turborex

pneumatic brake

TX 180 | TX 180 HD
TS 180 | TS 180 HD

CE

operating instructions

renova
WE NEVER LOSE CONTROL

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This product complies with the Directive 2006/42/CE

MANTX180ENA4V0421

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introduction

The following manual is intended for installers and users of the product and provides descriptions and explanations on the Turborex brake in its standard version (TX), in the Selematic version (TS) or in its High Dissipation series (TX HD – TS HD) and on all its parts and/or options that can be supplied by Renova.

Inside you will find:

- Unpacking instructions for our TX - TX/HD - TS - TS/HD brakes
- Instructions for assembly and storage of our brakes and related maintenance
- Electric/pneumatic connections of our brakes
- Instructions for replacing the component parts of our brakes and various kits
- Assembly instructions for the various optionals that Renova can supply for our Turborex brakes
- Dimensions and technical data of our brakes

Since the product and Renova itself are constantly changing in order to improve the quality and performance of our products, Renova reserves the right to update the manuals without obligation to update products already marketed and/or any previous manuals.

warnings

CAREFULLY READ THE INSTRUCTIONS AND WARNINGS IN THIS MANUAL AND KEEP THEM FOR FURTHER REFERENCE FOR THE ENTIRE LIFE OF THE PRODUCT. IN THIS MANUAL THERE ARE IMPORTANT INSTRUCTIONS RELATED TO OPERATION AND SAFETY FOR INSTALLING, USE AND MAINTENANCE OF THE PRODUCT.

WE STRONGLY RECOMMEND THAT THE DEVICE BE ASSEMBLED AND INSPECTED BY A QUALIFIED TECHNICAL STAFF IN ORDER TO AVOID ANY RISK OF DAMAGE TO PERSONS OR TO THE PRODUCT ITSELF.

IN THE EVENT OF ANY BREAKAGE OF THE PRODUCT, THE OPERATOR SHOULD BE AWARE OF THIS MANUAL AND THE INFORMATION INSIDE IT, KNOWING AND KNOWING TO AVOID ANY RISKS AND / OR DANGERS, BEFORE AN INTERVENTION BY OUR SPECIALIZED TECHNICIAN.

assistance

Renova is worldwide present with Agents and Distributors.

Contact Renova support

support@renova-srl.com

description

The Turborex TX - TX/HD - TS - TS/HD brakes, made entirely by Renova in its factory, are mainly designed for use in the field of tension control of unwinding materials, an application that requires excellent heat dissipation and great sensitivity. tension control on core, which by varying the diameter, require a continuous variation of the braking parameters to guarantee the quality of production. A brake with excellent cooling capacity was thus created to ensure constant performance during its work, infinitesimal wear of the friction elements with consequent practically zero emission of fine dust to protect the health of the personnel present next to the machine. Maintenance costs are therefore very low and limited over the years. Particular attention was then paid to the flexibility of the brake in order to offer performance adaptable to the various types of processing. There are thus numerous possibilities to customize the brake by varying the number of pistons that operate it, their size, the number of discs, the material of the friction pads and the adoption of the Selematic system to enhance its sensitivity to low torques.

THIS COMPONENT IS DESIGNED TO BE INCORPORATED IN A MACHINE AND CANNOT WORK INDEPENDENTLY.
IT IS FORBIDDEN TO USE IT IF ITS USE ON THE MACHINE DOES NOT COMPLY WITH THE REGULATIONS IN FORCE.

functioning

The brake is activated by a series of pneumatic actuators (cylinder + piston), mounted uniformly in the cover; the number can vary from 2 to 6 according to the needs of the couple. These actuators (which we will call from now on simply pistons) can be connected all together or even in groups (2 + 4) (2 + 2) in order to diversify the torque according to the type of use: voltage control braking and emergency braking, braking of papers with different weights or reel sizes, etc.
The pistons compress the pressure disc, used as a wear indicator, which in turn presses a series of steel discs, which slide on teeth, against brake linings mounted on supports that slide on 4 guides.
A series of springs separates the discs in the absence of pressure, eliminating residual torques that can hinder the positioning of the coils or other.
The TS version (Turborex Selematic) is instead the more “flexible” version compared to our normal Turborex. Constructively identical, in this brake the only variant lies in the springs. While the Turborex has 16 identical springs (12 for the HD version), the Selematic springs are designed to have different stiffnesses and resistances, from the hardest located between the first disc and lining plate, to the softer one, located near the last record. This involves a wider use than the standard Turborex, managing to adapt to non-continuous work changes. The Turborex Selematic, therefore, is recommended in particular uses where there are frequent changes in work, pressure, etc... while for continuous and uniform uses, we recommend the standard Turborex.
The heat generated by the action of the brake is disposed of by 2 peripheral fans, one under pressure and the other in suction, which force the air to pass through the disc pack, cool the surfaces and maintain constant working temperatures.

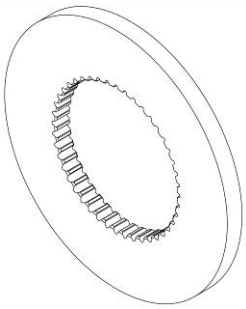
The maximum operating pressure of our TX - TX/HD - TS - TS/HD brakes is 6 Bar. Renova strongly advises against

using a higher pressure in order to avoid breakdowns and malfunctions harmful to the machine and/or to the 'operator. We also remind you that incorrect use of the brake does not fall within our warranty coverage guidelines.

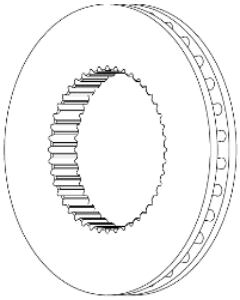
High Dissipation series version

The High Dissipation series version (abbreviated to HD) has now become the Renova standard. The operation of these brakes is identical to its standard version, but they differ, as indicated by the name of the brake itself, as they possess a high working heat dissipation thanks to the innovative design of our self-ventilating central discs.

These discs, with a different profile from the standard ones, provide greater heat dissipation, making the brake more performing.



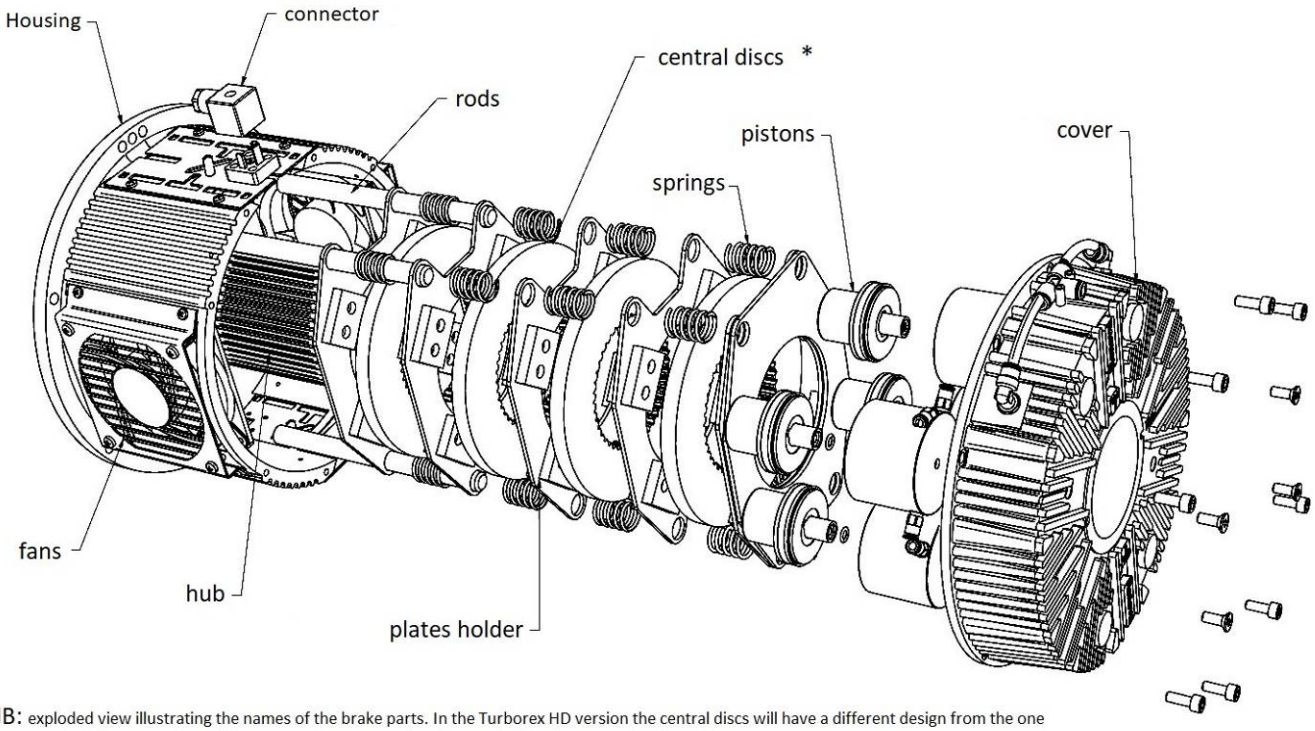
Standard disc TX



Self-venting disc TX/HD

This innovative design also allows the use of one less disc than the standard version of the brake, making the brake itself lighter and more efficient.

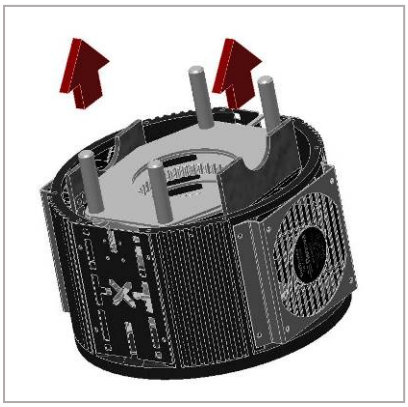
brake parts designations



* NB: exploded view illustrating the names of the brake parts. In the Turborex HD version the central discs will have a different design from the one shown and will be present in a different quantity compared to the standard Turborex version (1 less)

disassembly, inspection and storage

Check that the packaging has not been damaged during transport.
Check that the following details are included in the package and correspond to the brake ordered whose code is mentioned on the label stuck on the brake casing.



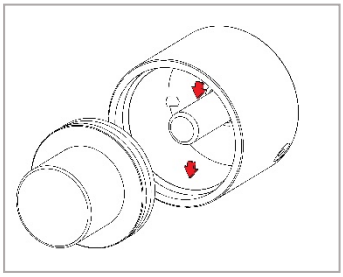
Remove the transport guards from the fans.

Also remove the protection on the sensors in models with tachometer, taking care not to damage the sensor cable.

ATTENTION:
If this requirement is neglected, the ventilation of the brake is compromised and the consequent overheating can damage various components such as brake linings, central discs, electric cables.

Renova guarantees a detailed dimensional and quality control on all the parts that make up our TX-TX / HD brake. We also guarantee total control over any electrical part present in the chosen brake configuration, 100% tested by our operators during the brake assembly phase.

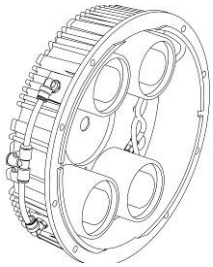
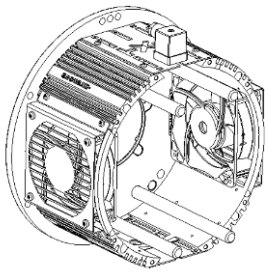
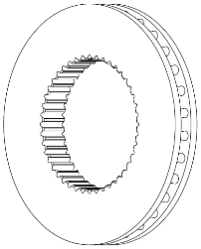
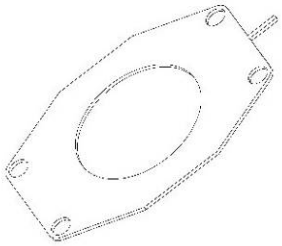
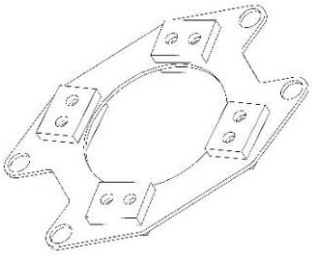
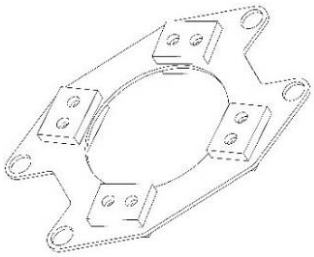
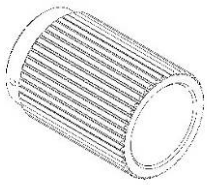
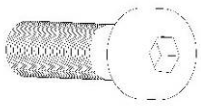
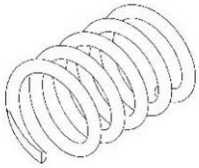
If the brake is stored in stock, leave the brake in its original packaging. Despite the galvanic protections on the metal parts, very humid or aggressive environments can over time affect the surfaces of the hub, central discs and sliding guides and inflate the friction pads.



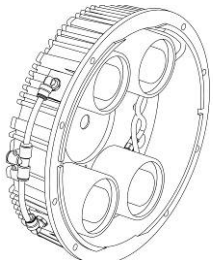
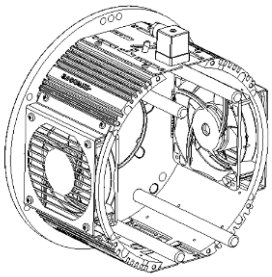
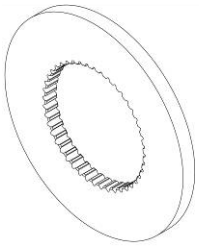
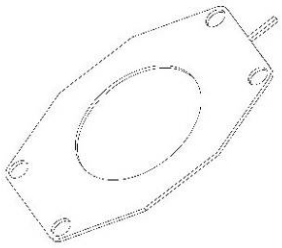
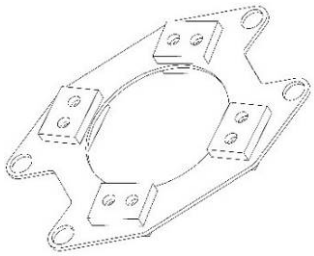
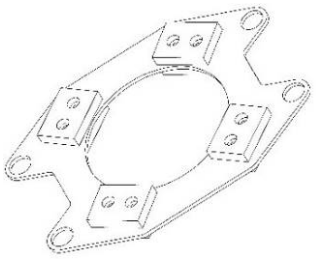
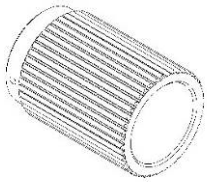
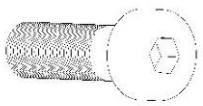
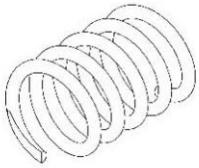
If the brake is stored for a long time, the film of grease that lubricates the movement of the piston can dry out.
It is therefore advisable to relubricate the internal surfaces of the cylinder and the central guide with a very thin film of lubricating, water-repellent, anti-adhesive silicone grease specific for metal-rubber. Be careful not to use excessive amounts of grease which, reaching the brake linings, affect their performance.

package contents

Turborex TX HD version (no optional)

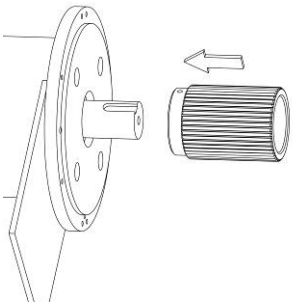
Cover with assembled and wired pistons	1		Housing with 4 guides and two carters with fans assembled and connected to the connector	1	
Central discs design HD	3		Pressure disc	**1**	
Double plate holder	2		Single plate holder	**2**	
Hub If purchased by the customer	1		Allen screw M6	**8**	
Springs Soft wire Ø same if in standard TX version. Soft wire Ø different if Selematic version	12				

Turborex TX version

Cover with assembled and wired pistons	1		Housing with 4 guides and two carters with fans assembled and connected to the connector	1	
Central discs design HD	4		Pressure disc	**1**	
Double plate holder	3		Single plate holder	**2**	
Hub If purchased by the customer	1		Allen screw M6	**8**	
Springs Soft wire Ø same if in standard TX version. Soft wire Ø different if Selematic version	16				

assembly procedures

Hub mounting on the machine shoulder

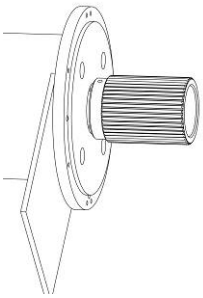


Check that the mounting dimensions on the frame and on the shaft correspond to those of the brake.

- Check that there is no grease or oil from faulty shaft bearing seals.
- Fit the hub up to the support surface of the brake body.
- Axially block the hub with a screw threaded ring nut or Seeger or screw/washer in the shaft head.

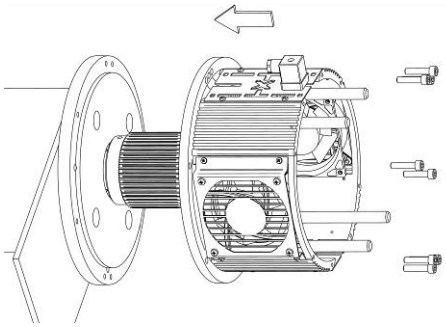
ATTENTION:

A badly locked hub can slide on the shaft and by rotating damage the pistons with consequent detachment of fragments that are thrown.

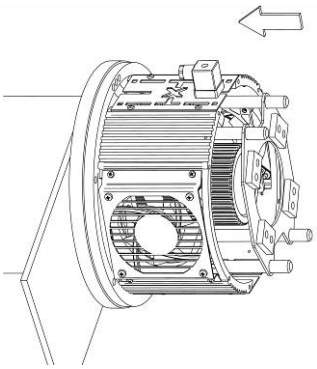


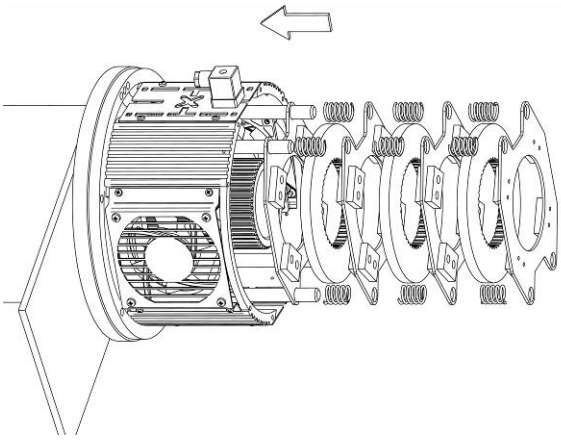
Brake mounting:

• Open the brake by unscrewing the 8 screws on the cover and remove the discs and springs.
• Fit the brake body centering it on its seat and positioning the fans horizontally to prevent them sucking dirt from the floor
• Secure it firmly with screws with tightening torque suitable for aluminum alloys (M8>15Nm, M10>20Nm).

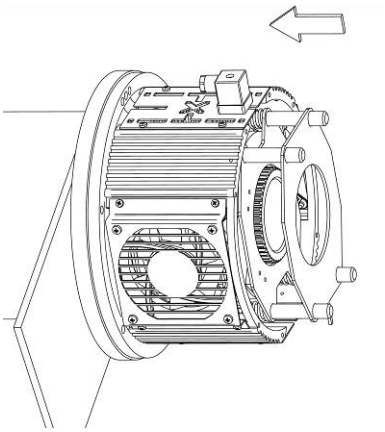


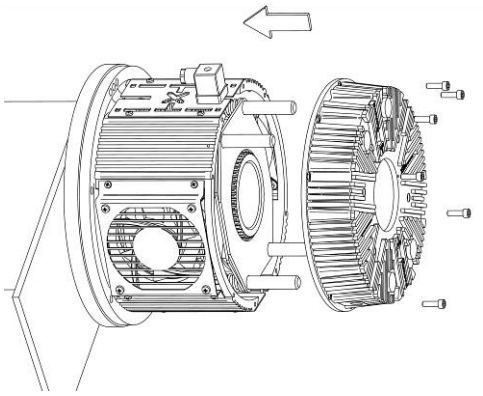
• Insert the first single shoe holder plate onto the guides with the pads facing the operator.
• Mount the first set of 4 springs on the guides, the central disc, the double shoe holder disc.
• Continue with the other springs, central discs and staple holder plates in sequence, then mount the last single staple holder disc with the pads facing inside of the brake





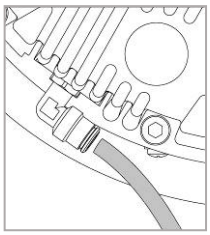
• Fit the pressure disc.
• Press the disc pack to check that it moves freely and with a springy motion.
• Fit the cover by aligning the holes with the guides and close it with a slight pressure.
Then tighten the 8 screws that connect it to the brake body with a tightening torque suitable for the aluminum alloy (~6Nm).



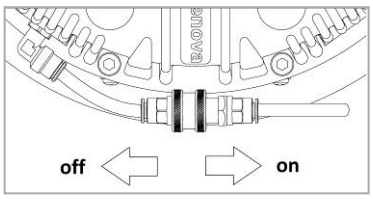


Once all the steps listed have been completed, the mechanical assembly is complete and the pneumatic and electrical connections must be made to make the brake operational.

pneumatic connection procedures



• Connect the air supply hose to the fitting or fittings in the brake cover.
Depending on the number of pistons mounted on the brake and the connection system, there may be several entries which connect separately groups of pistons.

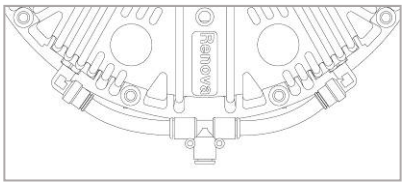


• If there is a manual selection valve for feeding to the piston group, position it open.

• If there is a different differentiated power supply system, such as two solenoid valves that feed groups of pistons, position it in the opening position.

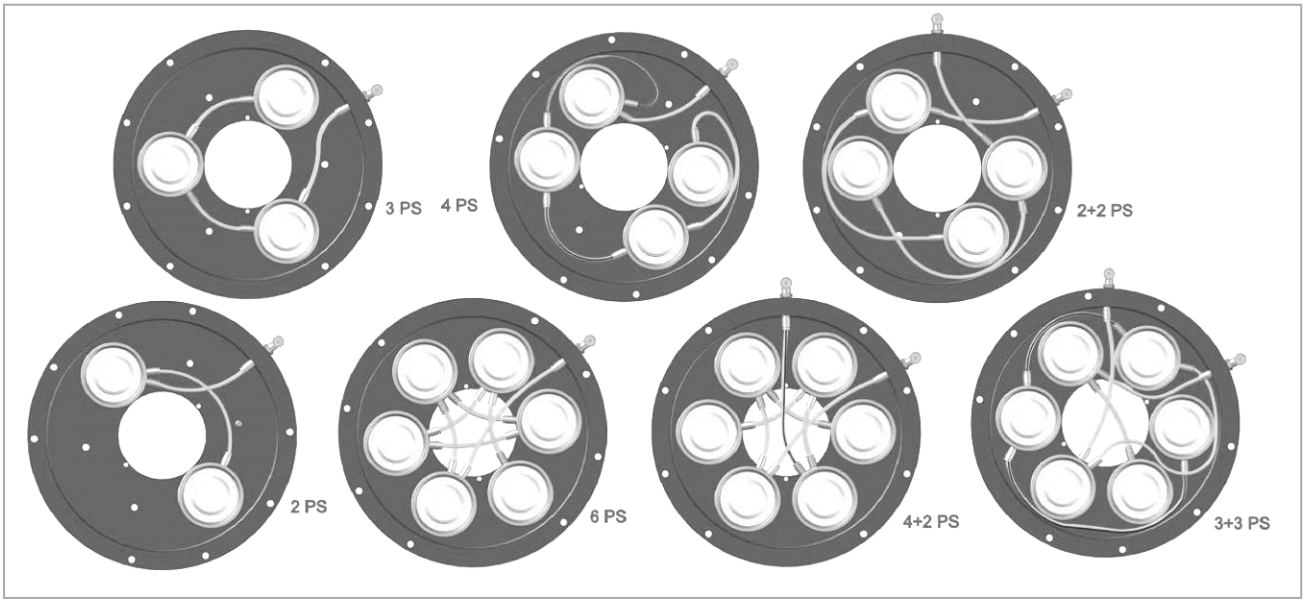
• Bring the brake to maximum pressure (6 bar) and check that there are no load drops or hisses that signal air leaks.

• In the case of drives connected to regulation system with electro-pneumatic transducers or proportional valves, etc. controlled by PLC or computer, check that at signal “0” there is 0 bar of pressure and the internal brake discs are completely free to turn



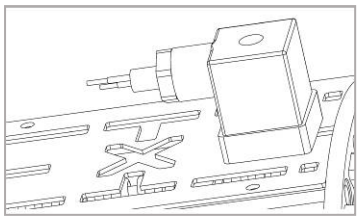
• The maximum recommended pressure is 6 bar.

Possible configurations of the pistons present in the cover:



electrical connection procedures

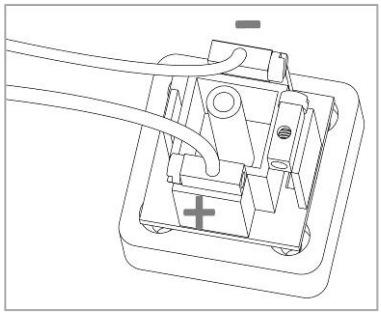
• Connect the power supply wires of the fans and the rev counter (if present) to the connector in the side brake casing, taking care of the polarity. The electronic card that controls the fans requires this prescription. The same attention also applies to the connections of the tachometer sensor in the models that provide it; in addition to the power contacts, there is also the pulsating signal that will be processed by the PLC

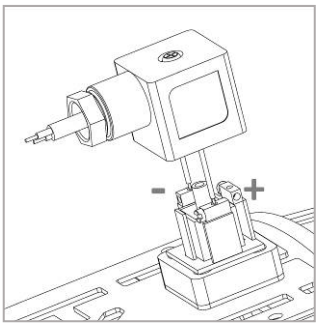


• Some types of double-pole or multi-pole connectors are used which are mounted according to the brake equipment or customer specifications.

TRIPOLAR CODE CNTH100P3

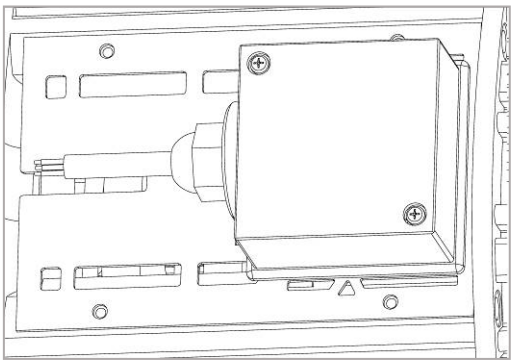
EN17530-803 three-pole connector
Cable diameter 2,5 mm
Rated voltage max 300 V AC
Maximum range 16 A
C-VDE insulation
Degree of protection IP 65
Screw connection
Used for fans connection
• Connect positive pole 90° times from neutral
• Connect negative pole opposite connector





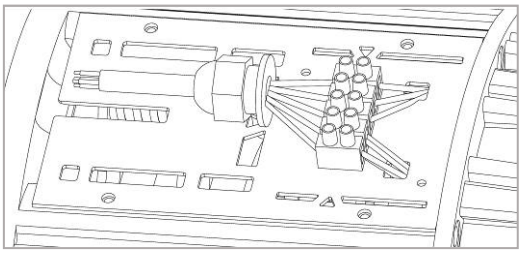
BOX/MAMMUT CODE CNTH100F0

Multipole connector
Cable diameter 2,5 mm
Max rated voltage 380 V AC
Maximum range 2 A
Screw connection
Degree of protection IP 54



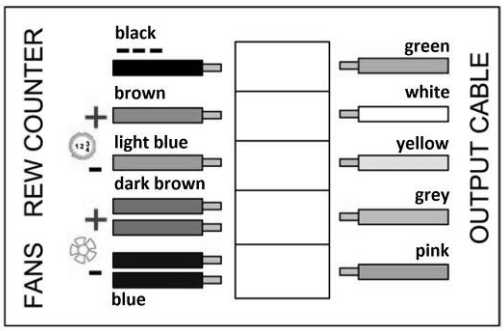
Used to connect fans, tachometer sensor (in some applications even double) and other sensors such as the temperature sensor.

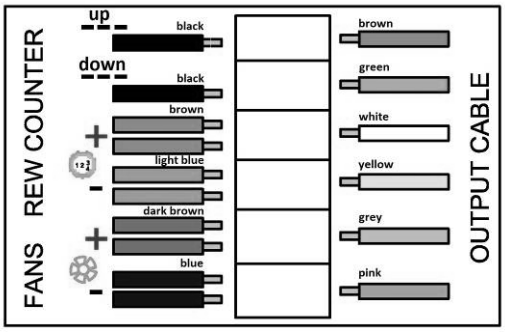
Diagram 1 shows the inlet connections from the fans and the rev counter; out to the wires of the multipolar cable.
Diagram 2 shows the inlet connections from the fans and 2 rev counter sensors; out to wires of the multipolar cable.
Diagram 3 shows the incoming connections from the fans and the temperature sensor; out to the wires of the multipolar cable.
Diagram 4 shows the connections to the fans only.

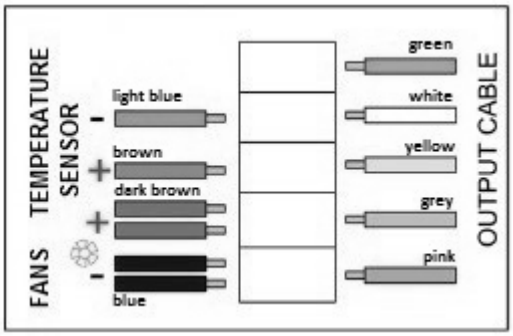


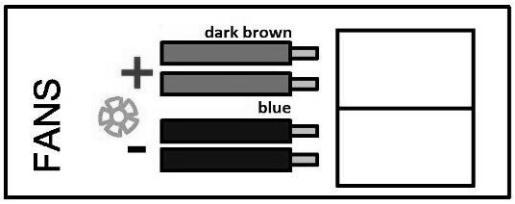
The advantage of this type of connector is the absence, in case of failure and therefore replacement of the fans or the tachometer sensor, of welded contacts that are more complicated to make and which can give to cold welding.

ELECTRICAL CONNECTION DIAGRAMS



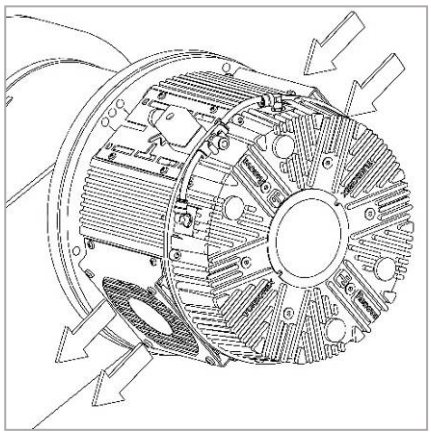






fans

After making the various connections, turn on the fans.
The voltage of the standards fans is 24 VDC.



At the request of customers, we sometimes mount voltage of 110 VAC and 220 VAC which we do not recommended because they are potentially dangerous for the people working on the brake.
It is preferable to use a transformer that we can supply as an option.
The fans normally used are divided into *standard and hp (high power)* with enhanced cooling characteristics.

Type	Voltage	Power	Sound level	Renova code
Standard	24 V CC	11 W	57 dB(A)	VT12038024
High performance HP4	24 V CC	30 W	67 dB(A)	VT120380H4
High performance HP6	24 V CC	65 W	73 dB(A)	VT120380H6
Standard 110 V	110 V AC	20 W	51 dB(A)	VT12038110
Standard 220 V	220 V AC	19 W	47 dB(A)	VT12038220

Fans dimensions: 120mm x 120mm x 38mm.

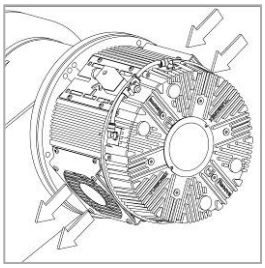
• Check that the fans are working correctly, one in suction and the opposite in pressure

Once all the mechanical, pneumatic and electrical steps have been carried out, the brake is ready for use.

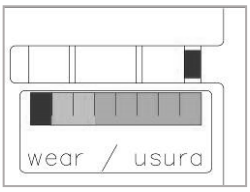
maintenance instructions

Our TX / TX HD brakes require periodic maintenance as they have parts subject to wear. In order to avoid problems on the brake and to corrupt its operation, below you will find the checks to be carried out on our brakes and the replacement procedures if something should be changed.

MAINTENANCE

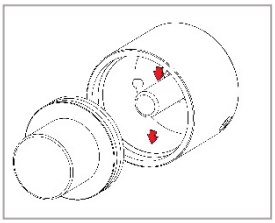


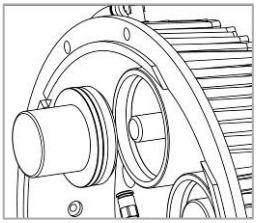
• Check when the systems are switched on or in any case on a daily basis that the suction and pressure fans are working correctly. Operation of the brake without sufficient ventilation can lead to excessive overheating which seriously damages brake linings, fans and other components.

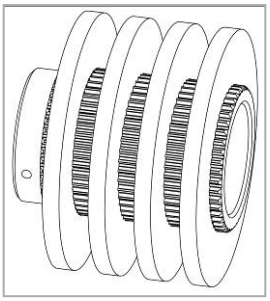


• Check the wear indicator on the side casing every month. If the indicator is positioned in the yellow area, check the state of the linings and if some are more worn than others, swap their position. If the indicator is positioned in the red area it is necessary to replace them.

• Check every 3 months that the pistons are not full of dust or dirt. Clean the sliding surface with compressed air. Check that the pistons slide freely. If not, spread a thin film of lubricating, water-repellent, anti-adhesive silicone grease specific for metal-rubber, the internal surfaces of the cylinder and the guide. Also check the good condition of the lip seals. If not, replace them







• Check every 3 months that there are no lumps of dirt between the toothing of the hub and the discs that could obstruct their free sliding. If not, clean them with a wire brush.

ATTENTION:

Before working on the brake, always disconnect the power supply to the fans. The moving blades can be dangerous for the operator's fingers.

spare kit (replacements)

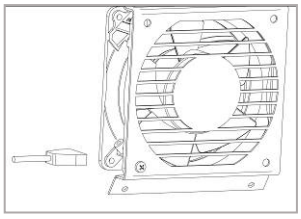
REPLACEMENT OF THE FERRODIC PLATE

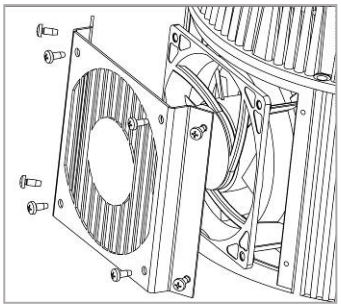
- Remove the power supply to the fans because the moving blades can be dangerous for the operator's fingers.
- Remove the pneumatic power supply.
- Open the brake and remove the old brake pads.
- Check that the 4 shoe-holder plates do not show any lesions that could affect the sliding of the brake lining discs. If necessary, replace the guides
- Fit the new plates on the brake according to the assembly instructions described above (ref. Pag. 10/11)

REPLACEMENT OF THE CENTRAL DISCS

- Remove the power supply to the fans because the moving blades can be dangerous for the operator's fingers.
- Remove the air supply.
- Open the brake and remove the old central discs.
- Check that the hub toothing does not show any cracks that could affect the free sliding of the discs. If necessary, replace the hub. If there is dirt, clean with a wire brush
- Fit the new plates on the brake according to the assembly instructions described above (ref. Pag. 10/11)

REPLACEMENT OF THE FANS

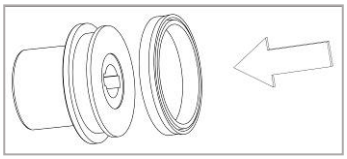


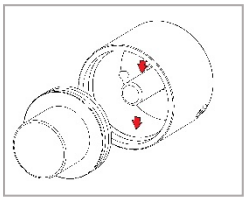


- Remove the power supply to the fans because the moving blades can be dangerous for the operator's fingers.
- Remove the pneumatic power supply.
- Disassemble the carter of the fan to be replaced and then the fan **taking note of the direction of assembly** that characterizes the function of air suction or compression.
- Disconnect the plug located on the side of the fan.
- Mount the new fan on the carter and connect it to the flying socket.
- Secure the carter with the screws on the brake body.
- Power up the fan and check that it is working properly

Note: some types of fans do not have a flying socket that cuts the connection wire. In this case, removing the fan, remove the wire up to the electrical connector and then reinsert that of the new fan. It is then necessary to reconnect the wire to the connector with locking

REPLACEMENT OF THE PISTONS



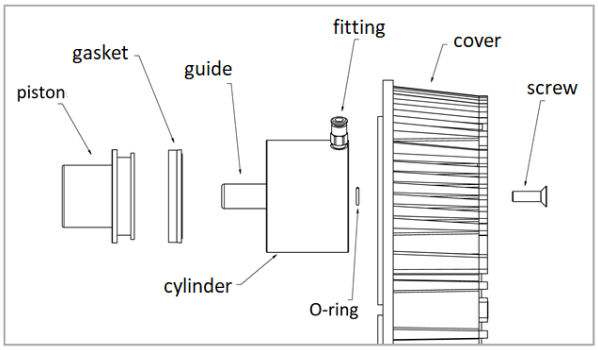


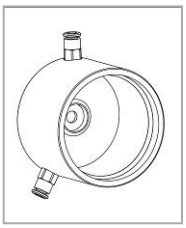
Piston lip seal replacement.

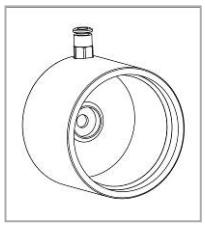
- Remove the piston from the cylinder, if it is stuck, feed the brake at very low pressure until the piston comes out of its seat
- Remove the damaged gasket and replace it carefully so as not to cut it on the edge of the groove.
- Check that the internal surface of the cylinder is regular without marks or scoring.
- Spread a thin film of lubricating, **water-repellent, anti-adhesive silicone grease specific for metal-rubber**, on the internal surfaces cylinder and guide.
- Put the piston back in its seat.
- Check the piston seal at maximum pressure.

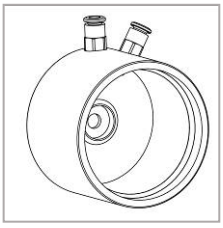
Piston and cylinder replacement

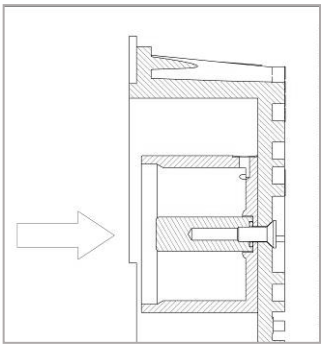
- Disconnect the air hose from the connector or connectors. Depending on the position inside the cover, there may be three types of cylinder.
- Unscrew the corresponding screw on the brake cover and remove the piston.



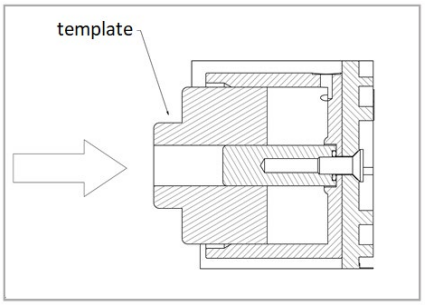


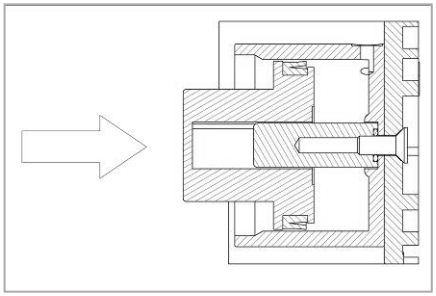


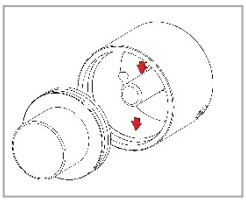




- Insert the new cylinder, the O-ring, the piston guide and tighten the screw without tightening.
- Insert the template (available as an option) for centering the piston guide and tighten the screw on the cover.
- Spread a thin film of lubricating, **water-repellent, anti-adhesive silicone grease specific for metal-rubber**, on the internal surfaces cylinder and guide.







- Insert the piston inside the cylinder, taking care not to damage the gasket on the inner edge of the cylinder
- Connect the air pipes to the connectors.
- Check the piston seal at a pressure of 6 bar.

If present, check your configuration of pistons on the label on the cover.

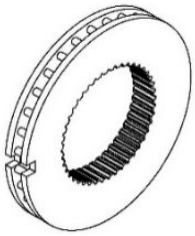
accessories

Our TX - TX / HD brakes can have, on customer request, some accessories that are not present in our standard versions.

RPM COUNTER

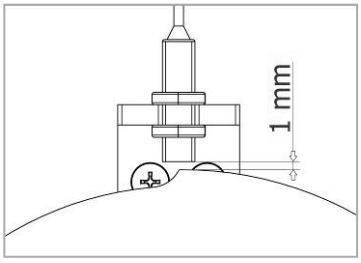
One of the most used and requested accessories not present in our standard is the tachometer with its sensor. These brakes will be supplied in the same composition as the standard brakes, except that a central disc (the last in the assembly phase) will be replaced by a specially built central disc with one or more "notches" for the tachometer. These discs, as for the standard versions, are also available in the High dissipation series version.

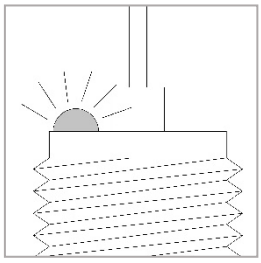
Disc standard with notches for RPM



Disc HD with notches for RPM

• position the sensor at a distance of about one millimeter from the central disc, shaped with notches whose number and shape depend on the type of PLC management.
• Then power up the sensor and check by turning the shaped central disc that the warning light on its upper end flashes

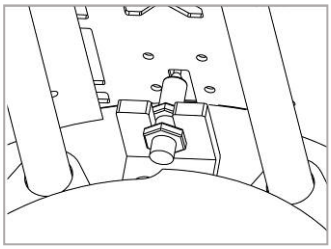




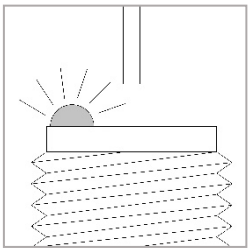
Below is the list of our available tachometers. By default, Renova supplies on its brakes a tachometer with PNP connection normally open (NO), but on request the PNP versions normally closed (NC) and the NPN versions both normally closed and normally open are also available.

Type	Voltage	Current	Signal distance	Wiring	Renova Code
Standard	10 - 30 V CC	<200 mA	1,5mm	PNP (NO)	CG00000000
Customer request	10 - 30 V CC	<200 mA	1,5mm	NPN (NO)	CG00000NPN
Customer request	10 - 30 V CC	<200 mA	1,5mm	PNP (NC)	CG00000000-NC
Customer request	10 - 30 V CC	<200 mA	1,5mm	NPN (NC)	CG00000NPN-NC

REPLACEMENT OF RPM COUNTER



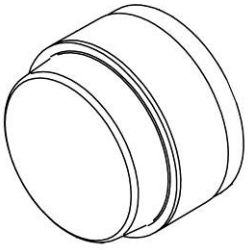
- Remove the power supply to the fans because the moving blades can be dangerous for the operator's fingers.
- Remove the pneumatic power supply.
- Disconnect the sensor from the connector.
- Remove the sensor by unscrewing the nut that locks it on the bracket.
- Remove it from the eyelets and from the thermal protection sheath.
- Mount the new sensor on the bracket and adjust the distance from the central disc to about 1mm.



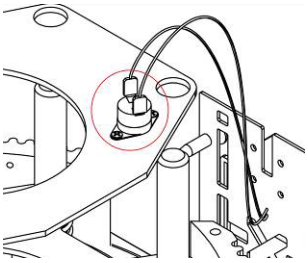
- Insert the cable into the eyelets and into the thermal protection sheath.
- Connect the 3 poles to the connector contacts according to the previously shown diagram (ref page 13).
- Power up the tachometer and check for proper operation by turning the central cam disc and observing the light on the sensor head turning on.

KIT TEMPERATURE SENSOR - LAMP (KT000000000)

Another optional that Renova provides concerns the kit including the temperature sensor and signaling lamp. Thanks to these options it is possible to monitor that the brake temperature does not rise above the threshold and if this happens it will be signaled by a light signal emitted by the lamp.



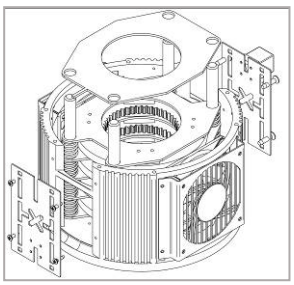
Signalation lamp

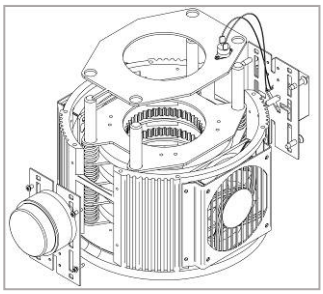


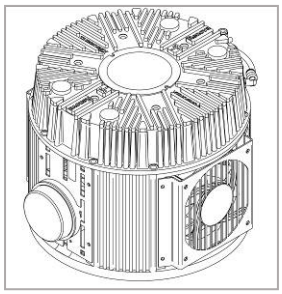
Temperature sensor

INSTALLATION

- Disconnect the fans from the power supply; moving blades can be dangerous for the operator's fingers.
- Remove the pneumatic power supply.
- Remove the cover and the pressure discs.
- Remove the two-side carter, being careful, if there is a 3-pole socket to cut the fan power supply wires near the connector.
- Place the new kit and store the pressure disc with the bimetal thermostat facing the cover.
- Reassemble the brake.
- Power up the fans and check that they are working properly

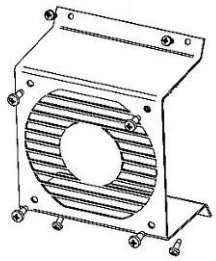






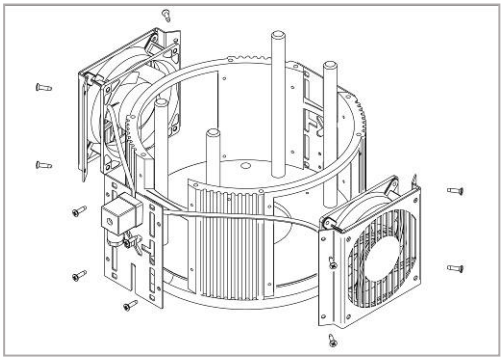
KIT FOR 4 FANS BRAKE

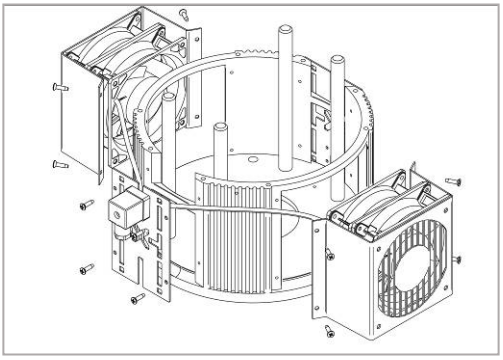
For those applications where more heat dissipation is required, you can switch from 2 fans to 4 fans thanks to the use of a special casing that allows the assembly of 2 fans one above the other.



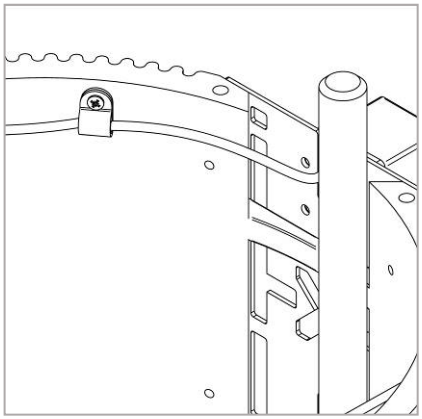
INSTALLATION OF FAN KIT

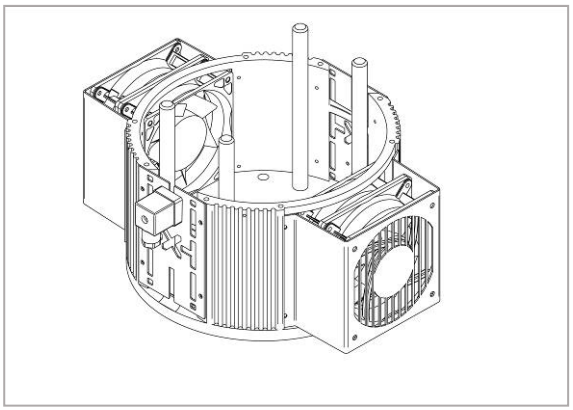
- Disconnect the fans from the power supply; moving blades can be dangerous for the operator's fingers.
- Remove the pneumatic power supply.
- Disconnect the flying plug located on the side of the fan.
- Remove the cover and all the components inside the brake.
- Remove the fan carter and the cover where the electrical connector is located.
- Place the new kit.





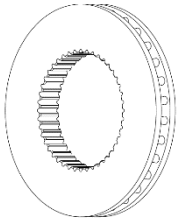
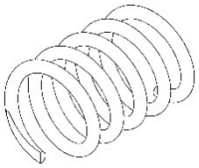
- Insert the electrical wiring of the fans into the approp.
- Secure the fan carter and the electrical connector carter with the screws on the brake body
- Reassemble the brake
- Power up the fans and check that they are working properly.



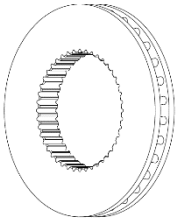
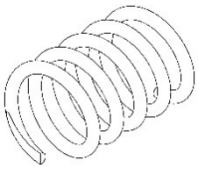
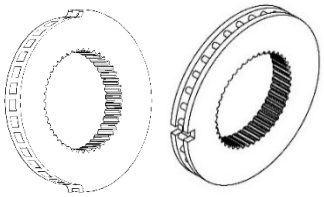
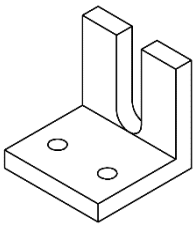


KIT UPGRADE FROM TX TO TX/HD

For customers who already have one of our standard versions, Renova also provides upgrade kits on request to change the brake by switching to the High Dissipation version without having to buy a new brake. The upgrade kit consists of the following parts in the version without options.

Central discs (brake without RPM)	3		springs	12	

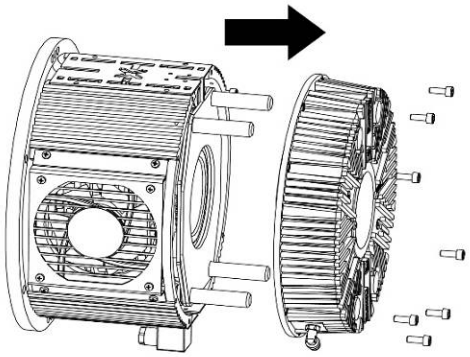
From the following parts in the version in which the RPM counter is present

Central discs (brake with RPM)	2		Springs	12	
Disc with notches or cam design for RPM.	1		RPM sensor support bracket and relative bracket mounting screws.	1	

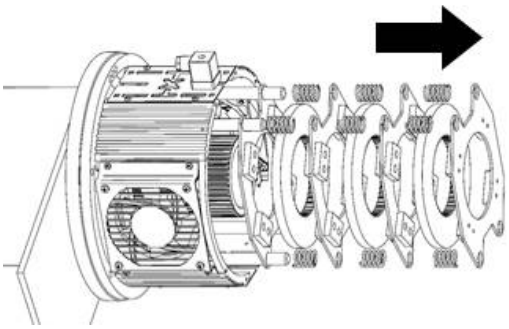
ASSEMBLY OF THE KIT

Before proceeding, make sure the fans are not powered electrically.

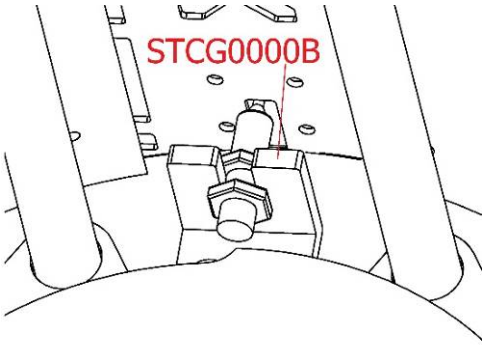
1. Remove the brake cover by unscrewing the 8 screws.



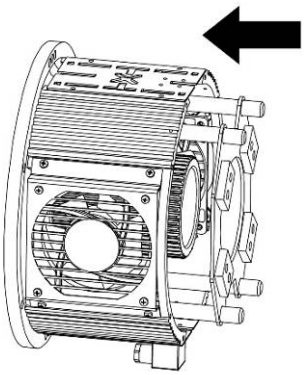
2. Remove the brake pad and disc layer in order.
<u>For brakes without RPM skip to step 4</u>



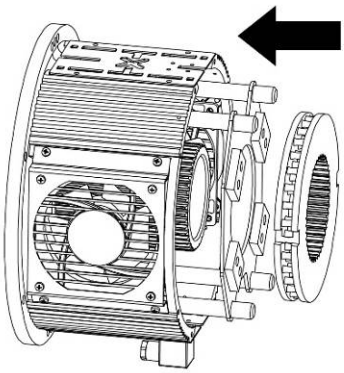
3. Remove the RPM sensor support bracket and replace it with the one supplied. Don't block yet the position of the RPM on the new bracket



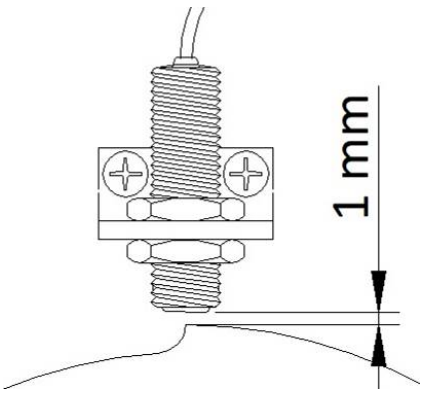
4. Insert the single brake plate holder into the cylindrical guides. Be careful not to damage the RPM sensor if present.



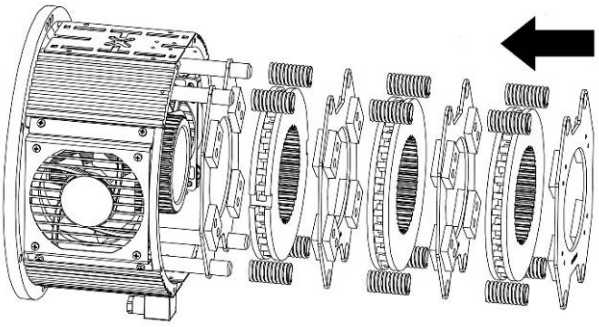
5. Insert cam disc or notch disc for RPM version taking care not to damage the sensor. For version without RPM, <u>insert a regular disc and skip to step 7</u>



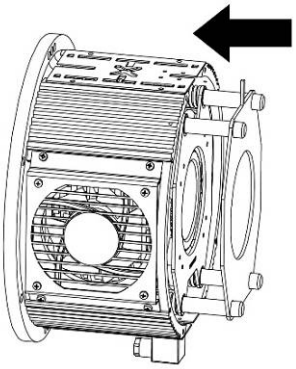
6. Lock the position of the RPM sensor to 1mm away from the outermost track of the disc. For more details see the chapter of the manual referring to the RPM sensor



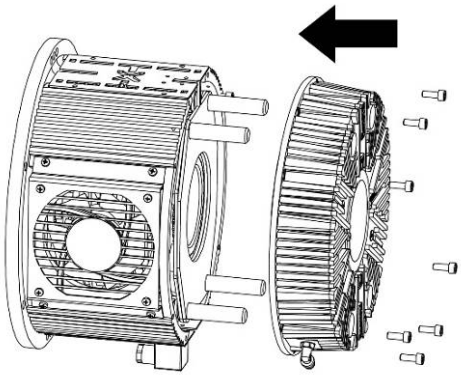
7. Reassemble in sequence the remaining discs, springs, plate holders as in image below. Please note, in the upgrade from TX180 to TXHD180 you will have the remainder of a double plate holder



8. Last, insert the pressure disc with the brake wear indicator

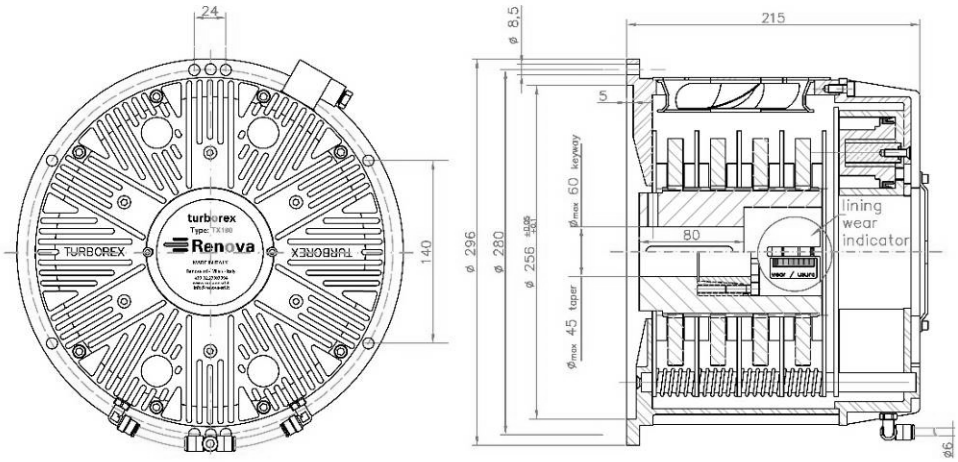


9. Insert the cover and tighten the screws removed in step 1

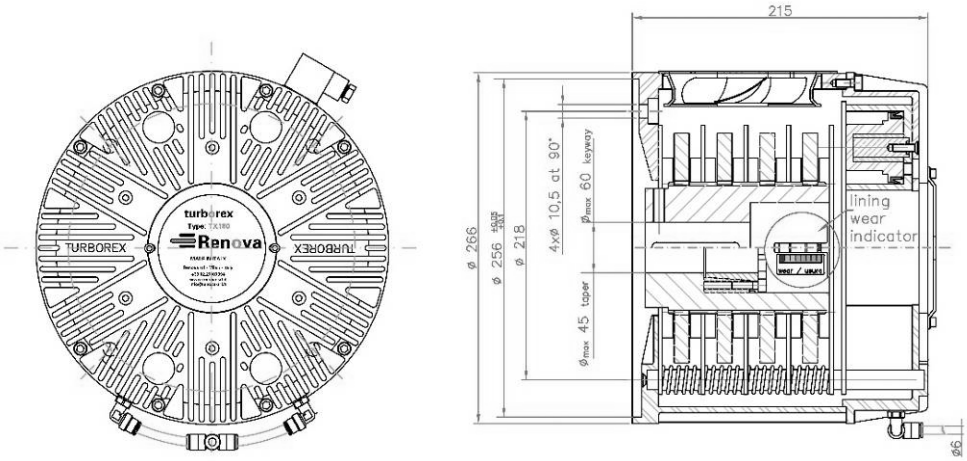


dimensions

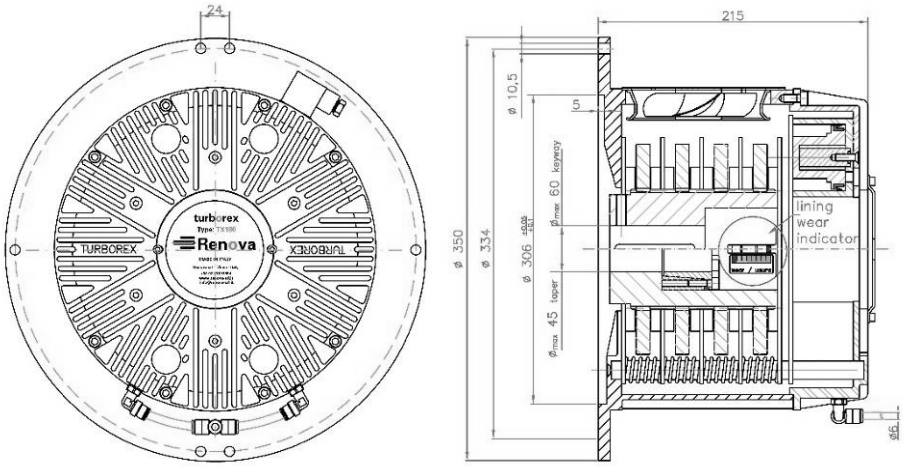
- C Flange (Ø296mm) ➔ drawings with maximum overall dimensions, the same also for HD version



- K flange (Ø266mm) ➔ drawings with maximum overall dimensions, the same also for HD version



- Z flange (Ø350mm) ➔ drawings with maximum overall dimensions, the same also for HD version



technical data

performance

torque	Dependent on cover configuration. For more technical information, consult the brake drawing which presents more detailed and specific data of the brake selected
speed	max 2500 rpm
dissipable heat	4,5 kW – 7 kW
max pressure	6 bar

materials

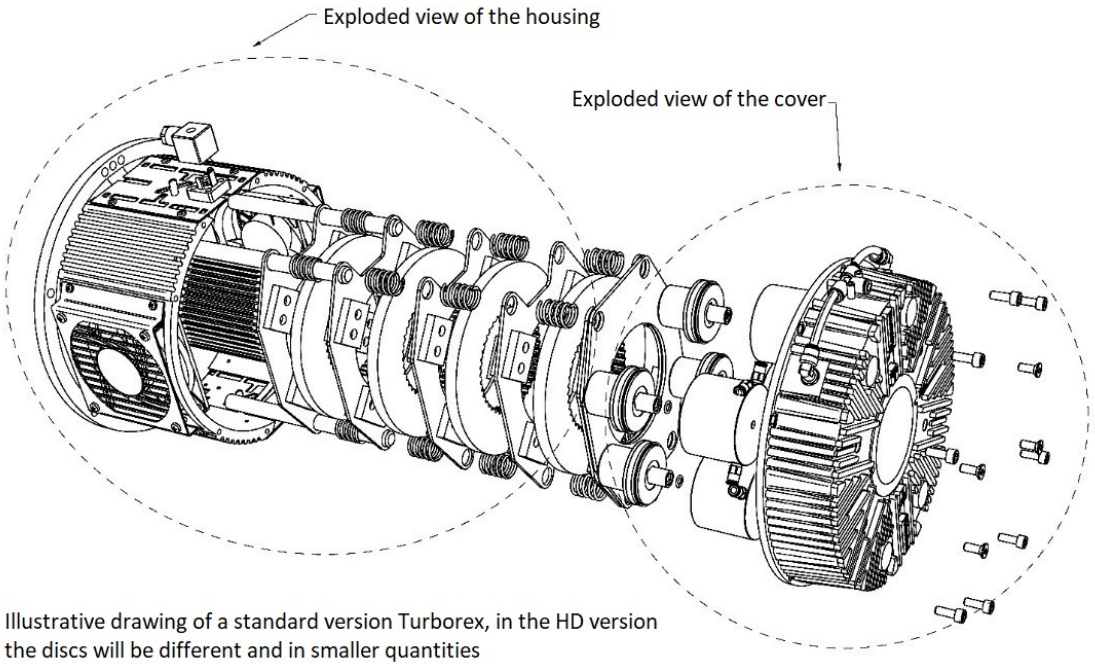
Housing and brake cover	aluminum alloy
Central discs	Standard version: high carbon index steel High dissipation series: cast iron
Ferods	Compound for continuous high temperature slip
Pistons	aluminum alloy
Pistons seal	Viton
Hub	Steel with induction hardened teeth

weights

Brake weight (without hub)	about 19,7*
Hub weight	4,8 kg*
Central discs weight	5,9 Kg
J central discs	0,0288 kgm^2

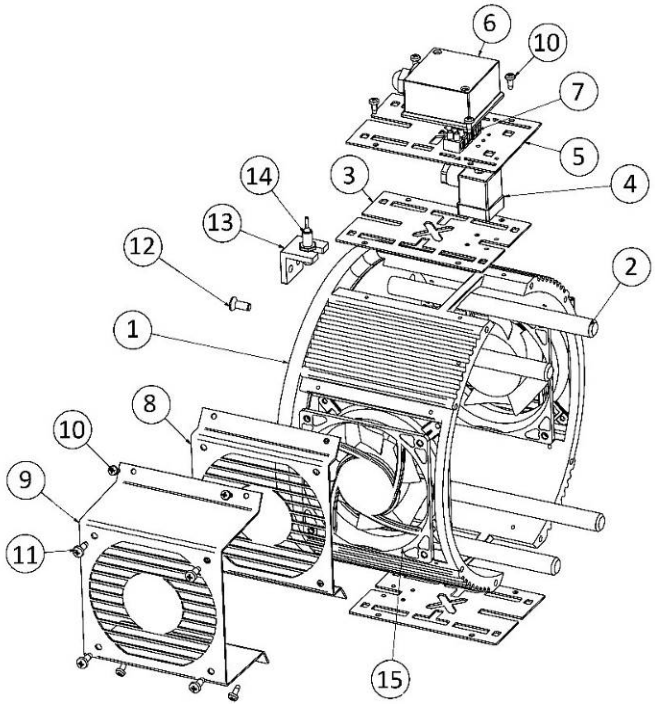
*the exact weight depends on the required configuration

parts replacement



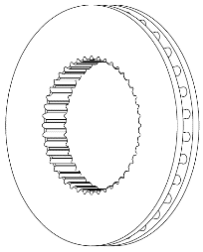
Illustrative drawing of a standard version Turborex, in the HD version the discs will be different and in smaller quantities

EXPLODED VIEW OF THE HOUSING

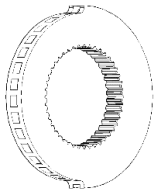
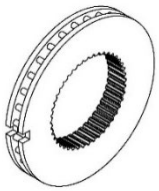


POSITION	CODE	DESCRIPTION
1	CPTX180C00	Housing TX180 flange C, mounting CX250 (Ext. flange diameter 296mm)
	CPTX180K00	Housing TX180 flange K (External flange diameter 266mm)
	CPTX180Z00	Housing TX180 flange Z, mounting CX300 (Ext. diameter flange 350mm)
2	GUTX180000	Rods TX180
3	CATX1804D3P	Lateral carter for 3 pin connector
4	CNTH100P3	3 pin connector
5	CATX1804DFO	Lateral carter for multipolar connector
6	CNTH100FO	Terminal cover
7	MAMMUT2RPM	Terminal block
8	CVTX180038-R20	Fan carter standard
9	CVTX18004V	Fan carter double
10	VITBM4012A	Button head screw – carter
11	VITBM5016A	Button head screw – fan
12	VITSM60200	Countersunk head screw – rods
13	STCG000000	RPM counter bracket
14	STCG0000B	RPM counter bracket – TXHD
	CG00000000	RPM counter PNP – Normally open
	CG00000NPN	RPM counter NPN – Normally open
	CG00000000-NC	RPM counter PNP – Normally closed
	CG00000NPN-NC	RPM counter NPN – Normally closed
15	VT12038024	Fan 120x120x38 - 24V - DC 0.46A - 11W
	VT120380H4	Fan 120x120x38 - 24V - DC 1.25A - 30W - H4
	VT120380H6	Fan 120x120x38 - 24V - DC 2.70A - 65W - H6
	VT12038110	Fan 120x120x38 - 110VDC - 50Hz - 235mA - 20W
	VT12038220	Fan 120x120x38 - 220VDC - 50Hz - 120mA - 19W

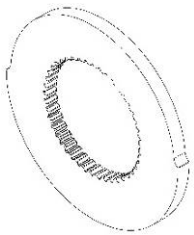
DISCS

Central discs design HD Code: TXP0018	3		Central discs standard version Code: DCTX180000	1	

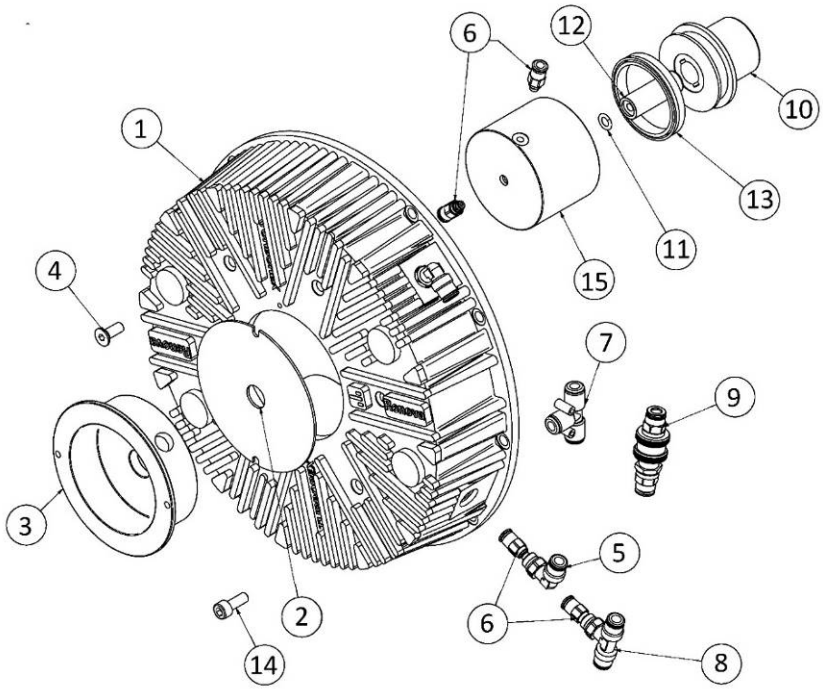
RPM DISCS FOR HIGH DISSPATION SERIES

	DCTXHD1800FS	Disc with cam design
	TXP001801	Disc TX180HD RPM – 1 notch
	TXP001802	Disc TX180HD RPM – 2 notches
	TXP001804	Disc TX180HD RPM – 3 notches
	TXP001824	Disc TX180HD RPM – 4 notches

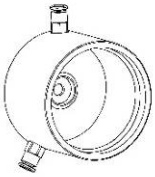
RPM DISCS FOR STANDARD SERIES

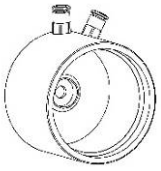
	DCTX1800FS	Disc with cam design
	DCTX180001	Disc TX180 RPM – 1 notch
	DCTX180002	Disc TX180 RPM – 2 notches
	DCTX180004	Disc TX180 RPM – 4 notches
	DCTX180006	Disc TX180 RPM – 6 notches
	DCTX180008	Disc TX180 RPM – 8 notches
	DCTX180012	Disc TX180 RPM – 12 notches
	DCTX180016	Disc TX180 RPM – 16 notches
	DCTX180024	Disc TX180 RPM – 24 notches
	DCTX180030	Disc TX180 RPM – 30 notches
	DCTX180032	Disc TX180 RPM – 32 notches

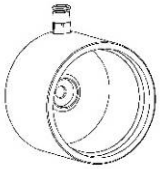
EXPLODED VIEW OF THE COVER



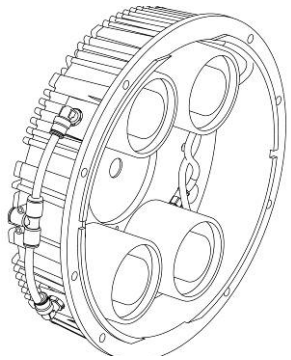
POSITION	CODE	DESCRIPTION
1	COTX180000	Cover
2	TPTX180000	cup TX180
3	SFTX180018	Photocell support
4	VITSM60200	Countersunk head screw M6 – cylinder
5	RAM505AR00	Elbow fitting - pipe 6 mm
6	RAM505ARM5	Pipe fitting 5mm – M5
7	I40-0046	Fitting T form - pipe 6mm
8	TU108G06AR	Fitting T form 1/8'' – pipe 6mm
9	SELAIRTX180	Manual selector
10	PSTX180050	Piston diameter 50mm
	PSTX180040	Piston diameter 40mm
11	ORTX180	O-ring cylinder
12	GPTX180000	Piston guide
13	DEM055045V	Lip seal for piston diameter 50mm
	DEM040045V	Lip seal for piston diameter 40mm
14	VITCM60300	M6 screw - cover
15	CLTX180L50	Cylinder diameter 50mm with two opposed holes
	CLTX180F50	Cylinder diameter 50mm with two paired holes
	CLTX180M50	Cylinder diameter 50mm with one hole
	CLTX180L40	Cylinder diameter 40mm with two opposed holes
	CLTX180F40	Cylinder diameter 40mm with two paired holes
	CLTX180M40	Cylinder diameter 40mm with one hole


2 opposed holes


2 paired holes

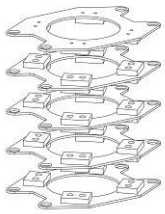
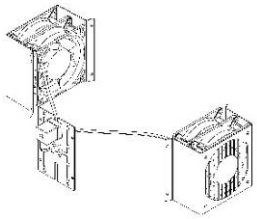
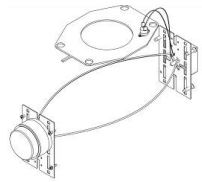
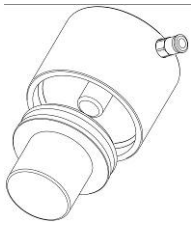

one hole

ASSEMBLED COVER (KIT FOR REPLACEMENT)

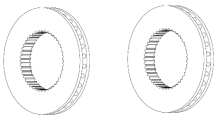
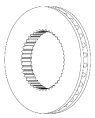
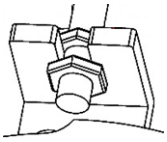
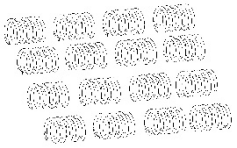


TXA0001	Assembled Turborex cover - 2 ps 50
TXA0002	Assembled Turborex cover - 2 ps 40
TXA0003	Assembled Turborex cover - 2 ps 30
TXA0004	Assembled Turborex cover - 3 ps 50
TXA0005	Assembled Turborex cover - 3 ps 40
TXA0006	Assembled Turborex cover - 3 ps 30
TXA0007	Assembled Turborex cover - 4 ps 50
TXA0008	Assembled Turborex cover - 4 ps 40
TXA0009	Assembled Turborex cover - 4 ps 30
TXA0010	Assembled Turborex cover - 2 ps 50 + 2 ps 50
TXA0011	Assembled Turborex cover - 2 ps 40 + 2 ps 40
TXA0012	Assembled Turborex cover - 2 ps 30 + 2 ps 30
TXA0013	Assembled Turborex cover - 4 ps 50 + 2 ps 50
TXA0014	Assembled Turborex cover - 4 ps 40 + 2 ps 40
TXA0015	Assembled Turborex cover - 4 ps 30 + 2 ps 30
TXA0016	Assembled Turborex cover - 2 ps 50 + 2 ps 40
TXA0017	Assembled Turborex cover - 2 ps 50 + 2 ps 30
TXA0018	Assembled Turborex cover - 2 ps 40 + 2 ps 30
TXA0019	Assembled Turborex cover - 3 ps 50 + 3 ps 50
TXA0020	Assembled Turborex cover - 3 ps 40 + 3 ps 40
TXA0021	Assembled Turborex cover - 3 ps 30 + 3 ps 30
TXA0022	Assembled Turborex cover - 4 ps 50 + 2 ps 40
TXA0023	Assembled Turborex cover - 4 ps 50 + 2 ps 30
TXA0024	Assembled Turborex cover - 4 ps 40 + 2 ps 50
TXA0025	Assembled Turborex cover - 4 ps 30 + 2 ps 50
TXA0026	Assembled Turborex cover - 4 ps 40 + 2 ps 30
TXA0027	Assembled Turborex cover - 4 ps 30 + 2 ps 40
TXA0028	Assembled Turborex cover - 2 ps 50 + 2 ps50 + 2 ps 50
TXA0029	Assembled Turborex cover - 2 ps 50 + 2 ps 50 + 2 ps 40
TXA0030	Assembled Turborex cover - 2 ps 50 + 2 ps 40 + 2 ps 40
TXA0031	Assembled Turborex cover - 2 ps 50 + 2 ps 40 + 2 ps 30
TXA0032	Assembled Turborex cover - 2 ps 50 + 2 ps 30 + 2 ps 30
TXA0033	Assembled Turborex cover - 2 ps 40 + 2 ps 40 + 2 ps 40
TXA0034	Assembled Turborex cover - 2 ps 40 + 2 ps 40 + 2 ps 30
TXA0035	Assembled Turborex cover - 2 ps 40 + 2 ps 30 + 2 ps 30
TXA0036	Assembled Turborex cover - 2 ps 30 + 2 ps 30 + 2 ps 30
TXA0052	Assembled Turborex cover - 3 ps 50 + 3 ps 40
TXA0053	Assembled Turborex cover - 3 ps 50 + 3 ps 30
TXA0054	Assembled Turborex cover - 3 ps 40 + 3 ps 30

REPLACEMENT KIT FOR TX

Illustration	Code	Description
		**Kit pads**
	KPTX180000	including: - 3 double plate holder - 2 single plate holder
		**Kit discs**
	KDTX180000	including: 4 central discs
	KDTX180001	Including: 3 central discs and 1 disc with 1 notch for RPM
	KDTX180FS	Including: 3 central discs and 1 disc cam design
		**Kit springs**
	KMTX180F15	16 springs wire 1,5mm
	KMTX180F20	16 springs wire 2,0mm
	KMTX180F25	16 springs wire 2,5mm STANDARD
	KMTX180F30	16 springs wire 3,0mm
	KMTX180F35	16 springs wire 3,5mm
		**Kit Fans** pre-wired compound by carter fan and 3 pole sockets
	KVTX180024	Kit with 2 fan standard 24 V CC 11 W STANDARD
	KVTX1800H6	Kit with 2 fan HP06 24 V CC 65 W
	KVTX1804H4	Kit with 2 fan HP06 24 V CC 30 W
	KVTX1804H6	Kit with 4 fan HP06 24 V CC 65 W
	KVTX1804H4E00	Kit with 4 fan HP04 24 V CC 30 W for E+L
		**Kit lamp** compound by: - alarm lamp - double lateral carter - multipolar connector - pressure disc with bimetallic thermostat N/O 100°C
	KT000000000	Kit lamp and bimetallic thermostat for overheating alarm upon 100°C
		**Complete pneumatic actuator kit** including cylinder, piston, gasket, guide, O-rings, fittings and screw
	KPSTX180F50	Piston diameter 50mm with two paired fittings
	KPSTX180L50	Piston diameter 50mm with two opposed fittings
	KPSTX180M50	Piston diameter 50mm with one fitting
	KPSTX180F40	Piston diameter 40mm with two paired fittings
	KPSTX180L40	Piston diameter 40mm with two opposed fittings
	KPSTX180M40	Piston diameter 40mm with one fitting

REPLACEMENT KIT FOR TX HD

Illustration	Code	Description
	**Springs kit**	
	KMTX180HDF18	Kit TX180HD springs Ø1.8mm – Orange
	KMTX180HDF22	Kit TX180HD springs Ø2.2mm – White STANDARD
	KMTX180HDF25	Kit TX180HD springs Ø2.5mm – Black
	KMTX180HDF28	Kit TX180HD springs Ø2.8mm – Black
	KMTX180HDF30	Kit TX180HD springs Ø3.0mm – Black
	KTXHD0000	Kit upgrade TXHD180 – 3 Self-venting discs
	KTXHD0001	Kit upgrade TX180HD – 3 Self-venting discs – 12 springs Ø2.2mm
	KTXHD0002	Kit upgrade TX180HD – 3 Self-venting discs – 12 springs Ø2.8mm
	KTXHD0003	Kit upgrade TX180HD – 3 Self-venting discs – 12 springs Ø1.8mm
	KTXHD0004	Kit upgrade TX180HD – 2 Self-venting discs – 1 Self-venting disc cam design - 12 springs Ø1.8mm – RPM bracket and screws
	KTXHD0005	Kit upgrade TX180HD – 2 Self-venting discs – 1 Self-venting disc with 1 notch - 12 springs Ø1.8mm – RPM bracket and screws
	KTXHD0006	Kit upgrade TX180HD – 2 Self-venting discs – 1 Self-venting disc with 2 notches - 12 springs Ø1.8mm – RPM bracket and screws
	KTXHD0010	Kit upgrade TX180HD – 2 Self-venting discs – 1 Self-venting disc cam design - 12 springs Ø2.2mm – RPM bracket and screws
	KTXHD0011	Kit upgrade TX180HD – 2 Self-venting discs – 1 Self-venting disc with 4 notches - 12 springs Ø2.2mm – RPM bracket and screws

warrantee

Renova srl guarantees this device from any defects relating to materials and manufacturing for a period of 12 months from the date of delivery of the brake itself.

In the event that, during the period covered by the guarantee, the device exhibits malfunctions, please contact the representative of the Company in the country of origin, or, in the absence of these, Renova srl directly.

The warranty includes spare parts and labor, but the shipping costs for delivery or collection of the device are exempt.

The warranty becomes invalid in the following cases:

• Improper use of the product

• Incorrect installation

• Lack of maintenance

• Modifications or interventions with non-original components or with personnel not authorized by Renova srl

• Total or partial non-compliance with the instructions

• Exceptional events

Once the warranty period has expired, technical support will be carried out by the assistance network which will carry out repairs according to the rates in force.

ISOENCErtifications s.r.l.

ISOENCErtifications srl

DICHIARAZIONE DI CONFORMITA'

DECLARATION OF CONFORMITY

Dichiariamo che l'esame è stato effettuato secondo i sotto citati requisiti che il sottoscritto soggetto recepisce
We declare that the examination has been carried out according with the following requirements to which the undersigned is subject transposing

RENOVA S.r.l.
Via Pompeo Mariani, 16
I - 20128 MILANO (MI)

DICHIARA CHE
/ DECLARE THAT

il prodotto/
the product

TURBOREX BRAKE

Modello / *Model* **TX180**

Anno di fabbricazione / *Production year* **2012**

E' CONFORME
/ FULFILS

alle seguenti Direttive Europee:
/ the requirements of the Directive:

Direttiva 2006/42/CE relativa alle Macchine

directive 2006/42/EC "Machinary directive"

Milano,
Data di Emissione del Certificato: 25/09/2012

ISOENCErtifications srl

Isoence Certifications 2412

L'amministratore unico
ing. Sergio Müller

Sede legale: Via Londonio, 28 - 20154 Milano - Italy
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NOTES

Manual revision index

Rev. n.	Revision date	Changes description

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