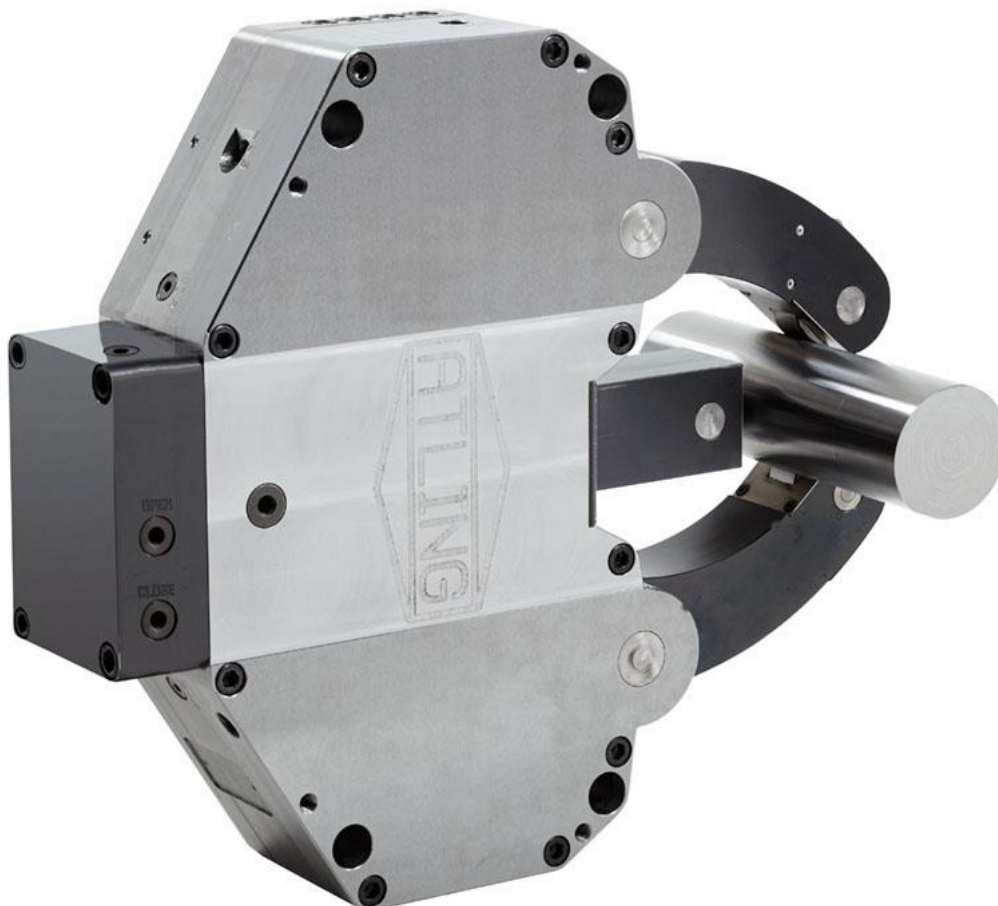




Operator's manual

www.atling.com



Self-Centering Steady Rests Hydraulic AXI / ASI- series



Before using the machine read and fully understand the contents of this manual

ATLINGS THE STEADY REST COMPANY**www.atling.se***Deklaration om överensstämmelse / Declaration of Conformity*

Atlings Maskinfabrik AB förklarar härmed att nedanstående utrustning uppfyller alla relevanta bestämmelser i **2006/42/EG** EG-direktiv och de nationella lagar och förordningar där dessa direktiv är införlivade.

Atlings Maskinfabrik AB hereby certify that device mentioned below confirms in all respects to the requirements of **2006/42/EC** EC-directive and the national laws there this directive is incorporate.

Självcentrerade stöddockor L../AX.. i hydraulikutförande avsedd att användas inmonterad i annan maskin. Stöddockan får inte tas i bruk förrän den maskin eller anläggning som den skall ingå i överensstämmer med kraven i EG's maskindirektiv

Self centering steady rests L../AX.. of hydraulic design incorporated into another machinery. The Steady Rest must not be put into service until the specific machinery or construction which it is part of conform to the specifications in EC's directive.

Component:

Steady Rest

Application:

Installation in machine

Type:

AXI / ASI / Special

Serial No:



Signature of responsible person

Om utrustningen modifierats utan föregående godkännande från undertecknad är denna deklARATION ogiltig.

If the devices modify without approval from undersigned this declaration is irregular.

Tillverkare / Manufacturer

Atlings Maskinfabrik AB
Box 21
816 25 Ockelbo

Steady Rests AXI / ASI-Series

Dear Customer

Thank you for selecting a product from Atlings Maskinfabrik AB. Our products are recognized by high quality and accuracy. Active cooperation with our agencies gives us a high level of service, which will fulfil Your expectations.

How to use and maintenance the Atling Steady Rest, we recommend you to read and fully understand the contents of this book. This, for you as a customer, to take full advantage of all built in features of the Steady Rest.

Exploded diagrams are shown to help you understand how the steady is built. They are also suitable to use in maintenance and service activities.

Do not hesitate to contact Atling or your nearest supplier if there are any questions. We appreciate any suggestions that will improve our product.

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1 Safety Instructions



Wrong installation and/or careless or wrong use can result in serious damages and even dangerous to life. All personnel operating or coming in contact with the steady rest, shall read and fully understand the content of this manual. Atling or nearest supplier shall be contacted if there is any uncertainty.

- Atling steady rests are equipped with safety valves (integrated in the pressure booster) which will prevent the steady rest from losing its clamping force if the supplied pressure suddenly drops. Lost supply pressure can cause workpiece to come loose and damage personnel and machine.
- Once a year check the pressure booster for correct operation.
- Never exceed recommended maximum pressure.
- The fastening between steady rest and support bracket should be checked at least once a week. Vibrations can cause the fastening bolts to come loose.
- Observe the risk of jamming between the levers.
- Hands or other parts of the body shall not be in the near of the steady rest or workpiece when operated.
- Part of workpiece where steady rest clamps must be aligned to centre line between chuck and spindle.
- System pressure shall be checked against weight of workpiece, machining depth and cutting speed.
- Always be careful when working with system under pressure.
- Do not clamp on unmachined faces. That can cause damage to the steady rest.
- Machining result will never have better accuracy than the surface the steady rest clamp on.
- Use of too high pressure will cause the guide seat to wear out quickly and also reduce the lifetime considerably.

2 Principal components and version designations

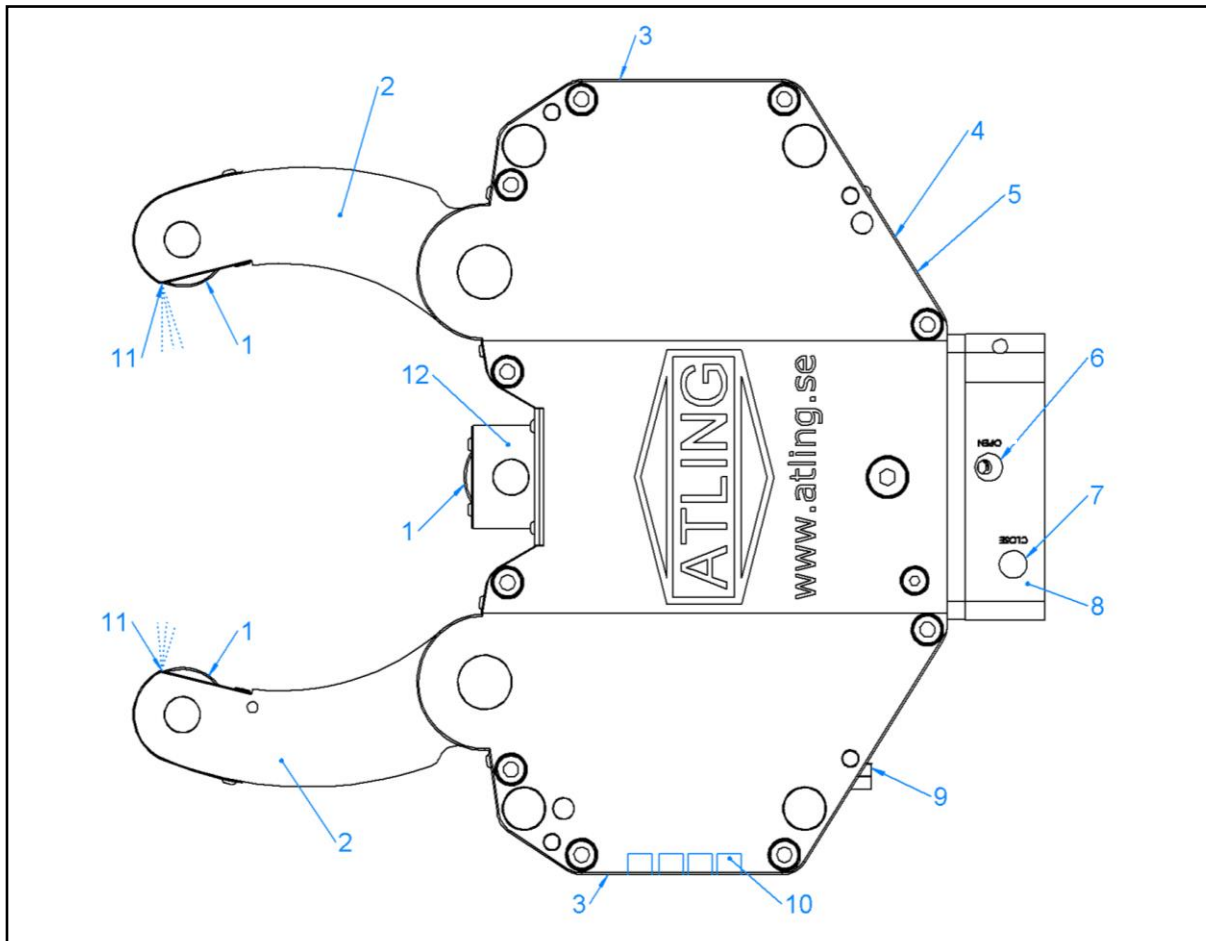


Figure 1. Steady rest with built in cylinder – AXI / ASI-series

- | | |
|---------------------------------------|---|
| 1. Rollers | 8. Pressure booster with check valve (built-in) |
| 2. Levers | 9. Lubrication connection |
| 3. Thread for eye bolt | 10. Metering valves |
| 4. Coolant connection | 11. Coolant curtain |
| 5. Air barrier or drainage | 12. Middle piece / cylinder |
| 6. Connection for opening of cylinder | |
| 7. Connection for closing of cylinder | |

3 General

Atling steady rests are normally used on lathes and grinding machines, manually or automatic operated machines with flat or slanted beds. The steady rest can also be used in special applications as to handle long hexagon bars and as grip finger in a robot.

3.1 Cylinder

Atling AXI / ASI steady rests are hydraulic controlled. The hydraulic cylinder inside the middle piece activates the middle piece and levers to stabilize the workpiece. By adjusting the pressure the amount of clamping force can be controlled. The maximum allowed working pressure is specified for each steady rest.

3.2 Pressure Booster

A pressure booster is installed inside the piston rod of every AXI / ASI steady rest to compensate for the smaller cylinder area. The pressure booster amplifies the incoming pressure four times hence the user can use the same pressure as for a standard steady rest. If the pressure drops the pressure booster begin to build the pressure back up again and stops as it reaches the maximum level. A ticking sound can be heard from the amplifier when the pressure is being build. The sound stops when the pressure is reached which should take a few seconds after the steady rest has gripped the workpiece. Filtering for hydraulics should be 10µm nominal; max 19/16 to ISO 4406. The pressure booster also comprises a check valve.

3.3 Wiper

Wipers remove dirt from the rollers. The condition of the wipers shall be checked regularly and changed if needed. Levers and piston rod are sealed against the housing to prevent dirt and chips to enter.

3.4 Coolant flush

The steady rest can be connected to the machine coolant system. By doing this a curtain of coolant coming out of the levers will prevent chips from getting between the rollers and the workpiece.

3.5 Accessories

There are accessories that can be delivered as non standard, such accessories are:

Workpiece wipers

There are two different designs of workpiece wipers that removes dirt and chips (see Figure 2). Both types are connected to the arms by two screws.

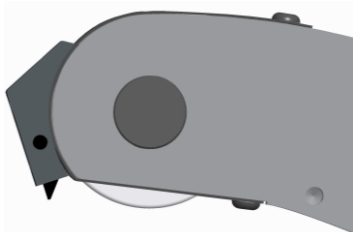
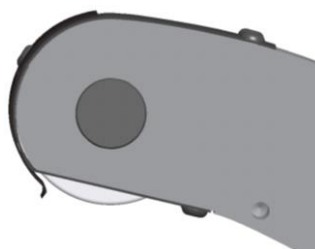


Figure 2. Self adjusting wipers.



Manually adjustable wipers

Steady rest support bracket

The support bracket must be on separate order and will be adapted to the machine fastenings and the steady rest.

For optimal use of the steady rest the support must be of rigid construction.

In principle, the support construction depends on:

- The design of the machine bed
- Centre line of the spindle
- The location of the centre in relation to the machine bed
- The space available to mount the steady

Extra care must be taken when machining and mounting the support to secure that the steady rest will be exactly perpendicular to the machine bed.

Some examples of brackets with the steady rest mounted:

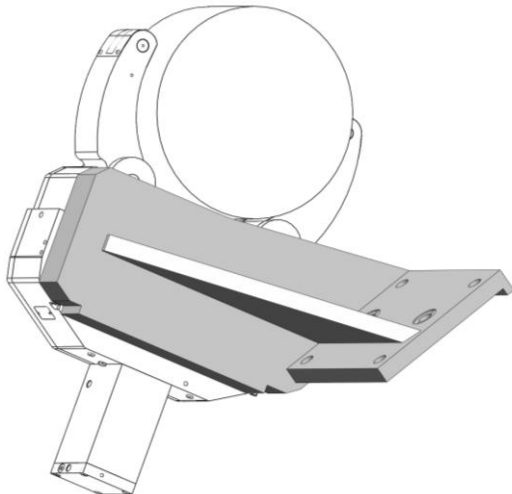


Figure 3. Support bracket for slant bed machine.

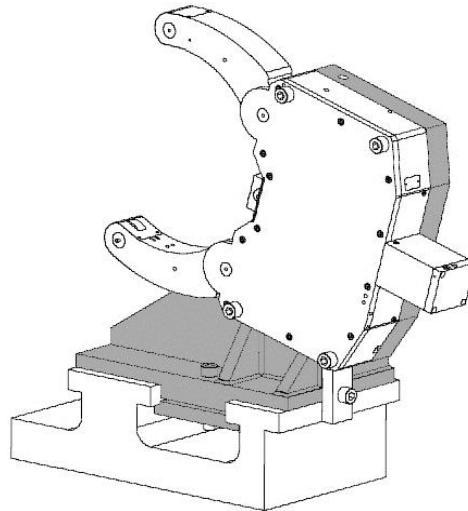


Figure 4. Support bracket for flat bed machine.

4 Operation conditions

The self-centering steady rest demands a turned or grinded workpiece surface which is aligned to the centre line of the machine. Three rollers (see Figure 1) spaced at approximately 120 degrees centralize the workpiece by controlled cam levers. This gives an accurate centering and support to the workpiece within the whole clamping range. To avoid damage to the steady rest and on the rollers no unmachined surface should be used.

4.1 Clamping force and working pressure

If maximal recommended clamping force is in use, the rollers life will considerably be reduced. Extreme high clamping force will in general not lead to a better machining result but instead roll the rollers into the workpiece. Working pressure to the steady rest depends on clamping force needed. Parameters controlling this are: depth of cut, speed, feed and required quality of the workpiece.

Note: Machining result will never have better accuracy than the surface the steady rest clamps on.

4.2 Hydraulic filtering

To comply with the recommendations of cleanness of the hydraulic oil the filtering should be 10 µm nominal; 19/16 according to ISO 4406.



- ✓ **It's very important to have a clean hydraulic oil, especial at the AXi models there it is a pressure booster installed!**
- ✓ **Filtration of hydraulic oil is necessary, down to particle size of 10 µm.**
- ✓ **Do not use thread tape or thread sealant as for example Loctite or similar product at the hydraulic system! Use hydraulic couplings and seals instead.**



Don't use thread tape!



Oil filter unit



4.3 Air barrier or drainage

Additional pressure of about 0,5 bar shall be supplied to the housing to avoid dirt and chips to enter into the housing. To be connected to the air/drainage connection (see Figure 1 position 5). The use of this feature is very important as it extends the lifetime of the steady rest parts considerably.

4.4 Lubrication

Atling steady rests can be prepared for both automatic oil lubrication and manual grease lubrication. If the steady rest is prepared for grease lubrication it comes with a lube nipple connected to the central lube point and there is a -G in the model name e.g. AX6i-G. The steady rest prepared for oil lubrication is equipped with metering valves and one central lubrication connection, G1/8".

All versions are prepared for central lubrication when delivered.

Atling recommend oil with EP-addition, DIN 51502. Before using the steady rest, lubricate with the central lubrication system of the machine until oil shows by the rollers.

Following is valid for central oil lubrication and the steady rest version AXi:

- Four metering valves are integrated in the housing and connected to a main line to the lubrication unit of the machine.
- The volume of metering valves range from 0,03 ccm to 0,06 ccm at each lubrication impulse.
- Working pressure of the metering valves shall be 12 – 45 bar.
- Relief pressure max. 3 bar.
- Lubrication impulses from the machine shall be in intervals of 3 – 5 minutes.
- When the machine has not been in use for some time, repeated lubrication impulses must be given before operation start.

4.5 Recommended lubricant

Table will show grease and oil recommended by Atling.

Type of load	Grease
Normal	DIN 51825-1 to 3
High	KP-grease as per DIN 51502
Lubrication oil	
All types	DIN 51502 with EP-addition

5 Installation



Extreme precision must be taken at installation of the steady rest. Bad installation will cause damage to the steady rest may cause it not to function satisfying. It is important to carefully follow the instructions of installation. Atling or nearest supplier shall be contacted if there is any uncertainty.

5.1 Mounting the steady rest to the support bracket

The steady rest mounts on the support bracket with four fastening bolts.

Note: do not tighten the screws before the steady rest has been adjusted by gauge dials (Table 2).

Mount in following order as per Figure 5. The numbers in the picture corresponds to the order of mounting.

- Mount an eye bolt in the threaded hole (no 1) at side of the housing and lift it.
- Mount the four bolts (no 2) that fasten the steady rest to the support.
- **Note:** do not tighten the screws hard but let the steady rest press only slightly on the support.
- Apply hydraulic to the cylinder connection (no 3) for opening and connection (no 4) for closing, both threads G3/8". **Note:** do not use higher pressure than needed for specific workpiece, and do not exceed recommended maximum pressure (see Figure 8).
- **Before** the fastening bolts are tightened, follow the instruction how to align the steady rest (next page).
- When connecting to the hydraulic system of the machine, information must be collected from the machine supplier to assure correct installation.

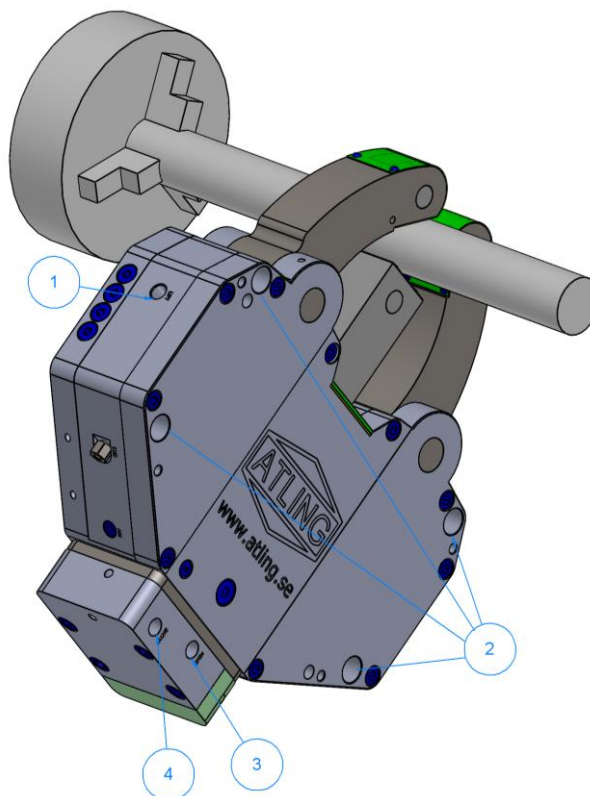


Figure 5. The important details when mounting the steady rest to the support.

5.2 Align the steady rest

Note: If working pressure is changed a new alignment must be done.

- Clamp an accurate machined shaft between two centres. With a dial gauge check the run out of truth for the shaft. Exchange the shaft if the run out of truth is abnormally great.
- Mount two dial gauges to the shaft as per Figure 6.
- Activate the cylinder with selected working pressure (see Figure 8), make the steady rest open and close so that the rollers clamp the shaft. **Note:** the steady rest must not be tightened to the bracket at this time.
- Check the dial gauges if the centre of rotation has moved in any direction. Depending on how accurate result is needed, the movement should be as small as possible.
- Tighten the fastening bolts using torque as per Table 2.
Open and close the steady rest once more. Check the dial gauges.

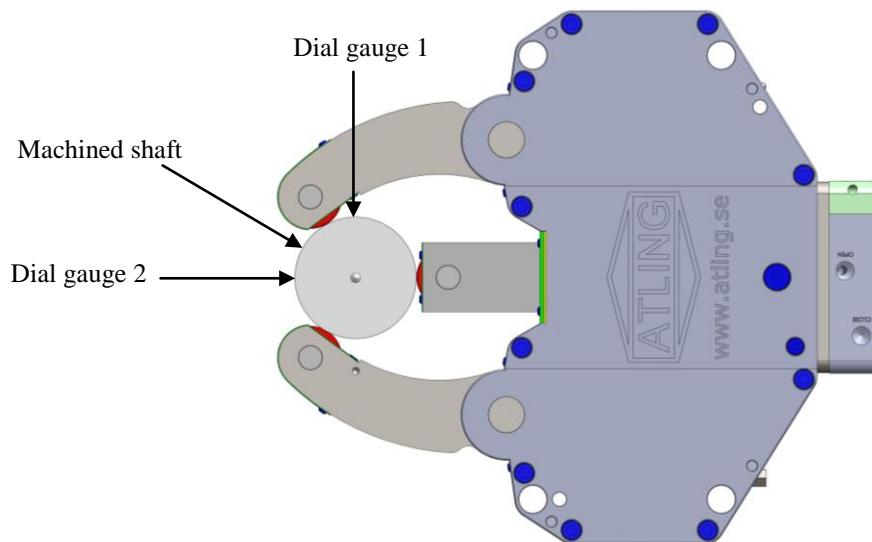


Figure 6. It is important that dial gauges are positioned 90 degrees apart .

5.3 Coolant flush through levers

To all AX-series models it is possible to connect the steady rest to the coolant system to efficiently remove chips by the rollers and create a curtain that prevents them from getting in between rollers and the workpiece which can cause damage to both. The connection for the coolant is in the top cover of the steady (see Figure 1) and is a G1/4" thread (G1/8" AX1E).. Recommended pressure for the coolant: 10-20 bar. Maximum pressure: 70 bar.

5.4 Installation of swing away system

The Atling AX-series provides the end-user the possibility to install a swing away system retrospectively. This is done by changing the track plate (see position 3-1/3-2 in Exploded view 1). This will make the lever open an extra amount which gives the user more space when changing work pieces. These track plates can be installed by the Atling factory or by the end user. To change plates the steady rest cover lid need to be removed, once again see the Exploded view 1. The plates are symmetrical which makes them suitable for both upper and lower lever.

Modell	Clamp ø	Screw	Torque	Max press.
Size	mm	mm	Nm	bar
1	6-70	M10	40	25
2	8-105	M12	75	60
3	12-125	M12	75	60
4	12-160	M16	180	70
5	20-200	M16	180	70
6	30-255	M20	350	70
7	45-320	M20	350	70
8	85-360	M20	350	70
8.5	100-430	M24	600	60
8.7	140-470	M24	600	60
9	100-510	M24	600	60
10	250-680	M24	600	60
11	450-870	M24	600	60

Table 2. Shows torque and max. pressure relating to different sizes of the steady rest.

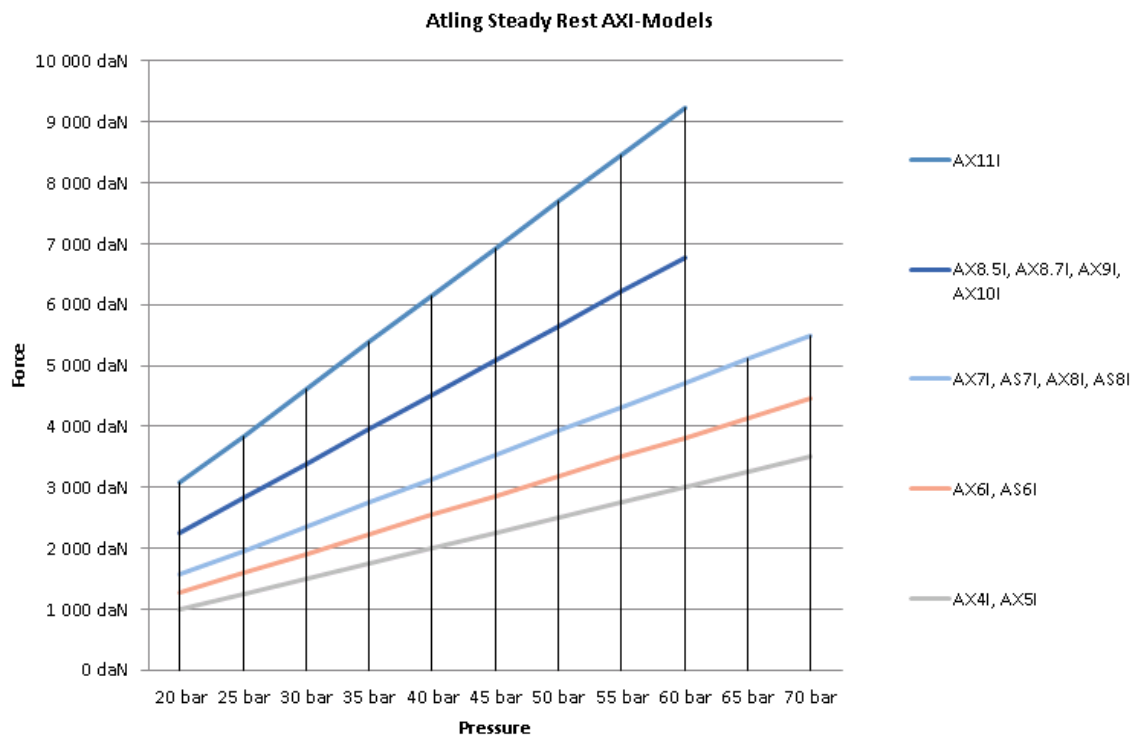


Table 3. Shows approximate relationship between hydraulic pressure and gripping force on different models of steady rests.

6 Maintenance



Care shall be taken when maintaining the steady rest. To avoid injuries the hydraulic and pneumatic pressure shall be switched off if not needed for maintaining the steady rest. Be sure there is no pressure on the cylinder when exchanging the pressure booster. Atling recommend extensive maintenance and repair to be performed by the supplier, or by other qualified service personnel.

6.1 Manual lubrication

Maintenance includes, among other things, lubrication of rollers and roller taps at both levers and piston rod. They are lubricated from the grease nipple (see Figure 1).

Note: No metering valves shall be used in manual lubrication.

- Use grease gun with recommended bearing grease DIN 51825-1 to 3 at normal load. Lubricate the steady rest via the grease nipple in intervals of 3 – 6 hours at continuous running depending on load.
- When lubricating the old grease shall be pushed out by the new grease.

6.2 Central lubrication

- Check daily that lubrication oil comes out at all three rollers and at the piston rod.
- Recommended lubrication interval is 3 – 5 minutes.

6.3 Remaining points of maintenance

- 1 to 3 times per year, depending on utility, check the torque of fastening bolts for steady rest to support and support to machine.
- Once a week, check the cylinder for leakage.
- Check the rollers by rotating them to detect any play. Exchange when needed (see next page).
- At least once a year the safety valve in the pressure booster shall be checked. This is done by switching the steady rest On and then supply pressure Off. If the steady rest loses its pressure then there is something wrong with the valve, and must immediately be exchanged.
- Perform an annual inspection (dismount the cover, exchange any damaged parts, clean all parts and lubricate).
- Daily check the status of the both wipers and seals. Exchange wipers when needed (see next page).

6.4 Exchange of rollers and wipers at Middle Piece

Dismounting is done in order as per Figure 8.

- Unfasten screws (no 33-1) which holds the wiper
- Dismount the wiper (no 31) by pulling it straight out
- Unfasten screw (no 18) who locks the roller tap in the lever
- Carefully knock away the tap (no 8) with a brass drift or use a puller
- Remove the roller (no 10)

Mount in reverse order with new roller and a possible new wiper. Check so the roller can be rotated after the wiper have been mounted, otherwise adjust the wiper a little.

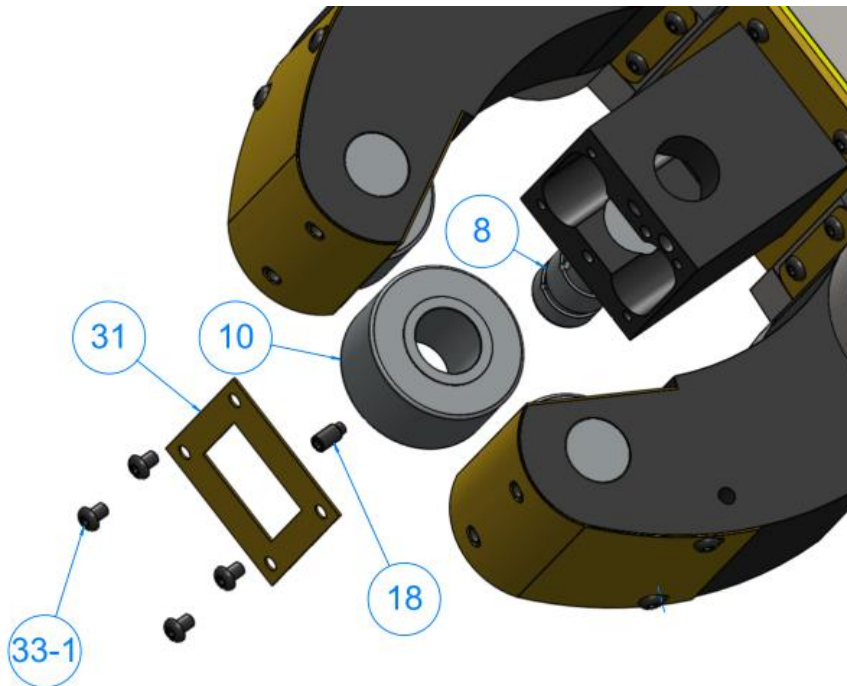


Figure 8. Shows dismounting sketch for middle piece roller.

6.5 Exchange of rollers and wipers at Lever

Dismounting is done in order as per Figure 9.

- Unfasten screws (no 33 and 22) which holds the wiper
- Dismount the wiper (no 32) by pulling it straight out
- Unfasten screw (no 18) who locks the roller tap in the lever
- Carefully knock away the tap (no 8) with a brass drift or use a puller
- Remove the roller (no 10)

Mount in reverse order with new roller and a possible new wiper. Check so the roller can be rotated after the wiper have been mounted, otherwise adjust the wiper a little.

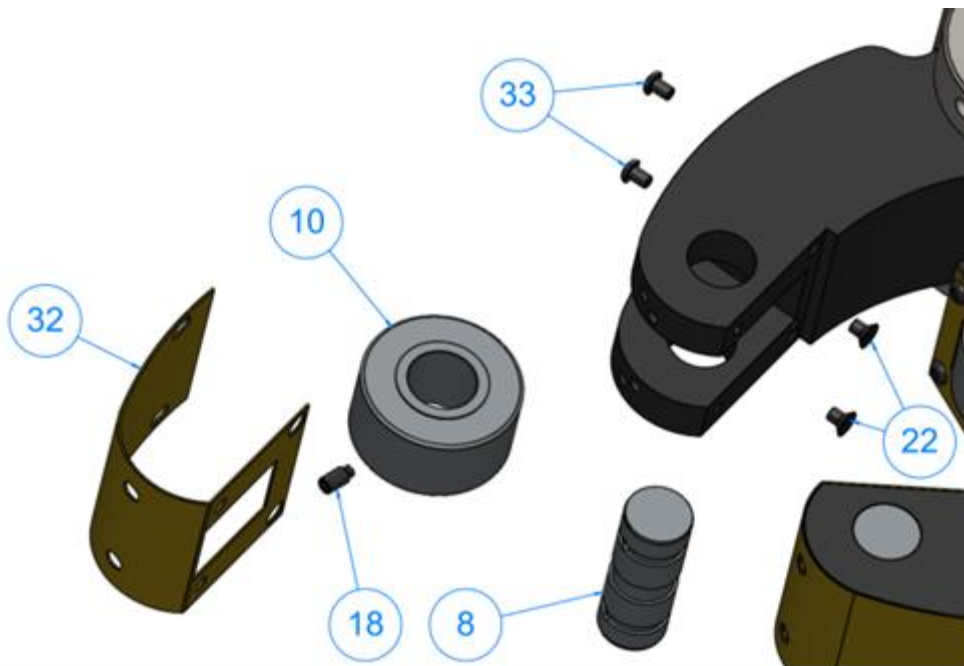
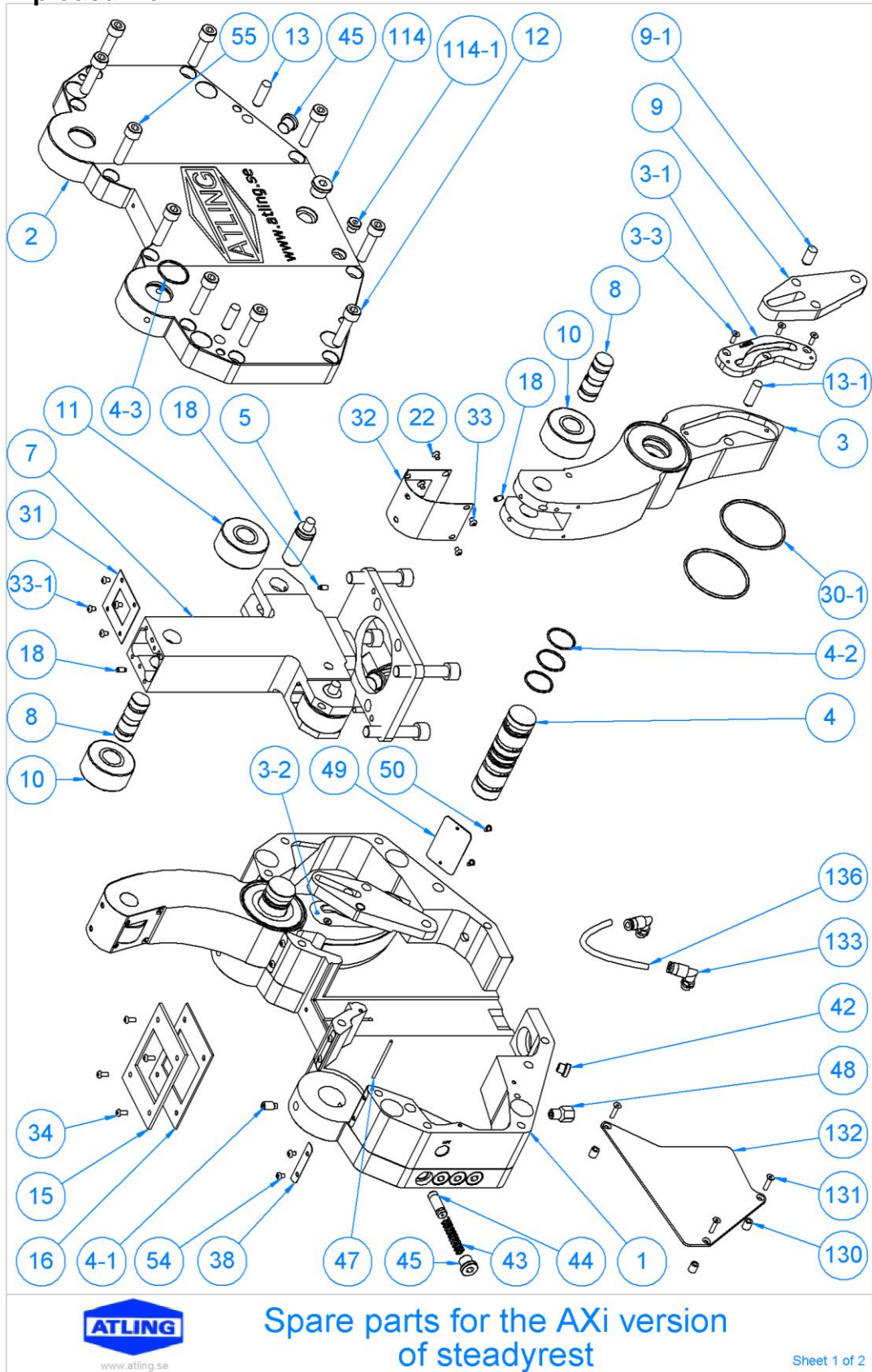


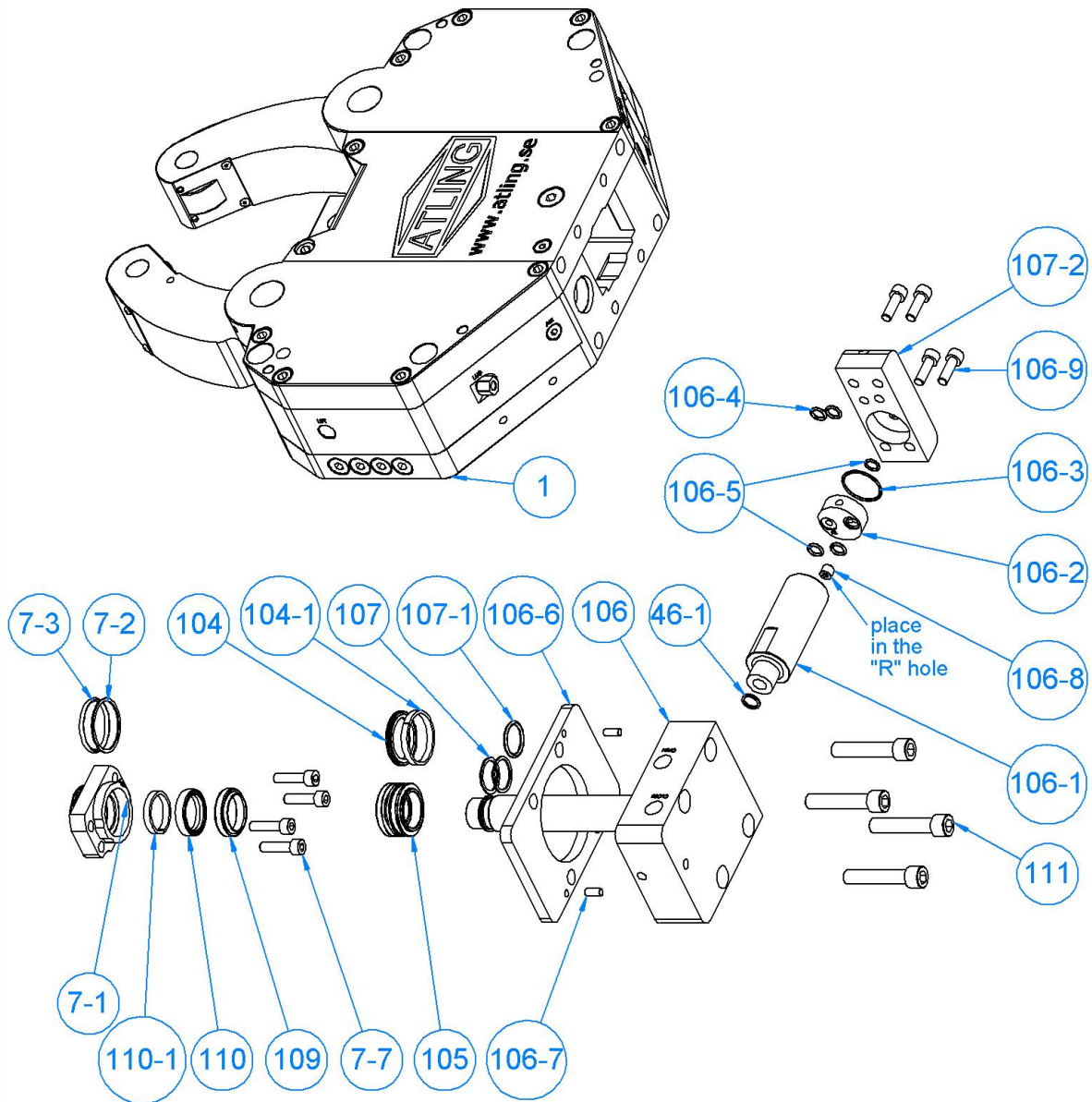
Figure 9. Shows dismounting sketch for lever

7 Spare parts

7.1 Exploded view 1



7.2 Exploded view cylinder



7.3 Article numbers for spare part kits

Steady rest	Seal kit House	Seal kit Cylinder	Wipers kit	Rollers kit	Shafts kit
AX1E	A5550101	A5550102	A5550103	A5550104	A5550105
AX2E	A5550201	A5550202	A5550203	A5550204	A5550205
AX3E	A5550301	A5550302	A5550303	A5550304	A5550305
AX4E	A5550401	A5550402	A5550403	A5550404	A5550405
AX4I	A5550401	A55504i2	A5550403	A5550404	A5550405
AX5E	A5550501	A5550502	A5550503	A5550504	A5550505
AX5I	A5550501	A55505i2	A5550503	A5550504	A5550505
AX6E	A5550601	A5550602	A5550603	A5550604	A5550605
AX6I	A5550601	A55506i2	A5550603	A5550604	A5550605
AX7E	A5550701	A5550702	A5550703	A5550704	A5550705
AX7I	A5550701	A55507i2	A5550703	A5550704	A5550705
AX8E	A5550801	A5550802	A5550803	A5550804	A5550805
AX8I	A5550801	A55508i2	A5550803	A5550804	A5550805
AX8.5E	A5550901	A5550902	A5550903	A5550904	A5550905
AX8.5I	A5550901	A55509i2	A5550903	A5550904	A5550905
AX8.7E	A5550901	A5550902	A5550903	A5550904	A5550905
AX8.7I	A5550901	A55509i2	A5550903	A5550904	A5550905
AX9E	A5550901	A5550902	A5550903	A5550904	A5550905
AX9I	A5550901	A55509i2	A5550903	A5550904	A5550905
AX10E	A5551001	A5551002	A5551003	A5551004	A5551005
AX10I	A5551001	A55510i2	A5551003	A5551004	A5551005
AX11E	A5551101	A5551102	A5551103	A5551104	A5551105
AX11I	A5551101	A55511i2	A5551103	A5551104	A5551105

