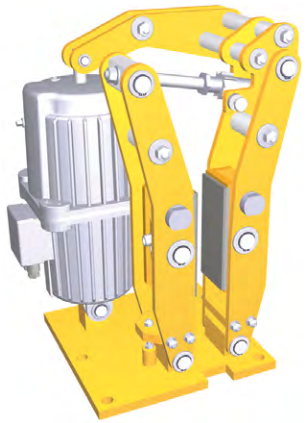
Disc brakes with the electrohydraulic thrustors of ZE type are adjusted to the cooperation with brake discs on their lateral surface. Braking torque is created by the spring inbuilt in the body of the thrustor or by the lever system (series 100), which through the compound lever causes pressing down of the brake shoes with friction linings to the friction surface of the brake disc.

Turning on the supply voltage of the thrustor starts the motor and the pump forcing the oil under the piston of the thrustor which causes that the piston moves up and the brake is released. Turning off the supply causes that the piston moves down (under the influence of the spring inbuilt in the thrustor or outside the thrustor- series 100) and the brake is applied. The speed of raising or falling of the piston can be adjusted through the use of the valve delaying the falling or lifting of the piston.

ZE thrustors can be equipped with inductive sensor of piston rod position mounted outside or with external mechanical switch signaling upper or lower position of the piston rod. Above mentioned sensors and switches require appropriate source of supply.

VARIANTS:
- **ATZ** – standard
- **ATZ (series 100)** – with outer spring
- **ATG** – mining
- **ATG (series 100)** – mining with outer sprig

WORKING CONDITIONS:
The brakes are intended for operation in moderate climate on the land. In the case of operation "in the open air" it is recommended to shield the brake to protect it against the precipitation. The brakes are intended mainly for operation in horizontal position (the basis mounted on the horizontal surface). Operation in other position is possible only after consultation with the manufacturer.



APPLICATIONS: belt conveyors, fans, drives of cranes, devices of continuous transport, machines for iron and steel, building, paper-making and other industries.

MATERIAL: construction of the brake – steel; brake shoes – spheroidal iron cast; asbestos-free friction lining; ZE thrustor body – aluminium, ExZE – iron cast; bolts made of stainless steel, self-lubricating sleeves.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
Mining brakes are intended for the operation in the areas with the danger of explosion in the conditions specified for group: I M2, II 2D, II 2G.

ELECTROHYDRAULIC THRUSTORS
Version N/1 – for outdoor use in a temperate climate. The thrustor has an oil-tight housing with a junction box with IP 65 rating according to PN-EN 60529:2003. The thrustor in the standard version is designed for operation in the vertical position and a position deviated from vertical by a 30° angle.

Conditions of operation: ambient temperature: –25°C to +40°C (electroinsulating transformer oil); –40°C to +50°C (silicone oil).

VERSIONS
- **ZE...** thrustor without brake spring [Type of operation S1, S3 do 100% 2000 c/h]
- **ZE...S...** thrustor with the brake spring, [operating mode S1, S3 to 100% 2000 c/h
- **ZEW...(S)...** thrustor with the brake spring and connector (allows to signal the upper piston rod position) [operating mode S1, S3 do 100% 2000 c/h]
- **ZEM...(S)...** thrustor with the brake spring and electromagnet (maintains the piston in its upper position without necessity of supplying the thrustor motor) [type of work S1, S3 40% 600 c/h] 38 V DC electromagnet supply voltage, current intensity of 0,4–0,45 A for size thrustor smaller than ZEM 2500 and 38V DC and 0,8 A for size ZEM 2500... and ZEM 3200
- **ZE…(S)…Cm** thrustor equipped with an external mechanical switch (PDM1F12PZ11) with a NO/NC contact system. This switch, depending on the position of the measuring slide, can indicate whether the piston rod is in the upper or lower position. After consultation, indi cation of a different piston rod position is also possible.

Technical details of the mechanical switch:
AC-15 and DC-13 utilisation categories
Rated operational voltage: AC:24/120/240V 50/60Hz
DC: 24/125/250 V
Rated operational currents: AC:10/6,3/1,8 A, DC: 2,8/0,55/0,27 A
Contact system: NO/NC
IP 66 rating

- **ZE…(S)…Ci-…** A thrustor equipped with an inductive sensor located on the outside. This sensor can indicate the position of the piston rod over its entire extension range. The position of the piston rod can be deter mined at any point using a sliding measuring head.

Technical details of the inductive sensor:
Supply voltage: from 12 to 24 VDC
Current: 10 mA max
IP 67 rating

Marking	Sensor type	Operation method	Output type
B1	E2A-M18-KS08-M1-B1	NO	PNP
C1	E2A-M18-KS08-M1-C1	NO	NPN
B2	E2A-M18-KS08-M1-B2	NC	PNP
C2	E2A-M18-KS08-M1-C2	NC	NPN

Versions with delay valves:
ZE.. P..... – with a lifting delay valve
ZE.. O..... – with a falling delay valve
ZE.. T..... – with a lifting and falling delay valve

(S1 – Operation continuous, S3 – Operation discontinuous)

For the supply of brakes with ZEM thrustor, a suitable UZ power supply system supplied with alternating current, which allows an electromagnet to be connected to it, may be provided

EXPLOSION-PROOF ELECTROHYDRAULIC THRUSTOR
The thrustor is made as an explosion-proof device in a flameproof casing with in-trinsically safe signalling circuits and a connection box with IP 65 rating according to PN-EN 60529:2003.

The thrustor in the standard version is designed for operation in the vertical position and a position deviated from vertical by a 30° angle.
The thrustor is equipped with a limit switch which can be used to indicate the movement of the piston rod to its upper extreme position.

Ambient temperature: from –20°C to +40°C.

VERSIONS
- **ExZE...S...** thrustor with the brake spring [Type of operation S1,S3 to 100% 2000c/h]
- **ExZEM...S...** thrustor with the brake spring and electromagnet (maintains the piston in upper position without necessity of supplying the thrustor motor – supply voltage of the electromagnet 42 VAC) * Type of operation S1, S3 to 40% 600 c/h]

The thrustors are intended for the operation in the areas with the danger of explosion in the conditions specified for group I M2, II 2D, II 2G.
The thrustors can be manufactured with the connector with **"r"** (NC) opening contact or **"z"** (NO) closing contact and thermal protection in the form of bimetallic switch **"1"** or posistor sensor **"2"**.

METHOD OF MARKING:

[**name**] – [**D_H**] / [**B**] – [**version**] – [**mounting**] – [**thrustor marking**] – [**size**][**type**] – [**version***]

* only when it concerns a given type, where:

name	e.g. disc brake
D_H	diameter of the disc brake [mm]
B	brake disc thickness [mm]
version	left "L", right "R"
mounting of the thrustor junction box	position "A", position "B"
thrustor marking	*see below*
size	e.g. 001
type	e.g. ATZ
version	WS… – special (individual arrangements)

METHOD OF THRUSTOR MARKING:

TYPE ZE

[**version**] – [**delay valve***] – [**size**] / [**stroke**][**spring***] · [**oil***] · [**voltage**][**sensor***]

* only when it applies, where:

version	ZE – basic ZEW – with connector ZEM – with electromagnet
delay valve	without the valve – omit the marking P – lifting O – falling T – lifting and falling
thrustor size	e.g. 1250
thrustor stroke	e.g. 50
spring	e.g. S 450
oil	normally transformer oil (omit the marking)
voltage	e.g. 500 V AC/50 Hz
sensor marking	(if required) – e.g: inductive B1 – "Ci-B1", mechanical "Cm"

TYPE ExZE

[**version**] – [**size**] / [**stroke**][**contact**][**protection**][**spring***] · [**voltage**]

* only when it applies, where:

version	ExZE – basic ExZEM – with electromagnet
thrustor size	e.g. 1250
thrustor stroke	e.g. 60
contact	"r" – opening, "z" – closing
protection	bimetallic switch "1", posistor sensor "2"
spring	e.g. S 450
voltage	e.g. 500 V AC/50 Hz