



 **turborex**

PATENTED PNEUMATIC BRAKE



turborex

A story of innovation

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

Turborex is the pioneer of eco friendly pneumatic brakes: it was designed by Giampiero Re, the same person who designed in the 80 's the CX brake, 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.

For this purpose he designed the Turborex with a multidisc system and a double fan ventilation for which Renova obtained the international patent for the technology applied.

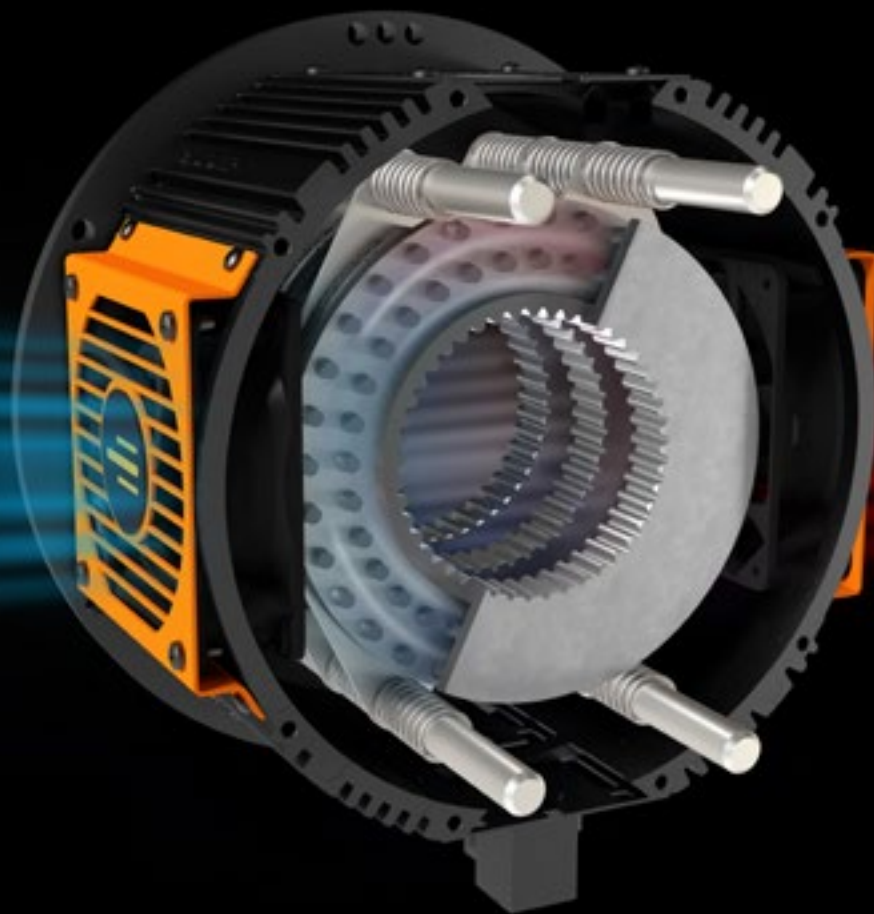
Since 2005 Turborex has been the result of continuous research and improvements based on consolidated experience and collaboration with the most important machine builders and end users.

Turborex is 100% designed and made in Italy.

Click on the “play” icons in this catalog and see demonstration videos!



PATENTED INNOVATIVE DESIGN



MULTIDISC SYSTEM

Thermal power and pressure distributed on multiple surfaces.

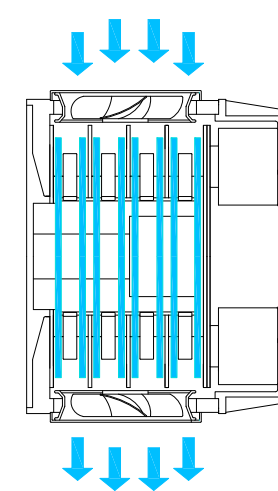
Moreover the reduced discs diameter of 180mm means 30% less sliding speed of the friction materials with the discs for a massive reduction of the pad wear and dust emission.

DUAL IN LINE FANS

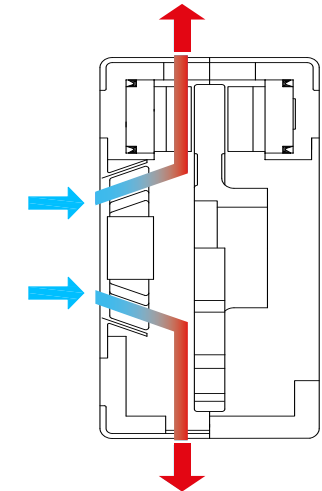
Continuous cooling airstream across pads and discs.

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.

TURBOREX VS OTHER LATEST GENERATION BRAKES



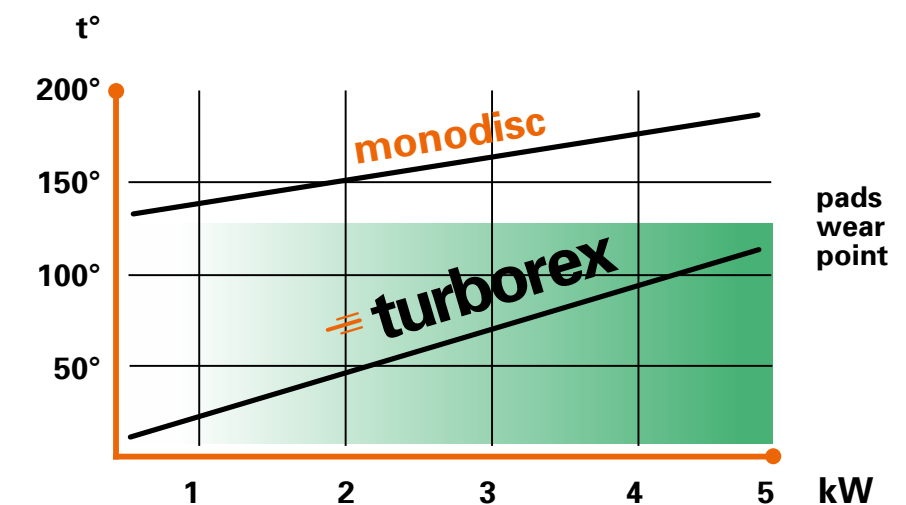
VS



- 2 cooling fans
- Radial air flow on all surfaces
- Disc diameter of 180 mm
- Pads/discs pressure 1:3
- Maximum heat dissipation 14 kW
- Soundless operation

- 1 cooling fan
- Axial air flow on all surfaces
- Disc diameter of 250 mm
- Pads/discs pressure 1:1
- Maximum heat dissipation 6 kW
- Noisy operation

TURBOREX WORKS AT LOWER TEMPERATURES



With Turborex high performances are kept constant over the time even in the toughest applications – 7/24 – where working conditions are extreme and working temperatures need to be drastically reduced.

MASTER TECHNOLOGY

Improved unwinding efficiency,
improved web tension control at any line speed.



HIGH POWER DISSIPATION

up to 14 kW

MAXIMUM SENSITIVITY

customizable piston configuration according to
torque requirements

100% PLUG AND PLAY

multiple air connections; turborex matches all
existing control systems

LINEAR TENSION CONTROL

no stress brake components providing high
performances through the whole working process

SOUNDLESS OPERATING

no noise emission during the working process

REDUCED MAINTENANCE

discs and pads kit specially designed to last

EASY AND FAST INSTALLATION

customizable flange to fit all roll stands,
no modification to the machine are required



LONG LIFE SPAN OF THE PADS

**Up to 42.000 working hours
with no maintenance*.**

Pads of high quality compound are rohs compliant: 100% asbestos, hexavalent chromium, mercury, cadmium, antimony, lead free.

*based on real field experience.
Please check terms and conditions
on the instruction manual.



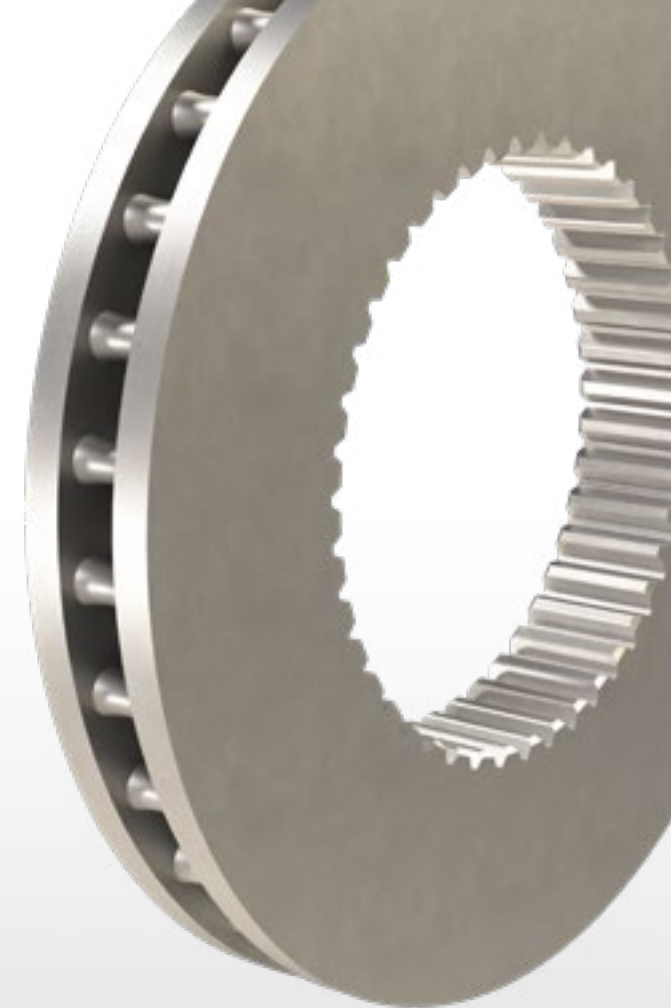
EXTERNAL PAD WEAR INDICATOR

Easily see pad wear without opening the brake. Parts kit replacement in less than 5 minutes.

No more caliper disassembly,
no more disc extractor.

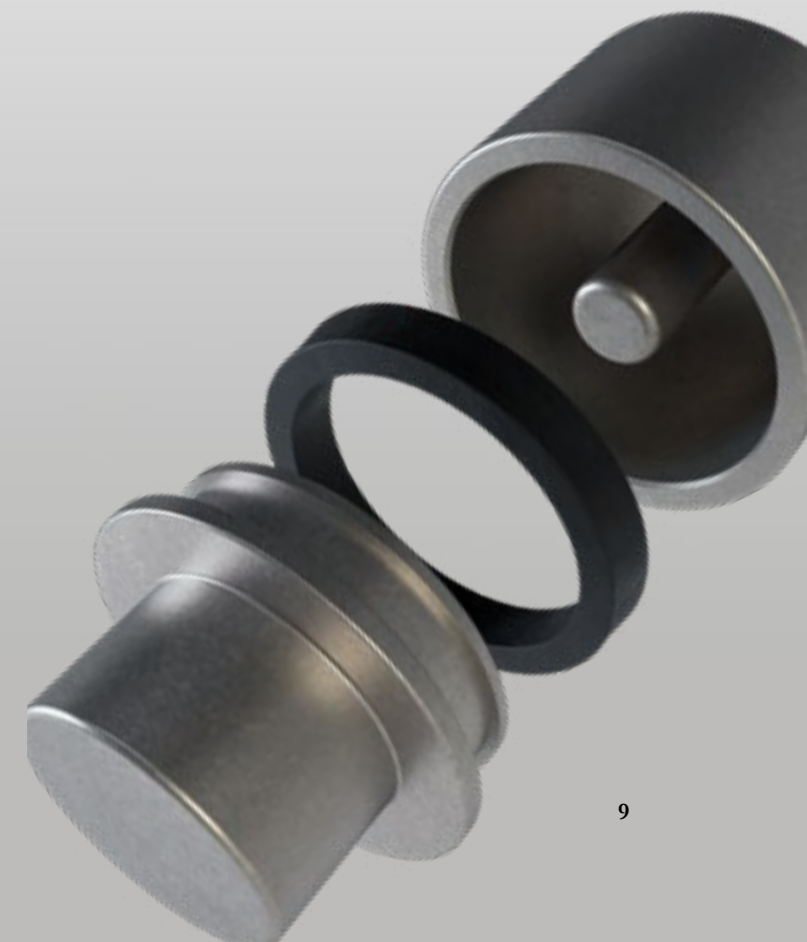
HIGH DISSIPATION DISCS

New HD discs with self-ventilation system guarantees performance never achieved before by improving the internal cooling capacity of the discs by quickly conveying the hot air to the outside. In addition, the reduced discs diameter of 180 mm means 30% less sliding speed of the friction materials with the discs for a substantial reduction of the pad wear and dust emissions.



SIMPLE PISTONS DESIGN

Piston, cylinder and seal.
Minimum number of components for a easier and reduced maintenance procedures.



ENVIRONMENTAL RESPECT

Pad wear exclusively depends on: specific pressure, peripheral velocity of the discs and operating temperatures.
Turborex design reduces all these parameters ensuring the longest pad life, thus the lowest dust pollution in the working area and final product.

DATA AND DIAGRAMS ARE BASED ON BENCH TEST RESULTS

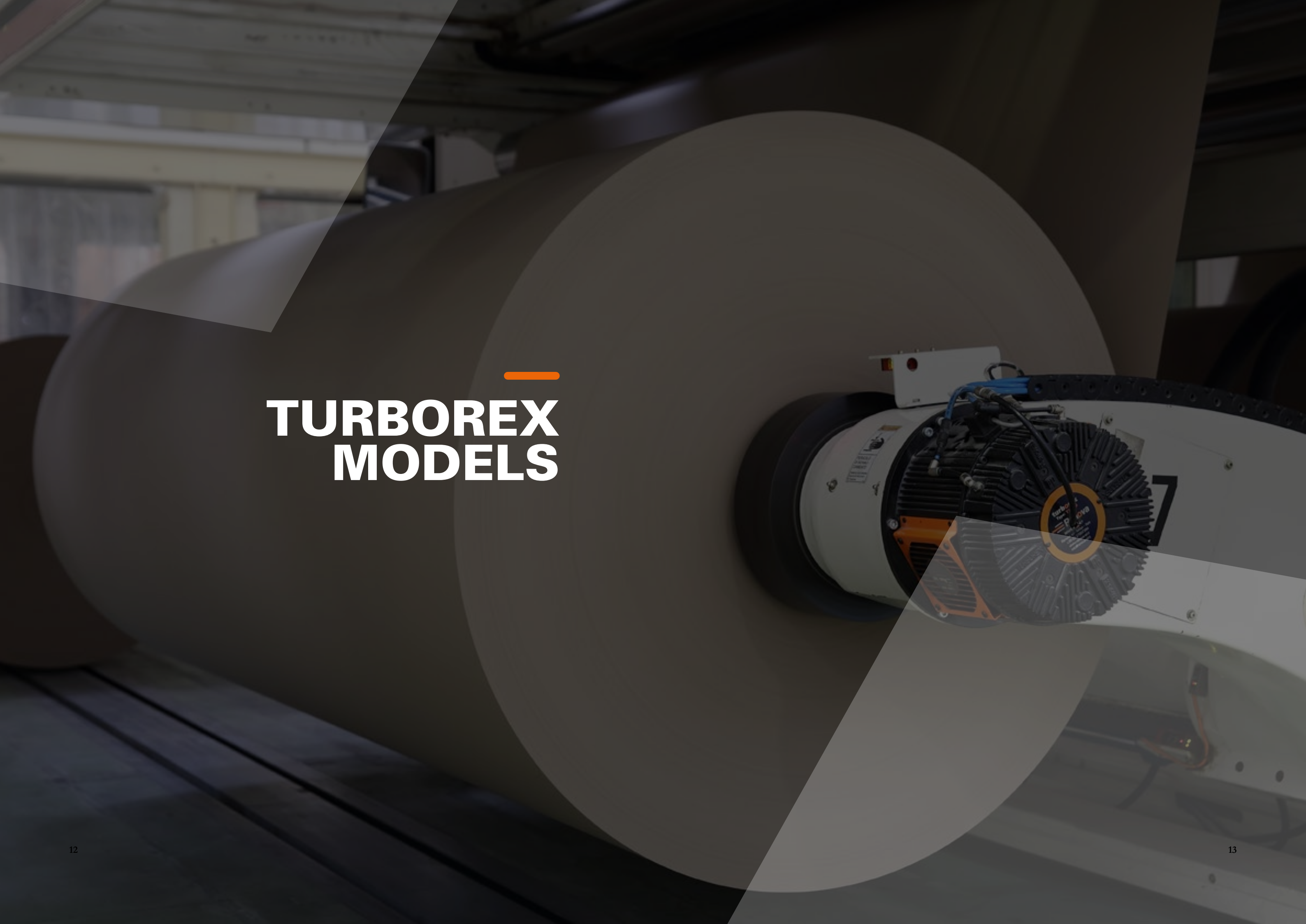
AND APPROVED BY OUR MOST DEMANDING CUSTOMERS

DAILY BRAKES POWDER EMISSION COMPARISON



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



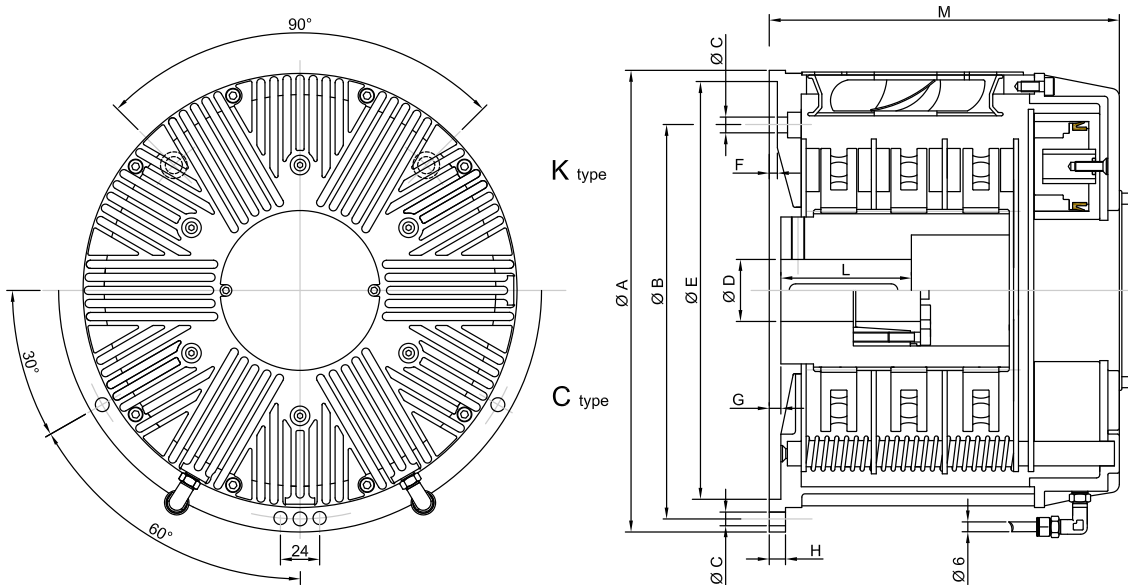


TURBOREX MODELS

TURBOREX HD

Turborex HD models are provided with HD discs to reach heat dissipation levels never reached before. It is a great solution for applications that require to drastically reduce the working temperatures.

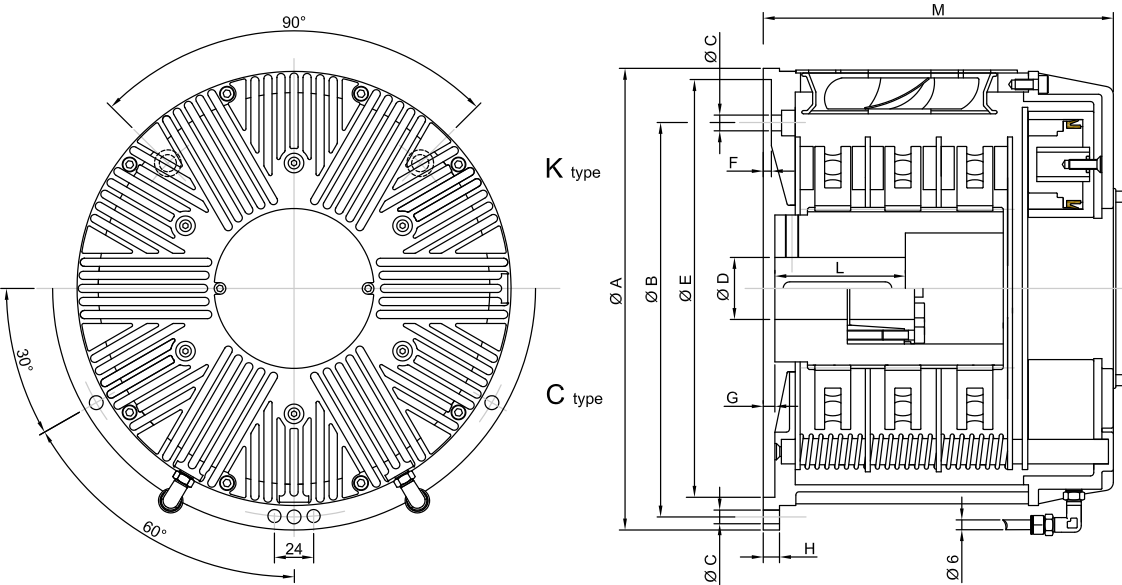
TXHD150						TXHD180					
	TX HD 150.05	TX HD 150.10	TX HD 150.15	TX HD 150.20	TX HD 150.25		TX HD 180.30	TX HD 180.40	TX HD 180.60	TX HD 180.75	TX HD 180.120
min torque Nm (0,2 bar)	2	3	4	5	8	min torque Nm (0,2 bar)	10	13	19	25	37
max torque Nm (6 bar)	55	99	132	191	250	max torque Nm (6 bar)	298	396	562	750	1125
heat dissipation (standard fan)	2 kW	2 kW	2 kW	2 kW	2 kW	heat dissipation (standard fan)	5 kW	5 kW	5 kW	5 kW	5 kW
heat dissipation (no fan)	1 kW	1 kW	1 kW	1 kW	1 kW	heat dissipation (hp fan)	9 kW	9 kW	9 kW	9 kW	9 kW
TXHD160						TXHD240					
	TX HD 160.15	TX HD 160.20	TX HD 160.25	TX HD 160.40	TX HD 160.50		TX HD 240.50	TX HD 240.80	TX HD 240.100	TX HD 240.150	TX HD 240.210
min torque Nm (0,2 bar)	4	7	8	10	16	min torque Nm (0,2 bar)	17	26	35	52	70
max torque Nm (6 bar)	132	198	264	382	500	max torque Nm (6 bar)	525	787	1050	1575	2100
heat dissipation (standard fan)	3 kW	3 kW	3 kW	3 kW	3 kW	heat dissipation (standard fan)	12 kW	12 kW	12 kW	12 kW	12 kW
heat dissipation (no fan)	1.5 kW	1.5 kW	1.5 kW	1.5 kW	1.5 kW	heat dissipation (hp fan)	14 kW	14 kW	14 kW	14 kW	14 kW



dimensions K type	TX HD 150	TX HD 160	TX HD 180	TX HD 240	dimensions C type	TX HD 150	TX HD 160	TX HD 180
	A	266	266	340		A	296	296
	B	218	218	322		B	280	280
	C	4x10.5	4x10.5	4x10.5		C	6x8.5	6x8.5
	D max	60	60	90		D max	60	60
	E +0.1/ +0.05	256	256	306		E +0.1/ +0.05	256	256
	F	5	5	5		F	5	5
	G	5	5	8		G	5	5
	H	/	/	21		H	12	12
	L	50	60÷93	60÷140		L	50	60÷93
dimensions C type	TX HD 150	TX HD 160	TX HD 180	TX HD 240		TX HD 150	TX HD 160	TX HD 180
	A	266	266	340		A	296	296
	B	218	218	322		B	280	280
	C	4x10.5	4x10.5	4x10.5		C	6x8.5	6x8.5
	D max	60	60	90		D max	60	60
	E +0.1/ +0.05	256	256	306		E +0.1/ +0.05	256	256
	F	5	5	5		F	5	5
	G	5	5	8		G	5	5
	H	/	/	21		H	12	12
	L	50	60÷93	60÷140		L	50	60÷93

TURBOREX HD SELEMATIC

Turborex HD 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 needing maximum sensitivity for the tensioning and the emergency stop.



TSHD180	TS HD 180.30	TS HD 180.40	TS HD 180.60	TS HD 180.75	TS HD 180.120
min torque Nm (0,2 bar)	3	4	6	8	12
max torque Nm (6 bar)	298	396	562	750	1125
heat dissipation (standard fan)	5 kW	5 kW	5 kW	5 kW	5 kW
heat dissipation (hp fan)	9 kW	9 kW	9 kW	9 kW	9 kW

TSHD160	TS HD 160.15	TS HD 160.20	TS HD 160.25	TS HD 160.40	TS HD 160.50
min torque Nm (0,2 bar)	2	3	4	5	8
max torque Nm (6 bar)	132	198	264	382	500
heat dissipation (standard fan)	3 kW	3 kW	3 kW	3 kW	3 kW
heat dissipation (no fan)	1.5 kW	1.5 kW	1.5 kW	1.5 kW	1.5 kW

TSHD240	TS HD 240.50	TS HD 240.80	TS HD 240.100	TS HD 240.150	TS HD 240.210
min torque Nm (0,2 bar)	17	26	35	52	70
max torque Nm (6 bar)	525	787	1050	1575	2100
heat dissipation (standard fan)	12 kW	12 kW	12 kW	12 kW	12 kW
heat dissipation (hp fan)	14 kW	14 kW	14 kW	14 kW	14 kW

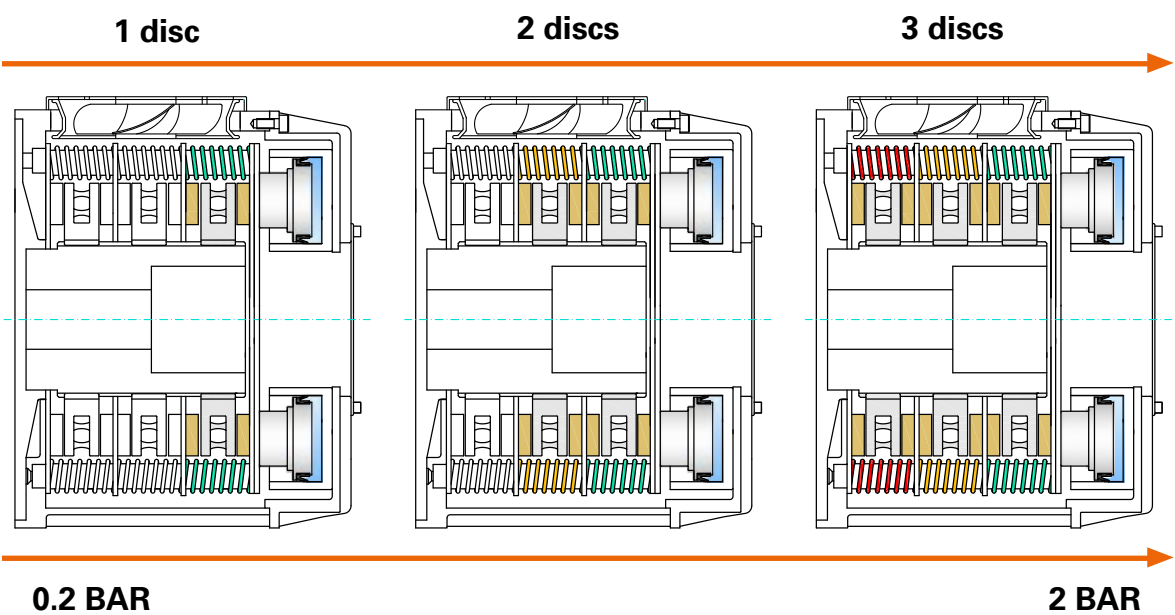
dimensions K type	TS HD 160	TS HD 180	TS HD 240	dimensions C type	TS HD 160	TS HD 180
A	266	266	340	A	296	296
B	218	218	322	B	280	280
C	4x10.5	4x10.5	4x12.5	C	6x8.5	6x8.5
D max	60	60	90	D max	60	60
E +0.1/ +0.05	256	256	306	E +0.01/ +0.05	256	256
F	5	5	5	F	5	5
G	5	5	8	G	5	5
H	/	/	21	H	12	12
L	60÷93	60÷140	60÷156	L	60÷93	60÷140
M	164	198	232	M	164	198

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.

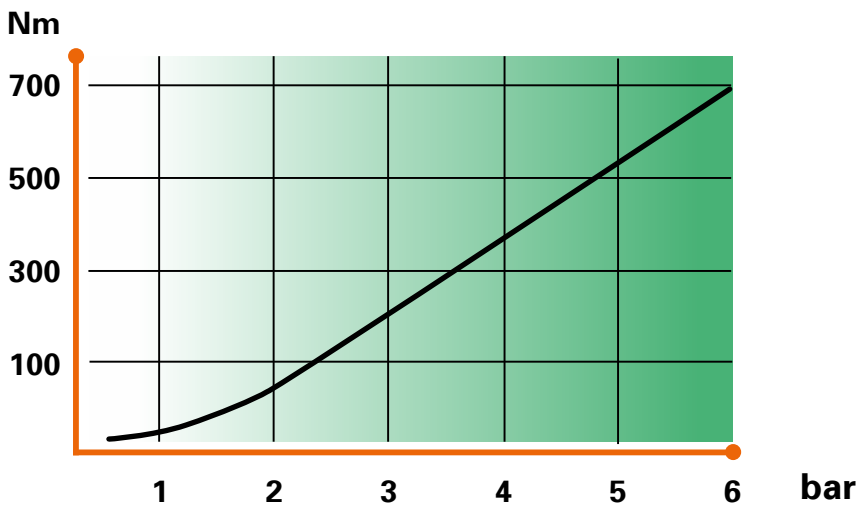


GRADUAL TORQUE APPLIED

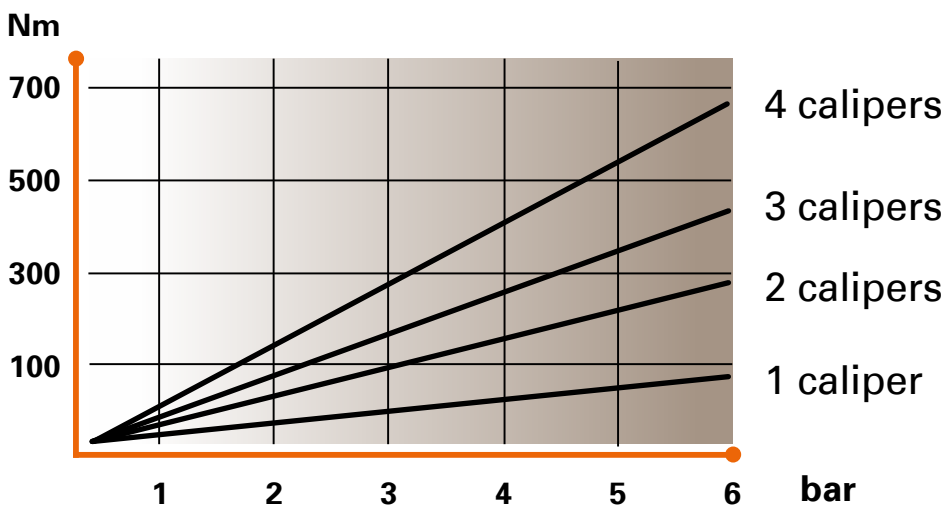
When selematic is incorporated in a turborex brake small variations of the torque are possible for a maximum sensitivity **especially among 0.2 bar** . In fact, the tension requirements for each material being processed, at the beginning of the roll, at the end of the roll and during an emergency stop situation can be accurately achieved via a single air supply.

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

TURBOREX SELEMATIC BRAKE



MONODISC BRAKE WITH MANUAL CALIPER SELECTION

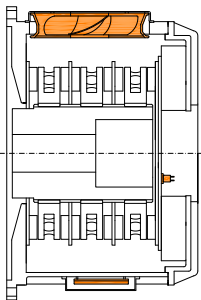


A large industrial machine, possibly a paper mill or textile loom, featuring a massive horizontal roll of light-colored material. The machine is equipped with various mechanical components, including a motor with orange accents and a pulley system. The background shows a factory setting with metal frames and equipment. The text "OPTIONALS AND ACCESSORIES" is overlaid in white on the left side of the image, with a small orange horizontal line above it.

OPTIONALS AND ACCESSORIES

FANS

Wide fans selection
same dimensions, different power.



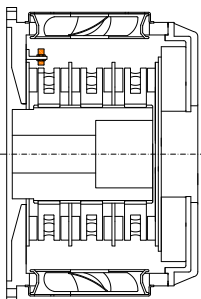
THERMISTOR

Fans internal temperature controller, the thermistor NTC is connected to the electronic unit that controls the fan through PWM signal (pulse with modulation).

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 DC	18 W
standard 220 V	220 V DC	19 W

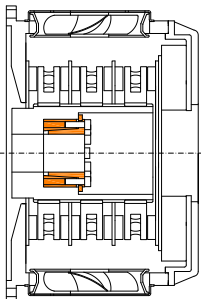
RPM COUNTER (PROXIMITY)

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



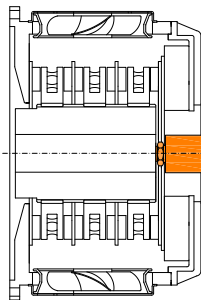
TAPER LOCKS

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



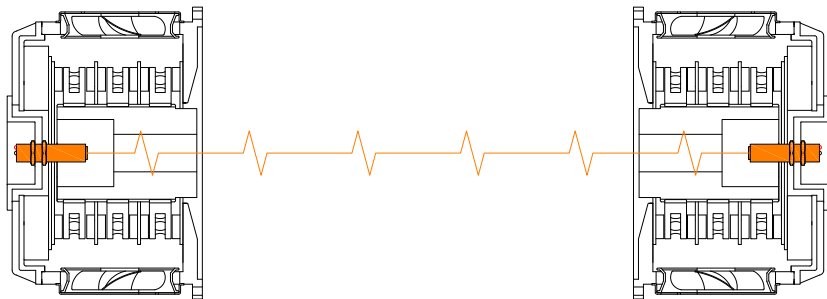
ROTARY JOINT

In case of application with expanding shaft or pneumatic core chucks. It allows the transit of the supply air to the shaft or the chuck.



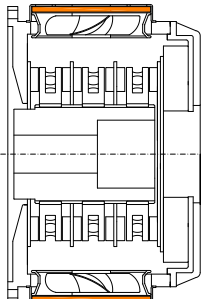
PHOTOCELL SUPPORT

Photocell set up for roll stand arm alignment.



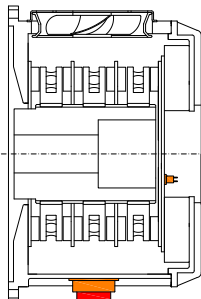
PARTICULATE FILTER

Applicable to all turborex models, the particulate filter eliminates any powder emission in the working area and on final product.



HEAT INDICATOR

With bimetallic thermostat. Visual light indicator for overheating brake.

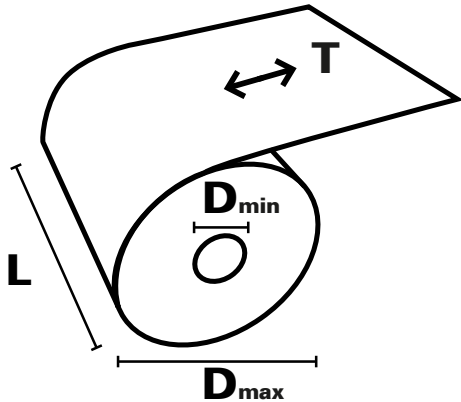




BRAKE SELECTION

BRAKE SELECTION GUIDE

	unit of measurement		tensioning
t	braking time [s]	$T_{max} = T_s \cdot L_{max}$	maximum web tension
v	web speed [m/min]	$T_{min} = T_s \cdot L_{min}$	minimum web tension
$T_{max/min}$	max/min web tension [N]	$C_{fmax} = \frac{D_{max} \cdot T_{max}}{2}$	maximum torque
$D_{max/min}$	max/min roll diameter [m]	$C_{fmin} = \frac{D_{min} \cdot T_{min}}{2}$	minimum torque
P	heat dissipated [kW]	$P = \frac{T_{max} \cdot v}{60 \cdot 10^3}$	heat dissipated
m	roll maximum weight [kg]		
T_s	web tension per centimeter [N/cm]		
$L_{max/min}$	max/min web width [cm]	$C_{fmax} = \frac{m \cdot D_{max} \cdot v}{240 \cdot t}$	emergency stop torque



SPECIFIC TENSION VALUES FOR MATERIALS

	paper			board		
weight [g/m²]	10 - 15	30 - 60	100 - 200	100 - 150	200 - 300	400 - 700
web tension [N] per centimeter T_s	0.3 - 0.4	1 - 2.5	3.5 - 7	5 - 7.5	10 - 11.5	16 - 18
	cellophane	polythylene	polypropilene	aluminum		
N/cm per μ of thickness	0.042	0.01- 0.02	0.015 - 0.025	0.035 - 0.105		

QUESTIONNAIRE



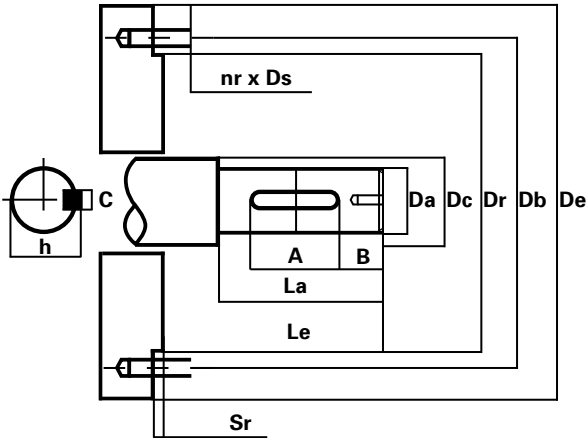
Please fill out the questionnaire, take a picture and send it via email to info@renova-srl.com

CUSTOMER

complete
name
position
company
plant
country
tel
email

APPLICATION DATA

machine type
application
n° brakes per roll 1 2
fans voltage 110 AC
220 AC
24 VDC
brakes pressure bar
roll diameter min mm
max mm
roll width min mm
max mm
roll weight min kg
max kg
speed min m/min
max m/min
type of material gr/m²
emergency stop sec

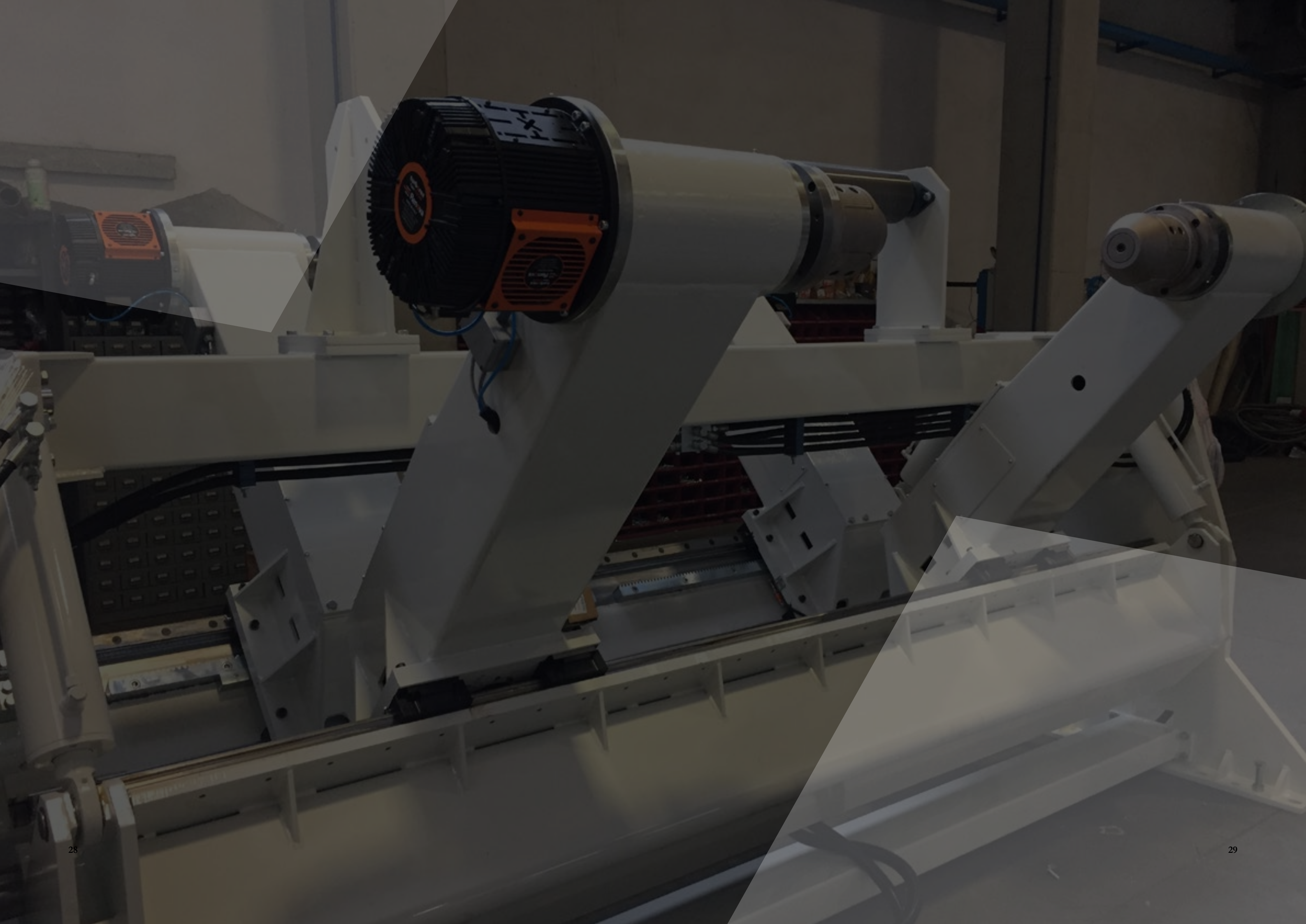


FLANGE DIMENSION

external diameter (De) mm
centering diameter (Dr) mm
centering thickness (Sr) mm
holes position diameter (Db) mm
nr per Ø of holes (nr x DS)
angles between holes (b°)

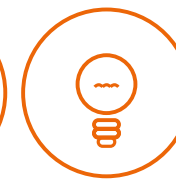
SHAFT DIMENSION

shaft diameter (Da) mm
shaft length (La) mm
shaft diameter (Dc) mm
total length (Le) mm
key dimensions (C x h) mm
blocking system seeger
bolt
threaded ring
dimension for hub/disc A mm
B mm





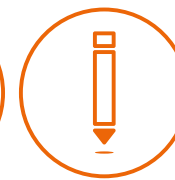
MADE IN ITALY
Our products are 100% designed and made in Italy



SUPPORT
Our staff is always available to answer your questions also in the after sales phase



QUALITY
All Renova's products are managed by TUV ISO 9001



CUSTOM PROJECTS
Project large or small, we work with you to provide the solution that fits



SUSTAINABILITY
Sustainable products, sustainable company. Renova has joined Erion



renova
WE NEVER LOSE CONTROL

