ENGINEERING
TOMORROW

User Guide

# Airflex®
# Failsafe Caliper Brake




VICKERS
by Danfoss

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# Description

Airflex© failsafe caliper is a spring applied, hydraulically released brake. The Airflex© brake is ideal for emergency stopping or static holding. Loads can be stopped quickly or in a controlled manner and held safely. Variable spring force kits, friction options and disc sizes allow for custom adaptation to any application. Sensors are available for monitoring pad wear and on/off brake status.

# Where used




**Oil & Gas**

- Drawworks
- Offshore Cranes
- BOP Winches
- ROV Winches

**Mining**

- Overland Inclined Conveyors
- Minewinders
- Grinding Mills

**Metal Processing**

- Overhead Cranes
- Rolling Mill Drives

**Vertical Lifting Systems**

- Port Cranes
- Offshore Windfarm Installation Cranes
- Kingpost Cranes
- Shiploaders
- Theatrical Stage Machines
- Amusement Rides
- Ski Lifts
- Elevators
- Escalators

**Marine**

- Deck Machinery
- Tug Winches
- Anchor Winches
- Mooring Winches
- Cable Laying Winches
- Umbilical Reels
- Gangway Winches

**Anywhere dependable, failsafe braking is needed!**

# Technical Data sheet

| Size 3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Clamp force [1] | | Brake force [2] | Loss of force per mm | Operating pressure | | Balance pressure | | |
| kN (min) | kN (max) | kN | % | Bar | psi | MPa | Bar | psi |
| 20.0 | 23.0 | 16.0 | 5 | 40 | 580 | 2.3 | 22.7 | 330 |
| 24.8 | 27.3 | 19.8 | 4 | 45 | 653 | 2.8 | 28.2 | 409 |
| 30.0 | 33.5 | 24.0 | 3 | 50 | 725 | 3.4 | 34.1 | 494 |
| 40.0 | 44.0 | 32.0 | 4 | 65 | 943 | 4.5 | 45.5 | 659 |
| 46.0 | 50.0 | 36.8 | 6 | 75 | 1088 | 5.2 | 52.3 | 758 |
| 50.0 | 55.0 | 40.0 | 6 | 80 | 1160 | 5.7 | 56.8 | 824 |
| 56.0 | 60.0 | 44.8 | 5 | 90 | 1305 | 6.4 | 63.6 | 923 |
| 60.0 | 66.0 | 48.0 | 5 | 95 | 1378 | 6.8 | 68.2 | 989 |
| 70.0 | 77.0 | 56.0 | 4 | 115 | 1668 | 8.0 | 79.5 | 1154 |
| 80.0 | 88.0 | 64.0 | 6 | 130 | 1885 | 9.1 | 90.9 | 1319 |
| 85.0 | 95.0 | 68.0 | 7 | 140 | 2031 | 9.7 | 96.6 | 1401 |
| 90.0 | 98.5 | 72.0 | 11 | 145 | 2103 | 10.2 | 102.3 | 1483 |
| 100.0 | 109.0 | 80.0 | 11 | 160 | 2321 | 11.4 | 113.6 | 1648 |
| 110.0 | 119.0 | 88.0 | 9 | 175 | 2538 | 12.5 | 125.0 | 1813 |
| 120.0 | 130.0 | 96.0 | 8 | 190 | 2756 | 13.6 | 136.4 | 1978 |

1) All figures are based on 1mm air gap
2) Braking force is based on minimum clamping force, nominal coefficient of friction μ = 0.4 and 2 brake surfaces

**Brake Torque**
Brake torque (T) in Newton-meters, can be calculated from below formula.
**T (Nm) = N x F x (D-0.2)/2**

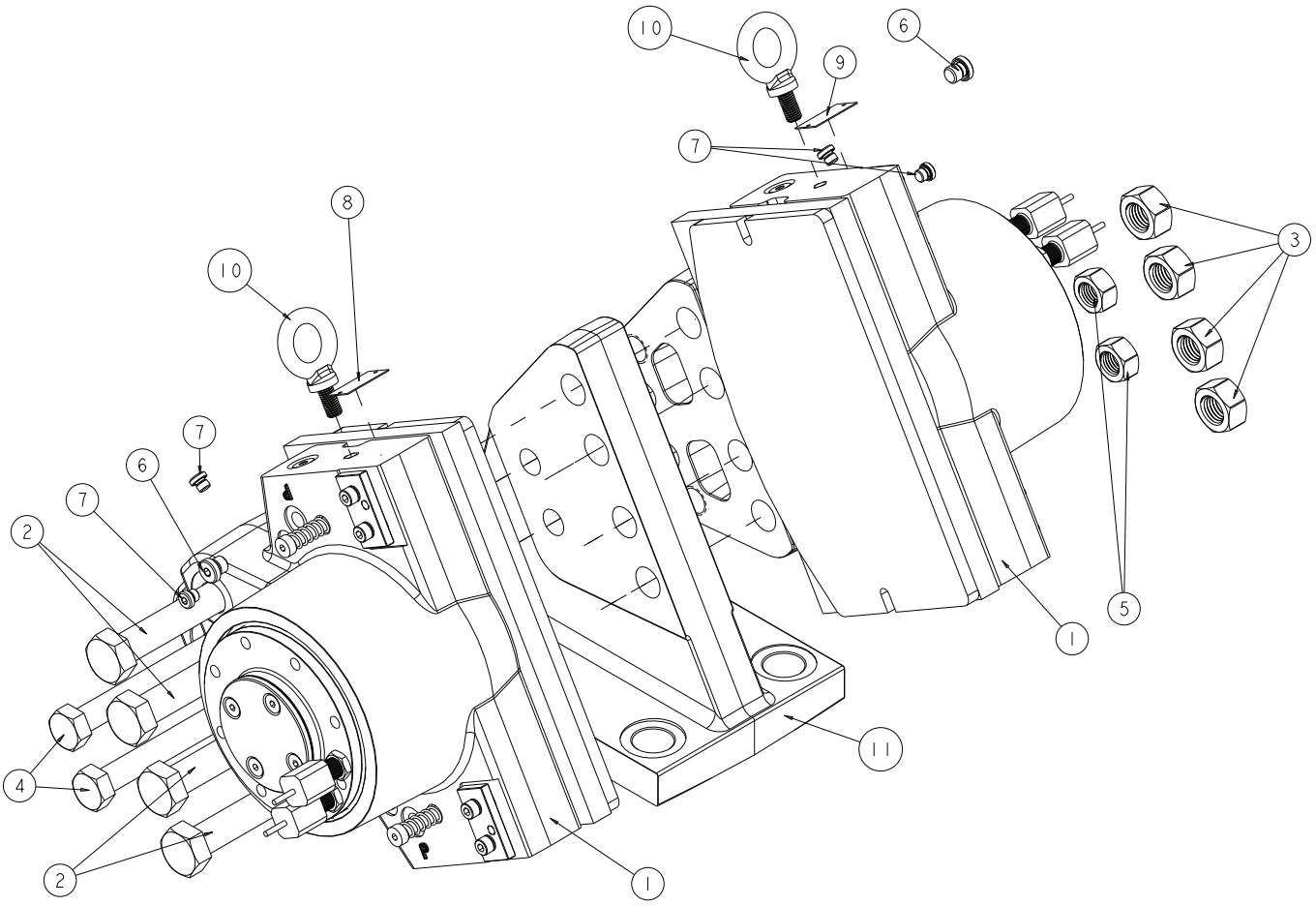
Where:
N = Number of brakes
F = Brake force ( in Newtons)
D = Disc outer diameter (Meters)


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# Basic information

| Size 3 | |
|---|---|
| Weight of caliper (without bracket) | 150 kg |
| Pad area (organic) | 59534 mm² |
| Max. wear of pad (organic) | 10 mm |
| Pad area (sintered) | 35948 mm² |
| Max. wear of pad (sintered) | 10 mm |
| Nominal air gap | 1 mm |
| Nominal coefficient of friction | 0.4 |
| Total piston area each caliper half | 88 cm² |
| Total piston area each caliper | 176 cm² |
| Volume for each caliper at 1 mm stroke | 17.6 cm³ |
| Actuating time (approximate) | 0.3s |
| Pressure connection/port | 1/4" BSP |
| Drain connection/port | 1/8" BSP |
| Operating temperature range | -20°C to +70°C |
| Max. operating pressure | 230 Bar (23MPa) |
| Min. disc diameter | 800 mm |

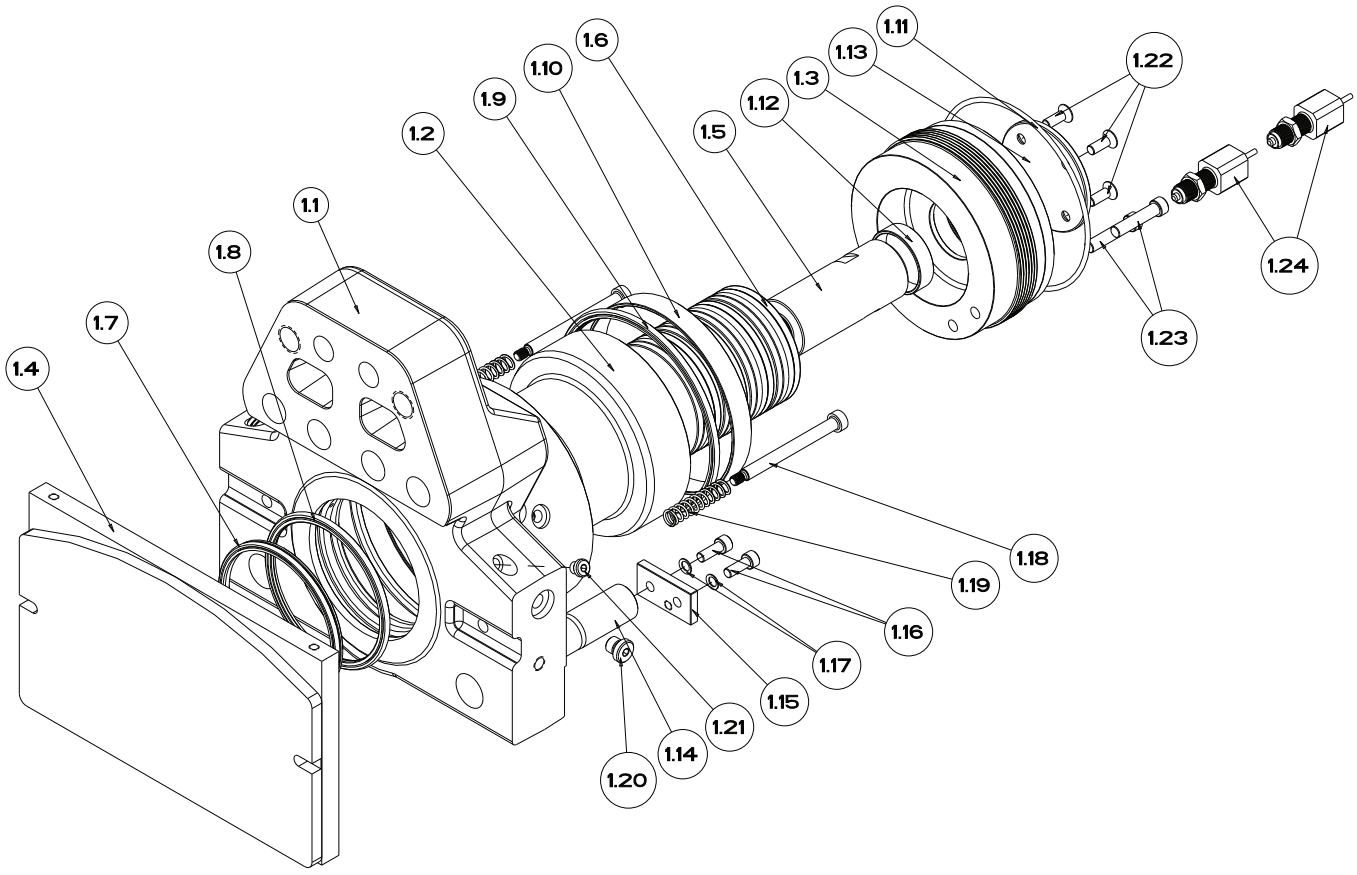
# Brake Assembly




| ITEM | DESCRIPTION | ITEM | DESCRIPTION |
|---|---|---|---|
| 1 | BRAKE SUB ASSEMBLY | 7 | 1/8 "BSP PLUG |
| 2 | M24 MOUNTING BOLT | 8 | NAME PLATE |
| 3 | M24 MOUNTING NUT | 9 | WARNING PLATE |
| 4 | M20 MOUNTING BOLT | 10 | EYE BOLT |
| 5 | M20 MOUNTING NUT | 11 | MOUNTING BRACKET |
| 6 | 1/4 "BSP PLUG | | |

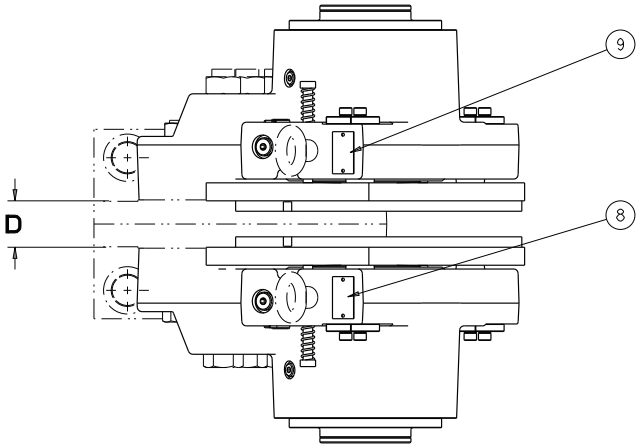

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# Brake Sub Assembly

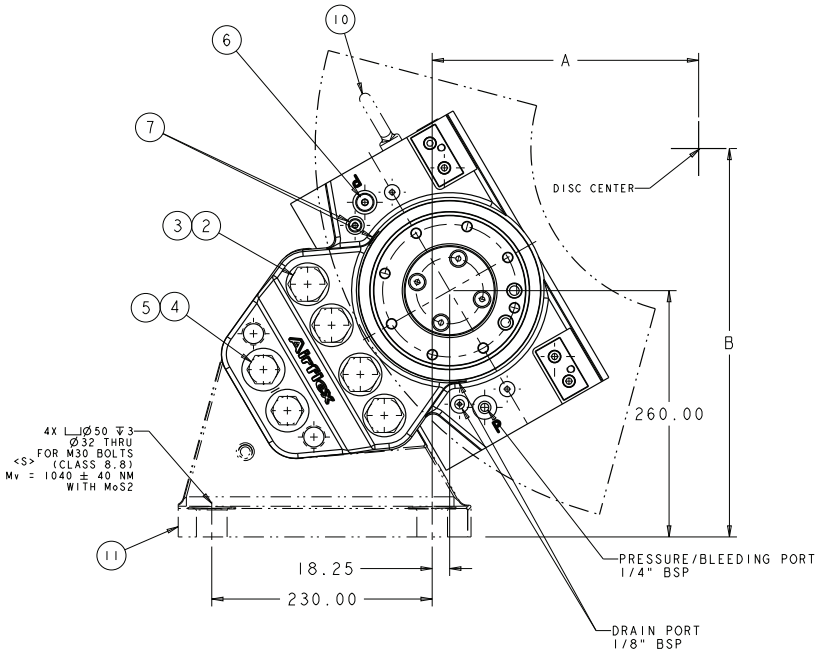


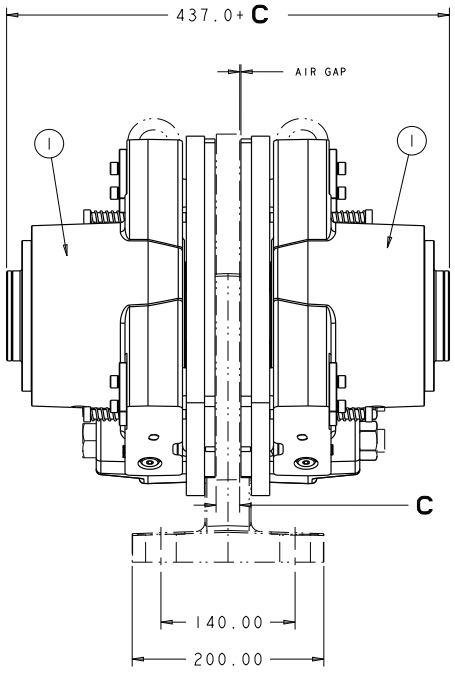

| ITEM | DESCRIPTION | ITEM | DESCRIPTION |
|---|---|---|---|
| 1.1 | BODY | 1.13 | TOP COVER |
| 1.2 | PISTON | 1.14 | SHEAR PIN |
| 1.3 | END CAP | 1.15 | KEEPER PLATE |
| 1.4 | FRICTION SUB ASSEMBLY | 1.16 | M8 BOLT |
| 1.5 | CENTER ROD | 1.17 | LOCK WASHER |
| 1.6 | DISC SPRING KIT | 1.18 | SHOULDER BOLT |
| 1.7 | SCRAPER SEAL | 1.19 | RETURN SPRING |
| 1.8 | ROD SEAL 1 | 1.20 | 1/4 "BSP PLUG |
| 1.9 | ROD SEAL 2 | 1.21 | 1/8 "BSP PLUG |
| 1.10 | BEARING RING 1 | 1.22 | M8 FLAT HEAD SCREW |
| 1.11 | O-RING | 1.23 | SENSOR PIN |
| 1.12 | BEARING RING 2 | 1.24 | SENSOR |

# Brake Assembly Dimensions




Distance from center of brake disc (R = disc radius)
A = 0.866*(R-100) + 18.3
B = 0.5*(R-100) + 260
C = Brake disc thickness
D = Mounting surface width = C+26




All dimensions are in mm, unless stated otherwise.

| ITEM | DESCRIPTION | ITEM | DESCRIPTION |
|---|---|---|---|
| 1 | BRAKE SUB ASSEMBLY | 7 | 1/8 "BSP PLUG |
| 2 | M24 MOUNTING BOLT | 8 | NAME PLATE |
| 3 | M24 MOUNTING NUT | 9 | WARNING PLATE |
| 4 | M20 MOUNTING BOLT | 10 | EYE BOLT |
| 5 | M20 MOUNTING NUT | 11 | MOUNTING BRACKET |
| 6 | 1/4 "BSP PLUG | | |


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# Model code

**ACB - F - D - 3 - 060 - V - 2 - D - 1 - A - A - O - A**

1-3 | 5 | 7 | 9 | 11-13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 | 29

| **1, 2, 3 - Prefix** | |
|---|---|
| ACB | Airflex Caliper Brake |
| **5 - Brake Type** | |
| F | Failsafe |
| **7 - Configuration** | |
| D | Dual |
| **9 - Brake Size** | |
| 3 | 20 KN – 120 KN |
| **11, 12, 13 - Clamp Force (KN)** | |
| 020 | 20 KN Clamp force (size-3) |
| 024 | 24.8 KN Clamp force (size-3) |
| 030 | 30 KN Clamp force (size-3) |
| 040 | 40 KN Clamp force (size-3) |
| 046 | 20 KN Clamp force (size-3) |
| 050 | 50 KN Clamp force (size-3) |
| 056 | 26 KN Clamp force (size-3) |
| 060 | 60 KN Clamp force (size-3) |
| 085 | 85 KN Clamp force (size-3) |
| 090 | 90 KN Clamp force (size-3) |
| 100 | 100 KN Clamp force (size-3) |
| 110 | 110 KN Clamp force (size-3) |
| 120 | 120 KN Clamp force (size-3) |

| **15 - Mounting** | |
|---|---|
| D | Danfoss mount |
| V | V - mount |
| **17 - Friction** | |
| 1 | Organic friction |
| 2 | Sintered Friction |
| **19 - Sensor** | |
| A | None |
| B | Brake ON/OFF sensor |
| C | Wear Sensor |
| D | Brake ON/OFF and wear sensor |
| **21 - Hydraulic Port Thread** | |
| 1 | Inlet port – 1/4" BSPP thread |
| **23 - Wear Compensation** | |
| A | Manual |
| **25 - Environment** | |
| A | Standard |
| **27 - Special Feature** | |
| O | None |
| **29 - Paint** | |
| A | Standard |

# Options

- Sensors- Wear, On/Off
- Mounting Bracket
- Discs

# Notes


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**Products we offer:**

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- Electric motors
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- Hydrostatic motors
- Hydrostatic pumps
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Local address:

**Danfoss Power Solutions (US) Company**
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515-239-6000

**Danfoss Power Solutions GmbH & Co.OHG**
Krokamp 35
D-2439 Neumünster, Germany
Phone: +49 4321 871 0

**Danfoss Power Solutions ApS**
Nordborgveg 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

**Danfoss Power Solutions Trade (Shanghai) Co. Ltd.**
Building #22, No 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 2080 6201

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