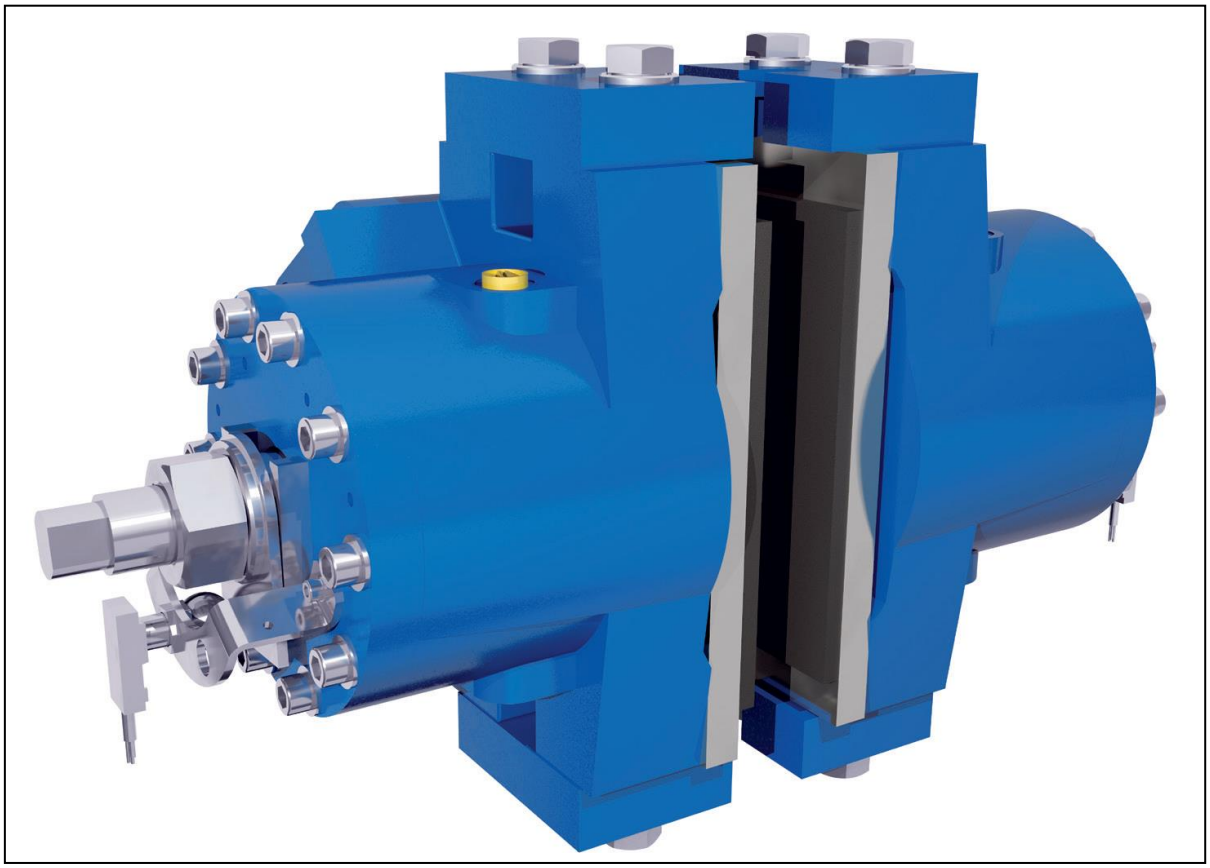
HYDRAULIC CALLIPER TYPE NHCD-1400
Instructions for assembly, adjustment and maintenance



Technical data sheet number:	**BC.TDS.00025I**
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Date Rev.01.	**-**

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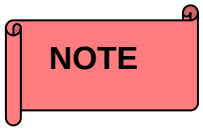
1. INTRODUCTION.

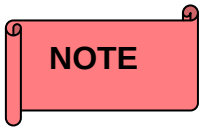
1.1. WHO IS THE TARGET AUDIENCE OF THIS MANUAL?

This manual has been written to aid with the installation, start-up, operation and maintenance of the brake. It is designed to help workers who are going to handle the brake, and technicians. It should therefore be made available to **everyone** who is going to work with these brakes and it must be ensured that the instructions given are followed.

This manual is intended to clarify any constructive doubts and the basic functions of the brake. We are sure that it will be an extremely useful information and a reference tool for operators and technicians.



In the event of any problems or if you have any questions regarding the brake, please do not hesitate to contact the ANTEC After-Sales Service, specifying the brake (Brake) model and the ANTEC order number, data that can be found on the label that each unit has.



Due to ongoing improvements to our brake designs, your brake may differ slightly from the one described in this manual. ANTEC reserves the right to make any changes deemed necessary.

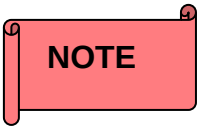
1.2. SAFETY INSTRUCTIONS.

Various symbols appear throughout this manual, which highlight the importance of the subject section. They are usually related to safety matters and it is therefore recommended to pay special attention to these points.

Warning: This symbol will be included at points or in paragraphs that need special attention. It usually refers to an operation in which special care must be taken.

Danger of death: This symbol will be included at points or in paragraphs that need special attention. It usually refers to an operation that might involve a death hazard.

High temperatures: This symbol will be included at points or in paragraphs that need special attention. It usually refers to an operation that might involve danger of high temperatures.



This symbol will be used to highlight an important comment or piece of information.

A number of general safety rules must be taken into account when handling ANTEC brakes:

1-. All workers and technicians must wear appropriate gear when handling the brake (safety clothes, boots, helmet, goggles, etc.).

2-. Always keep warning signs (if any) on the brake in good condition and adhere to them. During repairs or maintenance, place a warning sign to inform other workers that an ANTEC brake is being repaired in that machine, and that the power supply has been disconnected, if applicable.

3-. Find out the exact specifications of the liquids used to prevent health problems and ensure safety.

4-. Make sure all electrical apparatus (if any) is properly grounded to prevent electric shocks.

5-. Rigorously adhere to the limits set for each brake component and for the brake itself.

6-. Before switching on any machine fitted with ANTEC brakes, ensure that the brake is fully applied and tightened with the required torque.

7-. ANTEC does not accept any liability for the use and maintenance of the tools that the customer uses to assemble and handle the brakes.


Failure to comply with these rules may cause irreversible damage to both the Antec brakes and harm to the workers handling them.
These damages may result in the worker's death.

1.3. GENERAL ASPECTS.


The use of Antec brakes for unplanned operations or the negligent use thereof could seriously damage them or severely injure people standing nearby.

The NHCD-1400 brakes, are failsafe emergency brakes, in other words they brake using springs when there is no hydraulic pressure.

These brakes consist of two half-callipers mounted symmetrically to the plane of the disc on which they act. The symmetry of both half-callipers may become unaligned in some cases.

The calliper force of the brake directly depends on the force applied by the springs.

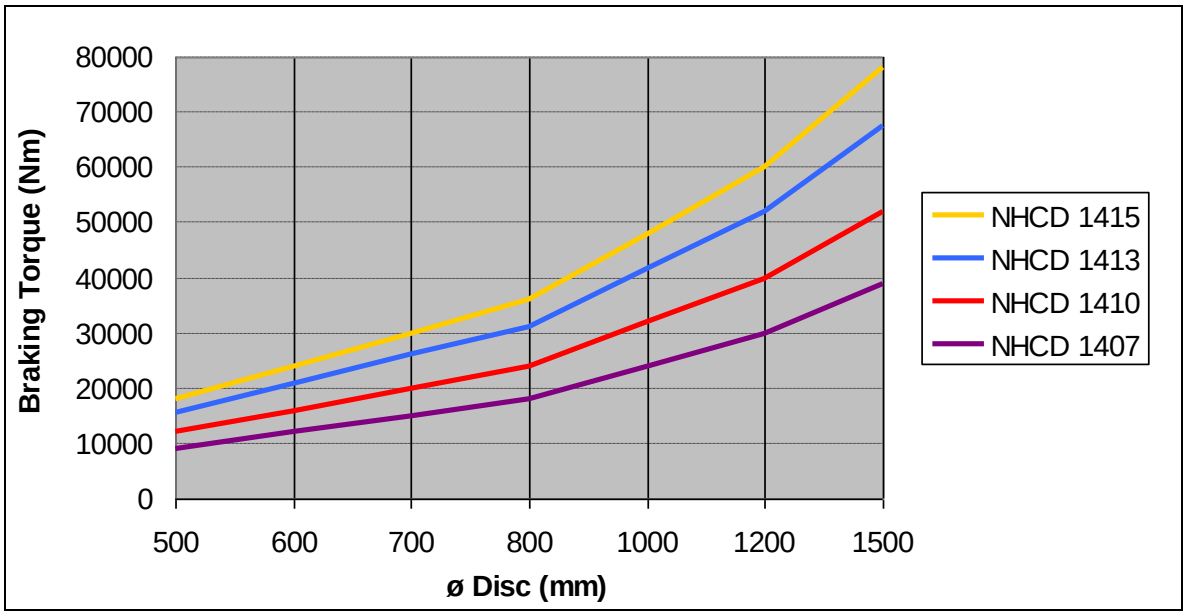
The opening force of the brake directly depends on the force applied by the hydraulic feed. The maximum feed pressure to open the brake is 21 Mpa, whereas the minimum varies depending on the spring strength. The minimum pressure for opening the brake as well as other data of interest are described in the following attached table.

CALLIPER		NHCD-1407	NHCD-1410	NHCD-1413	NHCD-1415
Clamping force	N	75000	100000	130000	150000
Releasing pressure	Mpa	11	14	20	21
Maximum pressure	Mpa	21			
Release stroke	mm	1 each side			
Oil volume	cm^3	113 each side			
Pad surface	cm^2	500 each side			
Friction coefficient (μ)	-	0.4			
Braking force (μ=0.4) (Bf)	N	60000	80000	104000	120000
Approximate total weight	Kg	185			

The braking torque of a NHCD-1400 brake, depends directly on the braking force described in the previous table (for each brake) and the outside diameter of the disc on which the brake acts.

CALCULATION OF THE BRAKE TORQUE

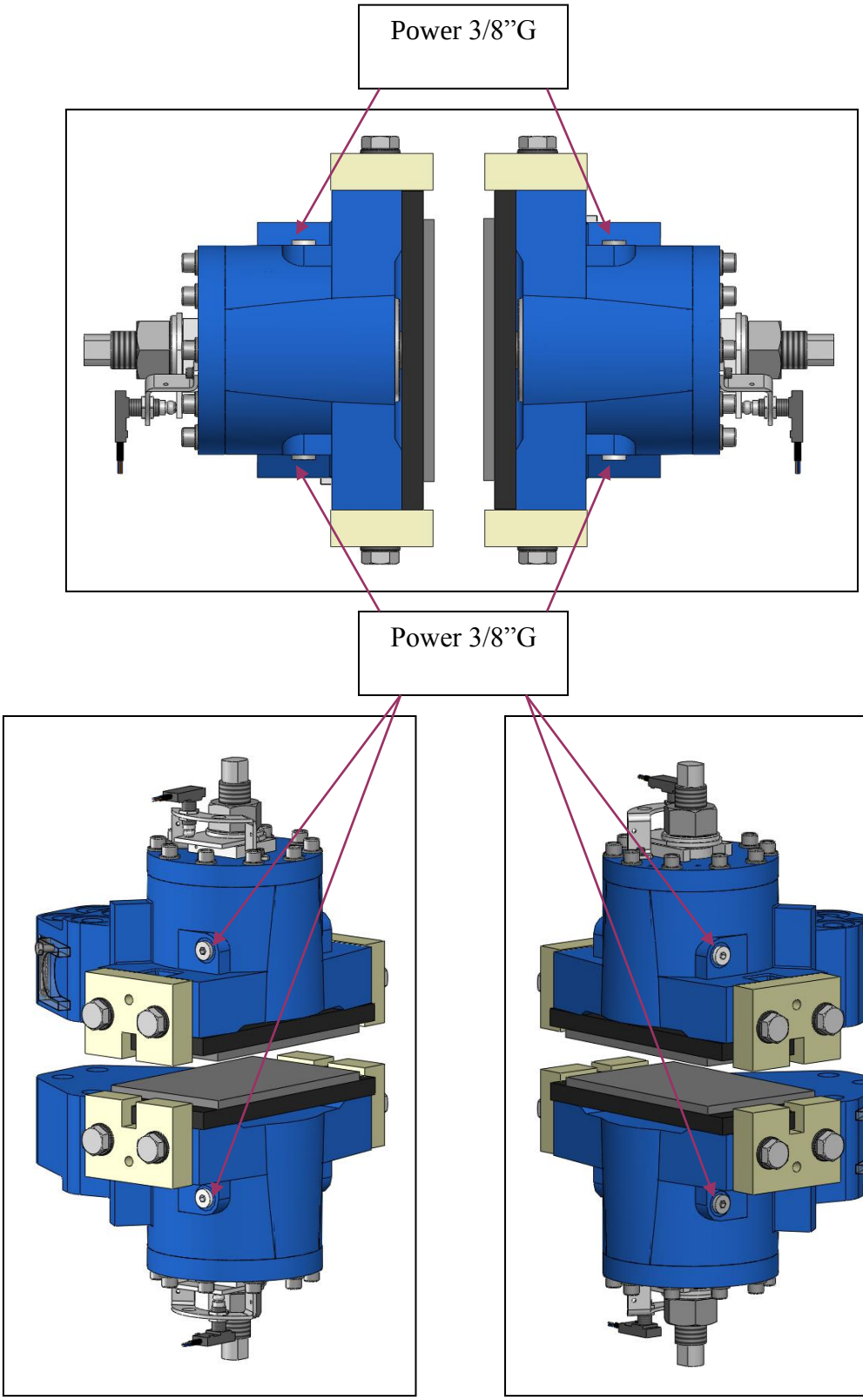
$$T_{(BRAKE.TORQUE)}(Nm) = \frac{n_{(NUMBER.OF.BRAKES)} \cdot Bf_{(BRAKING.FORCE)}(N) \cdot (\phi_{(DIAMETER.OF.THE.DISC)}(mm) - 200)}{2000}$$



Each half-caliper has 2 connections with a 3/8"G thread for the hydraulic feed. It is recommended to use the lower 3/8"G connection, leaving the upper one free to fit an air purge device or for the event that the oil must flow through the semi-calliper.

IMPORTANT: Never apply a greater pressure through the hydraulic pressure connection than the one specified on the technical specifications plate.

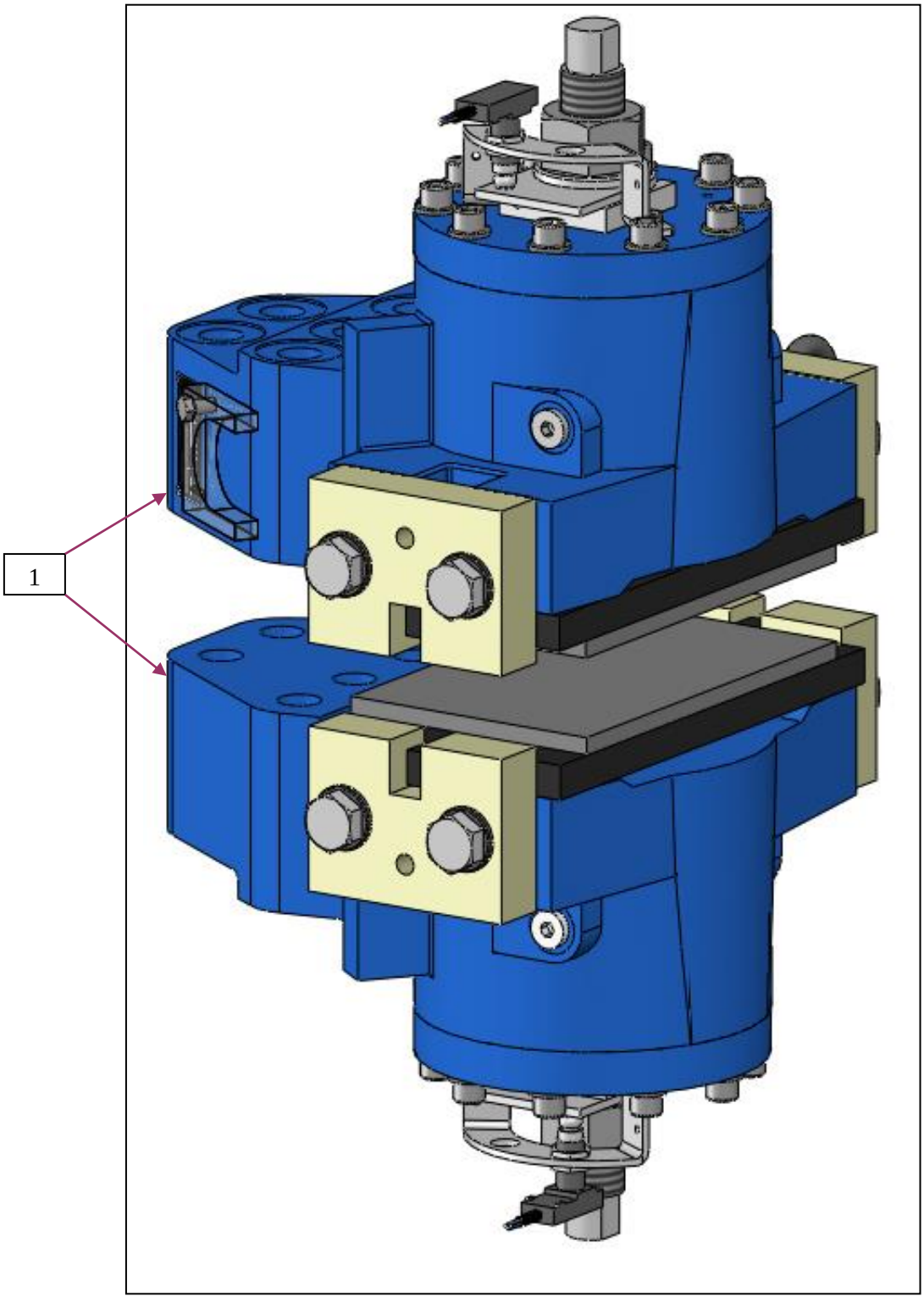
(Maximum pressure for NHCD-1400 = 21 Mpa).


Power 3/8”G
Power 3/8”G

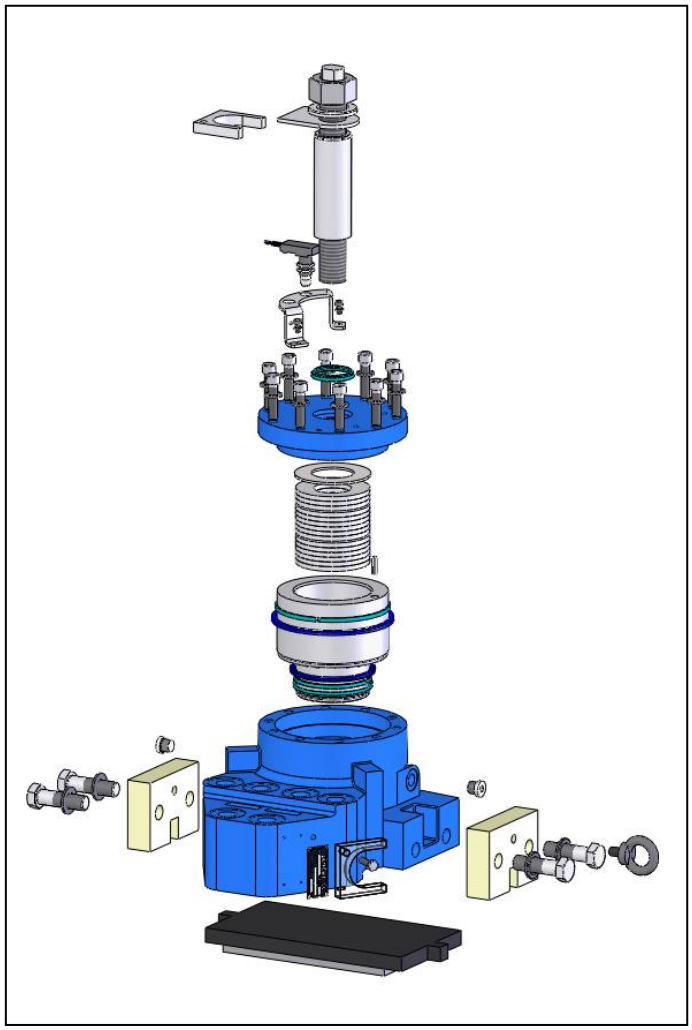
The NHCD-1400 brakes are comprised of the parts listed below:

BRAKE PARTS SET		
Number	**Name**	**Quantity**
1	MAIN BODY	2
2	PISTON	2
3	COVER	2
4	SPACER	2
5	ADJUSTMENT SCREW	2
6	LOCKING BACKSTOP	2
8	ACTUATOR	2
9	SENSOR BRACKET	2
10	LINING PLATE	2
11	SPRING	2
12	SUPPLEMENT *(Optional)*	2
13	SCRAPER	2
14	SCRAPER	2
15	GUIDE RING	2
16	GUIDE RING	2
18	BOLT	2
19	NUT	2
20	M12x50 8.8 SCREW	20
21	WASHER	20
22	M20x70 10.9 SCREW	8
23	BACKSTOP	4
28	WASHER	8
29	WASHER	2
30	WASHER	4
31	M6x12 8.8 SCREW	4
32	PLUG	4
33	SEAL	2
34	SEAL	2
35	TECHNICAL SPECIFICATIONS PLATE	2
36	SENSOR (CSA)	2
37	RIVET	8
38	M8x30 8.8 SCREW	2
39	M12 TRANSPORT EYE BOLT	1

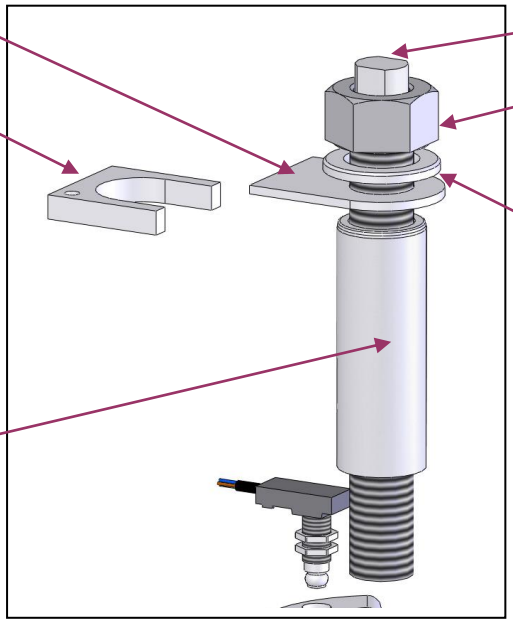
ASSEMBLY

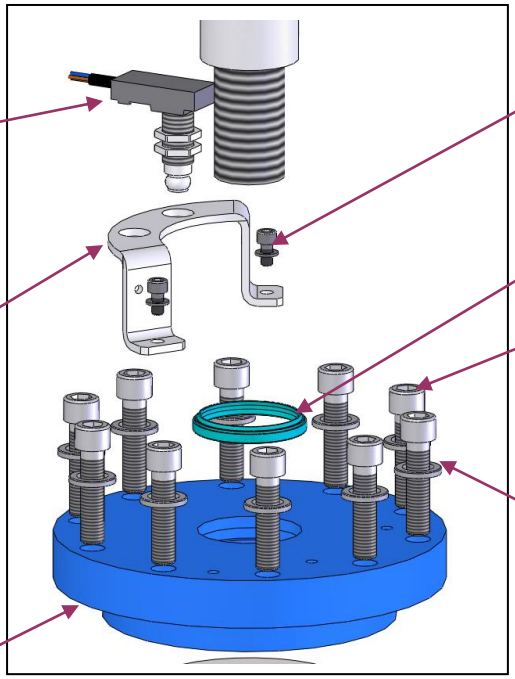


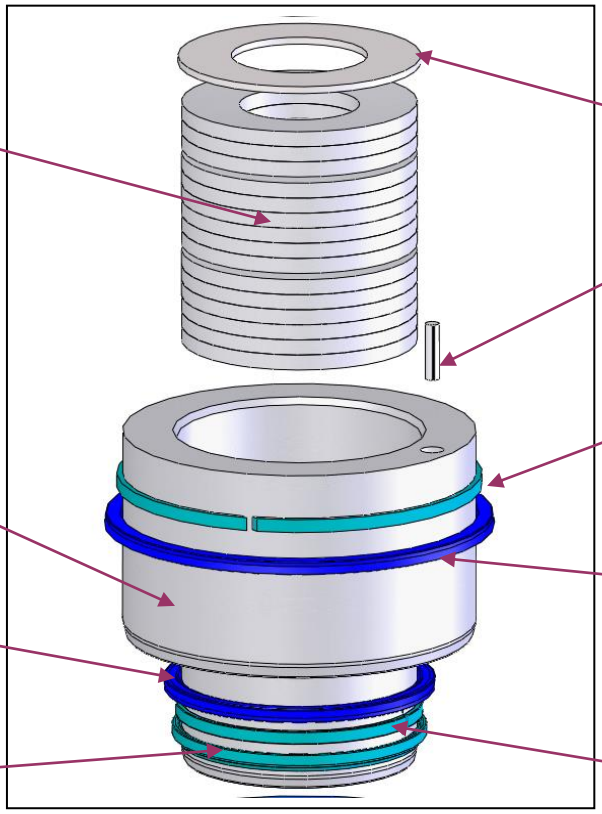
ASSEMBLY BREAKDOWN

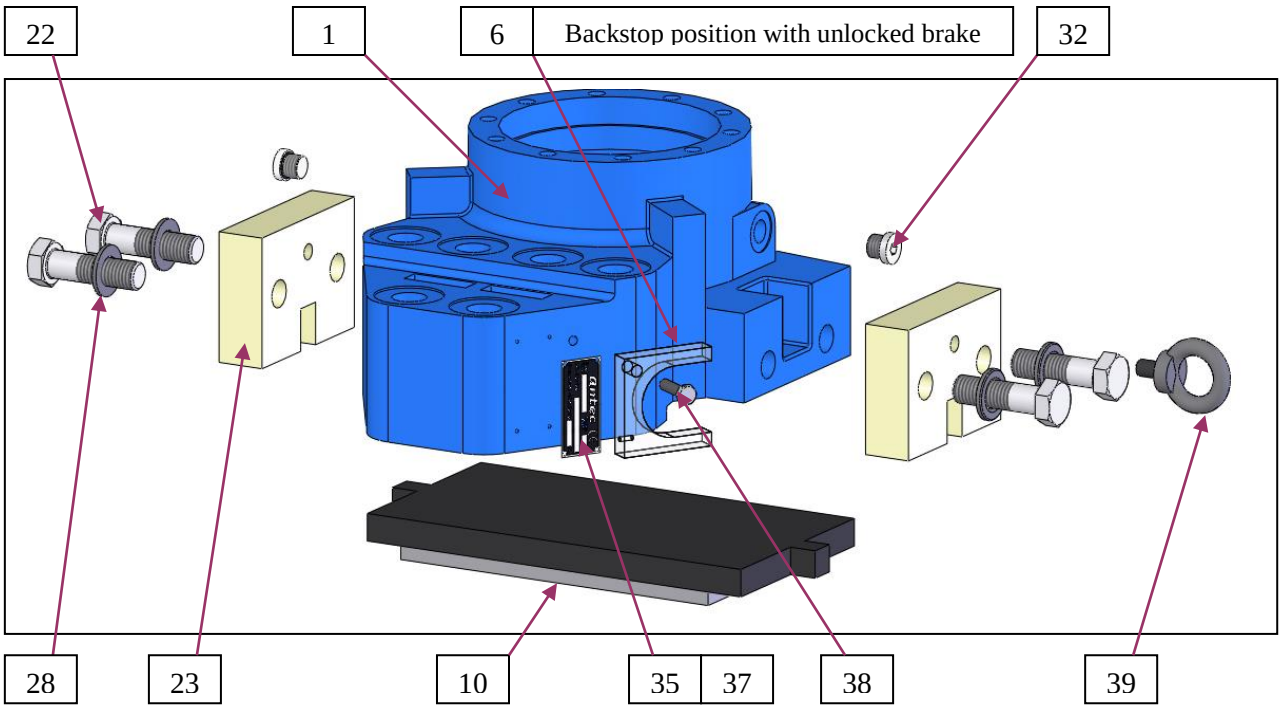


Backstop position with locked brake 6






11
12
Optional
18
16
2
33
34
13
15


22
1
6
Backstop position with unlocked brake
32
28
23
10
35
37
38
39

ANTEC, has different options that can be included with NHCD-1400 brakes. These options are the following:

- Lining wear indicator (D.D.).
- Hydraulic group.
- Connection tubing of the hydraulic group with the brake.
- Brake anchoring screws.
- Brake anchoring bracket.

NOTE

Any other option that may not be mentioned can be studied by ANTEC's technical department and thus provide a solution for any of the customer's requirements.

2. BRAKE DELIVERY AND ASSEMBLY METHOD.

2.1. BRAKE DELIVERY.

When the brakes leave the factory, they are always packaged to ensure maximum safety during transportation.

The NHCD-1400 callipers are supplied separately, to be anchored to a bracket prepared by the user. In the event that it is supplied with a bracket or hydraulic assembly, it will be supplied in another packaging.

The NHCD-1400 callipers are supplied without pressure, with fully distended springs.

Antec certifies that the NHCD-1400 brakes have been tested on the company's test benches at its facilities using the proper operating oil.

The inside brake parts are lubricated so that the brake will not suffer corrosion while being transported to the customer's facilities and during the subsequent assembly process.

NOTE

This film of oil that prevents the inside brake parts from corroding during transportation and the subsequent assembly only lasts for a limited amount of time.

All of the brake's drainage and hydraulic power outlets are plugged during transportation.

2.2. DISC AND SURFACE FOR ASSEMBLY.

Before starting the assembly process, check that the disc is clean and dry. Any residue, whether grease, oil or particles due to disc corrosion could prevent the brake and linings from working properly.

NOTE

When you clean the disc, you can use petroleum or diesel fuel the first time, but after that (and this is very important) the disc must be carefully cleaned using a solvent. Take care when using solvents. Dry the disc afterwards.

During transportation and storage, residue may build up in the brakes on surfaces in contact with brackets in the future and on the areas between the linings and the disc. We therefore recommend cleaning them thoroughly.

NOTE

The brakes have been designed in accordance with the customer's specifications. Therefore, possible disc and bracket machining defects will not have been taken into account. ANTEC thinks it is worth mentioning that possible flaws regarding parallelism and flatness in the brake's disc and securing bracket may reduce the contact surface area between the lining and disc. Contact between both surfaces will be restored fully after several braking actions.

2.3. ASSEMBLY PROCEDURE.

To assemble the brakes, proceed as follows:

2.3.1. Clean the disc in which you are going to install the NHCD-1400 brake. Any particles could damage the brake and prevent it from working properly. See the first NOTE on disc cleaning in point 2.2.

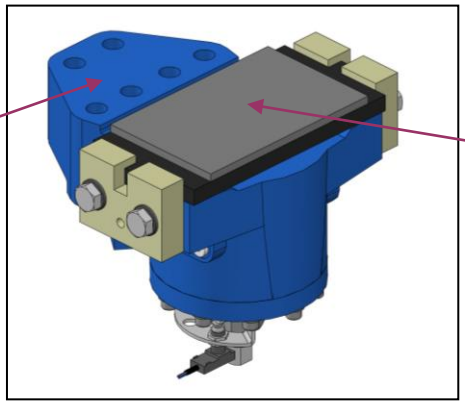
2.3.2. Remove brake from packaging (do not remove plugs marked 32).

2.3.3. Clean the contact surface between the brake and its bracket and the contact surfaces between the linings with the disc. Once the brakes have been unpacked and transported to the installation point they could become dirty, which is why both surfaces need to be cleaned.

NOTE

IMPORTANT: Do not use any liquid to clean these two surfaces. Clean them using a dry paper towel or cloth.

Contact surface with the bracket.



Contact surface between the linings and the disc.

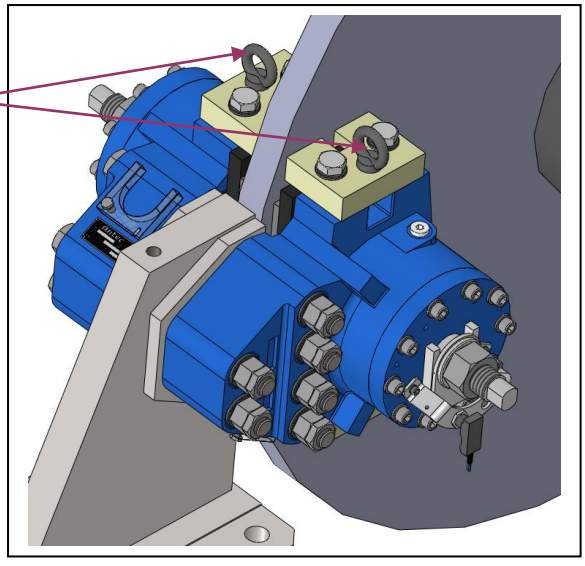
2.3.4. If the brake is supplied with the related bracket, anchor the brake bracket using the corresponding anchoring bolts for each case.

2.3.5. Fit the fastening screws, washers and nuts. Fasten the NHCD-1400 brake to the bracket using the anchoring screws and nuts with the proper torque. **ANTEC recommends using 10.9 screws lubricated with MoS_2.**

NOTE

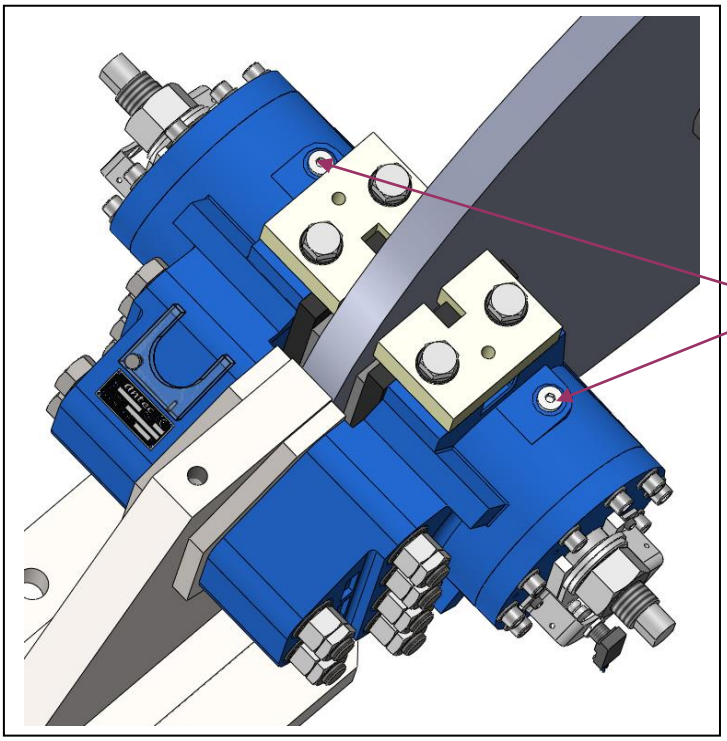
The anchoring screws, washers and nuts are optional accessories and are not supplied with the brakes unless the customer orders them.

The backstops (marked 23) are fitted with an M12 threaded hole for mounting eyebolts, which can be of great use for handling the semi-callipers.



RECOMMENDED TIGHTENING TORQUE FOR M24 SCREWS Quality 10.9 (Nm)	
Lubricated with MoS_2	Not lubricated
734	980

2.3.6. Make the hydraulic feed connections of the brake. Each semi-calliper has 2 connections with a 3/8"G thread for the hydraulic feed. Remove the plugs from the 3/8"G holes to which the hydraulic feed tubing is to be connected. It is recommended to use the lower connection, leaving the upper one free to fit a purging device, and if there is not one, leave the steel plug mounted.



Lower 3/8"G feed connection. Connection opposite to the one shown in the photo.

2.3.7. After fitting the hydraulic connections, apply 2 Mpa of pressure to the brake to bleed the air out of it. The purging of air out of the 3/8"G hole is done without hydraulic feed. In the event of not having the option of fitting a minimex outlet, the brake air can be bled out through the upper feed connection, by unscrewing the steel plug until oil comes out. At that time we will know that there is no longer any air in the brake, so we can screw the plug back on.

Important: Never apply more than 2 Mpa of pressure to the brake during the brake bleeding procedure as this could dangerous for the worker performing the operation.

2.3.8. After bleeding the air out of the brake, proceed to adjust the brake, according to point 4 of the instructions.

3. BRAKE MAINTENANCE.

NHCD-1400 brake maintenance will consist of regularly checking the following points:

3.1 – Lining wear. When the lining thickness drops below 2 mm at the thinnest point, it needs to be replaced. If the brake comes with a wear sensor (optional), replace the linings when the sensor warning comes on. See point 4.2 (adjustment of detectors) and point 5 (linings change).

3.2 – Adjust the brake whenever it displays a loss of force. If the brake comes with a wear sensor (optional), adjust the brake when the sensor warning comes on. See point 4.1. (adjustment of the calliper opening).

3.3. - Check the torque of the stopper screws and the fastening screws of the brake to any of the brackets. See the blueprint of the brake supplied with the documentation sent by Antec.

3.4. - Check that there is no leakage in the hydraulic connections.

4. ADJUSTING THE BRAKE.

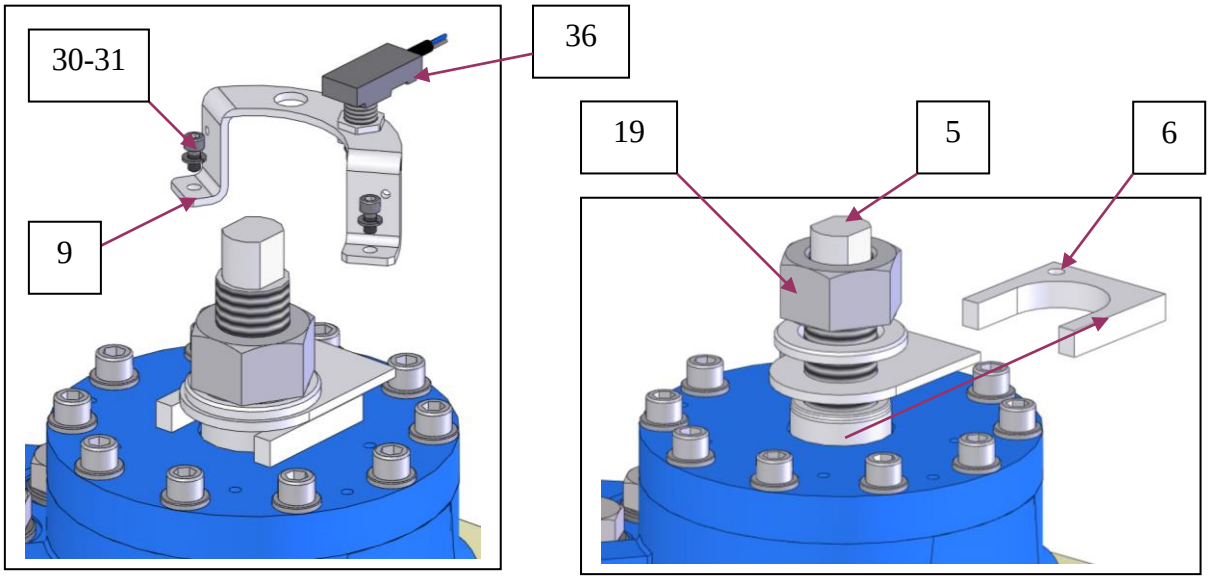
The brake has two unique adjustment points:

4.1. - Adjustment of the calliper opening.

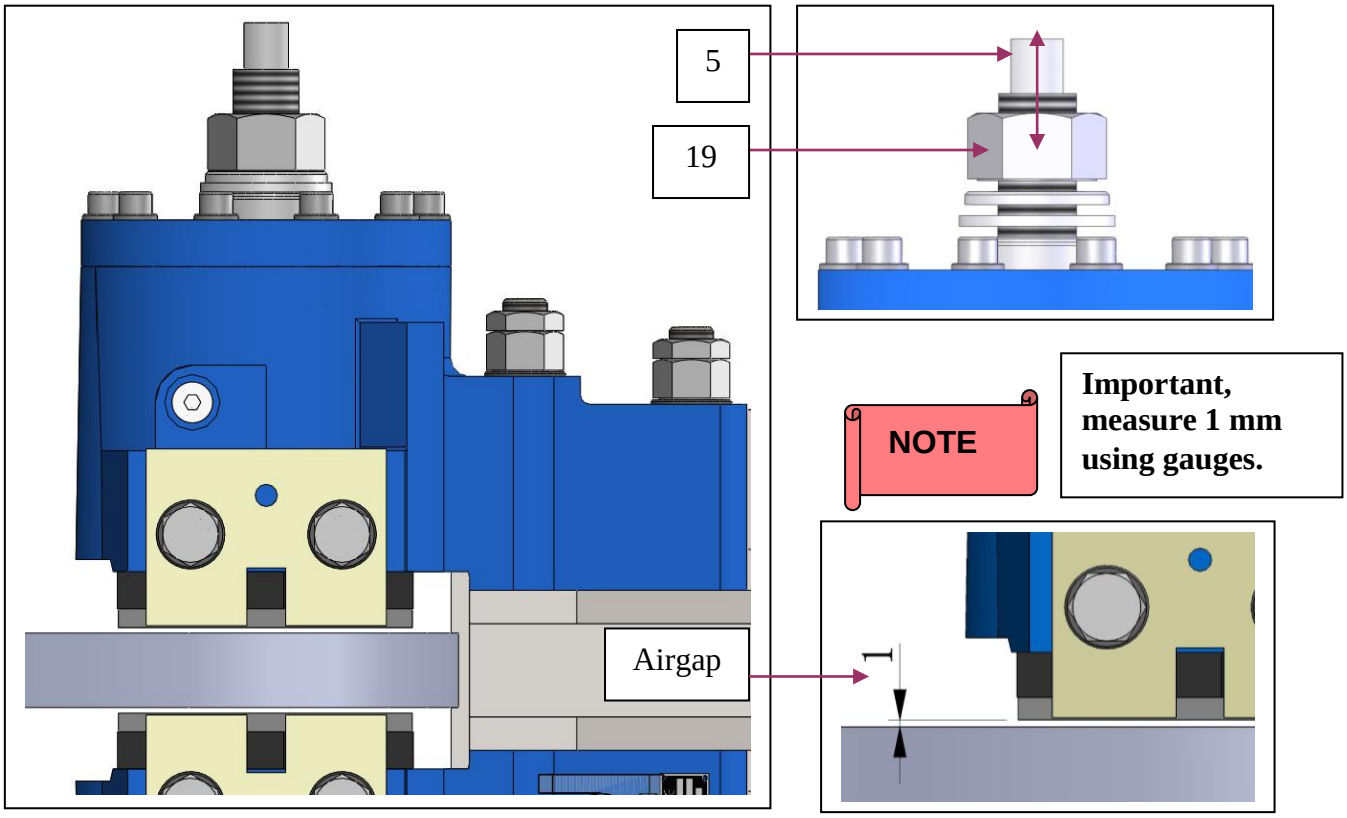
The explanation of the adjustment of the calliper opening will be given for one of the two semi-callipers. and is the same for the other.

4.1.1 Feed the semi-calliper with the related hydraulic pressure for each brake, as shown in the attached table in point 1.3. of the instructions. At this pressure the brake will be opened to the utmost.

4.1.2 Dismantle the bracket of the sensors (marked 9) with their bolts and washers (marked 30-31) and the sensor (36). Loosen the nut (marked 19) up until the end of the bolt, enough to free up the adjustment screw (marked 5). Dismantle the locking backstop (6).



4.1.3 Adjust the adjustment screw (marked 5), by tightening or loosening until the distance between the lining and the disc is of 1 mm. We will refer to this distance as the air gap. Important, measure this distance using gauges.



4.1.4 Once this opening has been adjusted lock the adjustment screw (marked 5) using the nut (marked 19).

4.1.5 The brake must ALWAYS be adjusted when the brake is installed, there is wear in the lining of 1 mm or the linings are replaced.

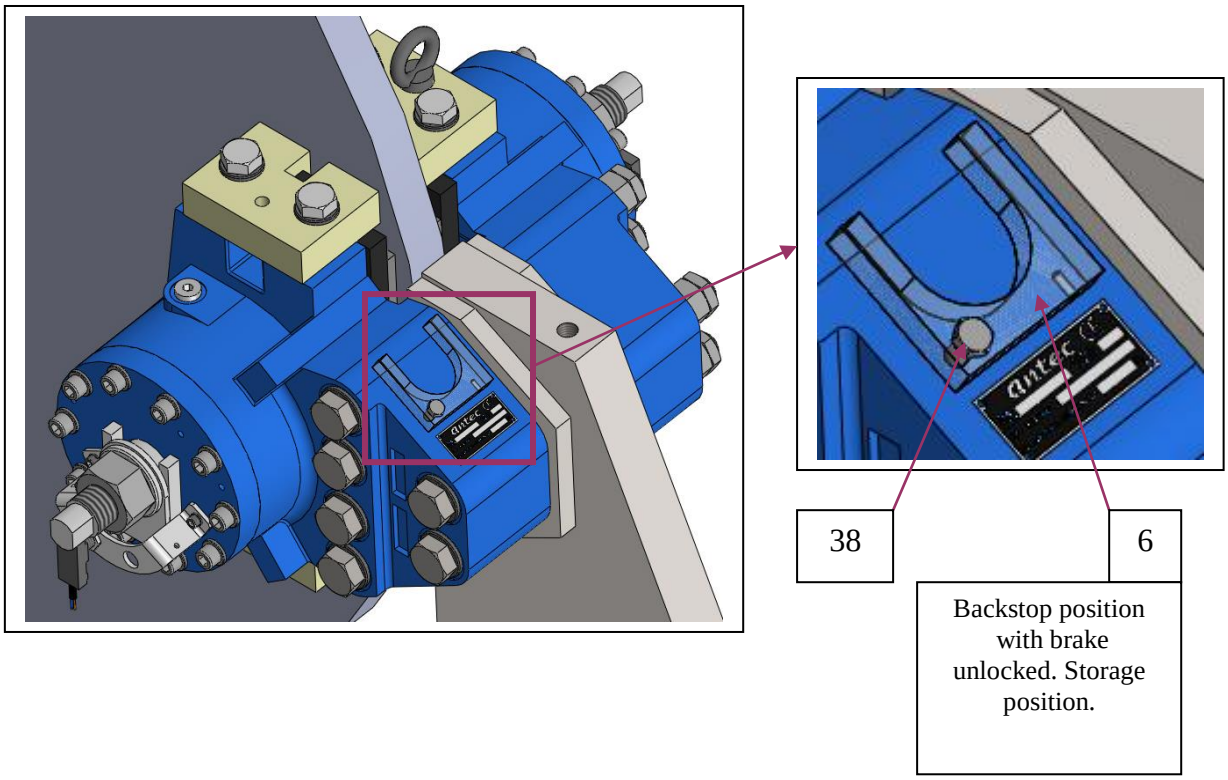
4.1.6 At that time the brake, after having cancelled the hydraulic feed, will by the action of the springs brake with the force shown in the attached table in point 1.3.

NOTE

The airgap must be the same on both sides of the disc. Otherwise, there may be anomalous forces applied to the disc and to the brake bracket.

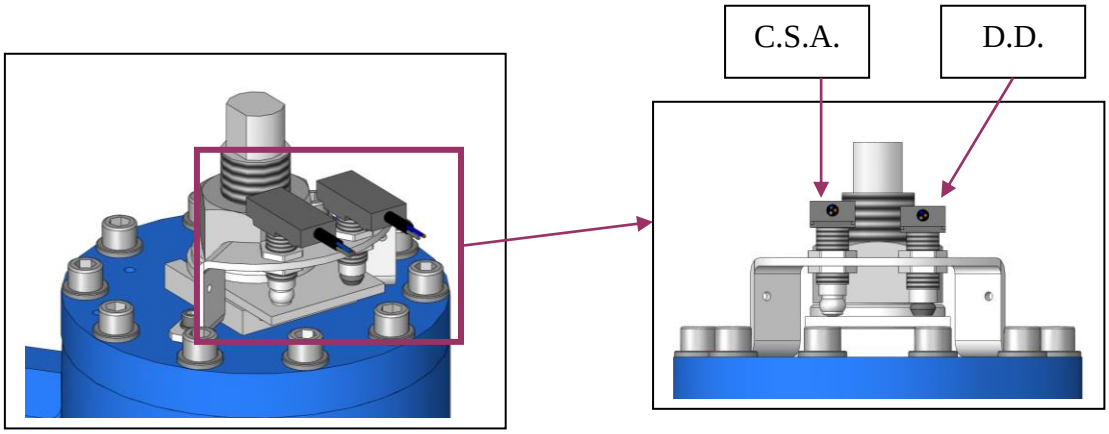
The wider the opening (>1 mm), the less the braking force and the lifespan of the springs.

4.1.7 Mount the locking backstop (marked 6) with the bolt (marked 38) in the position shown in the following diagram (storage position of the locking backstop).



4.2. - Adjustment of sensors

In the event that you have an ANTEC brake with brake opening signalling (C.S.A.) and a lining wear sensor (D.D.) *(Optional)*, these must be mounted on the cover as shown in the following diagram. There is another assembly option of the wear sensor (D.D) by means of cables embedded in the lining as explained in point 4.2.3.



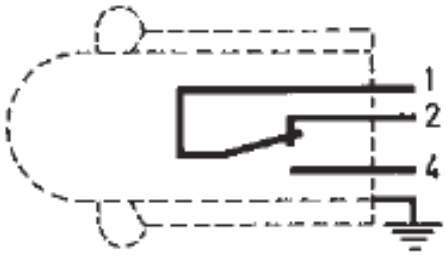
The two detectors fitted to the brake fulfil the following functions:

4.2.1. Opening signalling contact indicator (C.S.A.): This sensor indicates when the brake is open (pressurised). Then the sensor does not detect, the brake is closed (unpressurised).

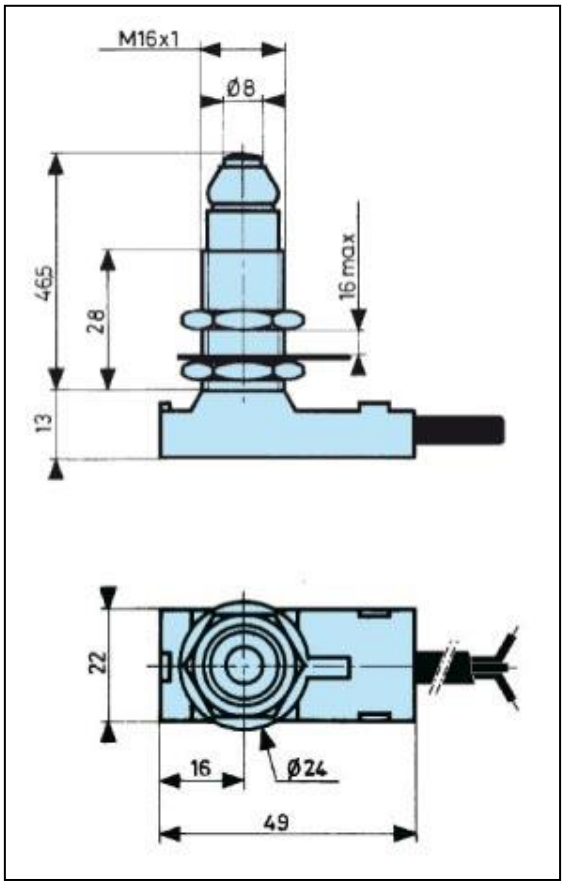
To properly understand how to adjust the lining wear sensor, its technical specifications data are attached.

Conformity to standards	
Protection	IP 56 - IP 66 depending on type
Version	Single-pole
Function	3-terminal single break two-way contact element (form C: changeover)
Electrical characteristics	
Assigned operating current (Ie)	5 A / 250 V
Thermal current Ith (A)	12
Connections	
Cable	PVC (A05 - VV - F), length 0.50 m 3 conductors cross-section 0.75 mm^2 Sheathed ext. Ø: 7.6 mm
Electrical protection	Earthing terminal for version 83 731 and 83 732
Approvals	CSA

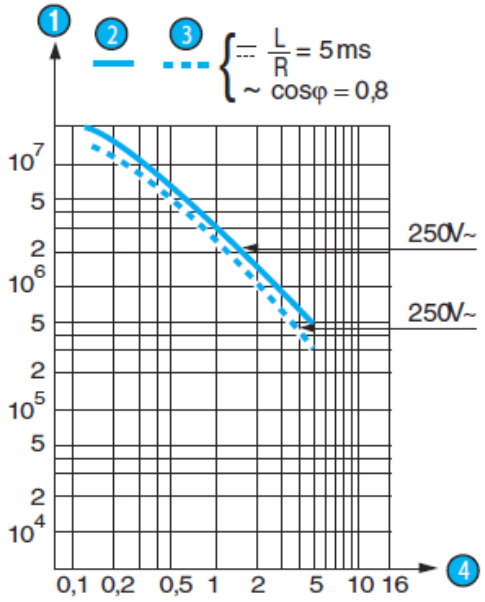
Minimum operating force (N)	
Minimum total travel force (N)	35
Differential travel (mm)	2
Minimum operating travel (mm)	0,2
Maximum total travel (mm)	6
Mechanical life (millions of operations) mini.	10^6
Operating temperature (°C)	-5 →+70
Protection °C	IP66
Weight (g)	110



1-Black (common)
2- Brown (NC)
4- Grey (NO)



CURVES

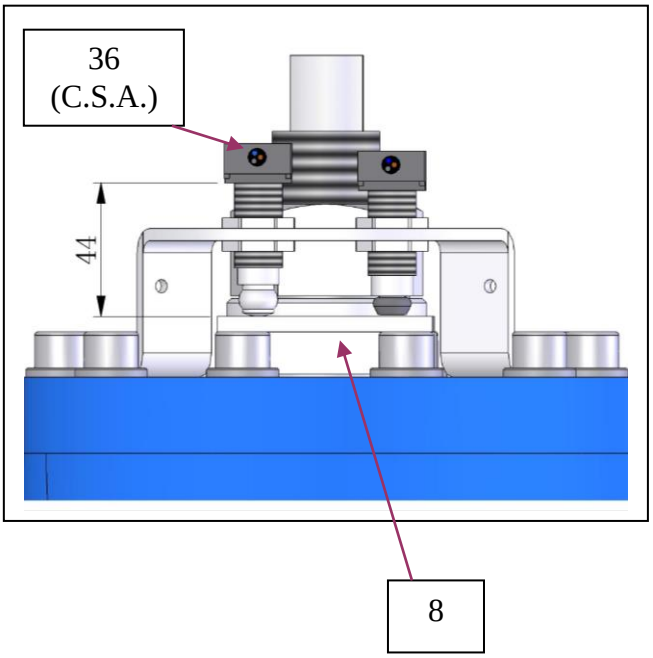


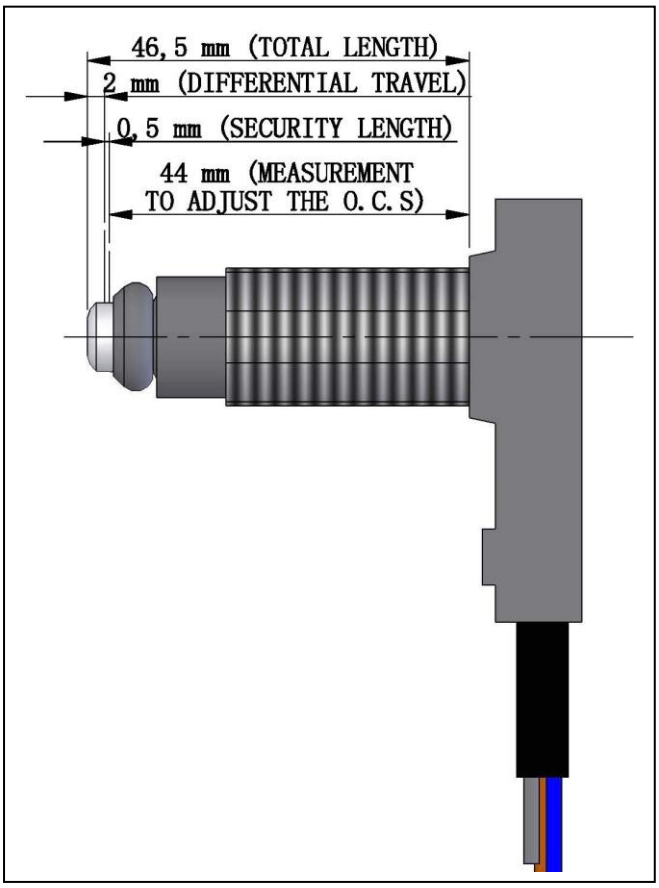
1 Number of operations
2 Resistive circuit
3 Inductive circuit
4 Current in amps

How is the opening sensor adjusted?

The sensor (marked 36), continuously detects the strip (marked 8), which moves together with the piston (marked 2) previously mention in the instructions, both with the brake open as well as with the brake closed.

By applying the opening pressure for each brake, shown in the attached table in point 1.3. of the instructions, adjust the opening sensor indicator (C.S.A.), to the measurement shown in the following diagram (44 mm between the head of the sensor and the strip (marked 8)).





When the sensor emits a warning, the operator must know that the following may occur:

- The brake is open, with which oil has entered into the hydraulic feed system at the pressure shown in the attached table in point 1.3. of the instructions.
- Depending on how the output cable of the sensor is connected (NC or NO), one can also know if there is any problem with the wiring connections.

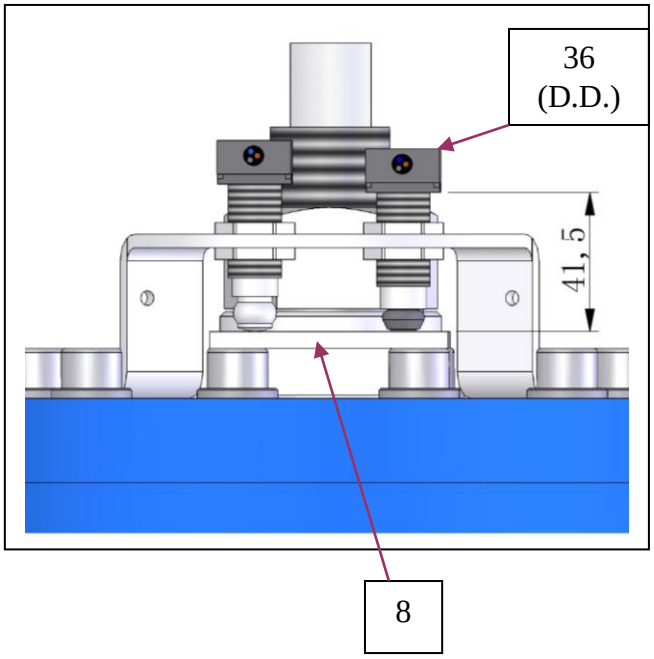
4.2.2. Lining wear sensor (D.D.) ***(Optional in the assembly of the brake)*****:** This sensor detects the time at which the lining has been worn by 1 mm.

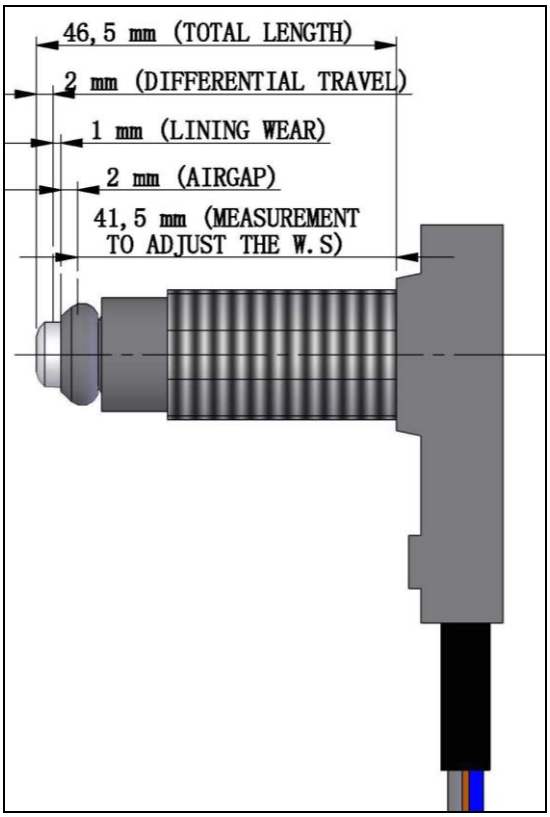
The sensor is the one as the one used to detect wear with the same technical features.

<u>How is the lining wear sensor adjusted?</u>

The sensor (marked 36), continuously detects the strip (marked 8), which moves together with the piston (marked 2) previously mention in the instructions, both with the brake open as well as with the brake closed.

By applying the opening pressure for each brake, shown in the attached table in point 1.3. of the instructions, adjust the lining wear sensor (D.D.), to the measurement shown in the following diagram (41.5 mm between the head of the sensor and the strip (marked 8)).





When the sensor emits a warning, the operator must know that the following may occur:

- The lining has worn by 1 mm.
- The lining is completely worn.
- Depending on how the output cable of the sensor is connected (NC or NO), one can also know if there is any problem with the wiring connections.

NOTE

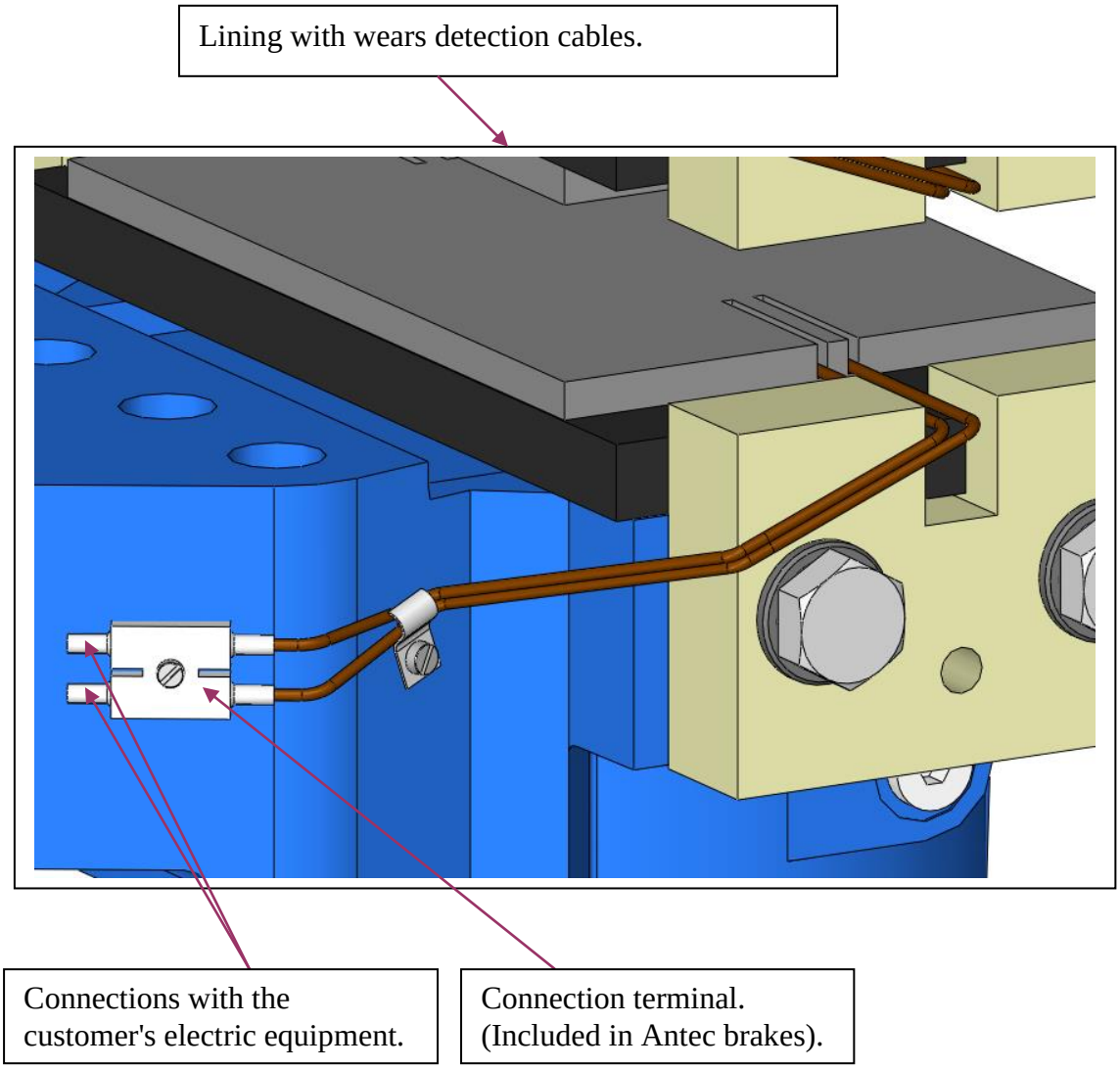
Important:
When the wear sensor gives a warning, the operator must make one of the following two decisions:

1 - If the lining is not completely worn out, adjust the brake following point 4.1 of the instructions.

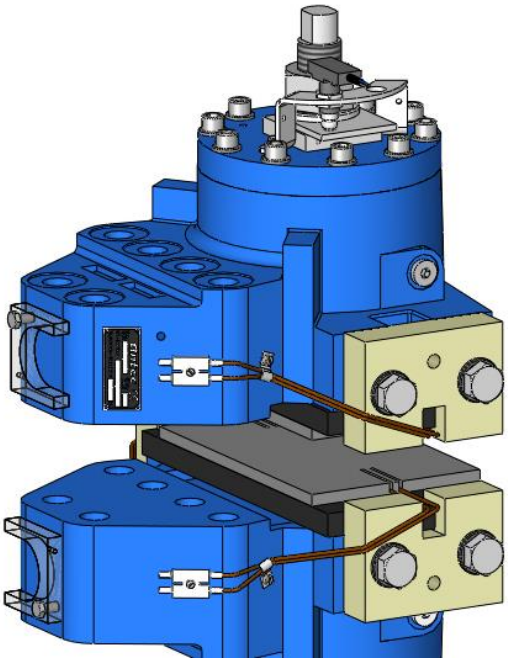
2 - If the lining is worn out, replace the lining following point 5 of the instructions.

4.2.3. Lining wear sensor with cable (D.D.) ***(Optional in the assembly of the brake)*****:** Antec brakes have an option for mounting the shoe lining wear detector by inserting two cables into the lining as shown in the following diagram.

The cables are connected to a connection terminal that is prepared so that the client can make the required connections to his electrical power equipment.



This type of wear sensor needs no kind of adjustment by the operator.

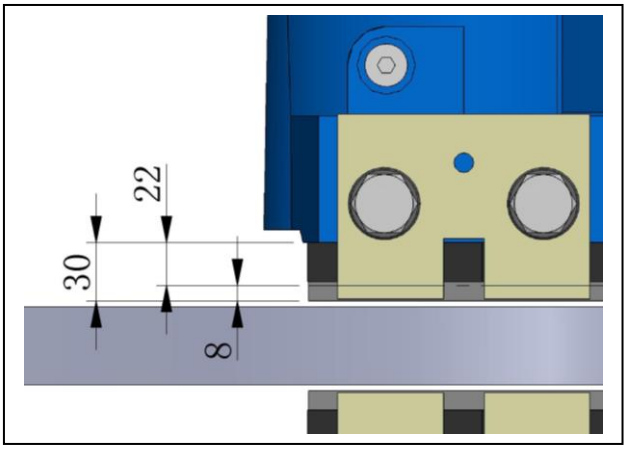


The customer must do the brake's electrical connection with the customer's electrical equipment.

5. CHANGING THE LININGS.

The linings (marked 10), are comprised of a steel plate and the friction material. Its total thickness is of 30 mm per lining.

When the total thickness of the lining has dropped to 22 mm at any point, in other words, it has worn down by 8 mm, it must be replaced.



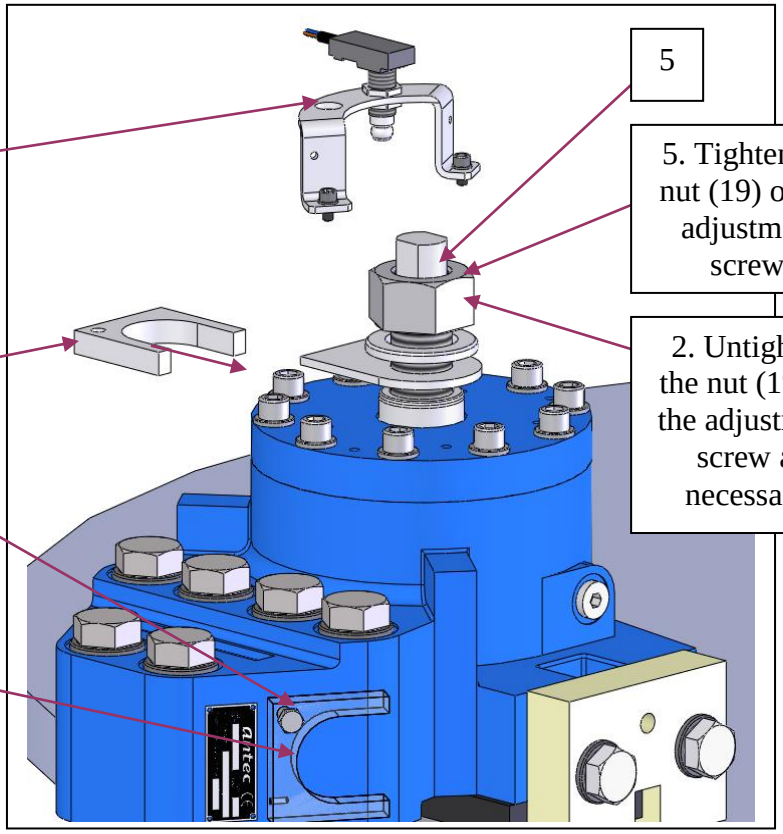
NOTE

ANTEC recommends always replacing both brake linings regardless of whether one or both linings have worn down.

To change the linings, proceed as follows:

5.1. Feed the brake at the pressure indicated for each brake in the attached table of point 1.3 of the instructions.

5.2- Maintaining the hydraulic pressure, remove the sensors bracket (marked 9). Then unscrew the nut (marked 19) enough to leave space to mount the backstop lock. Unscrew the bolt (marked 38) to remove the backstop lock (marked 6) from the body. Then assemble the backstop (marked 6) in the locked position. Retighten the nut of the adjustment screw (19) locking the calliper. At that time one can remove the hydraulic pressure.



NOTE

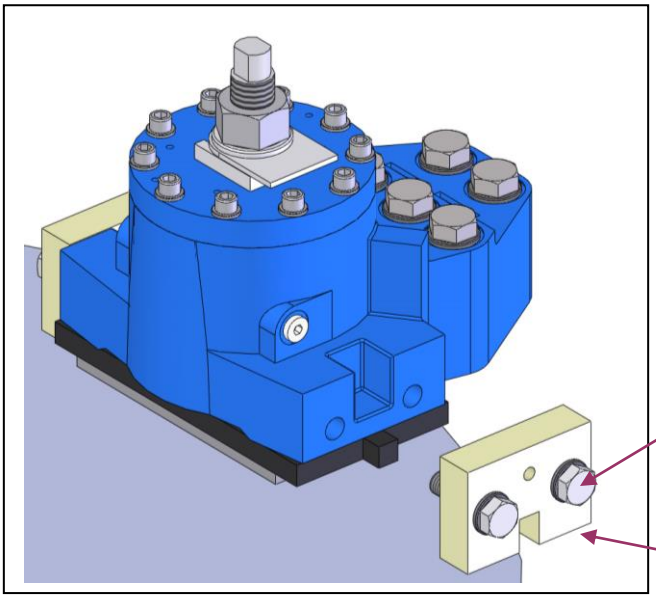
Once the locking backstop has been fitted (marked 6) and before tightening the nut (marked 19), it is important to unscrew the adjustment bolt (marked 5) enough to leave the necessary space to mount the new lining.

Fully ensure that the locking backstop specified in point 5.2 is properly fitted, before removing the hydraulic pressure.

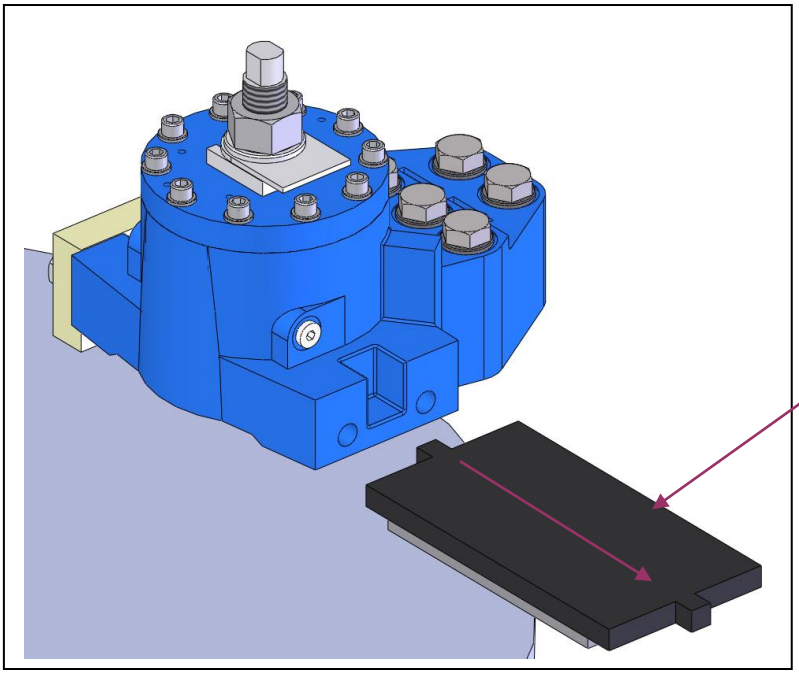
5.3- The linings of both semi-callipers can be changed in the same manner as these can both be dismantled from the sides or from the centre of the brake towards the centre of the disc (if there is enough space).

SIDE CHANGING OF BRAKE LINING.

Dismantle a side backstop (marked 23) with its anchoring bolts and washers (marked 22-28). Remove the old lining out of the side (marked 10).

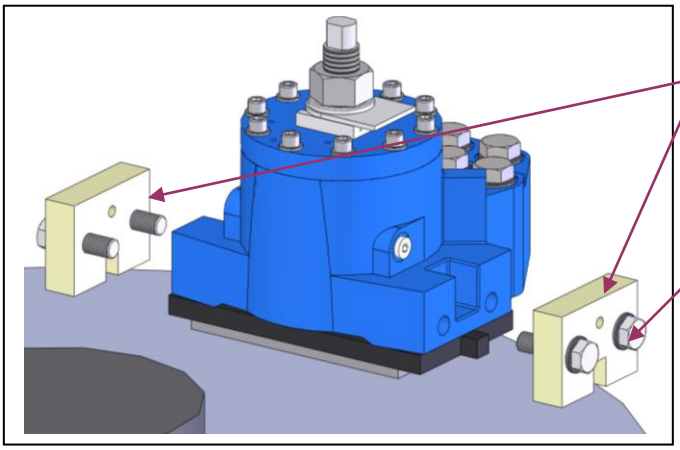


RECOMMENDED TIGHTENING TORQUE FOR M20 SCREWS Quality 10.9 (Nm)	
Lubricated with MoS_2	Not lubricated
427	570

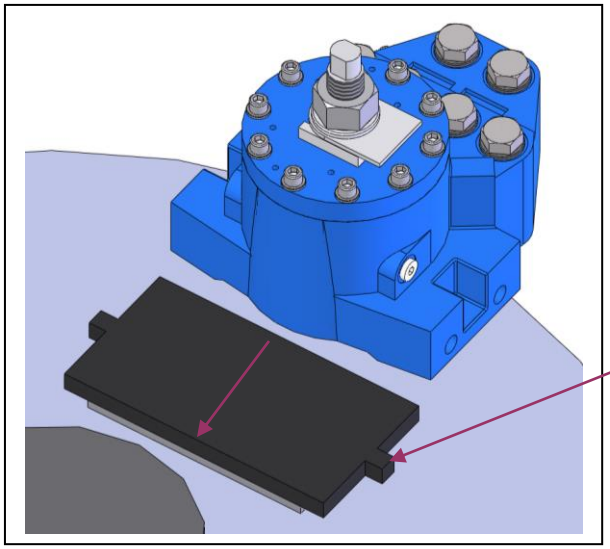


CENTRAL CHANGING OF BRAKE LINING.

Dismantle the two side backstops (marked 23) with their anchoring bolts and washers (marked 22-28). Remove the old lining out through the centre (marked 10).



RECOMMENDED TIGHTENING TORQUE FOR M20 SCREWS Quality 10.9 (Nm)	
Lubricated with MoS_2	Not lubricated
427	570



5.4- Mount the new linings.

5.5- Perform the procedure in reverse order, starting from point 5.3 (fit the side backstops).

5.6- Proceed as described in point 4 of the instructions (adjusting the brake).

NOTE

A newly installed lining requires a breaking-in period to achieve the proper lining properties. This period cannot be reduced due to the number of different influential factors.

6. CHANGING THE SPRINGS.

The process of changing springs is hazardous for the operator doing it, for which reason Antec warns of the danger and advises the client to establish a specific risk prevention protocol for this point.

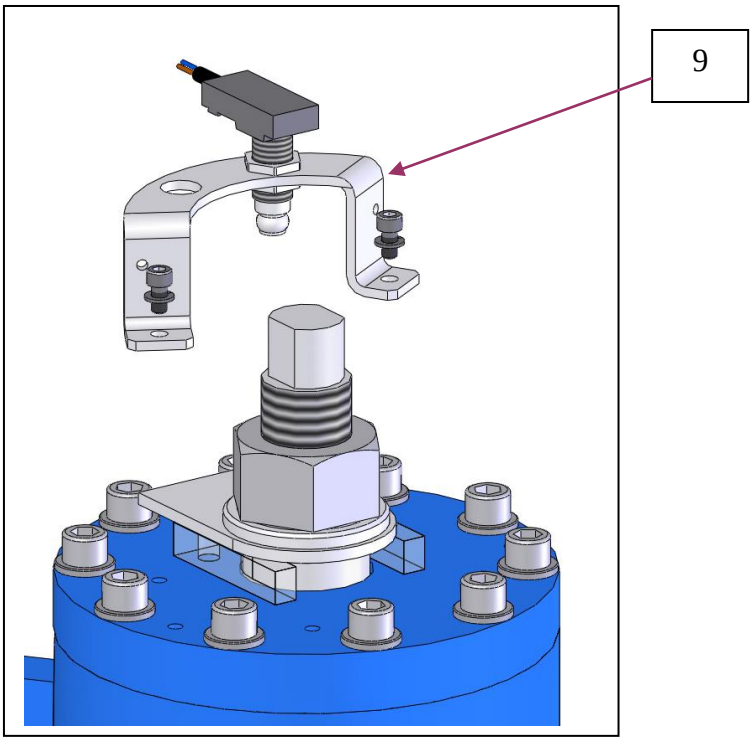
To change the springs proceed as follows (the explanation is given for one of the brake's semi-callipers, the procedure being the same for the other):

NOTE

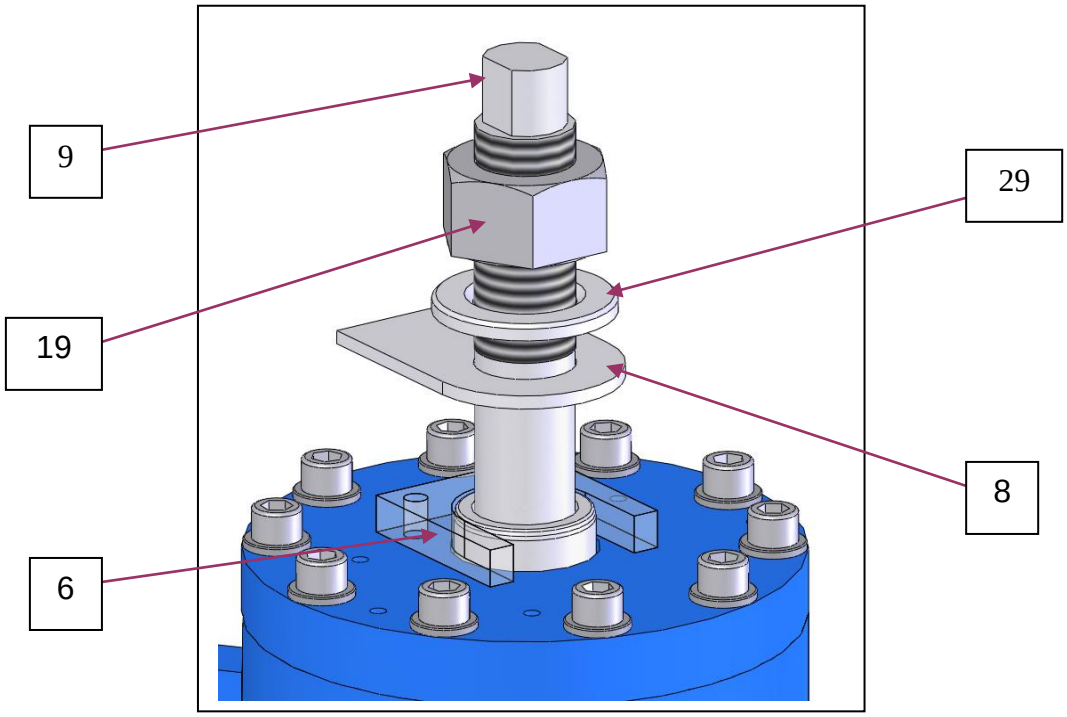
To change the springs, it is not necessary to dismantle the semi-calliper from its bracket.

6.1- Feed the brake at the pressure indicated for each brake in the attached table of point 1.3 of the instructions.

6.2- Maintaining the hydraulic pressure, remove the sensors bracket (marked 9).



6.3- Dismantle the nut and the washer (marked 19-29), the actuator (marked 8), the locking backstop (marked 6) in the event that these are mounted and the adjustment screw (marked 9), so that subsequently the springs, when the pressure is removed, are freed up without creating any effort.



6.4- The block of springs is still compressed, so that if now the cover is removed (marked 3), the springs would exert a force that could be dangerous for the worker.

NOTE

It is recommended to dismantle the lining (marked 10), in order to fully decompress the block of springs.

6.5- Maintaining the brake feed, dismantle the lining (marked 10), following the guidelines given in point 5.3 of these instructions.

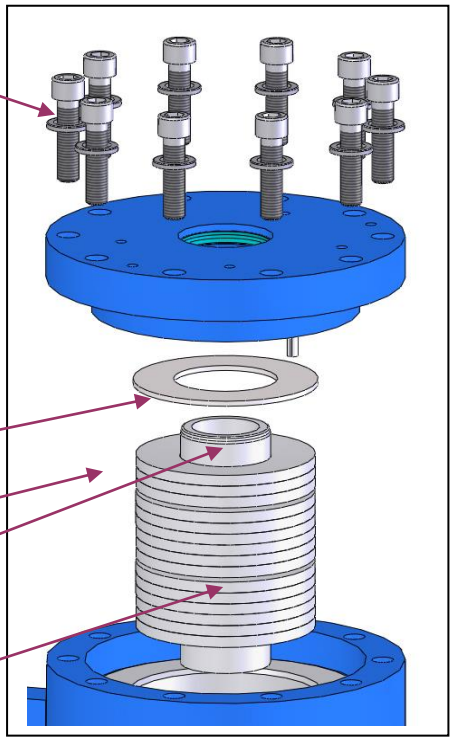
6.6- Remove the pressure.

Failure to comply with these rules may cause irreversible damage to the ANTEC brakes and injuries to the workers handling them.

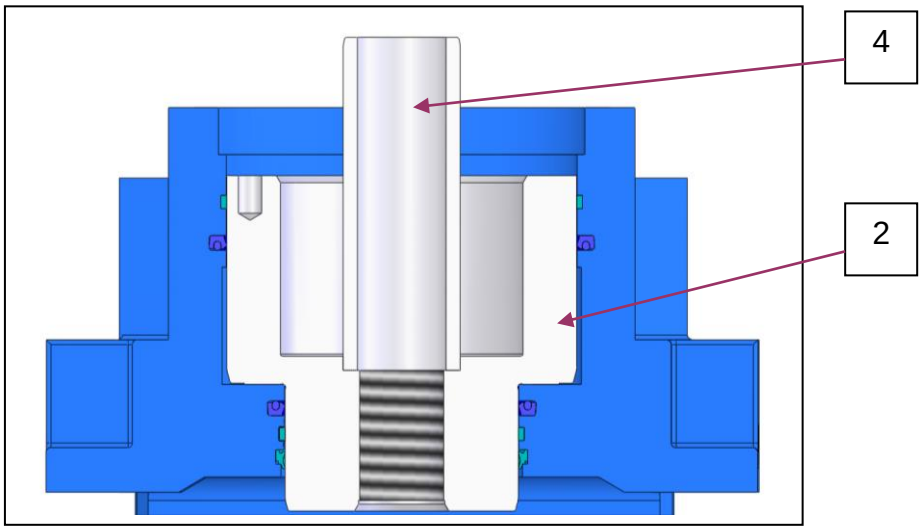
6.7- Without hydraulic pressure, loosen the 10 bolts with their washers (marked 20-21) which fasten the cover of the brake (marked 3).

After this, remove the cover (marked 3), and the spring guide (marked 4). Lastly, remove the package of springs (marked 11) and the supplement (marked 12) (*Optional depending on the brake model).*

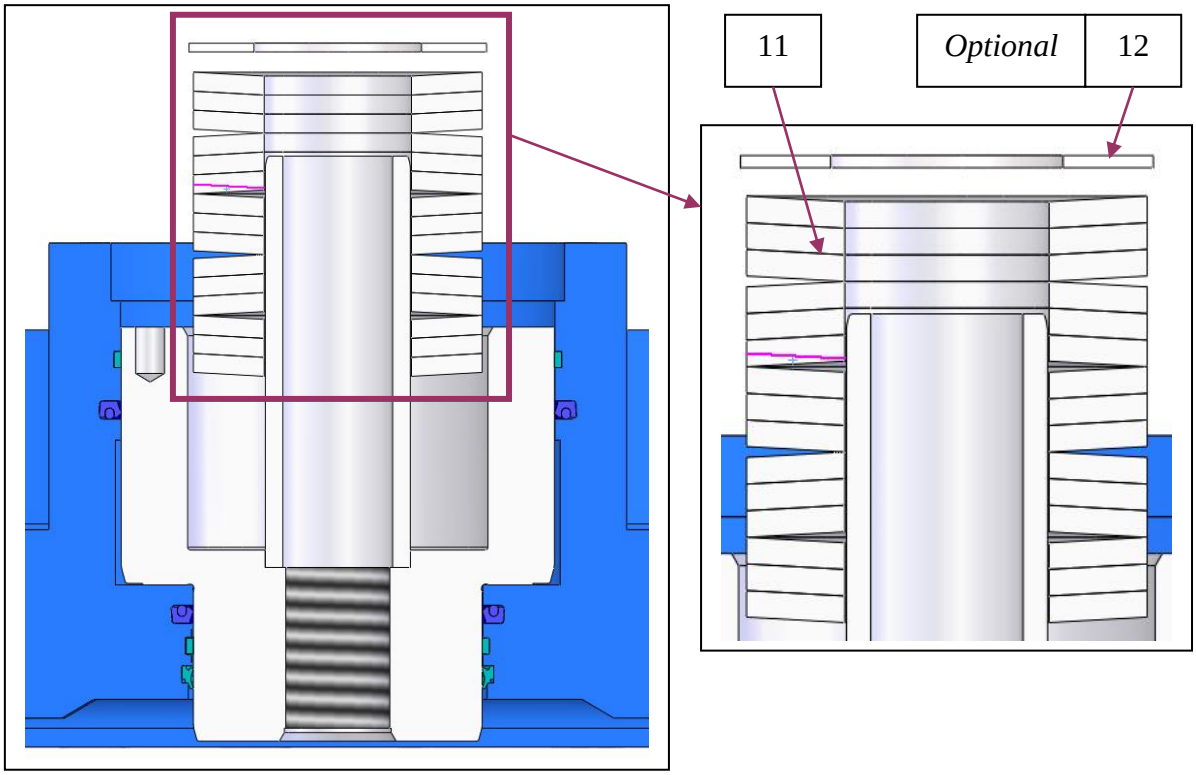
RECOMMENDED TIGHTENING TORQUE FOR M12 SCREWS Quality 8.8 (Nm)	
Lubricated with MoS_2	Not lubricated
59	85



6.8- Fit the spring guide (marked 4) into its place taking care to fit it into its lodging of the piston (marked 2).



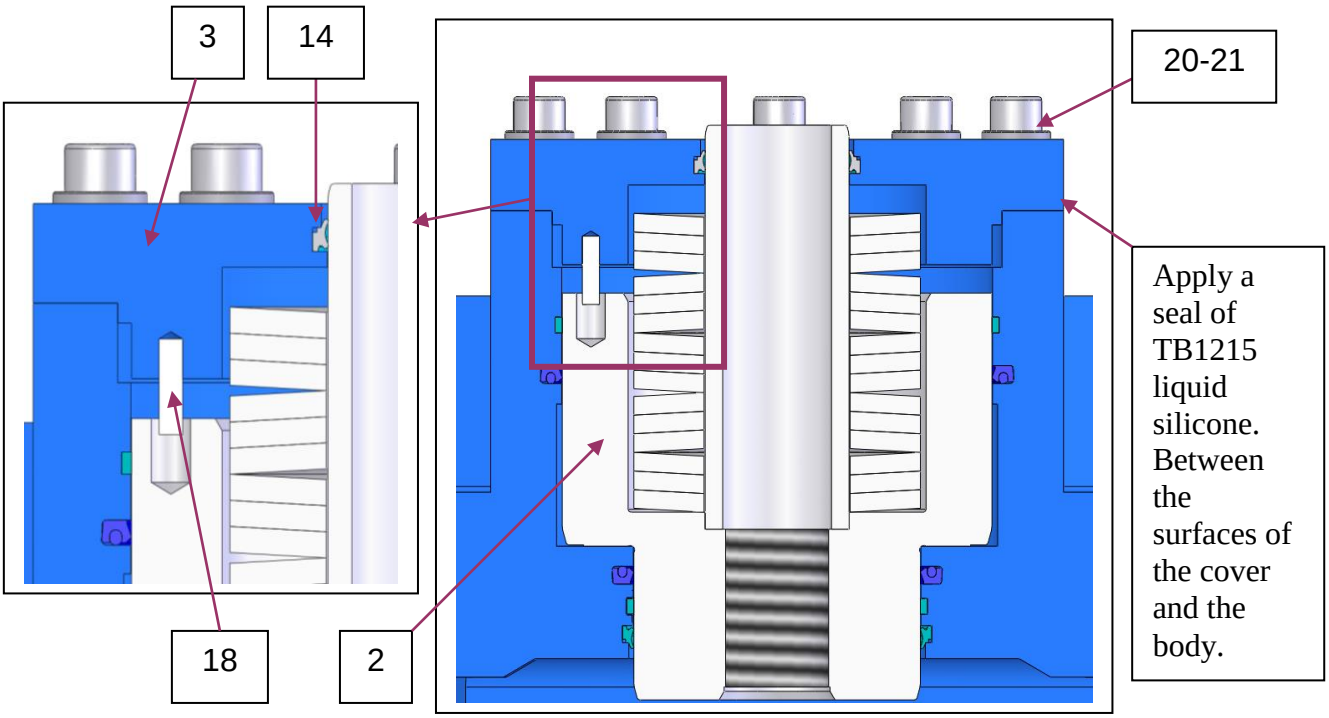
6.9- Install the new package of springs (marked 11), greasing it abundantly with thick green grease (For example, Sopral super-grass 792/2 or equivalent). Particular attention must be paid to mount the springs in the proper position. Observe the assembly of the springs in the blueprint of the assembly, which is specific to each brake model. Also mount the supplement (marked 12) (*Optional depending on the brake model).*



6.10- Mount the cover (marked 3), in which we must have replaced the scraper (marked 14) with a new one. When mounting the cover take into account that the pin (marked 18) must be lodged in the housing of the piston (marked 2). Tighten the cover fastening bolts (marked 20-21) with the corresponding tightening torque (see point 6.7 of these instructions).

NOTE

When mounting the cover (marked 3), clean it well and between it and the body (marked 1) apply a seal of simple application liquid silicone type Threebond TB1215 or equivalent.



6.11- Perform the procedure in reverse order, starting from point 6.6 and including this one.

6.12- Proceed as described in point 4 of the instructions (adjusting the brake).

7. CHANGING THE SEALS.

NOTE

The seals must be changed in the cleanest possible environment to avoid contaminating the parts inside the calliper with abrasive particles.

The parts and seals must be handled as carefully as possible to avoid superficial damages that could cause oil leaks.

Check that the surface of the parts is in good condition before fitting new seals.

Once the seals have worn down or leaks appear in the brake, they need to be replaced.

The seal kit for NHCD-1400 brakes consists of:

Marked reference on assembly drawing	Name	Quantity
13	*Scraper*	*2*
14	*Scraper*	*2*
15	*Guide ring*	*2*
16	*Guide ring*	*2*
33	*Seal*	*2*
34	*Seal*	*2*
BETWEEN 1-3	*Liquid silicone seal Threebond 1215*	*-*

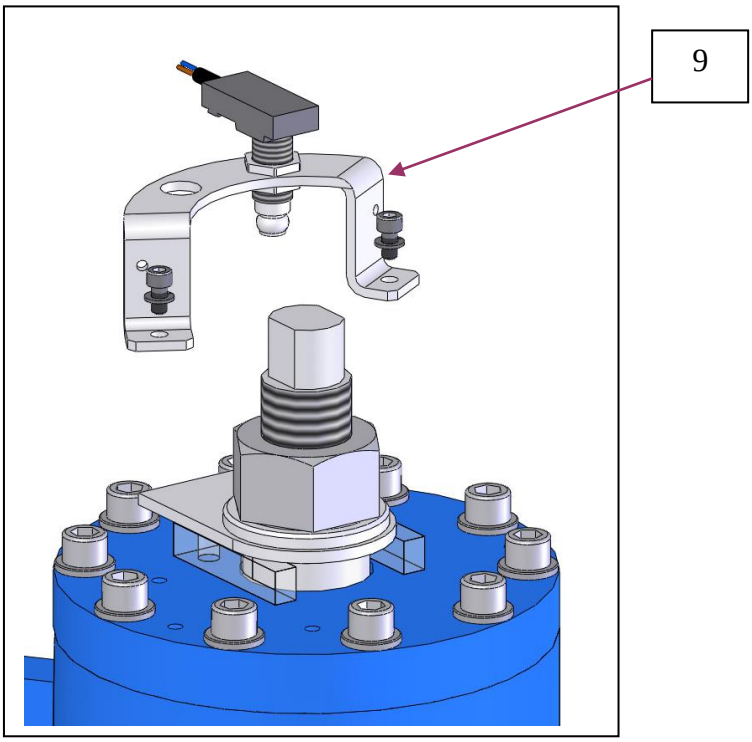
NOTE

ANTEC recommends ALWAYS replacing the entire brake seal kit when a problem occurs with any of its components.

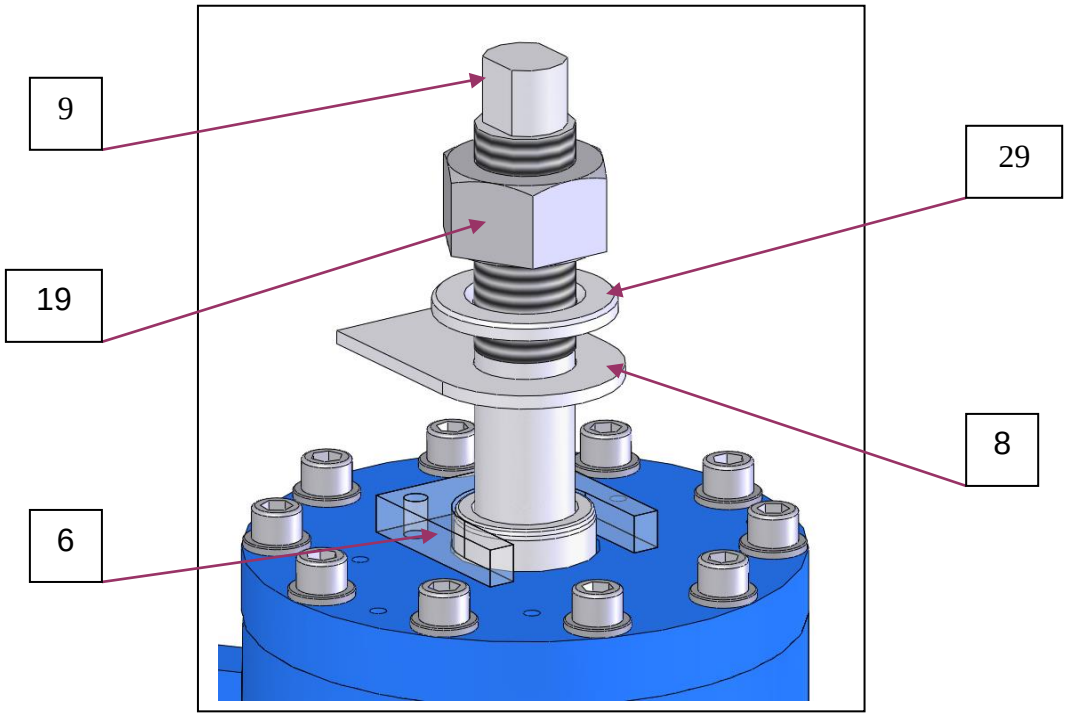
To replace the components of the seals kit we shall follow the following steps (the explanation is given for one of the semi-callipers of the brake and is the same for the other):

7.1- Feed the brake at the pressure indicated for each brake in the attached table of point 1.3 of the instructions.

7.2- Maintaining the hydraulic pressure, remove the sensors bracket (marked 9).



7.3- Dismantle the nut and the washer (marked 19-29), the actuator (marked 8), the locking backstop (marked 6) in the event that these are mounted and the adjustment screw (marked 9), so that subsequently the springs, when the pressure is removed, are freed up without creating any effort.



7.4- The block of springs is still compressed, so that if now the cover is removed (marked 3), the springs would exert a force that could be dangerous for the worker.

NOTE

It is recommended to dismantle the lining (marked 10), in order to fully decompress the block of springs.

7.5- Maintaining the brake feed, dismantle the lining (marked 10), following the guidelines given in point 5.3 of these instructions.

7.6- Remove the pressure.

Failure to comply with these rules may cause irreversible damage to the ANTEC brakes and injuries to the workers handling them.

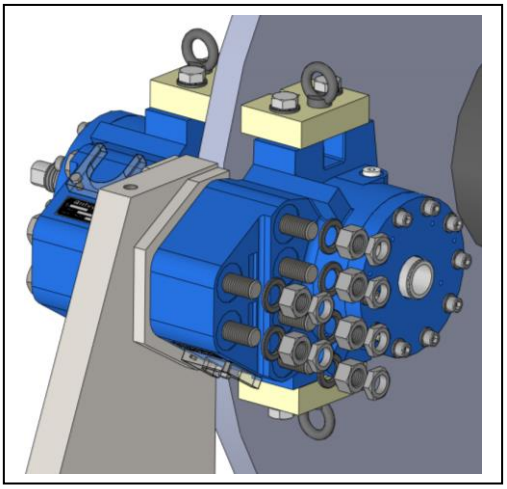
7.7- Remove the hydraulic feed connections.

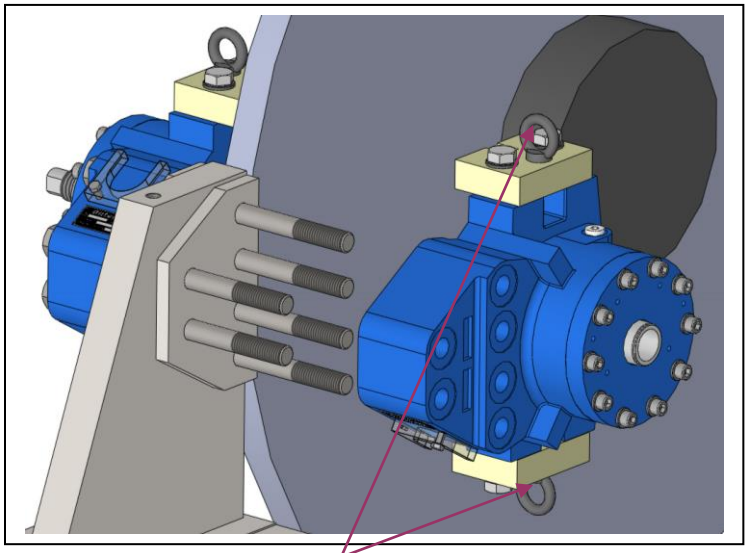
NOTE

It is not necessary to remove the hydraulic connections, but this may make handling the half-calliper easier for the worker.

7.8- Dismantle the semi-calliper from its bracket and position it in an ideal place to handle it. For the handling of the semi-callipers, the brake's backstops are fitted with threaded holes for M12 eye bolts.

The process of handling the brake is hazardous for the operator doing it, for which reason ANTEC warns of the danger and advises the client to establish a specific risk prevention protocol for this point.

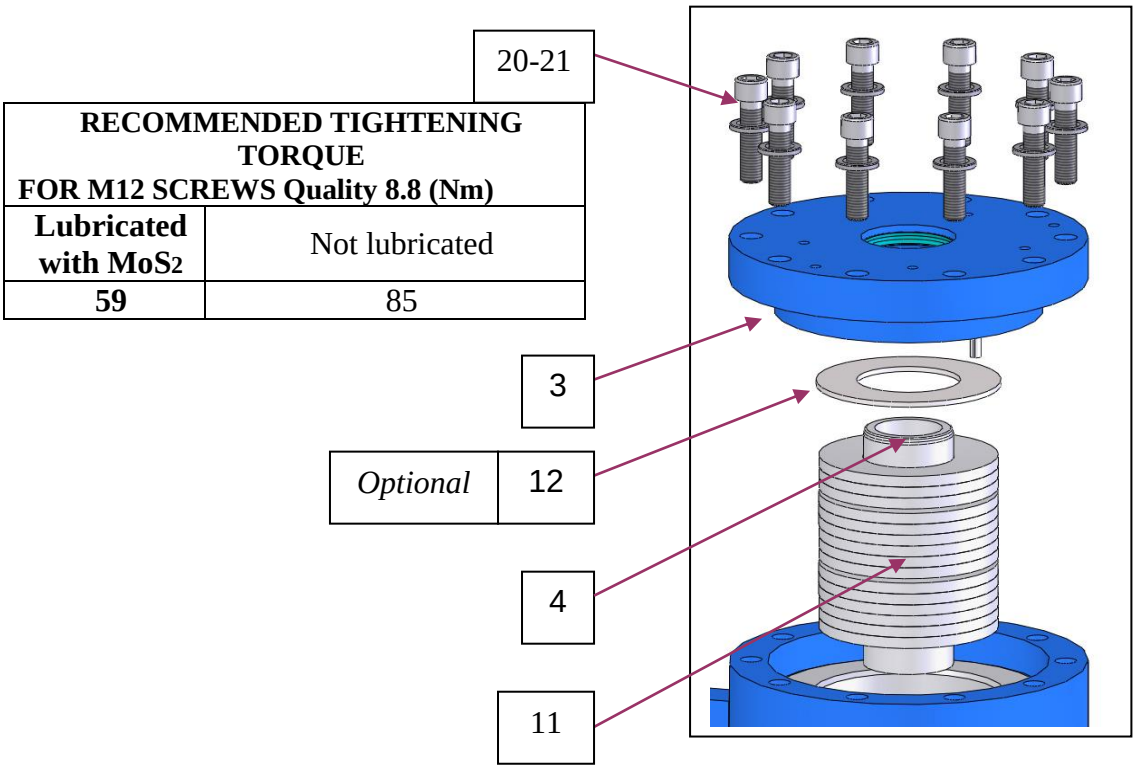




Possibility of mounting M12 eye bolts.

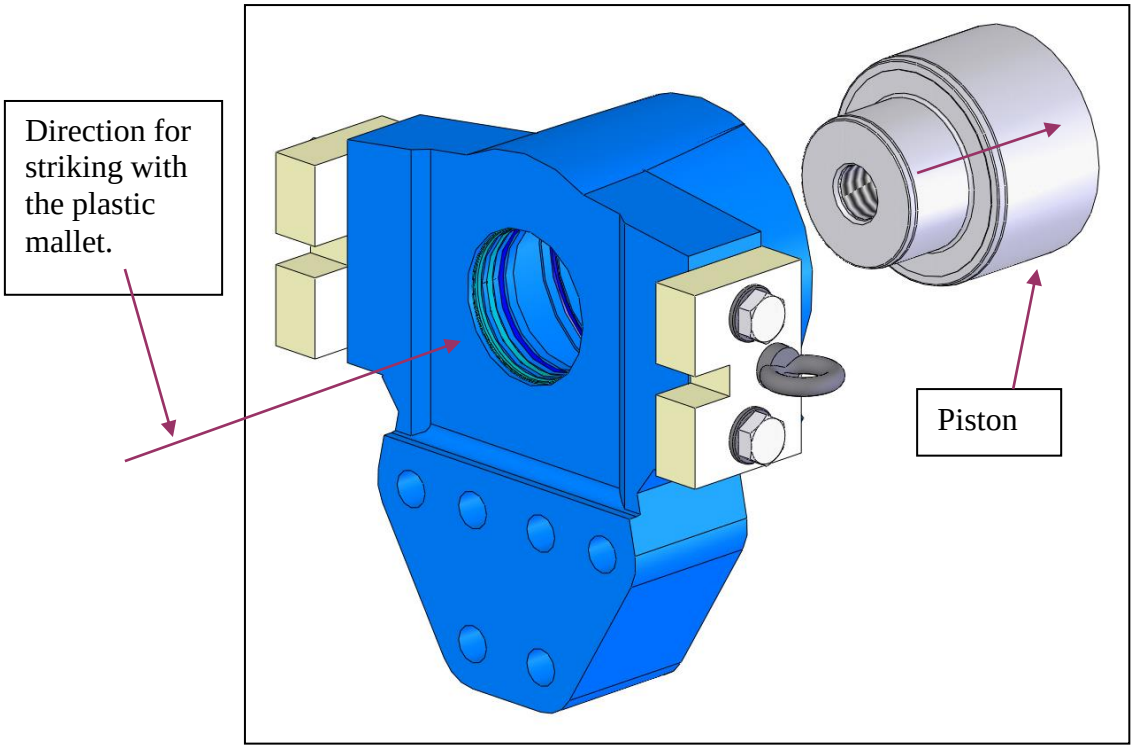
7.9- Without hydraulic pressure, loosen the 10 bolts with their washers (marked 20-21) which fasten the cover of the brake (marked 3).

After this, remove the cover (marked 3), and the spring guide (marked 4). Lastly, remove the package of springs (marked 11) and the supplement (marked 12) (*Optional depending on the brake model).*



RECOMMENDED TIGHTENING TORQUE FOR M12 SCREWS Quality 8.8 (Nm)	
Lubricated with MoS_2	Not lubricated
59	85

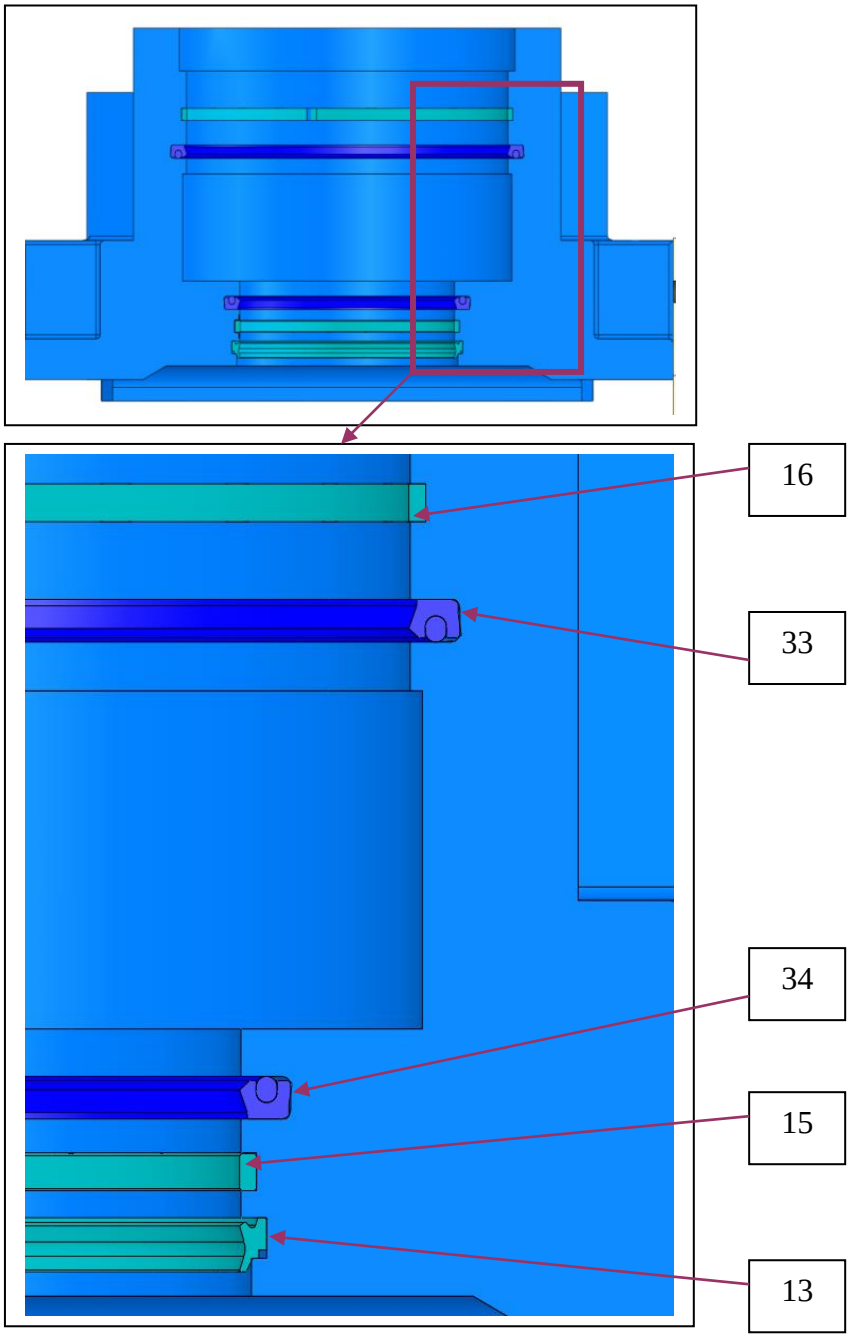
7.10- Remove the piston (marked 2) by striking with a plastic mallet in the direction shown in the diagram.



7.11- Remove the damaged seals from their housings in the main body (marked 1).

7.12- Clean the housings in the body (marked 1) well to remove any residue from the damaged seals.

7.13- Place the new seals in the right place, taking care to position them properly, as shown in the diagram.



7.14- Before refitting the piston (marked 2) thoroughly inspect it and ensure that it is suitable to be mounted again. A piston in poor condition could lead to leaks in the brake.

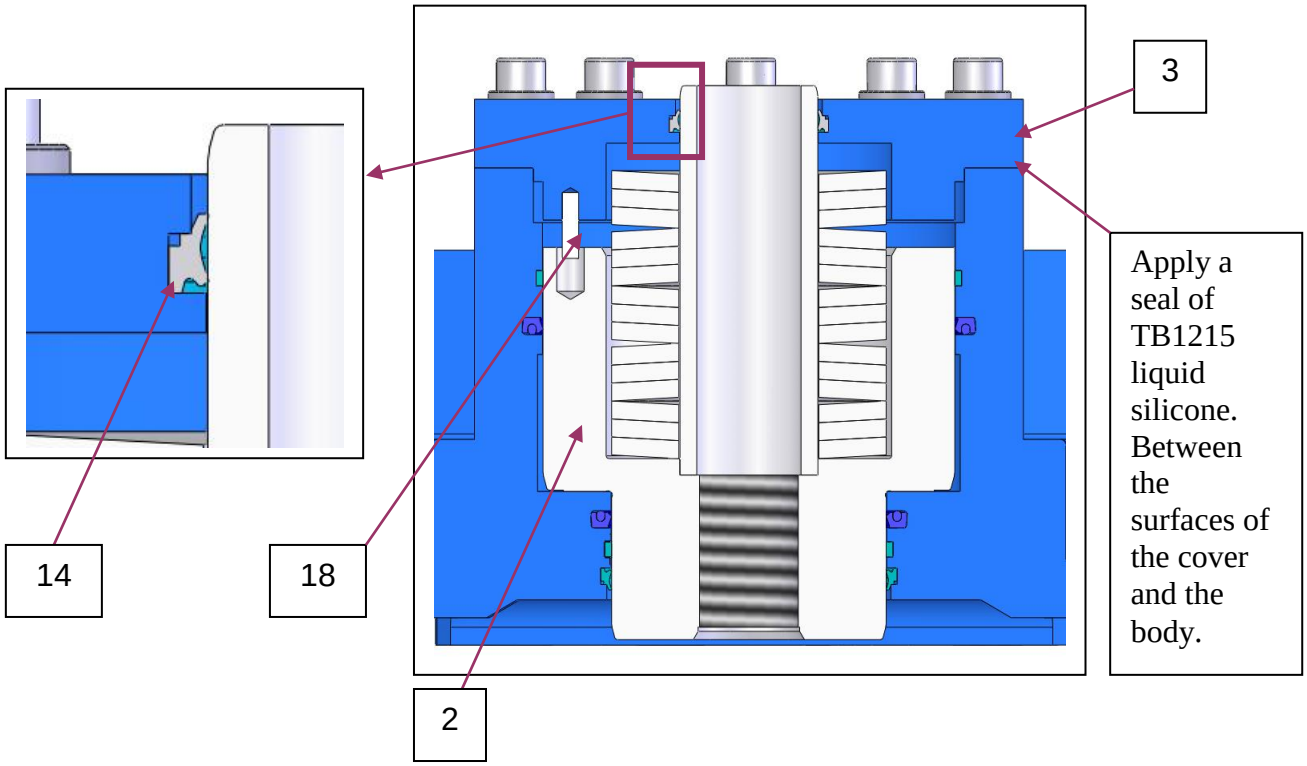
7.15- Before mounting the piston, apply a little oil to its side surface.

7.16- Perform the procedure in reverse order, starting from point 7.10 and including this one.

NOTE

When mounting the cover (marked 3), clean it well and between it and the body (marked 1) apply a seal of simple application liquid silicone type Threebond TB1215 or equivalent. Take into account that the pin (marked 18) must be lodged in the housing of the piston (marked 2).

Change the scraper (marked 14), mounted in the cover (marked 3).



7.17- Proceed with the procedure described in point 2 (brake assembly procedure) and in point 4 of the instructions (adjustment of the brake).

8. SPARE PARTS.

ANTEC recommends keeping a number of spare parts on hand for any necessary repairs or when certain components come to the end of their service life. ANTEC recommends the following spare parts for these brakes:

Marked reference on assembly drawing	Name	Quantity
10	Lining plate	2
13	Scraper	2
14	Scraper	2
15	Guide ring	2
16	Guide ring	2
33	Seal	2
34	Seal	2

NOTE

If you have any questions regarding brake spare parts, please contact the ANTEC After Sales Service, specifying the brake model and serial number.

9. ONGOING IMPROVEMENT PLAN.

As part of its continuous improvement process ANTEC S.A would welcome any customer suggestions or requests, which can be sent to the Sales Department at **sales@antecsa.com**.

ANTEC S.A. wishes to express its gratitude for the trust that you have placed in our product and we would like to invite you to visit out internet webpage to get to know our wide range of products.

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info@antec-bs.com
www.antec-bs.com

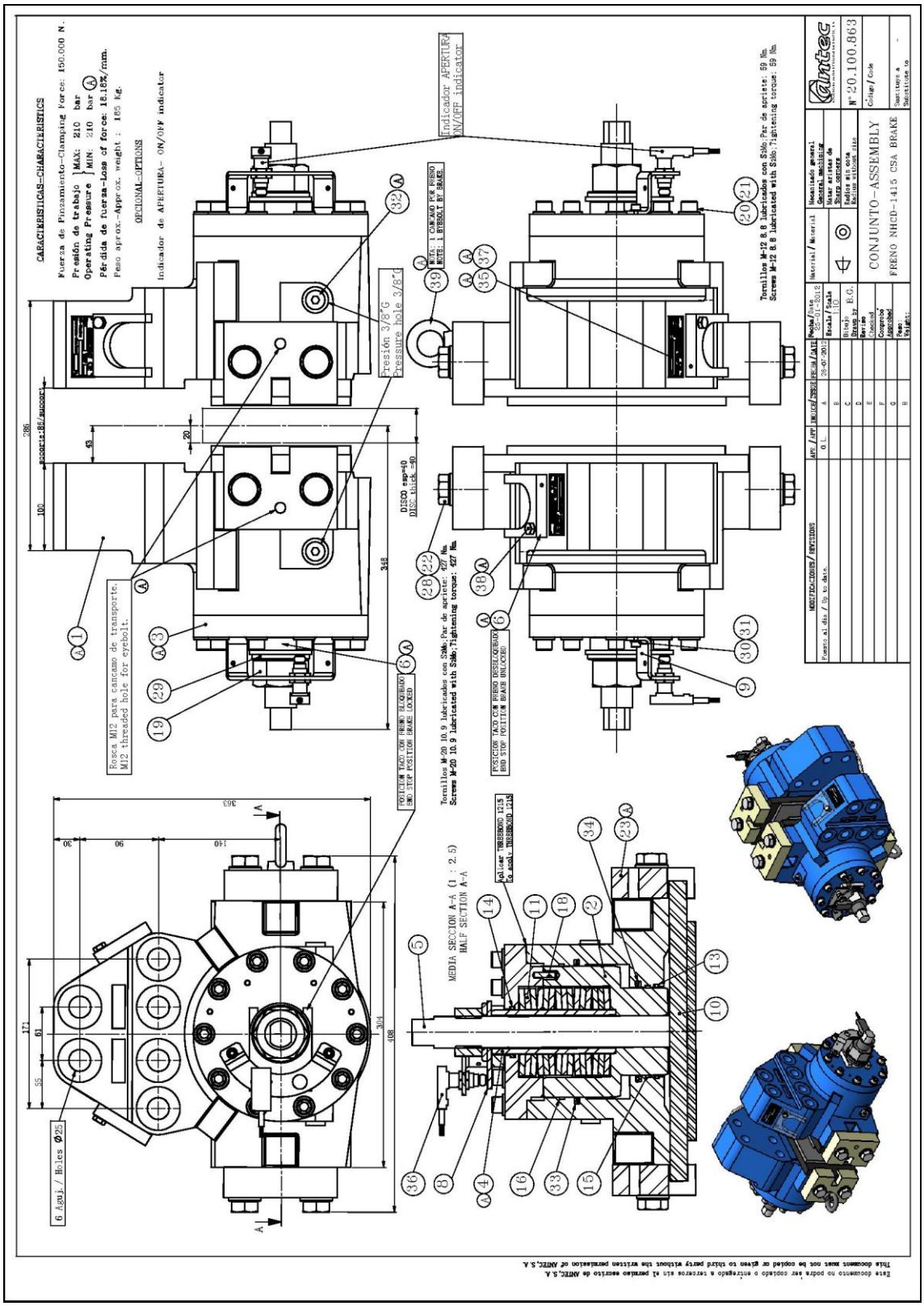
10. APPENDIX I. ASSEMBLY DRAWING.

NOTE

ANTEC will only make changes to these instructions due to amendments to the assembly drawing when these amendments are significant.

The assembly drawing provided in the instructions is for guidance purposes only and to help the worker to understand these instructions.

The customer will receive the drawing relating to its order, together with the documentation that the Antec Quality Department provides.


CONJUNTO-ASSEMBLY
FRENO NHCD-1415 CSA BRAKE
Nº 20.100.863
Indicador APERTURA ON/OFF indicator
Presión 3/8"G
Pressure hole 3/8"G
DISCO espe=40
DISC thick =40
MEDIA SECCION A-A (1 : 2.5)
HALF SECTION A-A
6 Agui. / Holes Ø25