87-4-8	119-4-11,1	146-4-12,7	174,8-8-9,6	174,8-8-9,6	203,2-8-9,6	203,2-8-9,6	203,2-12-11,1
				96,8-4-9,6	149-4-12,7			203,2-8-9,6	203,2-12-11,1	203,2-12-11,1	244,5-8-16,1
				119-4-11,1				203,2-12-11,1			
				100-4-8,5	122-4-11	122-4-11	122-4-11	150-4-13	150-4-13	150-4-13	180-4-15
				122-4-11			150-4-13	180-4-15	180-4-15	180-4-15	

CONNECTIONS



Cardan Shafts

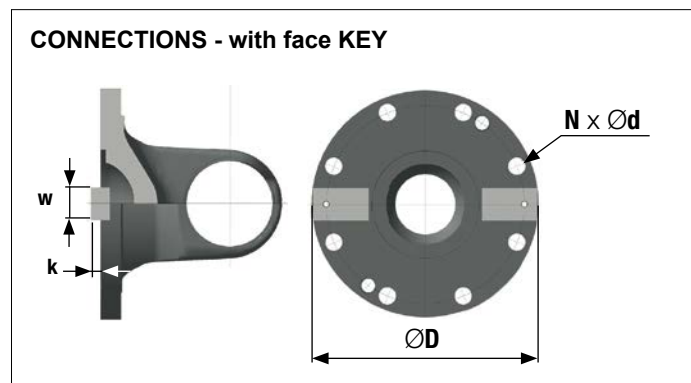
ACCESSORIES - CARDAN SHAFTS TYPE ACS

Revision number: T10155-01-B

Revision date: 05.11.2018

Series 4 and 5

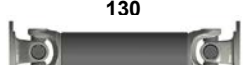
Series			4					5			
Size			21500	21510	22580	25080	28580	31510	35000	39000	44000
DESIGN	Bearing Torque	Nm	26.000	29.000	45.000	70.000	100.000	143.000	210.000	300.000	500.000
	Reversing Fatigue Torque	Nm	13.000	14.500	23.000	35.000	50.000	70.000	100.000	150.000	250.000
	Joint Performance Factor	Nm	8.050	8.350	12.050	18.650	26.200	28.140	40.300	56.800	81.500
	Swing Diameter	mm	220	220	225	250	285	315	350	390	440
		L1 min	797	775	900	995	1.115	1.205	1.295	1.450	1.660
		L2 min	150	140	110	140	140	140	150	170	190
		tube size	144	150	160 / 170	180	200	219	245	273	325
		L1 min	551	580	585	645	990	980	1.175	1.140	1.300
		L2 min	50	40	40	40	50	100	50	80	70
		L1 max	796	650	899	994	1.114	1.204	1.294	1.449	1.659
		L2 max	150	110	140	140	140	140	150	170	190
		L1 min	506	538	615	680	760	890	950	1.040	1.250
		tube size	144	150	160 / 170	180	200	215	245	273	324
CONNECTIONS (ØD-N-Ød)		DIN	225-8-16	225-8-16	225-8-16	250-8-18	285-8-20	315-8-22	350-10-22	390-10-24	435-10-27
			250-8-18	250-8-18	250-8-18	285-8-20	315-8-22	350-10-22	390-10-24	435-10-27	
			285-8-20	285-8-20	285-8-20	315-8-22					
		DIN with face key (w x k)	225-8-17 (32x9)	225-8-17 (32x9)	225-8-17 (32x9)	250-8-19 (40x12)	285-8-21 (40x15)	315-10-23 (40x15)	350-10-23 (50x16)	390-10-25 (70x18)	435-16-28 (80x20)
				250-8-19 (40x12,5)	250-8-19 (40x12,5)	285-8-21 (40x15)	315-10-23 (40x15)	350-10-23 (50x16)	390-10-25 (70x18)	435-16-28 (80x20)	480-16-31 (90x22,5)
					285-8-21 (40x15)						
		High-serration							350-12-1116	390-12-1118	435-16-1118
									390-12-1118	435-16-1118	480-16-1120



ACCESSORIES - CARDAN SHAFTS TYPE ACS

Revision number: T10155-01-B

Revision date: 05.11.2018

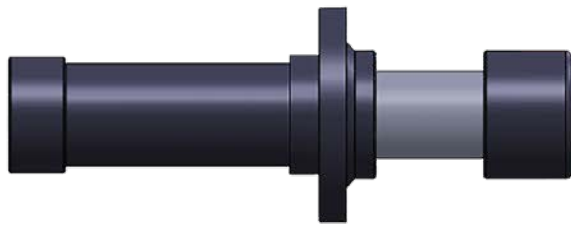
Series			5		6			
Size			49000	55000	62000	68000	75000	84000
DESIGN	Bearing Torque Nm		700.000	1.000.000	1.250.000	1.950.000	2.650.000	3.900.000
	Reversing Fatigue Torque Nm		345.000	500.000	625.000	950.000	1.350.000	1.850.000
	Joint Performance Factor Nm		112.000	154.000	210.000	320.000	750.000	2.230.000
	Swing Diameter mm		490	550	620	680	750	840
		L1 min	1.810	1.965	2.240			
		L2 min	190	240	250			
		tube size	351	402	445			
		L1 min	1.300	1.770	2.050			
		L2 min	50	55	55			
		L1 max	1.809	1.964	2.239			
		L2 max	190	240	250			
		L1 min	1.360	1.480	1.690			
		tube size	355	406	445			
		L1 min				3.250	4.000	4.250
		L2 min				250	250	250
		tube size				559	609	660
		L1 min				1.950	2.400	2.700
		tube size				559	609	660
CONNECTION (ØD-N-Ød)			480-16-31 (90x22,5)	550-16-31 (100x22,5)	620-16-38 (100x25)			
			550-16-31 (100x22,5)	620-16-38 (100x25)				
			480-16-1120	550-11-1122	620-6	680-24-33	750-24-33	840-24-38
			550-16-24	620-24-26	680-24-33			

Hydraulic Buffers

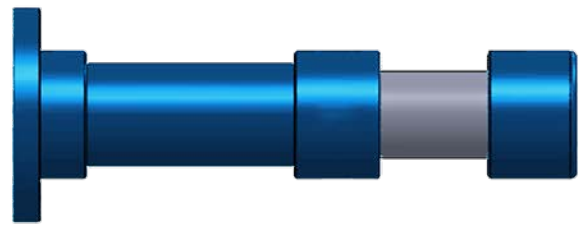
HYDRAULIC BUFFERS



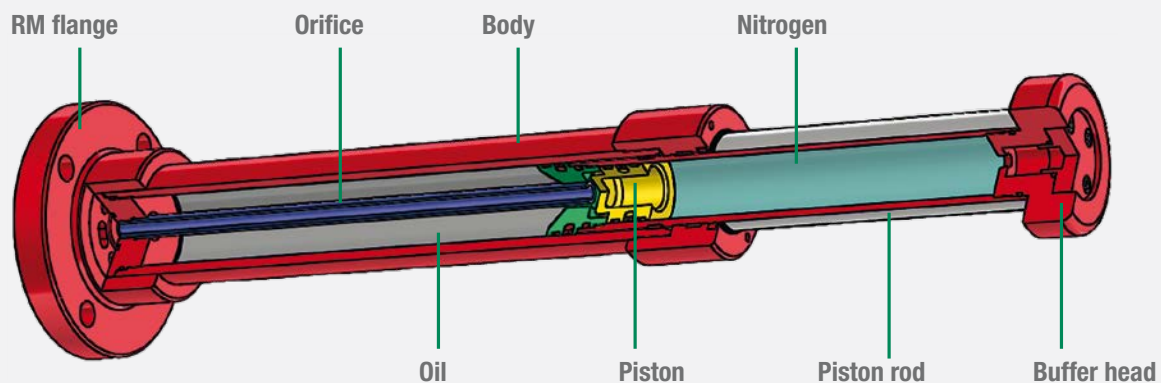
MAIN CHARACTERISTICS	APPLICATIONS
• DAMPING DEVICES REQUIRING NO EXTERNAL ENERGY • DECELERATE MOVING MACHINES ALONG THE SHORTEST POSSIBLE PATH • SELF-ADJUSTMENT • 2 TYPES: REAR MOUNTING OR FRONT MOUNTING • FILLING: OIL / NITROGEN	• STEEL INDUSTRY • NUCLEAR CRANES • PORT APPLICATIONS • OVERHEAD CRANES - CONTAINER CRANES STACKER CRANES • TRANSFER CARS - RAILWAY APPLICATIONS



Front Mounting



Rear mounting



Hydraulic Buffers

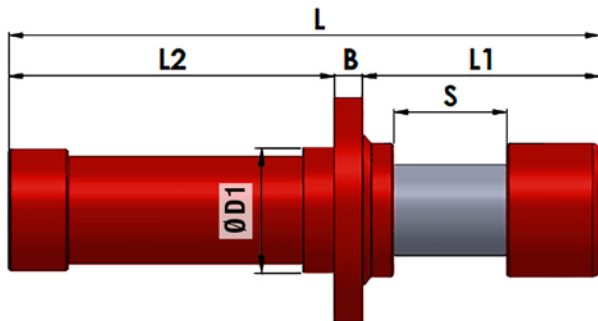
ACCESSORIES - HYDRAULIC BUFFERS

Revision number: T10125-01-C

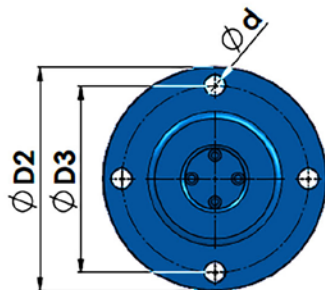
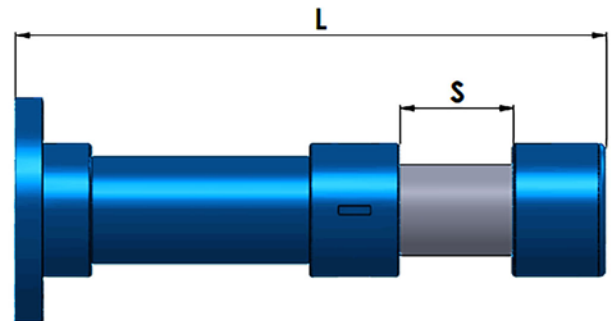
Revision date: 10.02.2019

PHS 063

Type FM



Type RM



PHS 063 100-RM
Size Stroke Type

Dimensions in mm	S	L	L1	L2	B	D1	D2	D3	d	W (kJ) Capacity/Stroke	F (kN) Buffering Force
PHS 063 100	100	455,5	202	233,5	20	91	168	135	17	15	170
PHS 063 150	150	568	252	296	20	91	168	135	17	23	170
PHS 063 200	200	680,5	302	358,5	20	91	168	135	17	30	170
PHS 063 250	250	793	352	421	20	91	168	135	17	38	170
PHS 063 300	300	905,5	402	483,5	20	91	168	135	17	46	170
PHS 063 350	350	1018	452	546	20	91	168	135	17	51	160
PHS 063 400	400	1130,5	502	608,5	20	91	168	135	17	54	150
PHS 063 450	450	1243	552	671	20	91	168	135	17	57	140
PHS 063 500	500	1355,5	602	733,5	20	91	168	135	17	59	130
PHS 063 550	550	1468	652	796	20	91	168	135	17	60	120
PHS 063 600	600	1580,5	702	858,5	20	91	168	135	17	60	110
PHS 063 650	650	1693	752	921	20	91	168	135	17	59	100
PHS 063 700	700	1805,5	802	983,5	20	91	168	135	17	57	90
PHS 063 750	750	1918	852	1046	20	91	168	135	17	54	80
PHS 063 800	800	2030,5	902	1108,5	20	91	168	135	17	51	70

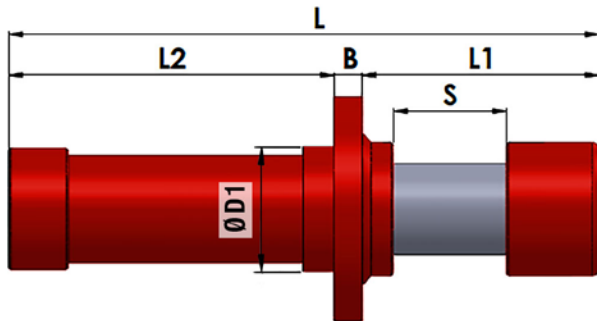
ACCESSORIES - HYDRAULIC BUFFERS

Revision number: T10125-01-C

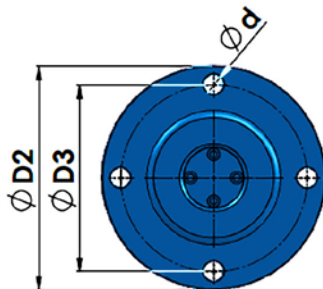
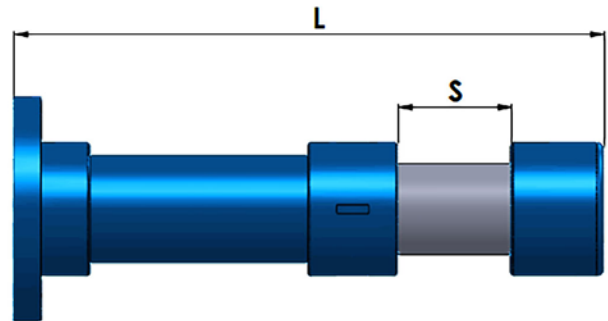
Revision date: 10.02.2019

PHS 080

Type FM



Type RM



PHS 080 100-RM
 Size Stroke Type

Dimensions in mm	S	L	L1	L2	B	D1	D2	D3	d	W (kJ) Capacity/Stroke	F (kN) Buffering Force
PHS 080 100	100	522,5	209,5	288	25	110	198	165	17	23	260
PHS 080 150	150	635	259,5	350,5	25	110	198	165	17	35	260
PHS 080 200	200	747,5	309,5	413	25	110	198	165	17	48	260
PHS 080 250	250	860	359,5	475,5	25	110	198	165	17	59	260
PHS 080 300	300	972,5	409,5	538	25	110	198	165	17	68	250
PHS 080 350	350	1085	459,5	600,5	25	110	198	165	17	76	240
PHS 080 400	400	1197,5	509,5	663	25	110	198	165	17	84	230
PHS 080 450	450	1310	559,5	725,5	25	110	198	165	17	90	220
PHS 080 500	500	1422,5	609,5	788	25	110	198	165	17	95	210
PHS 080 550	550	1535	659,5	850,5	25	110	198	165	17	100	200
PHS 080 600	600	1647,5	709,5	913	25	110	198	165	17	104	190
PHS 080 650	650	1760	759,5	975,5	25	110	198	165	17	106	180
PHS 080 700	700	1872,5	809,5	1038	25	110	198	165	17	108	170
PHS 080 750	750	1985	859,5	1100,5	25	110	198	165	17	109	160
PHS 080 800	800	2097,5	909,5	1163	25	110	198	165	17	109	150

Hydraulic Buffers

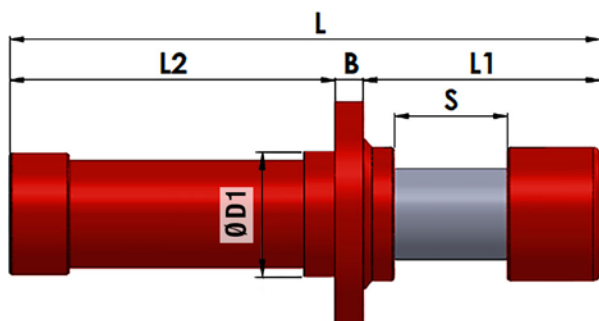
ACCESSORIES - HYDRAULIC BUFFERS

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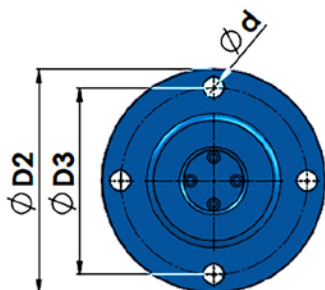
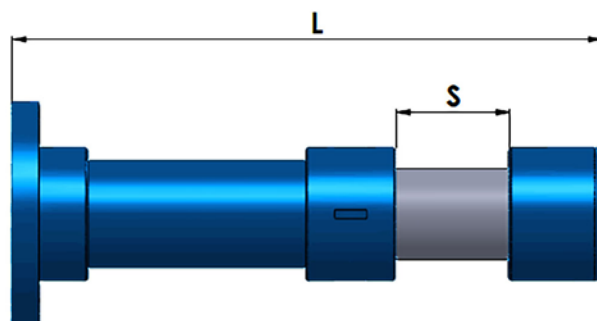
Revision date: 10.02.2019

PHS 100

Type FM



Type RM



PHS **100** **100-RM**
 Size Stroke Type

Dimensions in mm	S	L	L1	L2	B	D1	D2	D3	d	W (kJ) Capacity/Stroke	F (kN) Buffering Force
PHS 100 100	100	538,5	207	301,5	30	132	258	210	23	38	420
PHS 100 150	150	651	257	364	30	132	258	210	23	58	420
PHS 100 200	200	763,5	307	426,5	30	132	258	210	23	78	420
PHS 100 250	250	876	357	489	30	132	258	210	23	98	420
PHS 100 300	300	988,5	407	551,5	30	132	258	210	23	115	420
PHS 100 350	350	1101	457	614	30	132	258	210	23	132	420
PHS 100 400	400	1213,5	507	676,5	30	132	258	210	23	148	410
PHS 100 450	450	1326	557	739	30	132	258	210	23	161	400
PHS 100 500	500	1438,5	607	801,5	30	132	258	210	23	175	390
PHS 100 550	550	1551	657	864	30	132	258	210	23	190	380
PHS 100 600	600	1663,5	707	926,5	30	132	258	210	23	200	370
PHS 100 650	650	1776	757	989	30	132	258	210	23	210	360
PHS 100 700	700	1888,5	807	1051,5	30	132	258	210	23	220	350
PHS 100 750	750	2001	857	1114	30	132	258	210	23	230	340
PHS 100 800	800	2113,5	907	1176,5	30	132	258	210	23	240	330

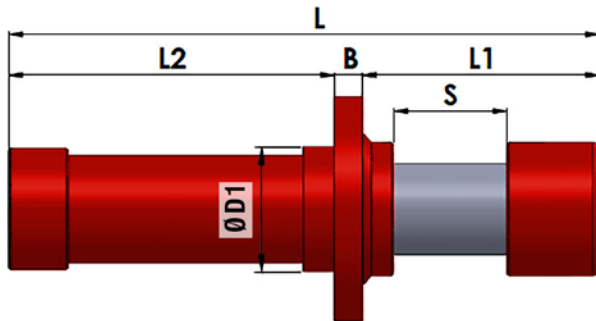
ACCESSORIES - HYDRAULIC BUFFERS

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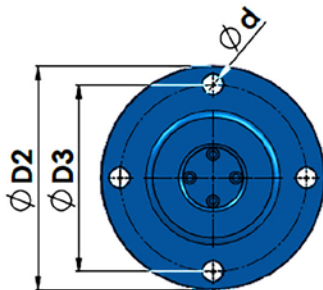
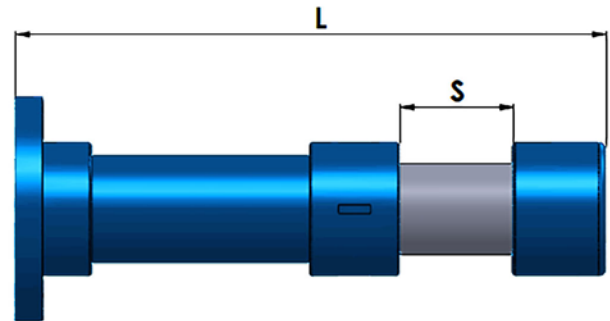
Revision date: 10.02.2019

PHS 125

Type FM



Type RM



PHS 125 100-RM
 Size Stroke Type

Dimensions in mm	S	L	L1	L2	B	D1	D2	D3	d	W (kJ) Capacity/Stroke	F (kN) Buffering Force
PHS 125 100	100	528,5	204,5	289	35	167	300	245	27	60	670
PHS 125 150	150	641	254,5	351,5	35	167	300	245	27	91	670
PHS 125 200	200	753,5	304,5	414	35	167	300	245	27	121	670
PHS 125 250	250	866	354,5	476,5	35	167	300	245	27	154	670
PHS 125 300	300	978,5	404,5	539	35	167	300	245	27	185	670
PHS 125 350	350	1091	454,5	601,5	35	167	300	245	27	215	670
PHS 125 400	400	1203,5	504,5	664	35	167	300	245	27	248	670
PHS 125 450	450	1316	554,5	726,5	35	167	300	245	27	275	650
PHS 125 500	500	1428,5	604,5	789	35	167	300	245	27	301	650
PHS 125 550	550	1541	654,5	851,5	35	167	300	245	27	325	630
PHS 125 600	600	1653,5	704,5	914	35	167	300	245	27	351	630
PHS 125 650	650	1766	754,5	976,5	35	167	300	245	27	377	630
PHS 125 700	700	1878,5	804,5	1039	35	167	300	245	27	393	610
PHS 125 750	750	1991	854,5	1101,5	35	167	300	245	27	414	610
PHS 125 800	800	2103,5	904,5	1164	35	167	300	245	27	435	590

Barrel-Roller Couplings

BARREL-ROLLER COUPLINGS





APPLICATIONS

- HOISTING DEVICE OF CRANES AND CONVEYORS INSTALLATIONS
- STEEL INDUSTRY
- HOISTING, GANTRY, STACKER AND CONTAINERS CRANES

MAIN CHARACTERISTICS

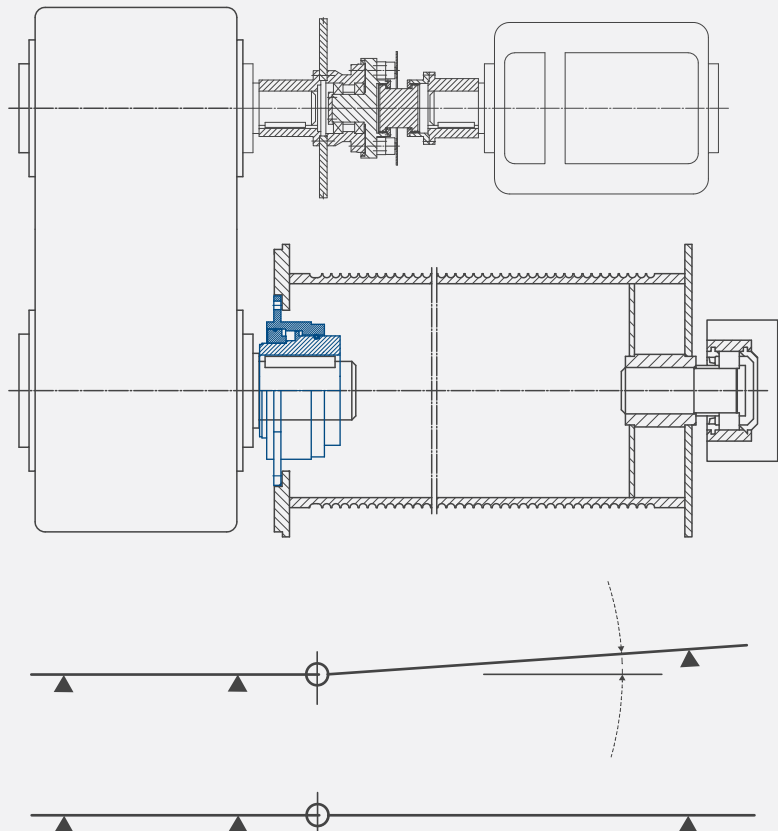
- CONNECT THE SLOW ROTATING SHAFT OF A GEARBOX TO THE ROPE DRUM OF HOISTING INSTALLATIONS
- CANCEL ALL THE CONSEQUENTIAL DISADVANTAGE OF A RIGID CONNECTION
- COMPENSATION OF ANGULAR AND AXIAL MISALIGNMENT

BCS COUPLINGS

- All-steel design
- Connection between hub and sleeve performed by barrel rollers
- Possibility to disassemble the hub from the sleeve
- Roller seats, inside the sleeve, are precisely machined and hardened

Benefits include

- Consent elevated radial loads proper to the rope drum of a hoisting crane
- Easy mounting :
 - hub fitted on the shaft of the gearbox
 - sleeve bolted directly on the rope drum
 - the 2 parts of the coupling are separately assembled in their axial working position
- Wear minimized



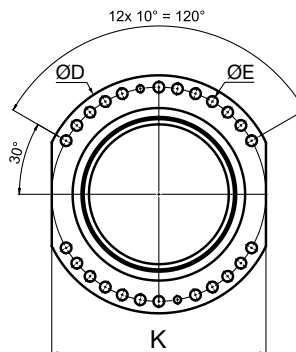
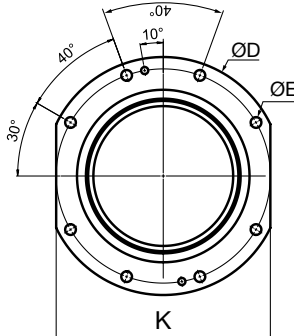
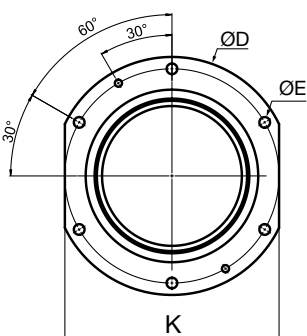
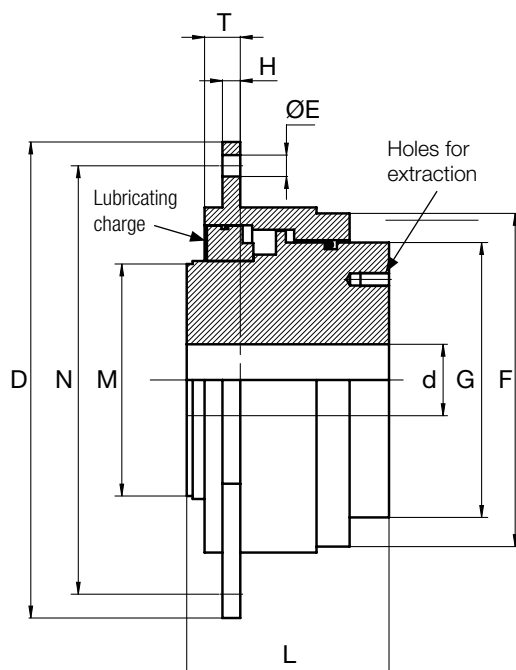
Barrel-Roller Couplings

DRUMS - BARREL-ROLLER COUPLINGS TYPE BCS

Revision number: T10144-01-B

Revision date: 23.11.17

Steel coupling designed to connect the slow rotating shaft of a gearbox to the rope drum of hoisting equipment.



Nota :

For bore finishing, reference centering diameter is concentric to barrel rollers pitch circle.

The dimensions **L** are the standard length of the couplings type **BCS**. For different lengths, consult us.

COUPLING type BCS...		140	160	180	200	220	240	260	280	310	340	400	420	450	530	560	600	670	730
Bore d (mm)	pilot	30	30	30	50	50	60	60	60	70	70	90	90	100	100	120	120	140	140
	max	65	80	85	95	105	115	130	140	160	175	210	220	235	290	310	330	375	410
Dimensions (mm)	D	230	250	280	320	340	360	380	400	420	450	510	550	580	650	680	710	780	850
	M	90	110	120	135	145	163	183	195	225	255	310	325	350	425	455	490	555	615
	F h6	140	160	180	200	220	240	260	280	310	340	400	420	450	530	560	600	670	730
	T	42	42	42	45	45	45	45	45	45	60	60	60	60	65	65	81	81	81
	L	90	95	100	110	125	130	145	170	175	185	220	240	260	315	350	380	410	450
	H	12	12	12	15	15	15	15	15	15	20	20	20	20	25	25	25	25	25
	N	200	220	250	280	300	320	340	360	380	400	460	500	530	600	630	660	730	800
	G	110	130	142	157	175	195	215	231	261	286	346	361	386	461	491	526	591	651
	Ø E H8	14	14	14	18	18	18	18	18	18	24	24	24	24	24	24	28	28	28
	N° holes	6	6	6	6	6	6	6	6	6	6	6	6	8	8	24	24	24	24
	K h9	200	220	250	280	300	320	340	360	380	400	460	500	530	580	600	640	700	760
Weight (kg)		13	16	24	29	35	42	54	67	90	108	150	190	230	395	460	520	740	890
Nominal torque max. (daNm)		50	400	780	1350	1600	1850	2200	3200	4000	5100	7700	11250	13000	19000	31000	42000	54000	75000
Radial force (daN)		1200	1400	1800	2500	3100	3700	4200	5200	6300	7950	11250	12300	14500	20200	25000	30000	34000	39000

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