

# **SIME Brakes** **Motor** **Braking** **Systems**



## HEAVY LIFT OFFSHORE CRANES

Stromag designs and provides to leading global heavy lift crane OEM, economical braking systems for large mast cranes typically installed on semi-submersible and surface crane vessels. The offshore construction vessels provide heavy lifting capability to support surface and sub-sea asset installation, decommissioning and removal.



The brakes, installed on the crane's drum, provide emergency stopping and holding functionality on the main hoist, auxiliary hoist and boom. In these applications, the braking systems are designed for use with 300 kW motors and above.

The Stromag braking systems comprise brakes type SHD1 mounted on a special bracket with balanced disc and hub. The hydraulic Power Pack can be included.

They offer many advantages:

- Their modularity: If crane load or speed needs to be increased, up to five calipers can be mounted on a 445 mm diameter disc.
- Their high performance: They are designed for emergency stopping at more than 3000 rpm.
- Their reliability: Each braking set is factory-tested.
- Their quick and easy installation for the engine manufacturer and the OEM: The engine manufacturer mounts the braking system directly at the rear of the motors and delivers complete time-saving, pre-assembled brake/motor packages to the crane OEM.

With years of extensive offshore application experience, Stromag can provide braking systems that meet various certifications including LR, ABS, BV and DNV-GL. Run-in braking systems can be delivered utilizing an in-house test bench. Several dynamic torque measurements are also available.

# SHD1 HYDRAULIC CALIPER

Fail-safe single-spring calipers type SHD1 are designed to operate in extreme duty applications in the most severe environmental conditions.

These hydraulic calipers, associated to the Hydraulic Power Packs type CSH, offer solutions for soft braking, MOPS or lowering operations. Their modular design allows a large range of torque and the possibility of association with different disc thicknesses and diameters.



## SHD1 CALIPER

- Spring application - Hydraulic release
- Mechanical holding in open position for pads replacement
- Thick lining pads (thickness to wear = 6 mm)
- Dynamic braking force from 2000 N to 11000 N
- Options: Opening and wear switches



## CSH HYDRAULIC POWER PACK

- Association with 1 to 5 calipers type SHD1
- Mechanical or analog pressure switch
- Options:
  - Soft Braking
  - MOPS
  - Lowering
  - Electrical unit

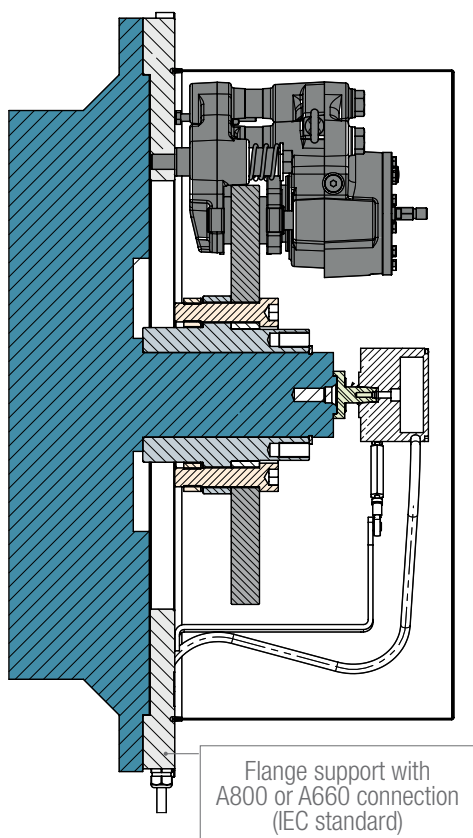




# SHD1 BRAKING SYSTEM

ECONOMICAL  
EASY INSTALLATION & MAINTENANCE  
COMPACT DESIGN  
HIGH PERFORMANCE  
SCALABLE SOLUTION

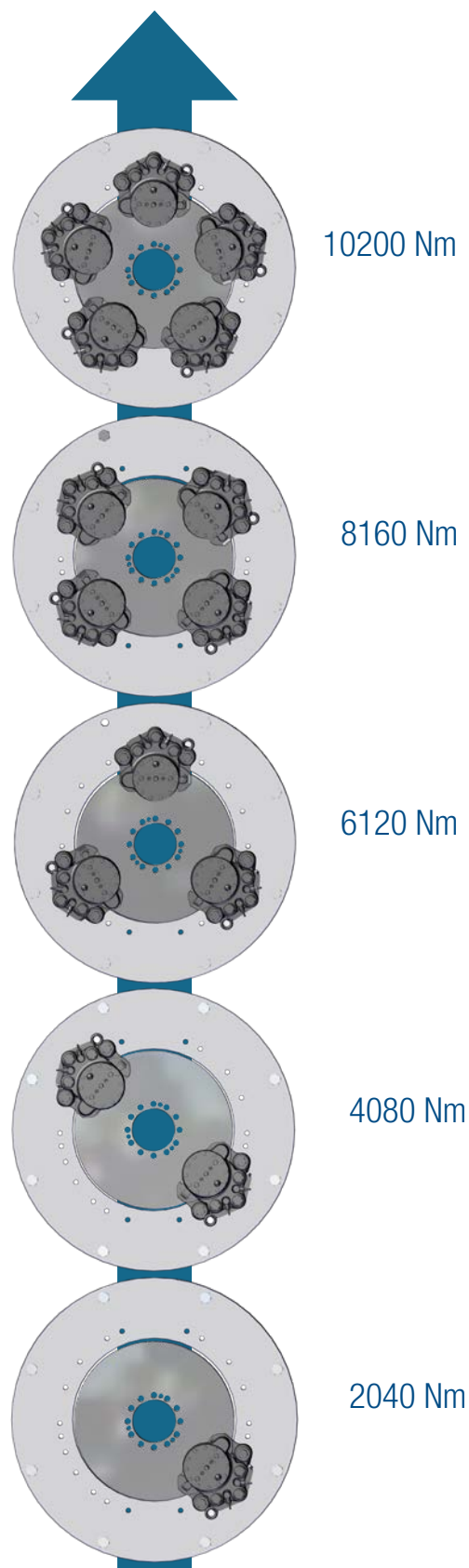
- ▶ This braking system is composed of 1 to 5 SHD1calipers, a disc and a flange support, it allows:
  - **Closing time** below 0.3s
  - **Opening time** below 0.5s
- ▶ It offers a scalable solution that can suit all crane configurations and can be adapted in case of lifting capacity evolution.
- ▶ It is particularly interesting for electric drive applications.



- ▶ The SHD1 braking system offers a very easy and quick mounting solution, the motor manufacturer can mount it directly on the motor. The crane OEM receives motor/brake assemblies that can be flanged on the gear box without problems of alignment.

## DYNAMIC BRAKING TORQUE

with ES3-7 lining pads and steel disc Ø445 mm:



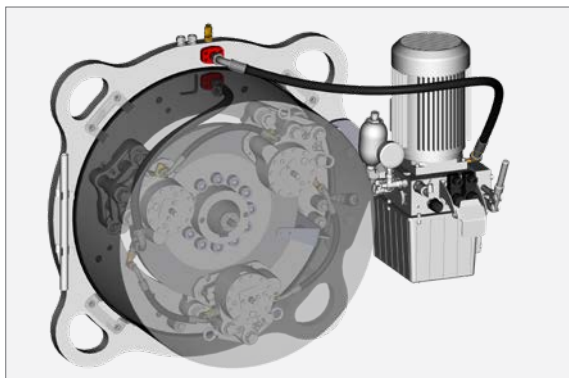
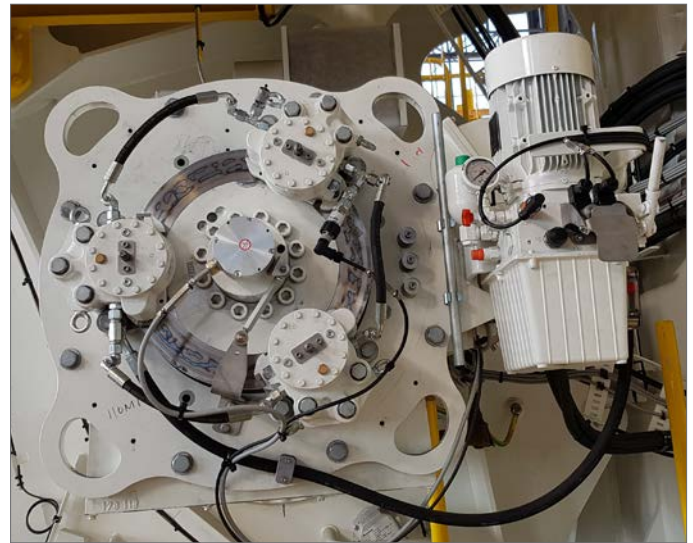
## HYDRAULIC POWER PACK

The Stromag hydraulic power packs offer multiple possibilities of braking control:

- MOPS solutions for the cranes safety in case of overload situations (according to NF EN 13852 standard)
- Soft-braking: application of a progressive and smooth braking force in case of load dynamic amplification.

The hydraulic power pack can be:

- standard, to control up to 5 calipers
- tailor-made with human machine interface, to control up to 32 calipers



## PROTECTION COVER

This braking system can be fitted with a protection cover depending on the application requirements: fastened on the flange support, the cover includes tightness seals, with hydraulic and electrical connections being made through the flange support.

## QUALIFICATION TESTS

Each SHD1 braking system is tested and run-in by our testing department under extreme operating conditions on our specific test bench. A qualification report with clamping force, test procedure, dynamic and static torques values is provided on request.

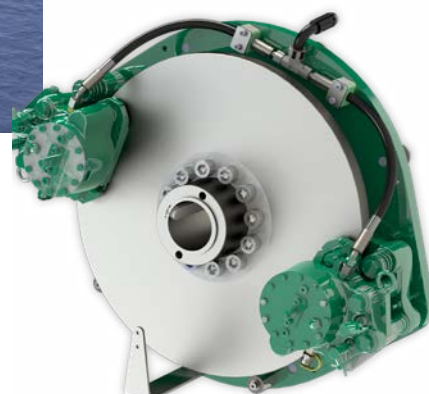
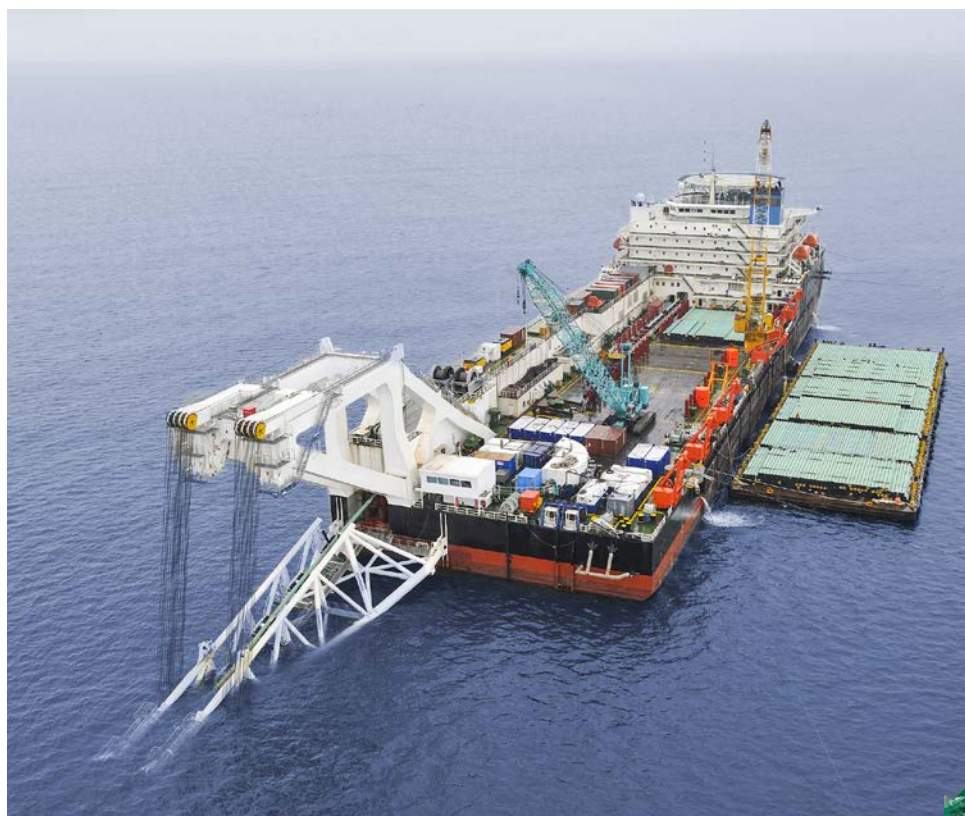
The certification tests of the motors, fitted with their braking system by the motor manufacturer, are performed under conditions very close to the final inertia in high speed.



## APPLICATION EXAMPLES

**Stromag works closely with the heavy lift cranes OEM's engineers to design economical braking solutions adapted to each application. The braking systems are mounted directly to the rear of the motors. Since no special support brackets are needed for the brakes, misalignment is not an issue.**

### PIPELAY SYSTEMS



#### Different Deck MAchinery Equipment :

- ▶ Pipe tensioners used on pipelay vessels to keep tension in the pipeline while it is being installed on the seabed
- ▶ Traction-storage winch used to lower pipeline to the seabed in a controlled way, or to retrieve part of the pipe.

#### Braking system :

- ▶ Set of 2 calipers SHD1 mounted on a circular flange (Ø660) and a stainless steel disc (Ø570) for direct installation on the shaft of each 500 kW motor delivered tested and run-in
- ▶ Calipers SHD1 with ES3-7 lining pads and inductive switches for opening and wear monitoring, with Lloyd's certification
- ▶ Quantity: the installation includes 2 drums, each fitted with 8 motors 500kW



## OFFSHORE WIND



Pedestal Mounted Cranes installed on construction vessels for offshore wind turbine installation with :

- ▶ Main Hoist
- ▶ Boom
- ▶ Slewing
- ▶ Load tugger

Braking system :

- ▶ Set of 1 or 3 calipers SHD1 mounted on a circular flange (Ø860) and a disc (Ø445) for direct installation on the shaft of each 300 kW motor, delivered tested and run-in
- ▶ Calipers SHD1 with UF2-7 lining pads with Lloyd's certification
- ▶ Quantity: the installation includes 1 drum fitted with 6 motors of 300 KW

## Stromag Facilities

### Europe

#### Germany

Hansastraße 120  
59425 Unna - Germany  
+49 (0) 23 03 102 0

*Clutches & Brakes, Couplings,  
Geared Cam Limit Switches, Discs,  
Wind Brakes*

Dessauer Str. 10  
06844 Dessau-Roßlau - Germany  
+49 (0) 340 2190 0

*Electromagnetic Clutches & Brakes*

#### France

Avenue de l'Europe  
18150 La Guerche sur L'Aubois - France  
+33 (0)2 48 80 72 72

*Disc Brakes & Drum Brakes*

#### Great Britain

Amphill Road  
Bedford, MK42 9RD - UK  
+44 (0)1234 324347

*Electromagnetic Clutches & Brakes,  
Industrial Caliper Brakes*

### North America

#### USA

31 Industrial Park Road  
New Hartford, CT 06057 - USA  
860-238-4783

*Electromagnetic Clutches & Brakes*

300 Indiana Highway 212  
Michigan City, IN 46360 – USA  
219-874-5248

*Couplings*

2800 Fisher Rd.  
Wichita Falls, TX 76302 - USA  
940-723-3400

*Geared Cam Limit Switches,  
Industrial Caliper & Drum Brakes*

#### South America

##### Brasil

Avenida João Paulo Abilas, 2970  
Jardim da Glória, Cotia - SP,  
06711-250 - Brasil  
+55 (11) 4615-6300

*Flexible Couplings, Bearing  
Isolators, and Coupling Guards*

### Asia Pacific

#### China

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Pudong 201206, Shanghai - China  
Tel +86 21-60580600

*Clutches & Brakes, Electromagnetic  
Clutches & Brakes, Couplings, Industrial  
Caliper & Drum Brakes, Discs, Geared  
Cam Limit Switches, Wind Brakes*

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Tal Khed, Pune- 410 501  
+91 2135 622100

*Clutches & Brakes, Electromagnetic  
Clutches & Brakes, Couplings, Industrial  
Caliper & Drum Brakes, Discs, Geared  
Cam Limit Switches, Wind Brakes*

## The Brands of Altra Motion

### Couplings

**Ameridrives**  
[www.ameridrives.com](http://www.ameridrives.com)

**Bibby Turboflex**  
[www.bibbyturboflex.com](http://www.bibbyturboflex.com)

**Guardian Couplings**  
[www.guardiancouplings.com](http://www.guardiancouplings.com)

**Huco**  
[www.huco.com](http://www.huco.com)

**Lamiflex Couplings**  
[www.lamiflexcouplings.com](http://www.lamiflexcouplings.com)

**Stromag**  
[www.stromag.com](http://www.stromag.com)

**TB Wood's**  
[www.tbwoods.com](http://www.tbwoods.com)

### Linear Systems

**Thomson**  
[www.thomsonlinear.com](http://www.thomsonlinear.com)

### Geared Cam Limit Switches

**Stromag**  
[www.stromag.com](http://www.stromag.com)

### Engineered Bearing Assemblies

**Kilian**  
[www.kilianbearings.com](http://www.kilianbearings.com)

### Electric Clutches & Brakes

**Matrix**  
[www.matrix-international.com](http://www.matrix-international.com)

**Stromag**  
[www.stromag.com](http://www.stromag.com)

**Warner Electric**  
[www.warnerelectric.com](http://www.warnerelectric.com)

**Deltran**  
[www.thomsonlinear.com](http://www.thomsonlinear.com)

### Belted Drives

**TB Wood's**  
[www.tbwoods.com](http://www.tbwoods.com)

### Heavy Duty Clutches & Brakes

**Twiflex**  
[www.twiflex.com](http://www.twiflex.com)

**Stromag**  
[www.stromag.com](http://www.stromag.com)

**Svendborg Brakes**  
[www.svendborg-brakes.com](http://www.svendborg-brakes.com)

**Wichita Clutch**  
[www.wichitaclutch.com](http://www.wichitaclutch.com)

### Gearing & Specialty Components

**Bauer Gear Motor**  
[www.bauergears.com](http://www.bauergears.com)

**Boston Gear**  
[www.bostongear.com](http://www.bostongear.com)

**Delevan**  
[www.delevan.com](http://www.delevan.com)

**Delroyd Worm Gear**  
[www.delroyd.com](http://www.delroyd.com)

**Nuttall Gear**  
[www.nuttallgear.com](http://www.nuttallgear.com)

### Engine Braking Systems

**Jacobs Vehicle Systems**  
[www.jacobsvehiclesystems.com](http://www.jacobsvehiclesystems.com)

### Precision Motors & Automation

**Kollmorgen**  
[www.kollmorgen.com](http://www.kollmorgen.com)

### Miniature Motors

**Portescap**  
[www.portescap.com](http://www.portescap.com)

### Overrunning Clutches

**Formsprag Clutch**  
[www.formsprag.com](http://www.formsprag.com)

**Marland Clutch**  
[www.marland.com](http://www.marland.com)

**Stieber**  
[www.stieberclutch.com](http://www.stieberclutch.com)

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