

**Drum brakes** with electrohydraulic thruster of ZE or EB type and with the electromagnetic thruster of DZEMz type are adjusted to cooperation with brake drums on their external surface. The braking torque is created by the spring inbuilt in the thruster body (AHH, AHG) or in the compound lever (AHH series 300, AHM), which through the compound lever causes pressing down the brake shoe with friction lining to the friction surface of the brake drum (with the exception of holding brake AHT).

#### BRAKES WITH ELECTROHYDRAULIC THRUSTOR

Turning the voltage supplying the thruster on starts the motor and the pump forcing the oil under the piston of the release, which causes that the piston moves up and the brake is thrustord (with the exception of the holding brake). Turning off the power causes that the piston moves down (under the influence of the spring in the thruster) and the brake is applied.

The value of the braking torque can be adjusted through the change of brake position on appropriate lever.

The speed of falling or raising the piston can be adjusted through the use of the valve delaying falling or raising of the piston.

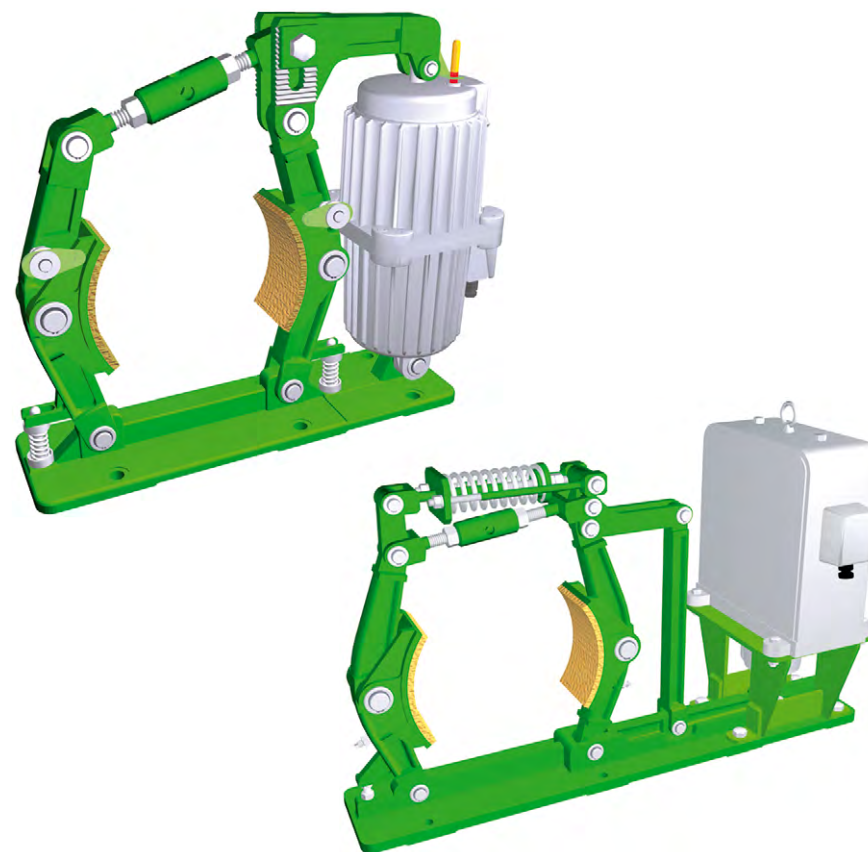
#### VARIANTS:

- **AHH** – standard
- **AHH (series 300)** – with outer spring
- **AHH (series 400)** – with increased braking torque
- **AHG** – mining
- **AHT** – holding; the brake of reverse operation, the thruster spring releases the brake and turning on and maintaining the supply of the thruster causes applying the brake
- **AHC** – loading: the usage of the thruster without the braking spring, braking torque is created by additional weights placed on the lever
- **AHR** – with a manual mechanism

#### BRAKES WITH ELECTROMAGNETIC THRUSTOR – AHM

Turning the voltage supplying the thruster on starts the electromagnet of the thruster, which pulls the piston up causing through the compound lever the brake release.

The value of the braking torque can be adjusted through the change of braking spring deflection. Brakes with electromagnetic thruster can be produced in the type intended for operation in the areas with the danger of explosion.



#### WORKING CONDITIONS

The brake is designed for work in moderate climate, on the ground. When working outdoor, it is recommended to cover the brake against direct precipitation. Basically, the brake is designed for work in the horizontal position (the base is fitted to the horizontal surface). Work in the position deflected from vertical 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, papermaking and other industries.

**MATERIAL:** brake construction – spheroidal iron cast, steel; asbestos-free friction lining; ZE thruster body – aluminium, ExZE – iron cast, DZEMz – steel; bolts from stainless steel).

### 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 (AHH, AHT AND AHC BRAKES)

Version N/1 – for outdoor use in a temperate climate.

The thruster has an oil-tight housing with a junction box with IP 65 rating according to PN-EN 60529:2003. The thruster 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...** thruster without brake spring [Type of operation S1, S3 do 100% 2000 c/h]
- **ZE...S...** thruster with the brake spring, [operating mode S1, S3 to 100% 2000 c/h]
- **ZEW...(S)...** thruster 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)...** thruster with the brake spring and electromagnet (maintains the piston in its upper position without necessity of supplying the thruster 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 thruster smaller than ZEM 2500 and 38V DC and 0,8 A for size ZEM 2500 and ZEM 3200
- **ZE...(S)...Cm** thruster 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, indication 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 thruster 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 determined 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

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 thruster, 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 (AHG Brakes)**

The thrustor is made as an explosion-proof device in a flameproof casing with intrinsically 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".

**ELECTROMAGNETIC THRUSTOR (AHG Brakes)**

Electromagnetic thrustors of DZEMz type are produced for continuous operation S1 and discontinuous operation S3-40.

**Conditions of operation:** grade of protection IP 40; ambient temperature: -15°C to +35°C.

**METHOD OF MARKING:**

[ name ] - [ D<sub>H</sub> ] - [ thrustor marking ] - [ size ] [ type ] - [ version\* ]

\* only when it concerns a given type, where:

**name** e.g. drum brake  
**D<sub>H</sub>** diameter of the brake drum [mm]  
**thrustor marking** see on the next page

**size** e.g. 264  
**type** e.g. AHH  
**version** WS... – special (individual arrangements)  
 K – lining wear compensation version

### METHOD OF THRUSTOR MARKING:

#### ZE TYPE

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

\* only when it applies

<b>version</b>	ZE – basic ZEW – with connector ZEM – with electromagnet	<b>thrustor size</b>	e.g. 1250
<b>delay valve</b>	without the valve – omit the marking P – lifting O – falling T – lifting and falling	<b>thrustor stroke</b>	e.g. 60
		<b>spring</b>	e.g. S 450
		<b>oil</b>	normally transformer oil (omit the marking); SIL – silicone oil
		<b>voltage</b>	e.g. 500 V AC/50 Hz
		<b>sensor marking</b> (if required)	– e.g. inductive B1 – “Ci-B1”, mechanical “Cm”

#### ExZE TYPE

[ version ] - [ size ] / [ stroke ] [ connection ] [ protection ] [ spring\* ] · [ voltage ]

\* only when it applies

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

#### DZEMz TYPE

[ version ] [ size ] - [ operation ] - [ voltage ]

\* only when it applies

<b>version</b>	DZEMz
<b>thrustor size</b>	e.g. 20
<b>type of operation</b>	S1 – continuous, S3–40 – discontinuous
<b>voltage</b>	e.g. 500 V AC/50 Hz