

Thrusters with Impeller

for electrohydraulic brakes



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E09.062e



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for electrohydraulic brakes



Features	Code
Thruster	T
Design	H
Spring activated, built-in spring or non-activated, external spring needed	F U
Electrohydraulically released	E
No adjustment to accommodate friction block wear	K
Thrusters 451, 452, 453, 454, 455, 456, 457, 458, 459 or 464 are available	451 to 464
Options (see page 4)	...

Example for ordering

Thruster TH, spring activated, electrohydraulically released, no adjustment to accommodate friction block wear, thruster 453, with manually hand release, for horizontal use:

TH - FEK - 453 - LS - hor

Design and function

The electrohydraulic thruster combines all the basic elements of a hydraulic system in a coaxial unit: an electric motor, a hydraulic pump and a cylinder with a piston. It is designed to exert a constant linear force for a given stroke.

The centrifugal pump impeller coupled to the motor shaft builds up hydraulic pressure under the piston, which causes an upward movement against the external (brake-side) or against the built-in actuating spring. When the motor is switched off, the piston is reset by the external (brake-side) or built-in actuating spring.

The hydraulic force is almost independent of the piston position of the cylinder. With a lower load, the stroke movement is faster and the downward movement slower.

Advantages

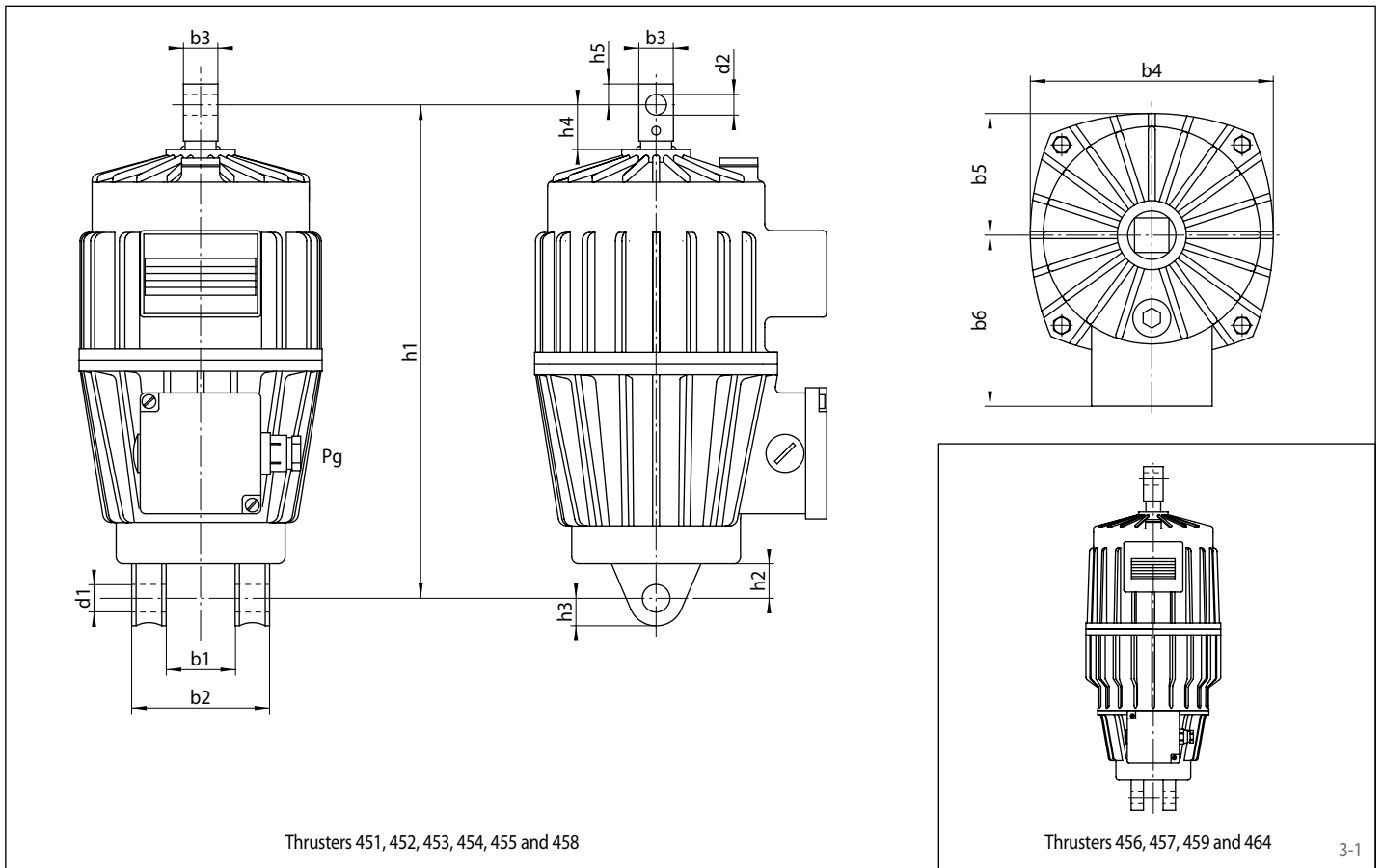
- The hydraulic force of the thruster is independent of the position of the piston rod.
- The thruster cannot be overloaded, even if an external force acts on the piston rod that is greater than the thrust of the thruster.

General technical data

Motor	2-pole Three-phase squirrel cage
Insulation level	F
Voltage	230 / 400 VAC
Supply frequency	50 Hz
Duty factor	100%
Max. number of actuation	2000/h
Insulation	IP56
Oil filling	IP Hydrus Oil 10
Mounting position	vertical with piston rod upwards
Permissible ambient temperature	-20 °C - +45 °C

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Dimensions

Thruster type	b1	b2	b3	b4	b5	b6	d1	d2	h1	h2	h3	h4	h5	k*	m*	n*	Pg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
451	40	80	20	142	71	103	16	12	286	20	16	26	13	64	62	32	11
452	40	90	25	168	84	128	16	16	380	25	20	37	16	70	84	65	16
453	60	110	30	192	96	136	20	20	406	30	25	39	18	70	84	65	16
454	60	110	30	192	96	136	20	20	406	30	25	39	18	70	84	65	16
455	60	120	35	234	117	155	20	20	450	30	25	37	20	94	110	60	16
456	40	90	40	274	137	166	25	25	645	35	25	67	25	94	110	60	16
457	40	90	40	274	137	166	25	25	645	35	25	67	25	94	110	60	16
458	60	120	35	234	117	155	20	20	515	30	25	42	20	-	-	-	16
459	40	90	40	274	137	166	25	25	705	35	25	67	25	-	-	-	16
464	40	90	40	274	137	166	25	25	705	35	25	67	25	-	-	-	16

* applies to the option of the external attenuation spring (R) see drawing on page 4

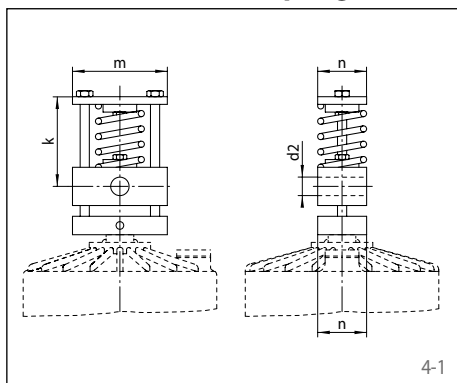
Technical Data

Thruster type	Lifting force	Stroke	Nominal power	Max. current consumption at 400 V, 50 Hz	Oil Volume	Weight with Oil
	N	mm	W	A	l	kg
451	220	50	130	0,3	1,4	8
452	300	50	180	0,4	2,5	13
453	600	50	240	0,5	3,5	15
454	750	50	280	0,6	3,5	15
455	1 200	60	370	0,8	4,5	21
456	2 000	60	590	1,2	11,0	47
457	3 000	60	680	1,4	11,0	47
458	1 200	120	370	0,8	6,0	27
459	2 000	120	590	1,2	13,0	52
464	3 000	120	680	1,4	13,0	52

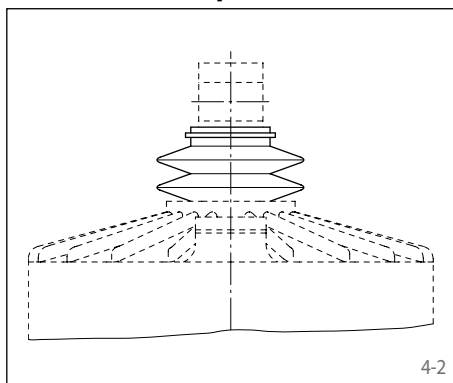
Code and description of possible options

Options	Code
<ul style="list-style-type: none"> • For temperatures down to -30 °C Filling with a special oil 	(A)
<ul style="list-style-type: none"> • For temperatures down to -40 °C With an electric heating rod for 230 VAC 	(AA)
<ul style="list-style-type: none"> • For temperatures up to +70 °C With special seals 	(W)
<ul style="list-style-type: none"> • For temperatures briefly up to +100 °C With special seals, pressure relief valve, special paint and special oil 	(HR)
<ul style="list-style-type: none"> • Lowering valve Slows down the lowering of the piston rod 	(SV)
<ul style="list-style-type: none"> • Non-standard voltage & frequency For use with non-standard voltages or frequencies 	(Vf)
<ul style="list-style-type: none"> • External attenuation spring Additional spring on the piston rod for better adjustability 	(R)
<ul style="list-style-type: none"> • Rubber hood To protect the piston rod 	(Cap)
<ul style="list-style-type: none"> • Design in insulation IP65 Additional seal on the terminal box 	(IP65)
<ul style="list-style-type: none"> • With hand release lever To manually drive out the piston rod in a de-energised state (brake release) 	(LS)
<ul style="list-style-type: none"> • Horizontal application For horizontal operation, an additional component is required internally 	(hor)
<ul style="list-style-type: none"> • Terminal box turned 90° 	(T)
<ul style="list-style-type: none"> • Other colour than RAL 9005 	(Col)
<ul style="list-style-type: none"> • Version with increased corrosion protection 	(M)

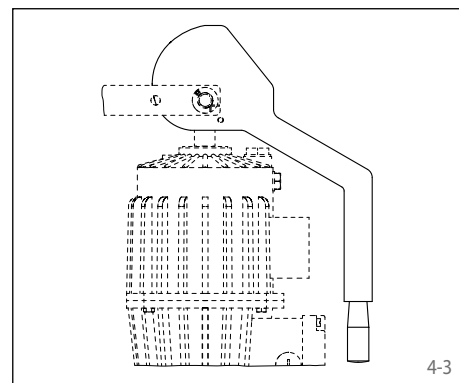
External attenuation spring (R)



Rubber hood (Cap)



With hand release lever (LS)



Please note:

The options can not be combined arbitrarily. If you need more options, please contact RINGSPANN.

Motor connection

- The three ends of the supply cable can be connected to the terminals in any order, since the fan operates independently of the direction of rotation of the motor.
- The thruster should be switched via a separate contractor. The direct parallel connection with e.g. the crane motor can delay the lowering time and thus the braking effect.
- The thrusters are insensitive to voltage fluctuations of up to $\pm 10\%$.
- Mounting points for an earthing cable are provided inside and outside the terminal box.
- The terminal box has a PG gland on each side for cable feedthrough.

Hydraulic oil

The thruster is delivered complete with oil filling IP Hydrus Oil 10.

Oils from other manufacturers with a viscosity of approx. $10 \text{ mm}^2/\text{s}$ at $+40^\circ\text{C}$ can also be used.

Examples:

- ESSO Spinesso 10
- Shell Tellus Oil 10
- CHEVRON Spindel Oil 10
- Aral Vitam GF 10
- etc.

Operating and ambient temperature

All thrusters are designed for continuous operation and for interval operation with up to 2 000 operations/hour at ambient temperatures ranging from -20°C to $+45^\circ\text{C}$. At temperatures

of more than $+45^\circ\text{C}$ the oil becomes thinner; the hydraulic losses increase and the hydraulic forces decrease. At temperatures below -20°C the oil becomes denser and the piston move-

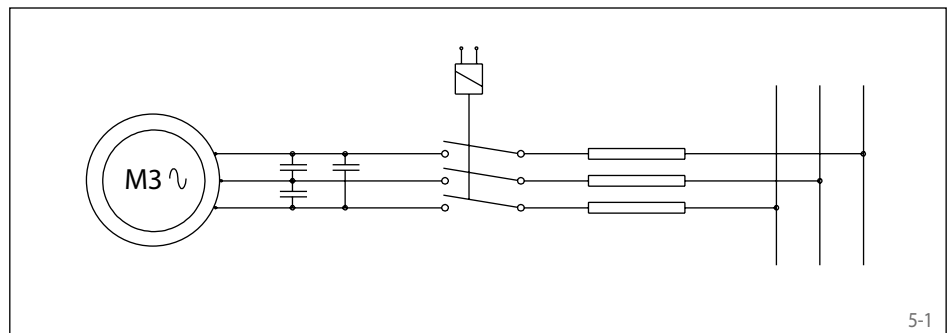
ments become slower. For these reasons, the thrusters must be filled with a suitable type of oil for extreme ambient temperatures.

Capacitor for fast downward movement

The lowering time of the piston rod can be reduced by using three capacitors connected in parallel. Typical applications are brakes for winches with a lifting speed of more than 8 m/min.

Recommended capacity values:

451 / 452	3x10 μF
453 / 454 / 455 / 458	3x20 μF
456 / 457 / 459 / 464	3x50 μF



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