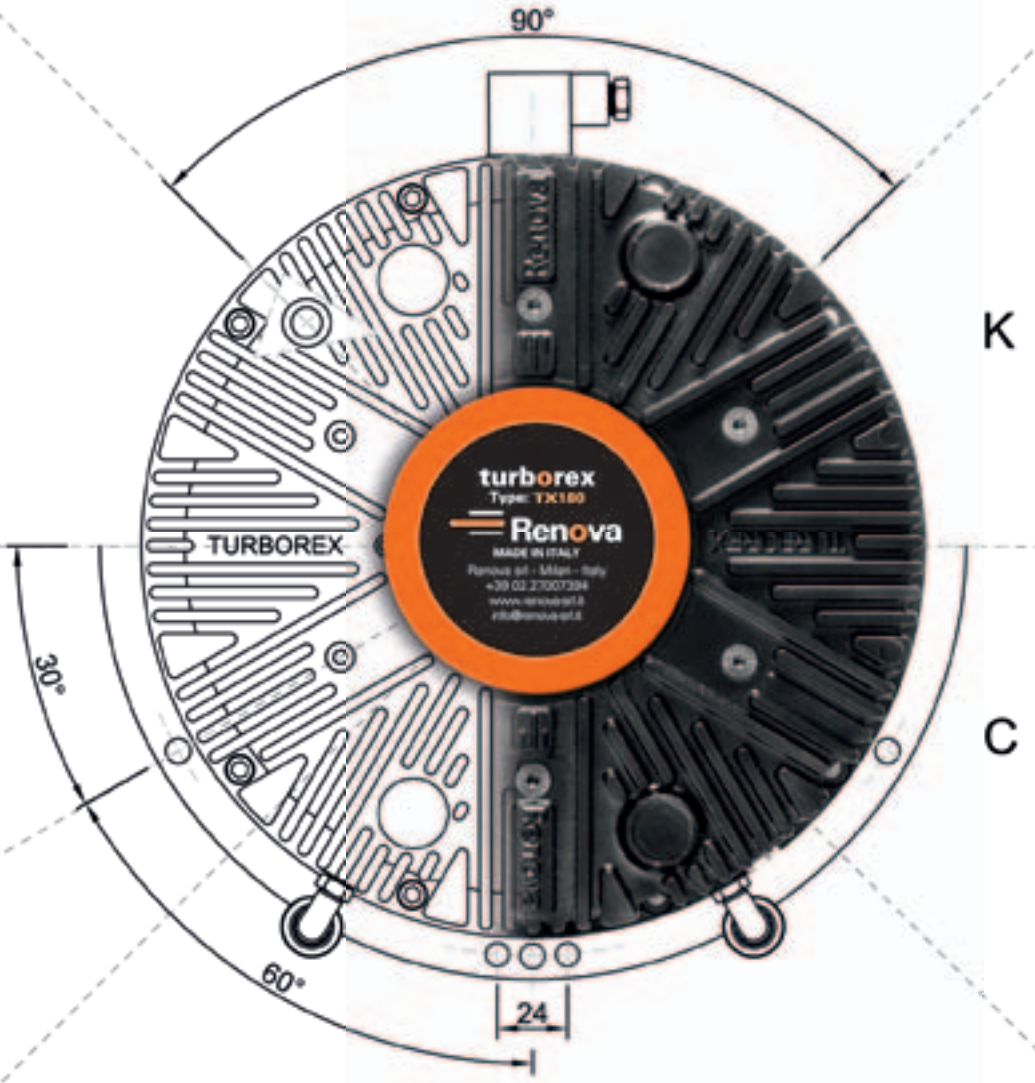


turborex
PNEUMATIC BRAKE

Renova
WE NEVER LOSE CONTROL

Made in Italy

turborex

A story of innovation

Turborex pneumatic brake is ideal on unwinders to keep constant the web tension during all the converting process.

The Turborex was designed by **Giampiero Re**, the same person who designed in the 80's the CX brake.

In the 80's Mr. Re applied an innovative axial fan ventilation on the CX monodisc brakes which helped a temperature decrease faster than before. In a very short time, this technology became the reference in thousand of applications in the converting industry.

In 2005 Mr. Re wanted to exceed himself by improving his CX brake. The challenge was to further reduce:

- Operating temperatures and pad wear
- Dust emission on product and working area
- Maintenance costs and procedures

From these purposes he designed the Turborex with a multidisc system and a double fan ventilation. Renova obtained the *international patent* for the technology applied to the Turborex.

Since 2005, Turborex has been the result of **continuous research and improvements** based on consolidated experience and collaboration with the most important machine builders and end users.

All Renova's products are managed by TUV ISO 9001

INNOVATIVE TECHNOLOGY PATENTED!

The Turborex is the pioneer of eco-friendly brakes which improves the unwinding efficiency while ensuring the highest performance and the least maintenance requirements for spare parts.

Maximum torque 2065 ft lb, maximum heat dissipation 16 hp.

100% INTERCHANGEABLE WITH ALL BRAKES
see the videos on *www.renova-srl.it*

MULTIDISC SYSTEM

Thermal power and pressure distributed on multiple surfaces.

Moreover the reduced discs diameter of 7” means 30% less sliding speed of the friction materials with the discs for a ***massive reduction of the pad wear and dust emission.***

2 FAN VENTILATION

2 fans instead of 1 for a double cooling effect.

This keeps the brake components from overheating, causing a loss of tension consistency and contributes to the ***consistent reduction of the pad wear and powder pollution.***

IMPROVED WEB TENSION CONTROL AT ANY LINE SPEED

up to 42,000 WORKING HOURS* with

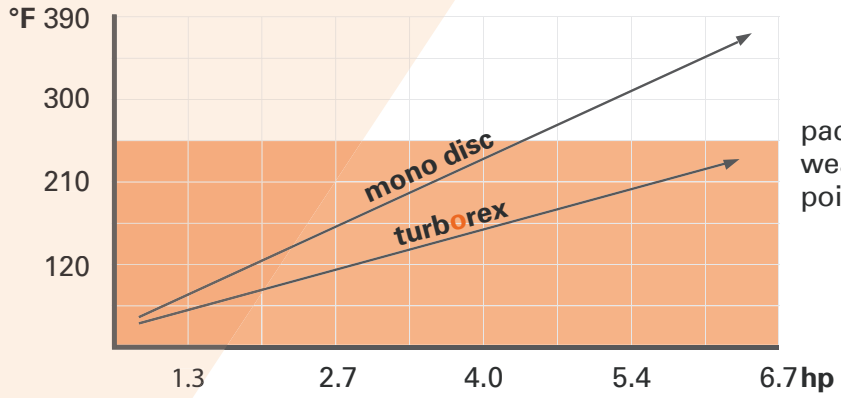
NO MAINTENANCE

on pads and discs guaranteed

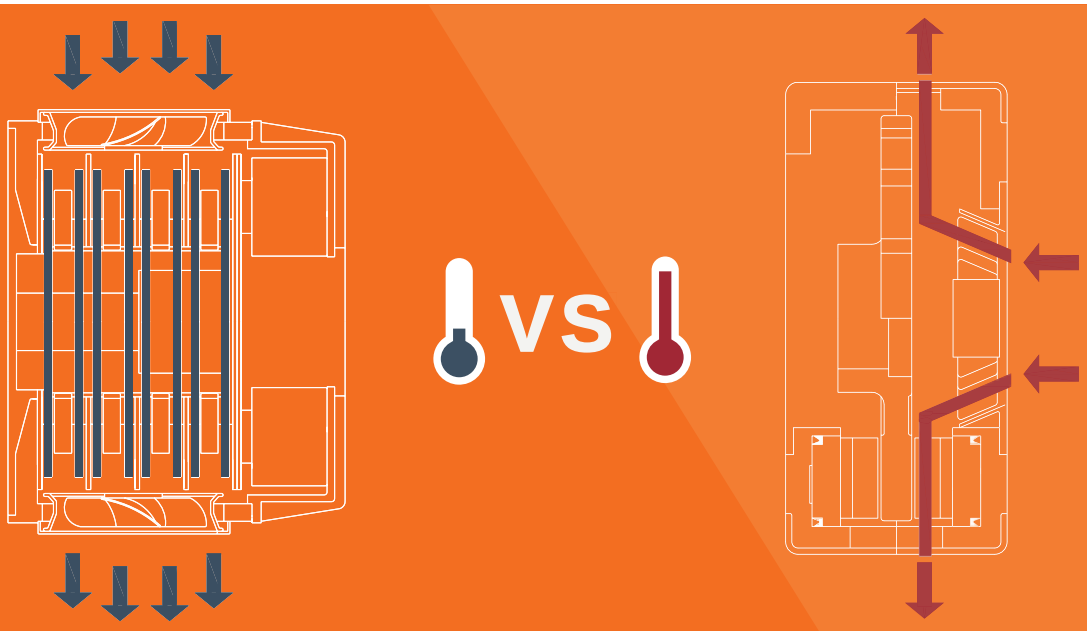
Based on real field experience.

Please check terms and conditions on the instruction manual

turborex works at lower temperature



High performance are kept constant over the time also on the toughest applications – 7/24 – where working conditions are extreme and working temperatures need to be drastically dissipated.



THE TURBOREX MULTIDISC BRAKE WITH DOUBLE FAN

- **2 Cooling fans**
- **Radial air flow** on all surfaces
- **Disc diameter** of 7''
- **Pads/discs pressure** 1:3
- **Max. heat dissipation** 16 hp

OTHER LATEST GENARATION OF MONODISC BRAKES

- **1 Cooling fan**
- **Axial air flow** only on 1 surface
- **Disc diameter** of 10'' or more
- **Pads/disc pressure** 1:1
- **Max. heat dissipation** 8 hp

Eco-Friendly TECHNOLOGY

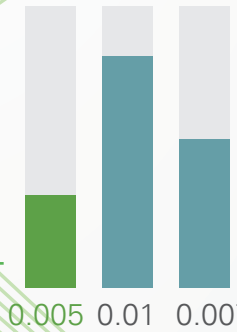
1. Pad wear exclusively depends on: specific pressure, peripheral velocity of the discs and operating temperatures.

2. Turborex design reduces all these parameters ensuring the longest pad life, thus the lowest dust pollution in the working area and final product.

3. Turborex's pads are RoHs compliant:100% asbestos, hexavalent chromium, mercury, cadmium, antimony, lead FREE.

***Daily brakes powder emissions comparison*:**

Turborex
Pad life 42000 working hours



Latest generation of monodisc brakes
Pad life 27000 working hours

Old monodisc brakes
Pad life 8500 working hours

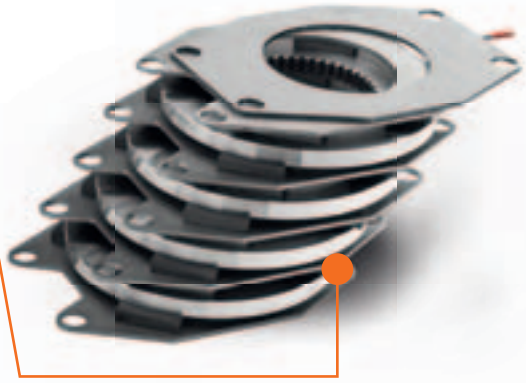
All our data and diagrams are based on bench test results and approved by our most demanding customers.

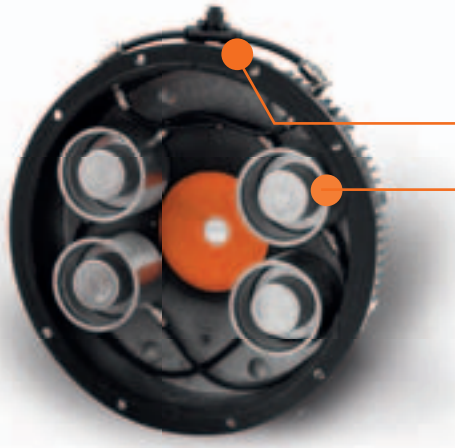
Let’s go on details

EASY AND FAST INSTALLATION
Customizable flange.
No modifications to the machine are required.

MAXIMUM HEAT DISSIPATION
Dual in line fans.
Continuous cooling airstream across pads and discs.

EASY AND FAST REPLACEMENT
Parts replacement in less than 5 minutes.
No more caliper disassembly, no more disc extractor.





100% PLUG&PLAY
Multiple air connections.
Match all existing control systems.

MAXIMUM SENSITIVITY
Customizable piston configuration.
According to torque requirements.

EXTERNAL WEAR INDICATOR
Easily see pad wear without opening brake.

Finally homogeneous pad wear.

Bespoke projects

Turborex can fit all applications also 16 hp high speed applications!

Turborex is 100% customizable, even in its dimension for narrow spaces.

turborex selematic

All Turborex brakes can be provided with the Selematic system.
It is a great solution for applications that process more than one material with different width and rolls diameter for the tensioning and the emergency stop.

Maximum sensitivity for light applications

Automatic torque selection

Turborex Selematic automatically finds and applies the necessary torque to multiple discs. It does this continuously throughout the production cycle and eliminates the need for manual adjustments ensuring the maximum sensitivity.

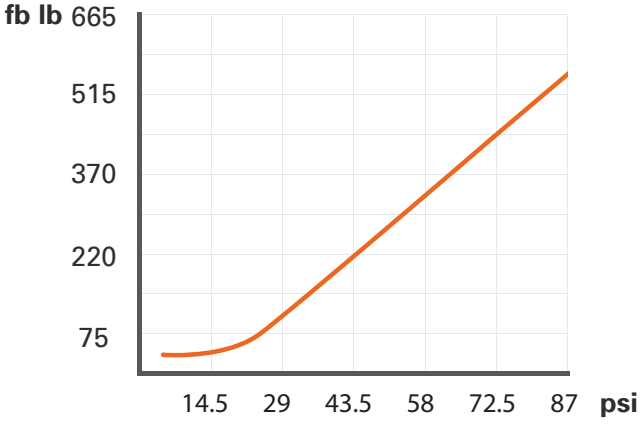
The discs are automatically and sequentially engaged with the air pressure

Gradual torque applied

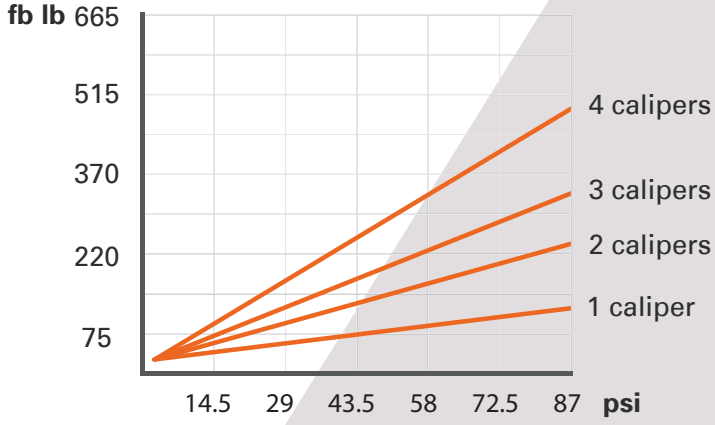
When Selematic is incorporated in a Turborex brake small variations of the torque are possible for a maximum sensitivity **especially among 0-29 psi**. In fact, the tension requirements for each material being processed, at the beginning of the roll, at the end of the roll and during an emergency stop situation can be accurately achieved via a single air supply.

Maximum precision via a single air supply

No more manual caliper activation
No more solenoid valves
No more reduced caliper
No more different torque model pads with different compounds



Turborex Selematic brake



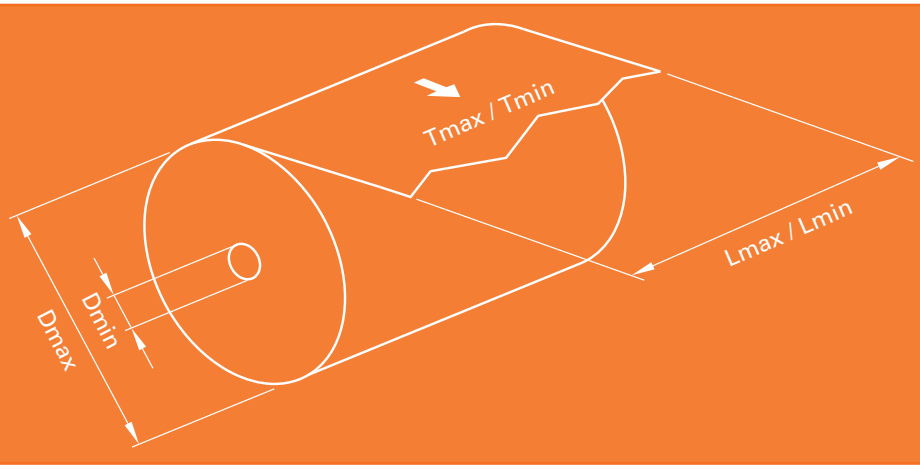
Monodisc brake with manual selection of calipers

Brake selection guide

	Unit of measurement
T max min	max/min web tension [lbf]
Ts	web tension per centimeter [pli]
D max min	max/min roll diameter [in]
L max min	max/min web width [in]
m	roll maximum weight [lb]
v	web speed [ft/min]
p	heat dissipated [hp]
t	breaking time [s]

	Tensioning
T_{max} [lb] = Ts · W_{max}	maximum web tension
T_{min} [lb] = Ts · W_{min}	minimum web tension
C_{max} [ft lb] = $T_{max} \cdot \frac{D_{max}}{2} \cdot 0.083$	maximum torque
C_{min} [ft lb] = $T_{min} \cdot \frac{D_{min}}{2} \cdot 0.083$	minimum torque
K [hp] = $T_{max} \cdot \frac{v_{max}}{33116}$	heat dissipated

	Emergency stop
C_{em} [ft lb] = $\frac{m \cdot D_{max} \cdot v_{max}}{t_{em} \cdot 92664.67}$	torque



Specific tension values for materials

Paper Basic weight [lb] Web tension [lb] per linear inch [in]	6.8 - 10.1 0.17 - 0.23	20.3 - 40.5 0.57 - 1.43	67.6 - 135.1 2.00 - 4.00
Board Basic weight [lb] Web tension [lb] per linear inch [in]	67.6 - 101.4 2.86 - 4.28	135.1 - 202.7 5.71 - 6.57	270.3 - 473.0 6.57 - 10.28
Cellophane pli for μ of thickness	0.02		
Polyethylene pli for μ of thickness	0.006 - 0.011		
Polypropylene pli for μ of thickness	0.009 - 0.014		
Aluminum pli for μ of thickness	0.020 - 0.020		

TX120
TS120 selematic

MODEL		120.7	120.15	120.30	120.45
Min torque **ft lb** *2.9 psi*	TX	3	4.4	6.6	8.9
	TS	0.7	1.1	1.6	2.2
Max torque **ft lb** *87 psi*		81.1	140.1	221.3	302.4
Heat dissipation *standard fan*		2.7 hp			

TX170
TS170 selematic

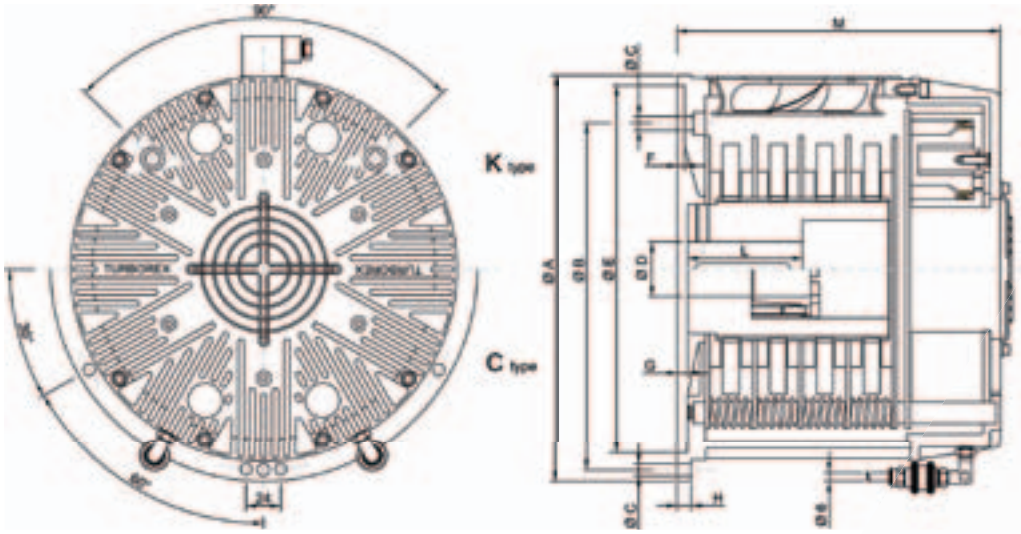
MODEL		170.20	170.40	170.60	170.75
Min torque **ft lb** *2.9 psi*	TX	4.4	8.9	13.3	16.2
	TS	1.1	2.2	3.3	3.8
Max torque **ft lb** *87 psi*		177	272.9	413	545.8
Heat dissipation *standard fan*		4.7 hp			
Heat dissipation *hp fan*		6.7 hp			

TX180
TS180 selematic

MODEL		180.25	180.50	180.75	180.100	180.150
Min torque **ft lb** *2.9 psi*	TX	7.4	13.3	19.2	25.8	39.1
	TS	1.8	3.3	4.8	6.4	9.6
Max torque **ft lb** *87 psi*		206.5	390.9	582.7	781.8	1172.7
Heat dissipation *standard fan*		6 hp				
Heat dissipation *hp fan*		9.4 hp				

TX240
TS240 selematic

MODEL		240.70	240.100	240.140	240.210	240.280
Min torque **ft lb** *2,9 psi*	TX	17	25.8	31.7	50.2	61.2
	TS	3.7	5.5	8.9	11.8	17.7
Max torque **ft lb** *87 psi*		516.3	752.3	1032.6	1548.9	2065.2
Heat dissipation *standard fan*		12.1 hp				
Heat dissipation *hp fan*		16.1 hp				



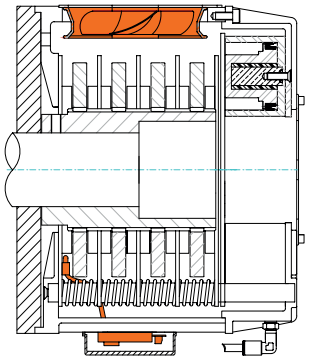
Dimensions (in)	TX 120C TS 120C	TX 120K TS120K	TX 170C TS 170C	TX 170K TS 170K	TX 180C	TX 180K	TX 180Z	TS 180C	TS 180K	TS 180Z	TX 240K TS 240K
A	8.66	7.78	11.65	10.47	11.65	10.47	13.78	11.65	10.47	13.78	13.39
B	8.35	5.51	11.02	8.58	11.02	8.58	13.15	11.02	8.58	13.15	12.68
C	6x0.26	4x0.33	6x0.33	4x0.41	6x0.33	4x0.41	6x0.41	6x0.33	4x0.41	6x0.41	4x0.49
D	1.57	1.57	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	3.54
E (+0.02 / +0.004)	4.96	5.51	10.08	10.08	10.08	10.08	12.05	10.08	10.08	12.05	12.05
F	0.12	0.12	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
G	0.12	0.12	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
H	0.47	/	0.55	/	0.55	/	0.55	0.55	/	0.55	/
L	1.97÷3.43	1.97÷3.43	2.36÷4.21	2.36÷4.21	2.36÷5.71	2.36÷5.71	2.36÷5.71	2.36÷5.71	2.36÷5.71	2.36÷5.71	2.36÷6.14
M	6.69	4.53	7.32	7.32	8.50	8.50	8.50	8.82	8.82	8.82	9.13

Optionals

FANS

Wide fans selection - same dimensions different power

Type	Voltage	Power
Standard	24 V DC	11 W
High Performance HP4	24 V DC	30 W
High Performance HP6	24 V DC	65 W
Standard 110 V	110 V AC	18 W
Standard 220 V	220 V AC	19 W



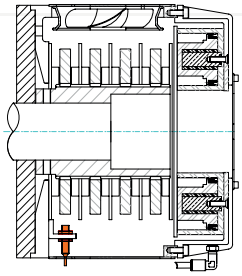
FANS INTERNAL TEMPERATURE CONTROLLER

Thermistor NTC – connected to the electronic unitthat controls the fan through PWM signal

(pulse with modulation)

RPM COUNTER (PROXIMITY)

It counts of the revolutions per minute to identify the diameter of the roll

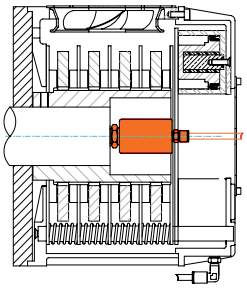


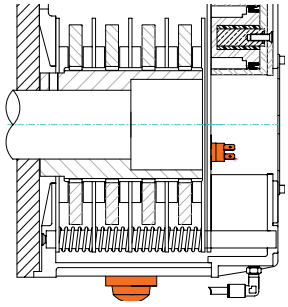
PHOTOCELL SUPPORT

Photocell set up for roll stand arm alignment

ROTARY JOINT

In case of applications with expanding shaft or pneumatic core chucks, it allows the transit of the supply air to the shaft or the chuck.



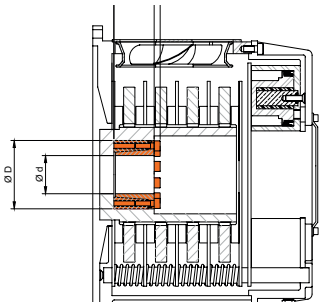


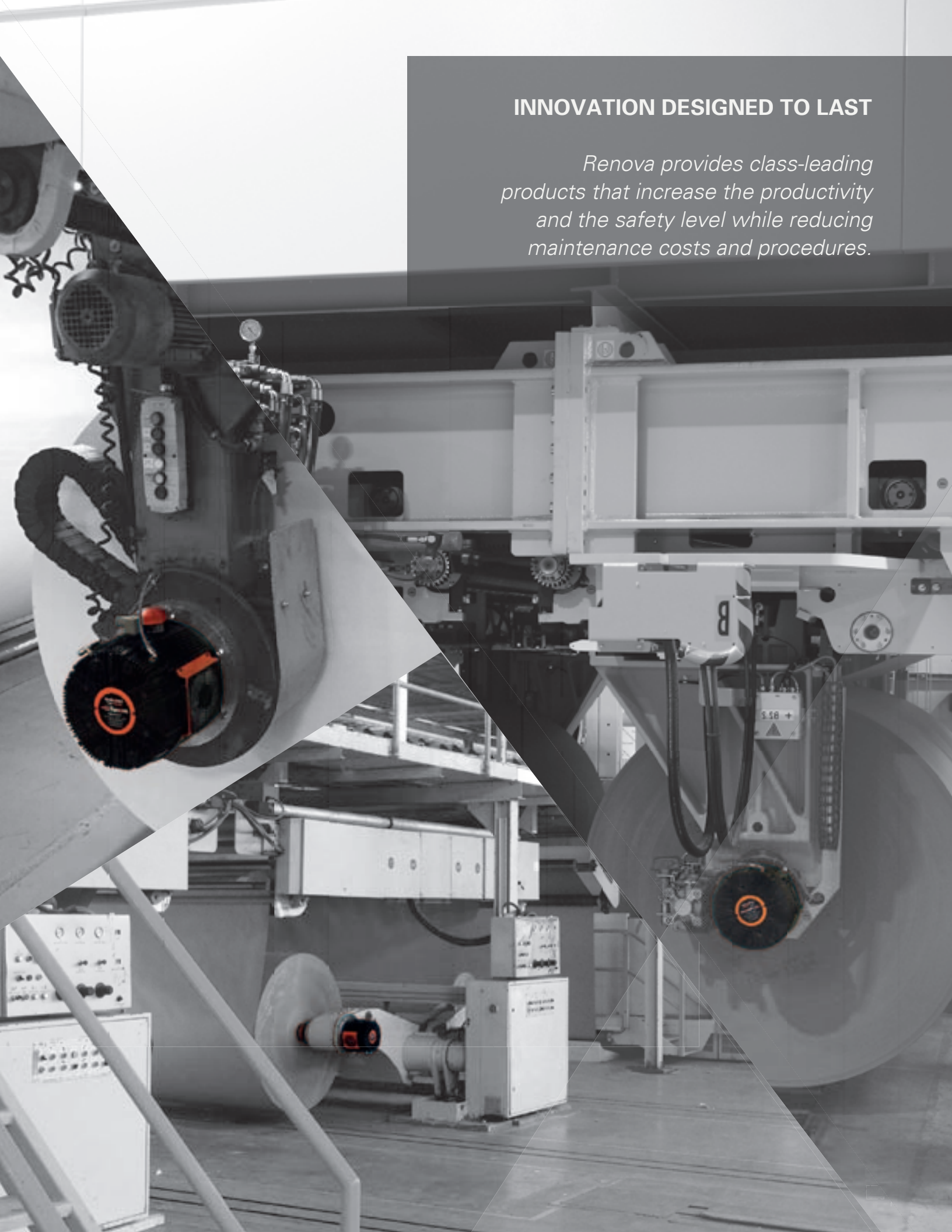
HEAT INDICATOR LIGHT with bimetallic thermostat

Visual indicator for overheating brake.

TAPER LOCKS

Wide range of taper locks available for a rapid fixing to the hub.





INNOVATION DESIGNED TO LAST

Renova provides class-leading products that increase the productivity and the safety level while reducing maintenance costs and procedures.

Renova
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