renova
WE NEVER LOSE CONTROL

turborex

PATENTED PNEUMATIC BRAKE

turborex

A story of innovation

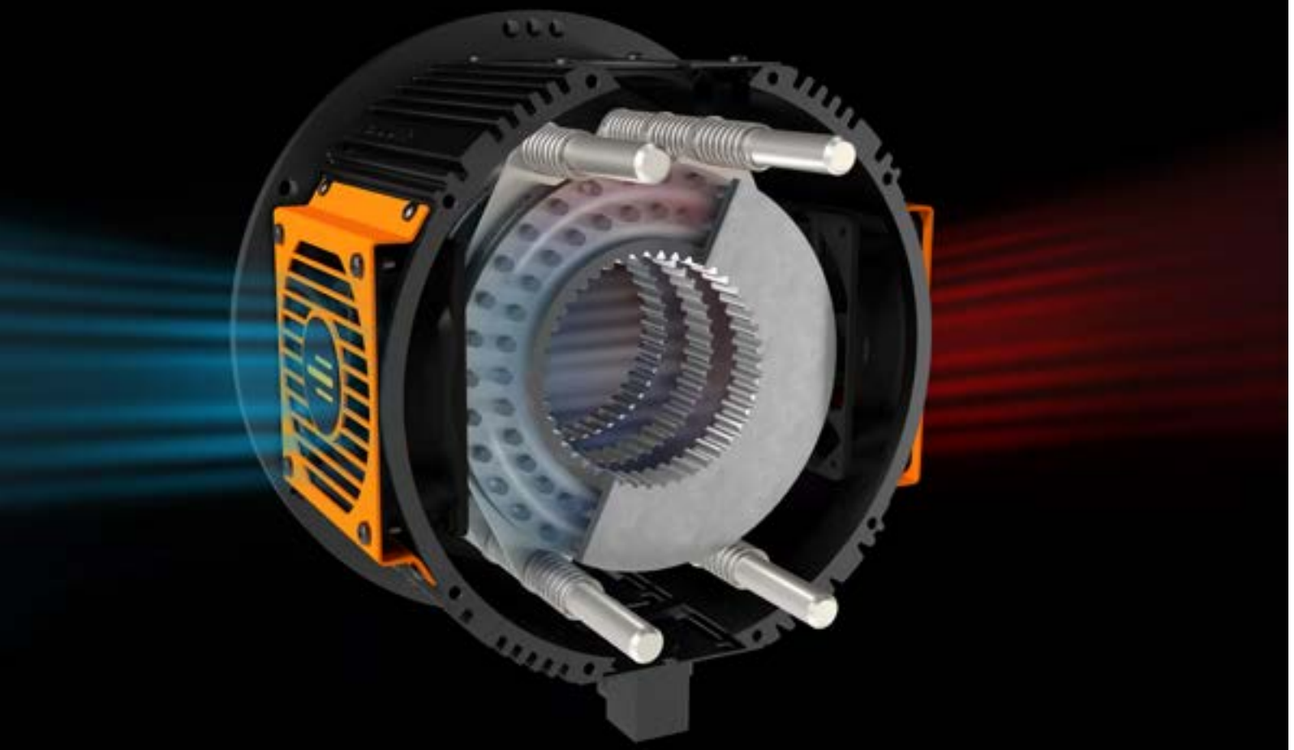
Turborex pneumatic brake is ideal on unwinders to keep constant the web tension during all the converting process.
Turborex is the pioneer of eco friendly pneumatic brakes: it was designed by Giampiero Re, the same person who designed in the ‘80s the CX brake, the reference in thousand of applications 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.

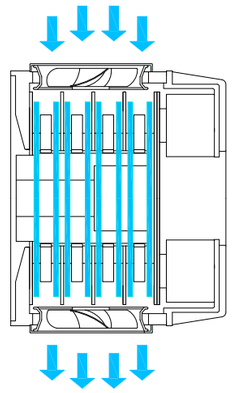
Moreover the reduced discs diameter of 7″ means 30% less sliding speed of the friction materials with the discs for a massive reduction of the pad wear and dust emission.

DUAL IN LINE FANS

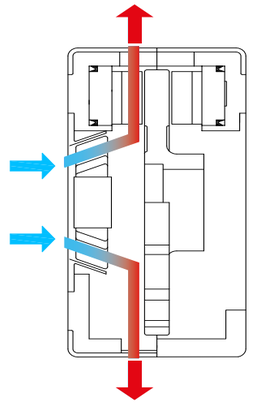
Continuous cooling airstream across pads and discs.

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



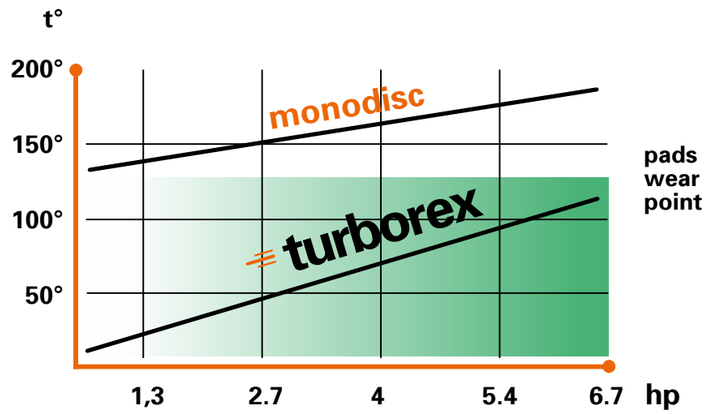
VS



- 2 cooling fans
- Radial air flow on all surfaces
- Disc diameter of 7″
- Pads/discs pressure 1:3
- Maximum heat dissipation 19 hp
- Soundless operation

- 1 cooling fan
- Axial air flow on all surfaces
- Disc diameter of 10″
- Pads/discs pressure 1:1
- Maximum heat dissipation 8 hp
- Noisy operation

TURBOREX WORKS AT LOWER TEMPERATURES



With Turborex high performances are kept constant over 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 18.8 hp

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 modifications 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.

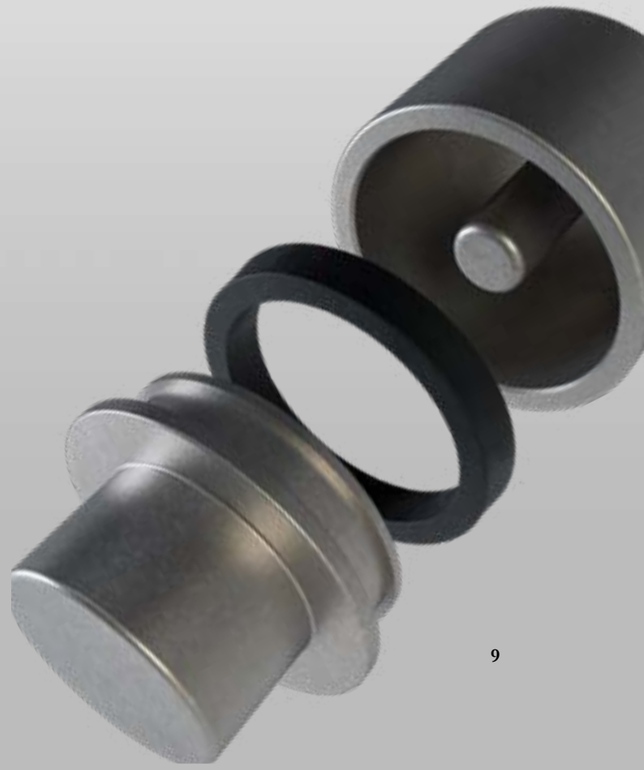
No more caliper disassembly, no more disc extractor.

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 7” 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 an 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.

DAILY BRAKES POWDER EMISSION COMPARISON

= turborex multidisc brake
pad life
42000
working hours

old monodisc brakes
pad life
8500
working hours

latest generation of monodisc brakes
pad life
27000
working hours

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

DATA AND DIAGRAMS ARE BASED ON BENCH TEST RESULTS

AND APPROVED BY OUR MOST DEMANDING CUSTOMERS

TURBOREX MODELS

TURBOREX HD

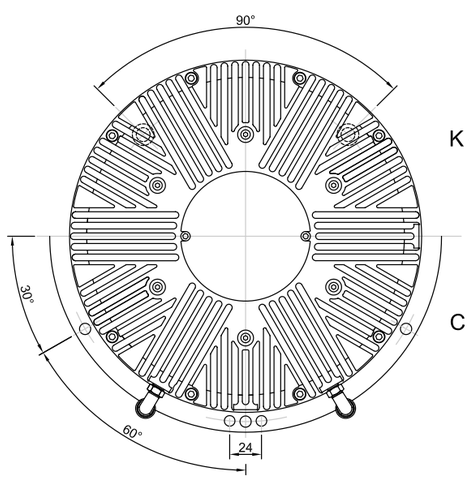
Turborex HD models are provided with HD discs to reach heat dissipation levels never reached before. It is a great solution for applications that require to drastically reduce the working temperatures.

TXHD150	TX HD 150.05	TX HD 150.10	TX HD 150.15	TX HD 150.20	TX HD 150.25
min torque ft•lbf (3 psi)	1.5	2.2	2.9	3.7	5.9
max torque ft•lbf (87 psi)	41	73	97	141	184
heat dissipation hp (standard fan)	2.7	2.7	2.7	2.7	2.7
heat dissipation hp (no fan)	1.3	1.3	1.3	1.3	1.3

TXHD180	TX HD 180.30	TX HD 180.40	TX HD 180.60	TX HD 180.75	TX HD 180.120
min torque ft•lbf (3 psi)	7.4	9.6	14.0	18.4	27.2
max torque ft•lbf (87 psi)	220	292	415	553	830
heat dissipation hp (standard fan)	6.7	6.7	6.7	6.7	6.7
heat dissipation hp (hp fan)	12	12	12	12	12

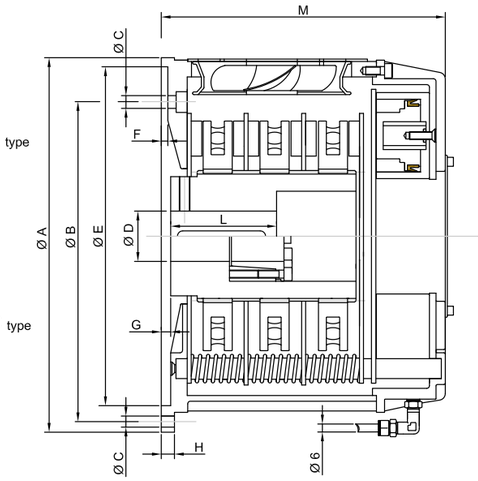
TXHD160	TX HD 160.15	TX HD 160.20	TX HD 160.25	TX HD 160.40	TX HD 160.50
min torque ft•lbf (3 psi)	2.9	5.1	5.9	7.4	11.8
max torque ft•lbf (87 psi)	97	146	195	282	369
heat dissipation hp (standard fan)	4	4	4	4	4
heat dissipation hp (no fan)	2	2	2	2	2

TXHD240	TX HD 240.50	TX HD 240.80	TX HD 240.100	TX HD 240.150	TX HD 240.210
min torque ft•lbf (3 psi)	12.5	19.1	25.8	38.3	51.6
max torque ft•lbf (87 psi)	387	580	774	1162	1548
heat dissipation hp (standard fan)	16	16	16	16	16
heat dissipation hp (hp fan)	18.8	18.8	18.8	18.8	18.8



K type

C type



dimensions K type	TX HD 150	TX HD 160	TX HD 180	TX HD 240
A	10.5	10.5	10.5	13.4
B	8.6	8.6	8.6	12.7
C	4x0.4	4x0.4	4x0.4	4x0.5
D max	2.4	2.4	2.4	3.5
E +4/+2 µ inch	10	10	10	12
F	0.2	0.2	0.2	0.2
G	0.2	0.2	0.2	0.3
H	/	/	/	0.8
L	2	2.4÷3.7	2.4÷5.5	2.4÷6.1
M	3.9	6.5	7.8	9.1

dimensions C type	TX HD 150	TX HD 160	TX HD 180
A	11.7	11.7	11.7
B	11	11	11
C	6x0.3	6x0.3	6x0.3
D max	2.4	2.4	2.4
E +4/+2 µ inch	10	10	10
F	0.2	0.2	0.2
G	0.2	0.2	0.2
H	0.5	0.5	0.5
L	2	2.4÷3.7	2.4÷5.5
M	3.9	6.5	7.8

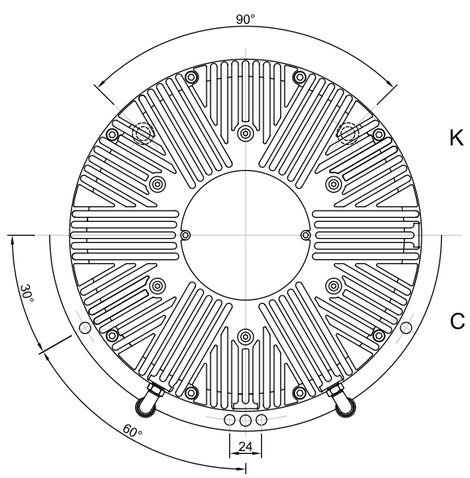
TURBOREX HD SELEMATIC

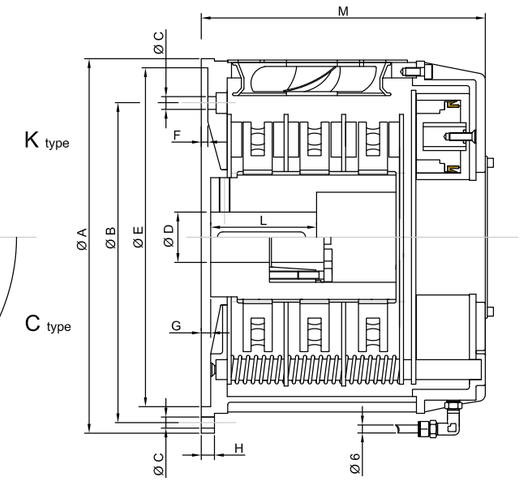
Turborex HD brakes can be provided with the selematic system. It is a great solution for applications that process more than one material with different width and rolls diameter needing maximum sensitivity for the tensioning and the emergency stop.

TSHD160	TS HD 160.15	TS HD 160.20	TS HD 160.25	TS HD 160.40	TS HD 160.50
min torque ft•lbf (3 psi)	1.5	2.2	2.9	3.7	5.9
max torque ft•lbf (87 psi)	97	146	195	282	369
heat dissipation hp (standard fan)	4	4	4	4	4
heat dissipation hp (no fan)	2	2	2	2	2

TSHD180	TS HD 180.30	TS HD 180.40	TS HD 180.60	TS HD 180.75	TS HD 180.120
min torque ft•lbf (3 psi)	2.2	2.9	4.4	5.9	8.8
max torque ft•lbf (87 psi)	220	292	415	553	830
heat dissipation hp (standard fan)	6.7	6.7	6.7	6.7	6.7
heat dissipation hp (hp fan)	12	12	12	12	12

TSHD240	TS HD 240.50	TS HD 240.80	TS HD 240.100	TS HD 240.150	TS HD 240.210
min torque ft•lbf (3 psi)	13	19	26	38	52
max torque ft•lbf (87 psi)	387	580	774	1161	1549
heat dissipation hp (standard fan)	16	16	16	16	16
heat dissipation hp (hp fan)	18.8	18.8	18.8	18.8	18.8





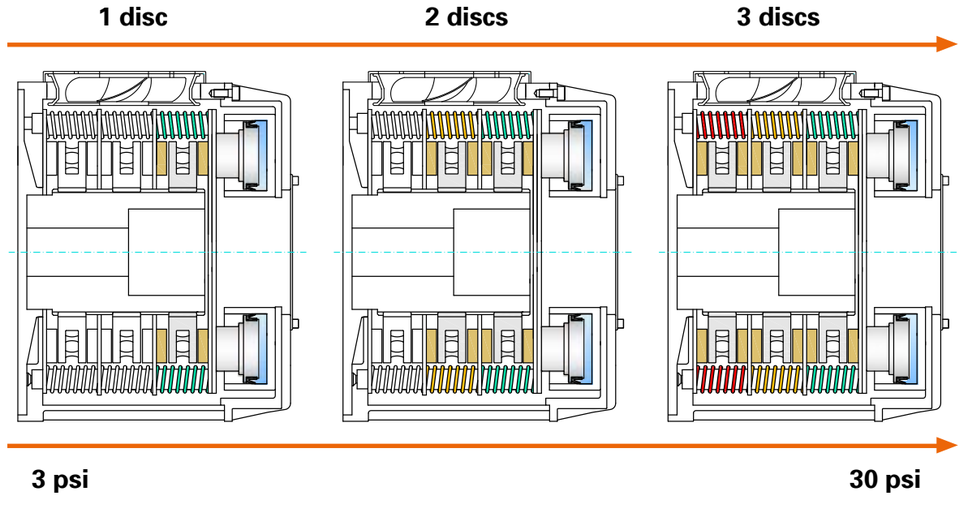
dimensions K type	TS HD 160	TS HD 180	TS HD 240
A	10.5	10.5	13.4
B	8.6	8.6	12.7
C	4x0.4	4x0.4	4x0.5
D max	2.4	2.4	3.5
E +4/+2 µ inch	10	10	12
F	0.2	0.2	0.2
G	0.2	0.2	0.3
H	/	/	0.8
L	2.4÷3.7	2.4÷5.5	2.4÷6.1
M	6.5	7.8	9.1

dimensions C type	TS HD 160	TS HD 180
A	11.7	11.7
B	11	11
C	6x0.3	6x0.3
D max	2.4	2.4
E +4/+2 µ inch	10	10
F	0.2	0.2
G	0.2	0.2
H	0.5	0.5
L	2.4÷3.7	2.4÷5.5
M	6.5	7.8

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

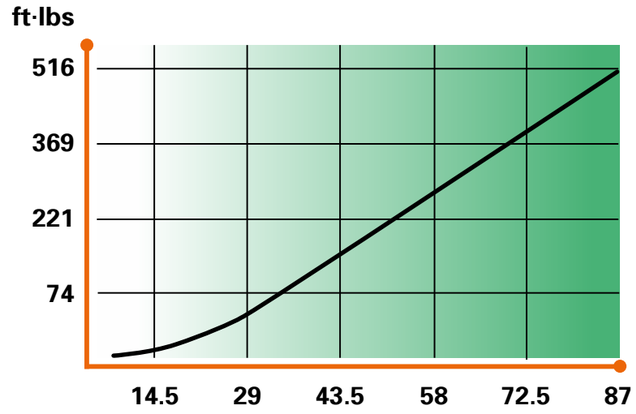


GRADUAL TORQUE APPLIED

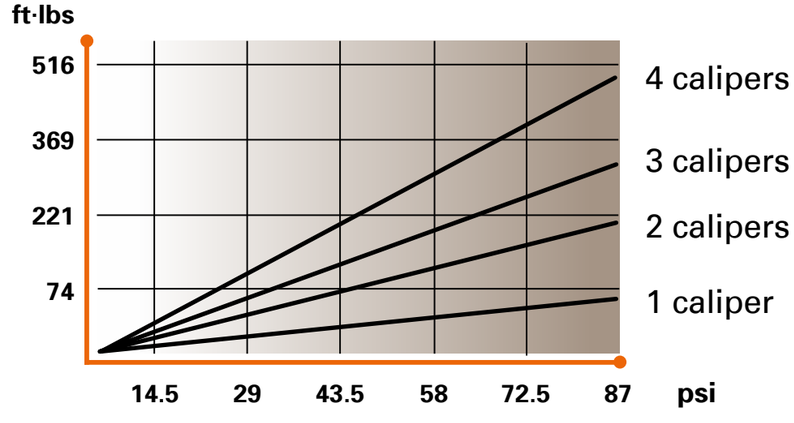
When selematic is incorporated in a turborex brake small variations of the torque are possible for a maximum sensitivity **especially among 3 psi** . In fact, the tension requirements for each material being processed, at the beginning of the roll, at the end of the roll and during an emergency stop situation can be accurately achieved via a single air supply.

- 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



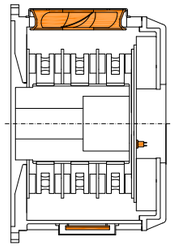
MONODISC BRAKE WITH MANUAL CALIPER SELECTION



OPTIONALS AND ACCESSORIES

FANS

Wide fans selection
same dimensions, different power.



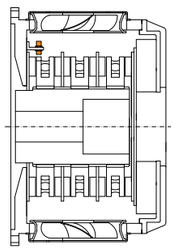
THERMISTOR

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	0.015 hp
high Performance HP4	24 V DC	0.040 hp
high Performance HP6	24 V DC	0.087 hp
standard 110 V	110 V DC	0.024 hp
standard 220 V	220 V DC	0.025 hp

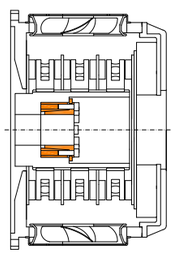
RPM COUNTER (PROXIMITY)

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



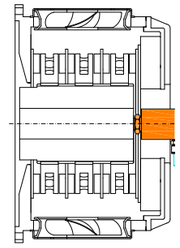
TAPER LOCKS

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



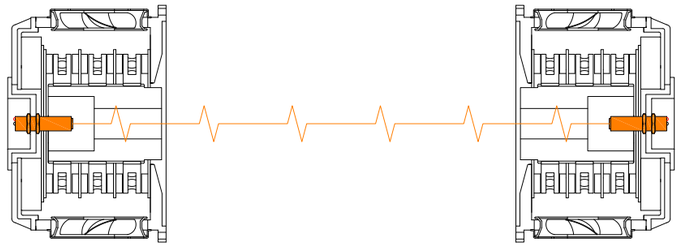
ROTARY JOINT

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.



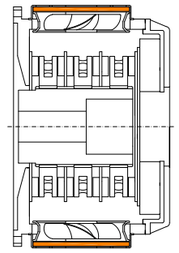
PHOTOCELL SUPPORT

Photocell set up for roll stand arm alignment.



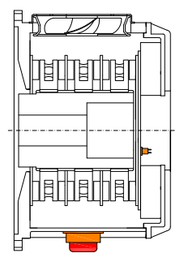
PARTICULATE FILTER

Appliable 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.



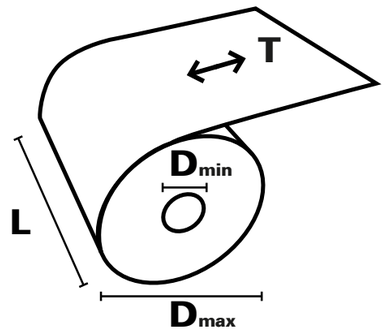
BRAKE SELECTION

BRAKE SELECTION GUIDE

	unit of measurement
t	braking time [s]
v	web speed [ft/min]
$T_{max/min}$	max/min web tension [lbf]
$D_{max/min}$	max/min roll diameter [in]
P	heat dissipated [hp]
m	roll maximum weight [lb]
Ts	web tension per centimeter [pli]
$L_{max/min}$	max/min web width [in]

	tensioning
$T_{max} = Ts \cdot L_{max}$	maximum web tension
$T_{min} = Ts \cdot L_{min}$	minimum web tension
$Cf_{max} = \frac{D_{max} \cdot T_{max} \cdot 0.083}{2}$	maximum torque
$Cf_{min} = \frac{D_{min} \cdot T_{min} \cdot 0.083}{2}$	minimum torque
$P = \frac{T_{max} \cdot v}{60 \cdot 10^3}$	heat dissipated

	emergency stop
$Cf_{max} = \frac{m \cdot D_{max} \cdot v}{92664.67 \cdot t}$	torque



SPECIFIC TENSION VALUES FOR MATERIALS

	paper			board		
Basic weight [lb]	6.8 - 10.1	20.3 - 40.5	67.6 - 135.1	67.6 - 101.4	135.1 - 202.7	270.3 - 473.0
web tension [lbf] per linear inch (Ts)	0.17 - 0.23	0.57 - 1.43	2.0 - 4.0	2.86 - 4.28	5.71 - 6.57	6.57 - 10.28

	cellophane	polythylene	polypropylene	aluminum
pli per µ of thickness	0.02	0.006- 0.011	0.009 - 0.014	0.02 - 0.07

QUESTIONNAIRE

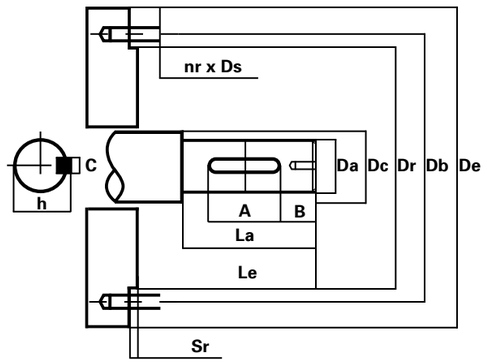
Please fill out the questionnaire, take a picture and send it via email to info@renova-srl.com

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 in / max in
roll width min in / max in
roll weight min lb / max lb
speed min ft/min / max ft/min
type of material lb
emergency stop sec



FLANGE DIMENSION

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

SHAFT DIMENSION

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

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

INNOVATION
We provide solutions that increase productivity and safety levels while reducing maintenance costs and procedures

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
Projects large or small, we work with you to provide the solution that fits

SUSTAINABILITY
Sustainable products, sustainable company.
Renova has joined Erion

renova
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CST Systems

Do you know what's possible?

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