

# Thrusters with Impeller

for electrohydraulic brakes



Issue 08/2025 · Technical details subject to change without notice.

E09.062e

Thrusters with Impeller  
for electrohydraulic brakes



| Features                                                                        | Code       |
|---------------------------------------------------------------------------------|------------|
| Thruster                                                                        | T          |
| Design                                                                          | H          |
| Spring activated, built-in spring or non- activated, external spring needed     | F<br>U     |
| Electrohydraulically released                                                   | E          |
| No adjustment to accommodate friction block wear                                | K          |
| Thrusters 451, 452, 453, 454, 455, 456, 457, 458, 459, 464 or 465 are available | 451 to 465 |
| 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

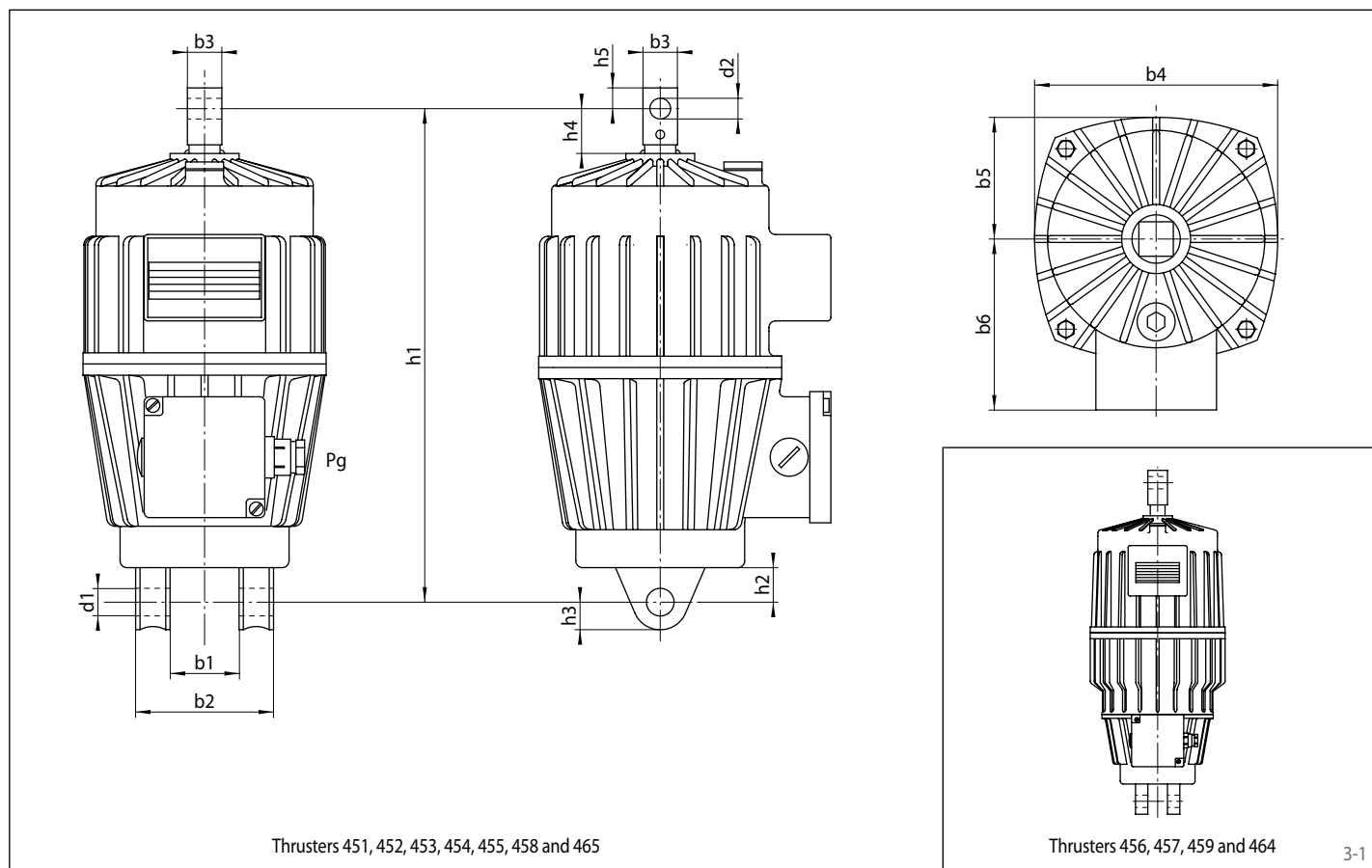
- The hydraulic force of the thruster is independent of the position of the piston rod.
- The thruster cannot be overloaded, even if an external force acts on the piston rod that is greater than the thrust of the thruster.

General technical data

|                                 |                                     |
|---------------------------------|-------------------------------------|
| Motor                           | 2-pole<br>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                     |

# Thrusters with Impeller

for electrohydraulic brakes



## Dimensions

| Thruster type | b1 | b2  | b3 | b4  | b5  | b6  | d1 | d2 | h1  | h2 | h3 | h4 | h5 | k* | m*  | n* | Pg |
|---------------|----|-----|----|-----|-----|-----|----|----|-----|----|----|----|----|----|-----|----|----|
| 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 |
| 465           | 60 | 120 | 35 | 234 | 117 | 155 | 20 | 20 | 450 | 30 | 25 | 37 | 20 | 94 | 110 | 60 | 16 |

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

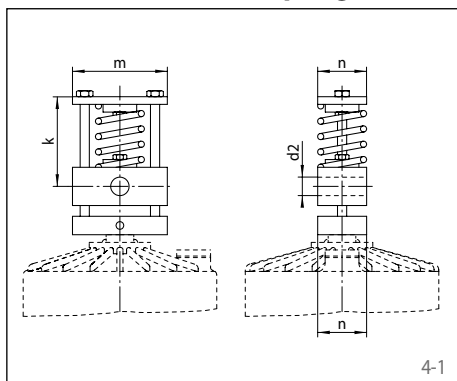
## Technical Data

| 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              |
| 465           | 1 500         | 60     | 400           | 1,0                                      | 4,5        | 21              |

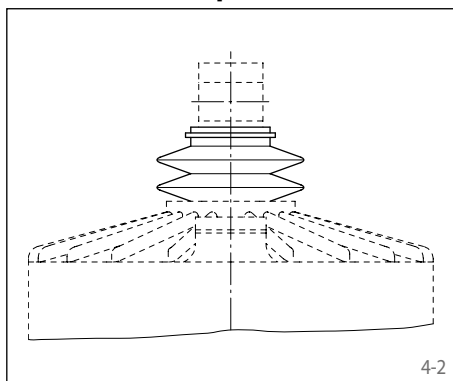
## Code and description of possible options

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

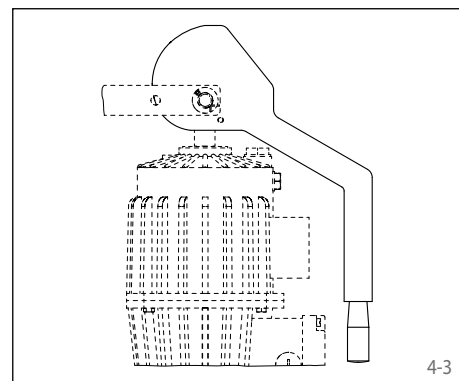
**External attenuation spring (R)**



**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  $-20^\circ\text{C}$  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  $-20^\circ\text{C}$  the oil becomes denser and the piston move-

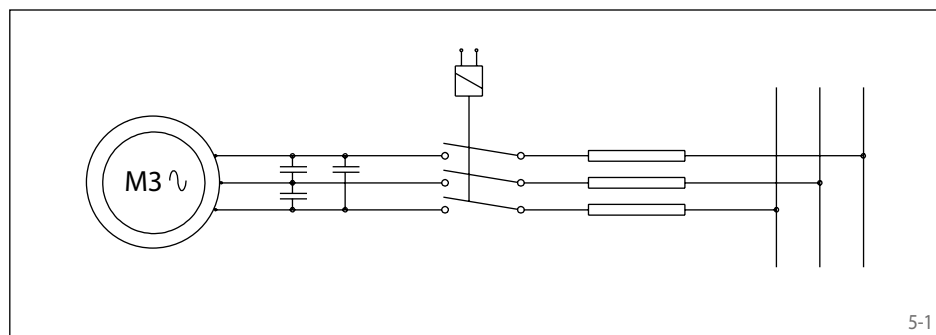
ments become slower. For these reasons, the thrusters must be filled with a suitable type of oil for extreme ambient temperatures.

## 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  $8 \text{ m/min}$ .

Recommended capacity values:

|                             |                           |
|-----------------------------|---------------------------|
| 451 / 452                   | $3 \times 10 \mu\text{F}$ |
| 453 / 454 / 455 / 458 / 465 | $3 \times 20 \mu\text{F}$ |
| 456 / 457 / 459 / 464       | $3 \times 50 \mu\text{F}$ |



## Germany

**RINGSPANN GmbH**

Schaberweg 30-38, 61348 Bad Homburg  
Germany • +49 6172 275 0  
info@ringspann.de • www.ringspann.de

**RINGSPANN Kempf GmbH**

Moorstraße 4, 36129 Gersfeld (Rhön), Germany  
+49 6654 96110 • info@kempf-gelenkwellen.de  
www.ringspann-kempf.de

**RINGSPANN RCS GmbH**

Hans-Mess-Straße 7, 61440 Oberursel, Germany  
+49 6172 67 68 50  
info@ringspann-rcs.de • www.ringspann-rcs.de

**Bosnia and Herzegovina, Serbia,  
Croatia, Montenegro, Kosovo,  
North Macedonia, Albania**

**RINGSPANN Bosanska Krupa d.o.o.**

Radnicka bb, 77240 Bosanska Krupa, Bosnia and  
Herzegovina • +387 37 961 444  
info@ringspann.ba • www.ringspann.ba

## France

**RINGSPANN France S.A.**

23 rue Saint-Simon, 69009 Lyon, France  
+33 4 78 83 59 01  
info@ringspann.fr • www.ringspann.fr

## Great Britain, Ireland

**RINGSPANN (U.K.) LTD.**

3, Napier Road, Bedford MK41 0QS, Great Britain  
+44 12 34 34 25 11  
info@ringspann.co.uk • www.ringspann.co.uk

## Asia

## Australia, New Zealand

**RINGSPANN Australia Pty Ltd**

10 Network Drive, Carrum Downs Vic 3201,  
Australia • +61 3 9069 0566  
info@ringspann.com.au • www.ringspann.com.au

## China, Taiwan

**RINGSPANN Power Transmission (Tianjin) Co., Ltd.**

No. 21 Gaoyan Rd., Binhai Science and Technology  
Park, Binhai Hi-Tech Industrial, Development Area,  
Tianjin, 300458, P.R. China • +86 22 5980 31 60  
info.cn@ringspann.cn • www.ringspann.cn

## Italy

**RINGSPANN Italia S.r.l.**

Via A.D. Sacharov, 13, 20812 Limbiate (MB), Italy  
+39 02 93 57 12 97  
info@ringspann.it • www.ringspann.it

## Netherlands, Belgium, Luxembourg

**RINGSPANN Benelux B.V.**

Nieuwenkampsmaten 6-15, 7472 DE Goor,  
Netherlands • +31 547 26 13 55  
info@ringspann.nl • www.ringspann.nl

**Austria, Czech Republic,  
Hungary, Slovakia, Slovenia**

**RINGSPANN Austria GmbH**

Triesterstraße 21, 2620 Neunkirchen, Austria  
+43 26 35 624 46  
info@ringspann.at • www.ringspann.at

## Poland

**Radius-Radpol Wiecheć Sp.J.**

Ul. Pasjonatów 3, 62-070 Dąbrowa, Poland  
+48 61 814 39 28 • info@radius-radpol.com.pl  
www.radius-radpol.com.pl

## Romania, Bulgaria, Moldova

**S.C. Industrial Seals and Rolls S.R.L.**

Str. Depozitelor, No. 29, 110078 Pitesti, Romania  
+4 0751 22 82 28  
mihai@isar.com.ro • www.isar.com.ro

## Sweden, Finland, Denmark,

## Norway, Baltic states

**RINGSPANN Nordic AB**

Industrigatan 10A, 619 33 Trosa, Sweden  
+49 6172 275 170  
info@ringspann.se • www.ringspann.se

## Switzerland

**RINGSPANN AG**

Sumpfstrasse 7, P.O. Box, 6303 Zug,  
Switzerland • +41 41 748 09 00  
info@ringspann.ch • www.ringspann.ch

## Spain, Portugal

**RINGSPANN IBERICA S.A.**

C/Uzbina, 24-Nave E1, 01015 Vitoria, Spain  
+34 945 22 77 50  
info@ringspann.es • www.ringspann.es

**Turkey, Azerbaijan, Kazakhstan,  
Kyrgyzstan, Tajikistan, Turkmenistan,  
Uzbekistan**

**RINGSPANN Turkey Güç Aktarım  
Sistemleri Ticaret Limited irketi**

Fatih Sultan Mehmet Mah, Poligon Cad. Buyaka 2  
Sitesi 3 Blok No: 8 İç Kapı No: 1, 34771 Ümraniye /  
Istanbul, Turkey • +90 532 165 7760  
info@ringspann.tr • www.ringspann.tr

## Ukraine

**"START-UP" LLC.**

Saltivske Hwy, 43, letter G-3, office 101,  
Kharkiv 61038, Ukraine • +38 057 717 03 04  
start-up@start-up.kh.ua • www.start-up.kh.ua

## Australia, New Zealand

**RINGSPANN Australia Pty Ltd**

10 Network Drive, Carrum Downs Vic 3201,  
Australia • +61 3 9069 0566  
info@ringspann.com.au • www.ringspann.com.au

## India, Bangladesh, Nepal

**RINGSPANN Power Transmission India Pvt. Ltd.**

GAT No: 679/2/1, Village Kuruli, Taluka Khed, Chakan-  
Alandi Road, Pune - 410501, Maharashtra, India  
+91 21 35 67 75 00 • info@ringspann-india.com  
www.ringspann-india.com

## South Korea

**RINGSPANN Korea Ltd.**

33 Gojae-17 Ghil Dongnam-gu, 31187 Cheonan-si  
Chungnam, South Korea • +82 10 54961 368  
info@ringspann.kr • www.ringspann.kr

## Singapore, ASEAN

**RINGSPANN Singapore Pte. Ltd.**

143 Cecil Street, #17-03 GB Building,  
Singapore 069542 • +6012 589 8975  
info@ringspann.sg • www.ringspann.sg

## America

## Brazil

**RINGSPANN do Brasil Ltda.**

Rua Vereador Oclésio Antonio Rebutini, 480  
CEP 13.287-012, Vinhedo/SP, Brazil  
+55 97503 9323  
contato@ringspann.com • www.ringspann.com.br

## Chile, Peru, Colombia, Ecuador

**RINGSPANN Sudamérica SpA**

Isidora Goyenechea 3365, Piso 11, 8320000  
Las Condes, Santiago-Región Metropolitana,  
Chile • +56 9 9147 2833  
info@ringspannsudamerica.com  
www.ringspannsudamerica.com

## USA, Canada, Mexico

**RINGSPANN Corporation**

10550 Anderson Place, Franklin Park, IL 60131, USA  
+1 847 678 35 81  
info@ringspann.us  
www.ringspanncorp.com

## Africa and Middle East

## Egypt

**Shofree Trading Co.**

218 Emtead Ramsis 2, 2775 Nasr City, Cairo, Egypt  
+20 2 2081 2057  
info@shofree.com • www.ringspann.com

## Maghreb, West Africa

**RINGSPANN France S.A.**

23 rue Saint-Simon, 69009 Lyon, France  
+33 4 78 83 59 01  
info@ringspann.fr • www.ringspann.fr

## Israel

**Getter Group GG Yarom**

4 Boltimor St., Petah Tikva, 4951015, Israel  
+972 3 557 01 15  
noam\_a@gg.co.il • www.ringspann.com

## South Africa, Sub-Saharan

**RINGSPANN South Africa (Pty) Ltd.**

96 Plane Road Spartan, Kempton Park,  
P.O. Box 8111, Edenglen 1613, South Africa  
+27 11 394 1830  
info@ringspann.co.za • www.ringspann.co.za