Important Note

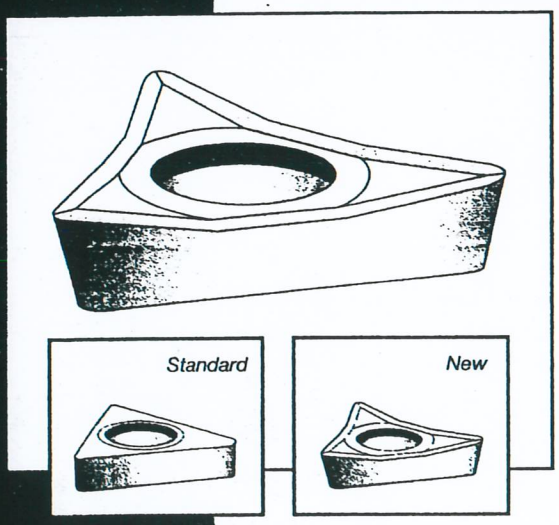
Herringbone after machining brake-disc

This info is to prevent Herringbone and increase smooth brake surface

Herringbone occurs due to machining on hard brake-disc material.

Hard brake-disc material can be caused for instance by overheating the brakes.

To prevent a rough or so called "Herringbone" surface we advise the following options:

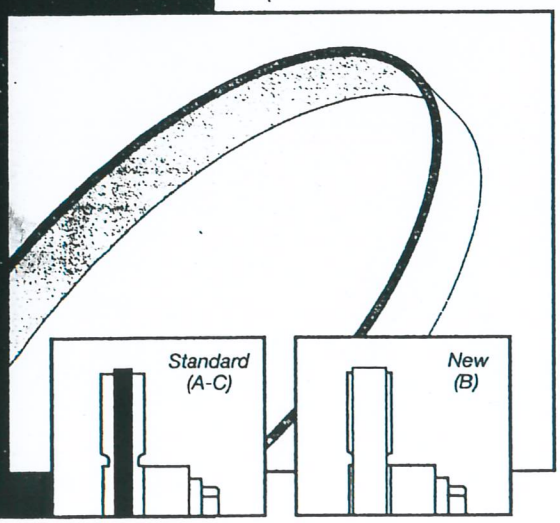


• The new bit with positive edges

This new bit is made from super strong high carbon steel. The three edges are very sharp and will not break. This superbit reduces the cutting resistance and prevents Herringbone.

Positive bit - 3 edges

Package 2 pieces



• The (new) silencer bands

A Standard silencer band. (Ø 225 - 300mm)
B **New** Extra Width silencer band: for all cars with discs min. width 24mm. (Ø 225 - 300mm)
C Silencer band for cars with small discs (Ø 175 up to 230mm)

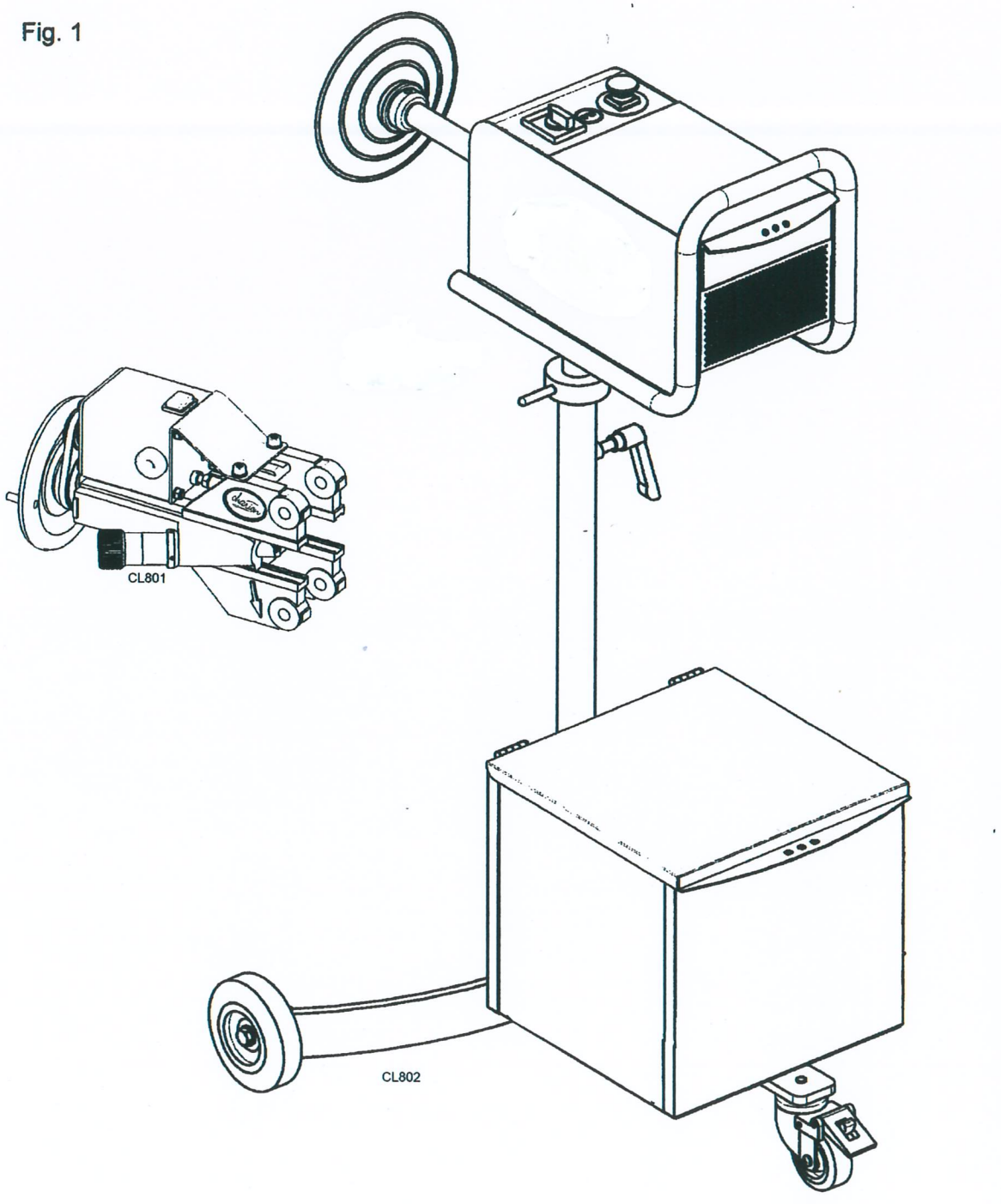
The normal silencer bands have a width of 8mm, the new triple 24mm.

Disc Aligner

Contents

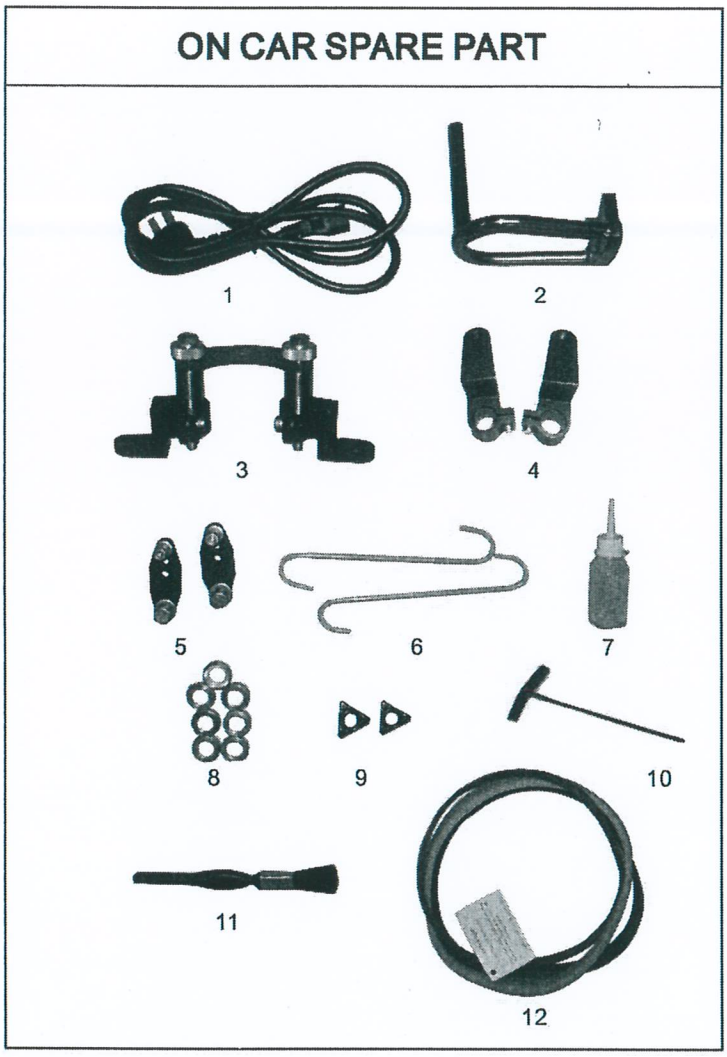
Summary

Fig. 1



Summary

Standard parts



1. Electric input wire

2.Drive Adapter

3.Universal Silide Mounting With Thread (Blue)

4. UNIVERSAL SLIDE MOUNTING WITHOUT THREAD(ONE COMPLETE SET)

5.Small Mounting Plates (One pair)

6.S-Hooks

7.Oil / Pot

8.Shims Wash

9.Three side bits (For hard disc)

10.Hexagon Key M6

11.Brush

12.Silence Band (Red=Small Blue=Middle Yellow=Large size)

Safety regulations

Safety regulations

Follow the standard safety regulations for working with electrical equipment and the regulations provided in this manual.
Store this manual carefully with the equipment.
The brake disc lathe should only be operated by persons who have read this manual and are authorised to carry out maintenance on the brakes of a vehicle.
Be aware of what you are working with.
Do not use the equipment under the influence of drugs or alcohol, or if your judgement is impaired.
Always use the disc lathe CL801 and the drive unit CL802 together.
Only use the disc lathe CL801 and the drive unit CL802 as stipulated in this manual.
Do not overload the disc lathe CL801 and the drive unit CL802.
Follow the electrical specifications as stated on the information plates of both devices.
Keep the workplace tidy. A disorderly working environment can lead to accidents.
If the equipment is not being used, it should be packed away out of childrens'reach.
Children must be kept clear of the equipment at all times.
No one else should be allowed to come in contact with the equipment or cables. Keep them clear of the working area.
Do not use the equipment in wet, humid environments, or where there is risk of explosion.
Do not leave the electrical equipment out in the rain.
Always follow the safety regulations and the (dis)assembly instructions provided by the car manufacturer when (dis)assembling vehicle parts.
A 0.5 meter working area is required both next to the drive unit CL802 and next to the disc lathe CL801.
Do not come close to the moving and rotating parts.
Dp not wear baggy clothing, ties or jewellery. These could get caught up in the moving parts.
Long hair should be kept in place with a hairnet.
The drive unit CL802 must be equipped with a safety rubber cover, as specified in this manual.
Make sure that the surface of the working area is level.
Do not move the equipment while it is running.
Never remove the plug from the wall socket by pulling the cable.
Warning: machining generates hot chips of metal from the disc.
The accompanying risk of fire, injury or burns must be prevented by taking the following safety precautions.

- Wear safety googles
- Wear protective clothing
- wear work gloves
- Wear a dust mask
- Check that a fire extinguisher is present

If possible, always use the rubber silencer ring on the outer edge of the brake disc. This will minimise vibration and/or noise.
In the interest of personal safety, only use the accessories and/or attachments specified either in the manual or the catalogue.
CHARION cannot be held liablefor customised attachments or modifications of the equipment.
Check damaged parts.
Prior to using the equipment, damaged safety guards or other parts should be checked in order to ascertain that they still function properly.
Check the alignment of the moving parts and their connections, possible part faults, the set up and indeed any other conditions that might have an influence on the operation of the equipment.
If not otherwise indicated in the manual, damaged safety guards or other parts must be replaced or repaired by an recognized technician.
Defective electric components must be replaced by a recognized technician.
Do not use the equipment if the on/off controls are defective.
In the interest of effectiveness and safety, keep the tips sharp and the equpment clean.
Hand grips must be kept dry, clean and free from oil and grease.
Only maintain the equipment as described in this manual.
General repairs, repairs to damaged parts,as well as any other form of maintenance should only be carried out by a recognized technician (possessing thorough electrical and mechanical knowledge and experience) using genuine spare parts.
Repairs and maintenance may only be carried out on the equipment if it has been switched off and if the plug has been removed from the mains.
Prior to repairs on the drive unit CL802 carefully short-circuit the connectors of the capacitor to prevent electric shock injuries.
Always use original CHARION parts in carrying out repairs or maintenance.

Installation

Fig. 8

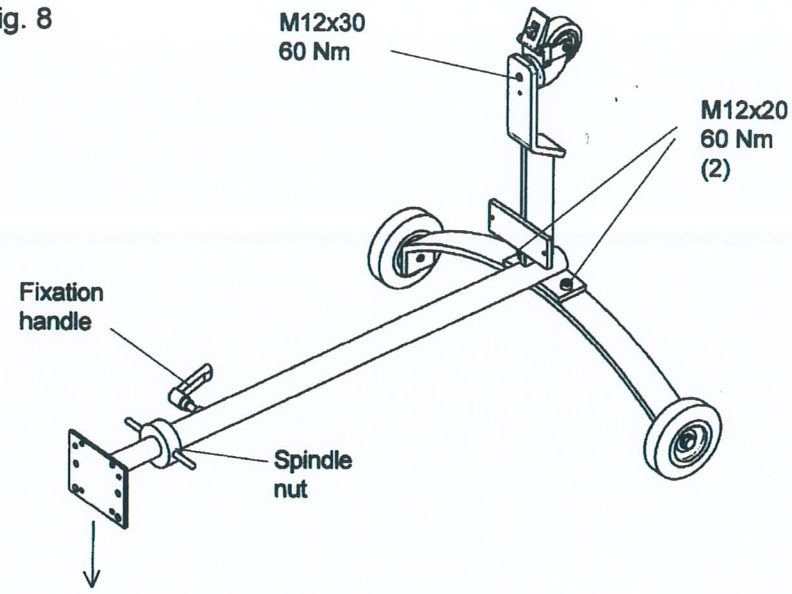
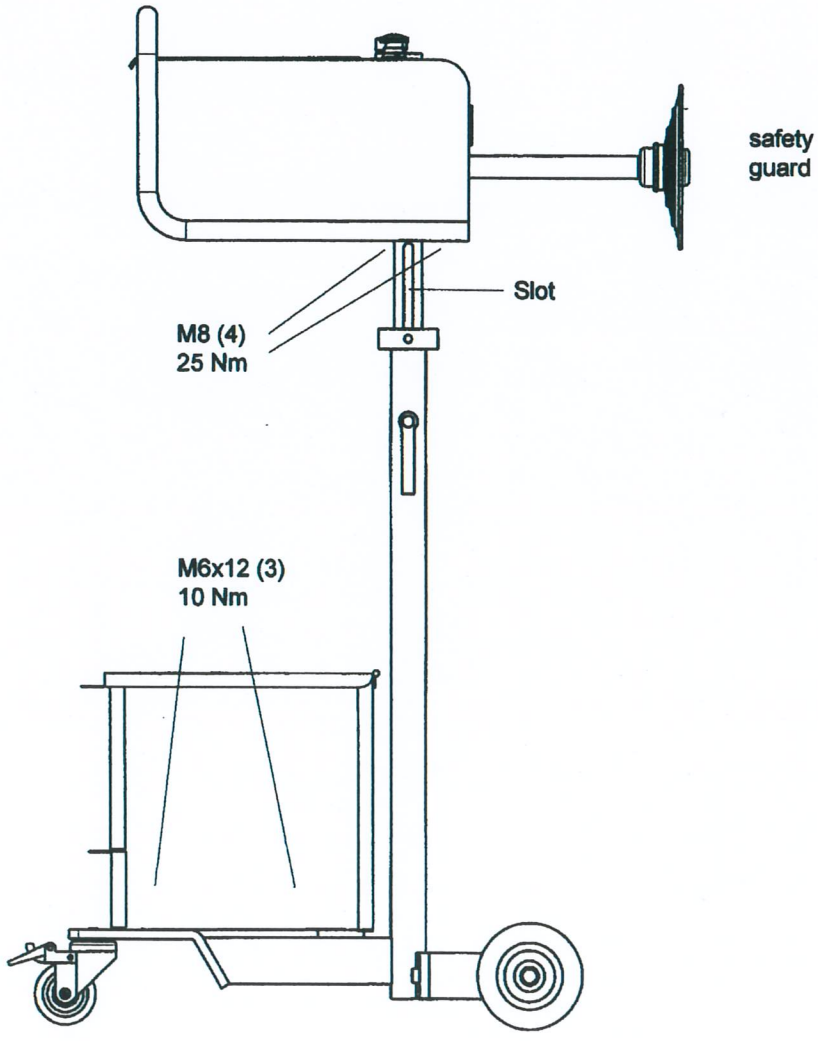


Fig. 9



Controls Disc Lathe

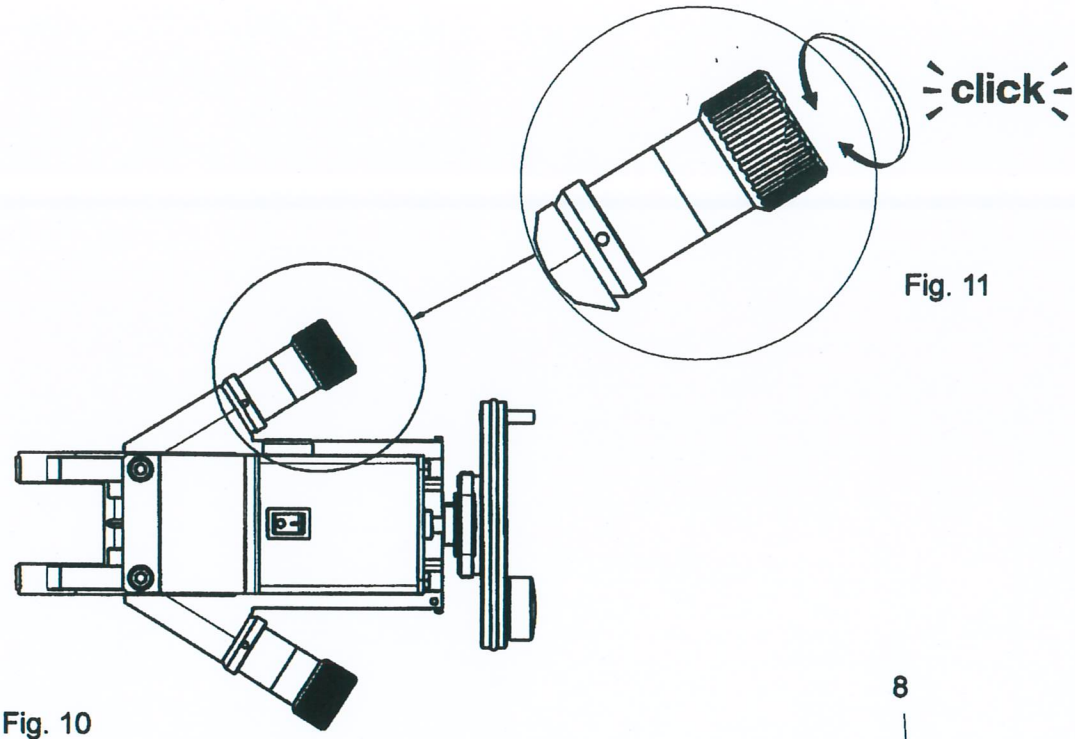


Fig. 11

Fig. 10

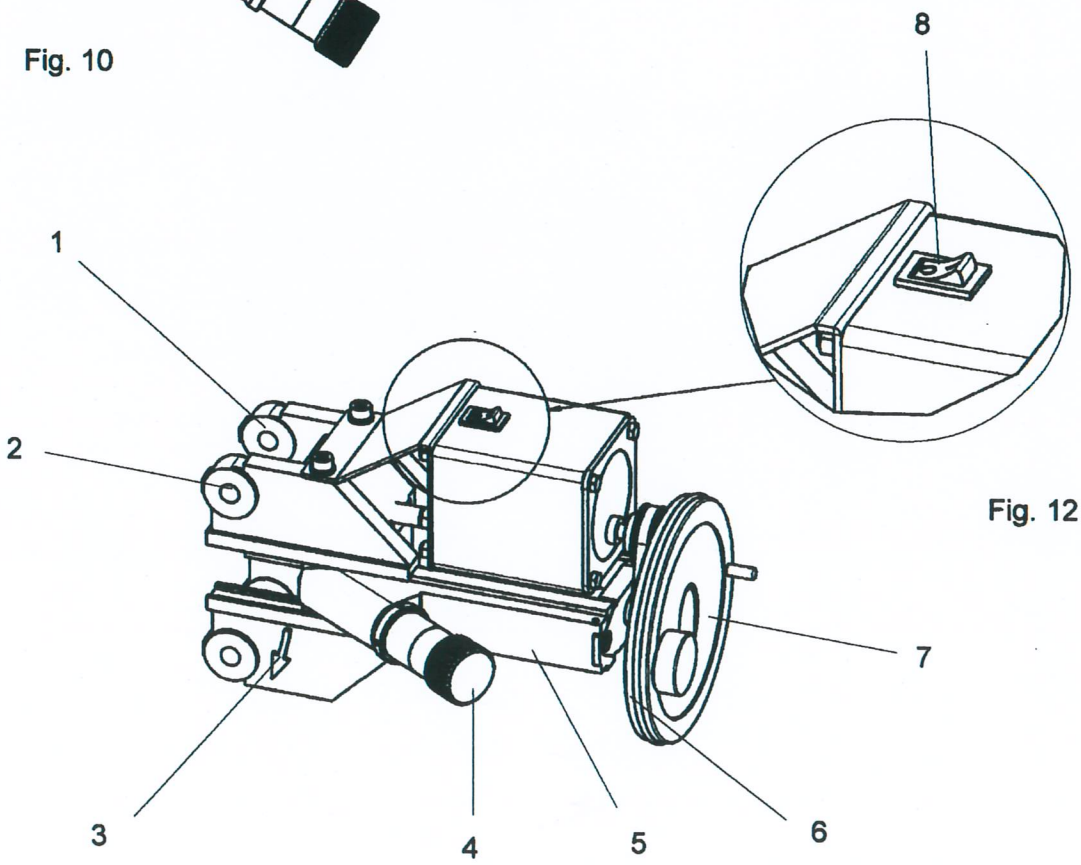


Fig. 12

Fig. 13

Controls Drive Unit

Fig. 14

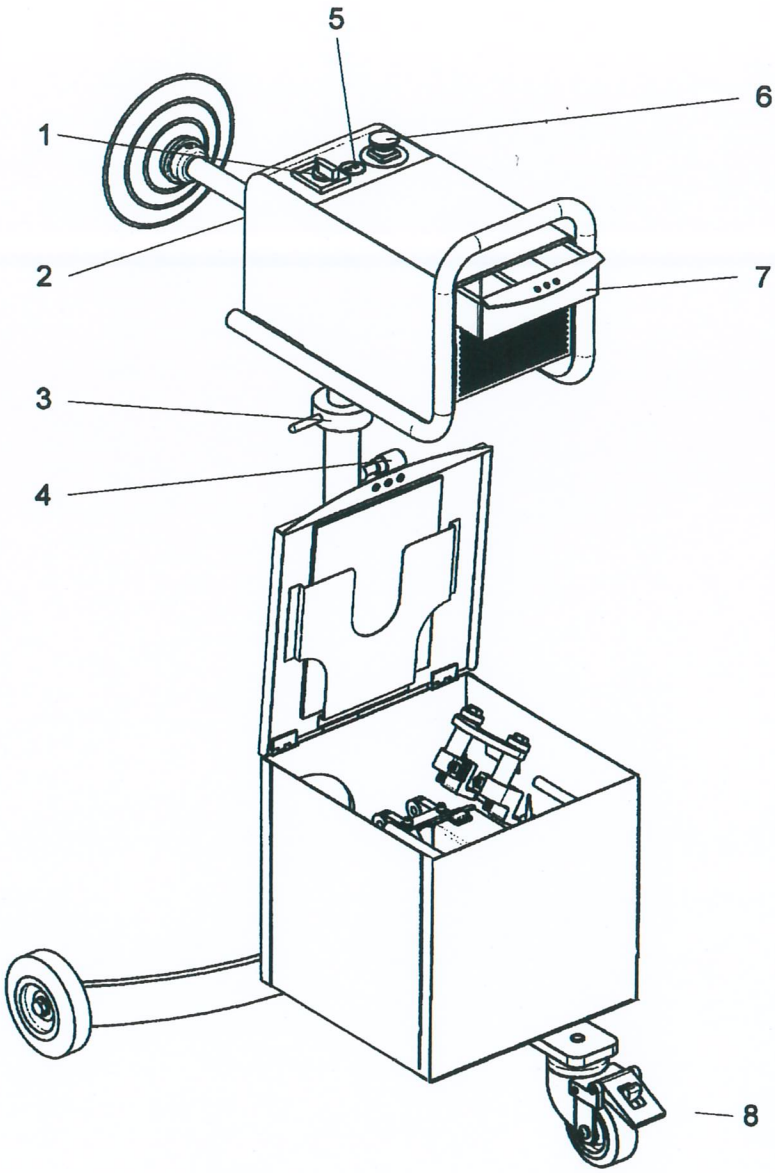
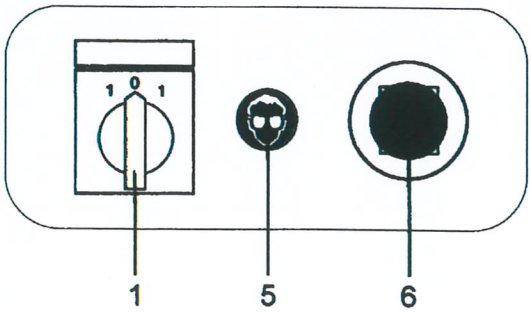


Fig. 15



Controls Drive Unit, fig. 14.

1 - CL802: Motor switch:direction switch, one speed version, fig.15.
2 - Mains inlet
3 - Spindle nut for height adjustment
4 - Locking height adjustment
5 - Safety glasses / eye-protection obligatory
6 - Energency switch
7 - Drawer
8 - Locking caster wheel

In case of emergency switch off the CL802 unit with the emergency switch. In a safe situation the CL802 can be reset by turning the motor switch to position 0.

Preparation

Installation instructions

1 - bolt front of standard on rear of stand, fig. 8.
2 - Two hex head bolts M12x20, torque 60 Nm.
3 - Remove caster wheel from rear stand.
4 - Mount caster wheel under rear of stand, fig. 8.
5 - One bolt M12x30 with washer, torque 60Nm.
6 - Rotate the spindle until the groove in the spindle is pointed towards the threaded hole for the fixinghandle.
7 - Mount the fixing handle in the threaded hole.
8 - Put the stand on its wheels.
9 - Remove CL801, shaped foam, bottom plate and drawer from the metal box.
10 - Bolt the metal box on the stand, fig. 9.
11 - Three bolts M6x12 with washer M6. Torque 10 Nm.
12 - Place drawer, bottom plate and shaped foam in the metal box.
13 - Put CL801 in the box.
14 - Place drive adapter in the box.
15 - If present: put the mounting adapters in the box.
16 - Loosen the fixing handle half a turn.
17 - CL802 only: Rotate the spindle nut until the spindle plate is at least 50mm above the spindle nut.
18 - Tighten the fixing handle slightly.
19 - Mount the complete motor and bracket assembly on the spindle plate, fig. 9.
20 - Four nuts M8 WITH WASHERS. Torque 25 Nm.
21 - Put the rubber mat on the motor cover.
22 - Mount the safety rubber cover on the drive yoke.
23 - Store all other parts in the drawers.

Preparation

1 - Put the car on a ramp, put transmission in neutral.
2 - Jack up the car to the correct working level, wheels free off the ramp, fig. 17.
3 - Check wheel bearing play on both sides, fig. 18.
4 - If necessary, adjust wheel bearing tolerances as described by the workshop manual.
5 - Prevent dirt particles between disc and hub by securing the brake disc on the hub, immediately after removing the wheel. Use a brake pedal depressor to lock the brake disc, fig. 56. Note that not all brake discs are fixed on the hub with a screw or nut.
6 -Remove the wheel and secure the brake disc with the wheel nuts or bolts and conical rings, fig. 21.
7 - Remove the wheel on the other side too, and secure that brake disc with two wheel nuts or bolts and conical rings.
8 - Check the thickness of the brake disc, to ensure that the disc will not be below minimum thickness after machining.
9 - Refer to the workshop manual for the minimum brake disc thickness.
10 - If the brake disc is below minimum thickness, it must be replaced. Machining of the discs is not permitted in such cases.
11 - If the brake disc is thicker than the discard size, determine the maximum amount that could be machined off, for each side of the brake disc.
12 - Mount the drive adapter on one of the wheel nuts or bolts, fig. 21.
13 - The V-shape of the drive adapter must seat firmly on the edge of the hub.
14 - Tighten the wheel nuts or bolts evenly to 50Nm.
15 - Remove the complete brake calliper and hang it on the S-hook.
16 - Check the brake line and brake calliper are not touching the drive shaft or other rotating parts.
17 - Remove rust and dirt from the mounting surface of the calliper mounting lugs. Th ese calliper mounting lugs must be clean because it is the reference surface for aligning the brake surfaces to be machined.
18 - Fit the rubber silencer band on the outer edge of the brake disc to minimise vibration and/or noise, fig. 20.
19 - Connect the cable to the CL802 and to the mains supply.
20 - Connect the cable between CL802 and CL801.
21 - Turn the motor switch to position 0, unlock the emergency switch.
22 - Move the slides and bit holders of the CL801 in the most rear position.
23 - In this position the tool bits cannot be damaged by touching the brake disc.

Preparation

Fig. 17

Fig. 18

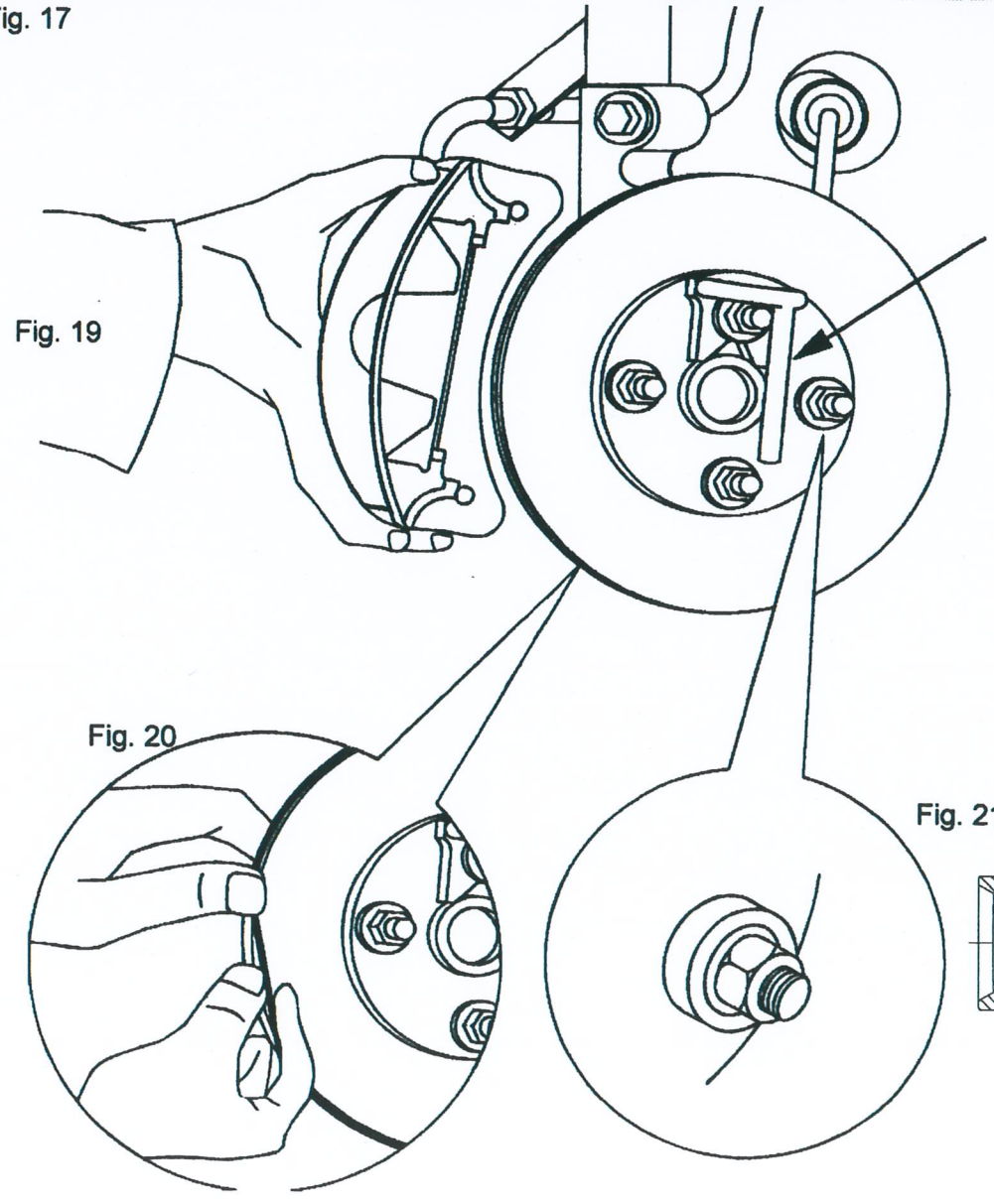


Fig. 19

Fig. 20

Fig. 21

Fitting the mounting-adapter USM

Fitting the mounting adapter USM

1 - See fig. 22 and 23 of the brake calliper ears.
2 - Use the red mounting adapter if the brake calliper ears are un-threaded, see fig. 24.
3 - Use the blue mounting adapter if the brake calliper ears are threaded, see fig. 25.
4 - Do not use air tools when mounting or removing the mounting adapter and/or CL801.
5 - First tighten all bolts by hand, then tighten with correct torque.

Mounting adapter usm red

1 - Mount the USM mounting adapter with the M 10 bolts supplied onto the brake calliper ears.
  a - The bow should be directed towards the axle, fig 24.
  b - Ensure that bolts of correct length are selected, the bolts must not touch the brake disc when fully inserted.
  c - If necessary, washers can be used to achieve the correct bolt length.
  d - Ensure that the hex head bolts of the slide piece are loose.
2 - After positioning the slide piece in the centre of the hub, tighten the M 10 bolts of the USM mounting adapter hand tight, fig. 27.

Mounting adapter USM blue.

1 - Measure the diameter of the original brake calliper bolt.
2 - Determine the use of the inserts in the mounting adapter according the diameter, fig. 26.
  M8: put inserts ⌀8,5 in the brackets of the mounting adapter.
  M9 - M10: put inserts ⌀ 10,5 in the brackets of the mounting adapter.
  M12 - M14: do not use inserts
  > M14: Ask your dealer for the necessary options.
3 - Mount the USM mounting adapter with the original calliper bolts on the calliper ears with thread, fig. 25.
  a - The bow should be directed towards the axle.
  b - Ensure that bolts of correct length are selected, the bolts must not touch the brake disc when fully inserted
  c - If necessary, the spacer tubes provided can be used to achieve the correct bolt length.
  d - Ensure that the hex head bolts of the slide piece are loose.
4 - After positioning the slide piece in the centre of the hub, tighten the M 10 bolts of the USM mounting adapter hand tight, fig. 27.

Fitting the mounting adapter USM

Fig. 22

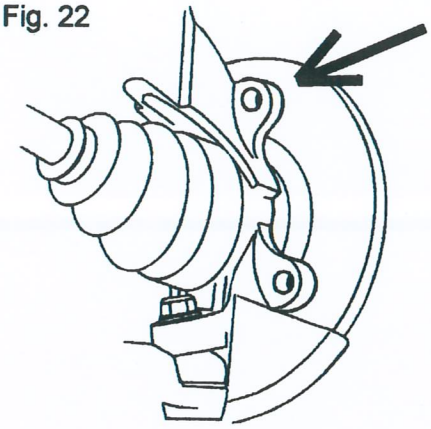


Fig. 23

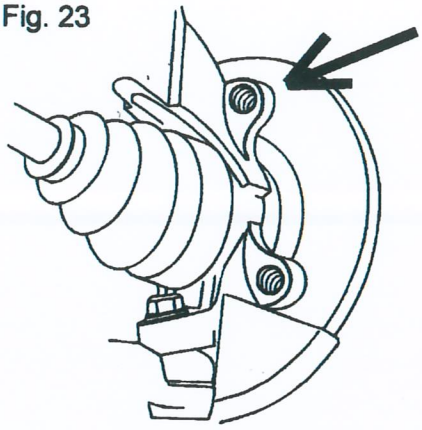


Fig. 24

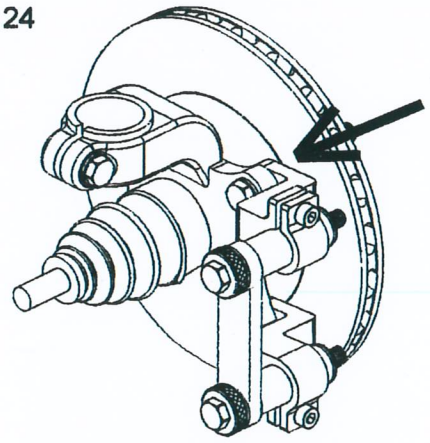


Fig. 25

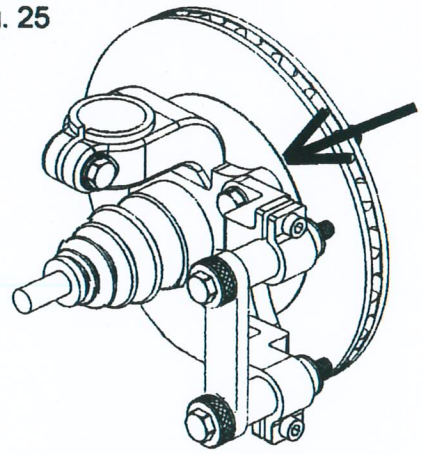


Fig. 26

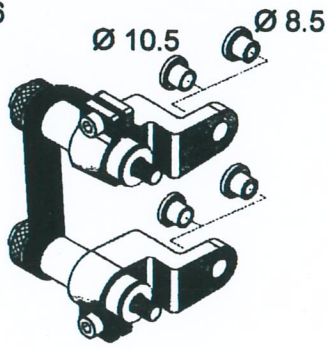


Fig. 27

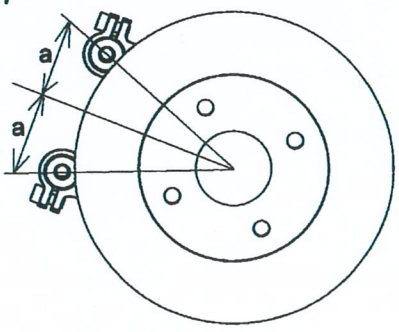
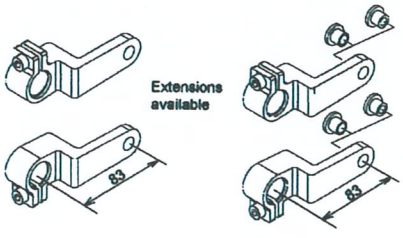


Fig. 28



Fitting the CL801 on the USM

Fig. 29

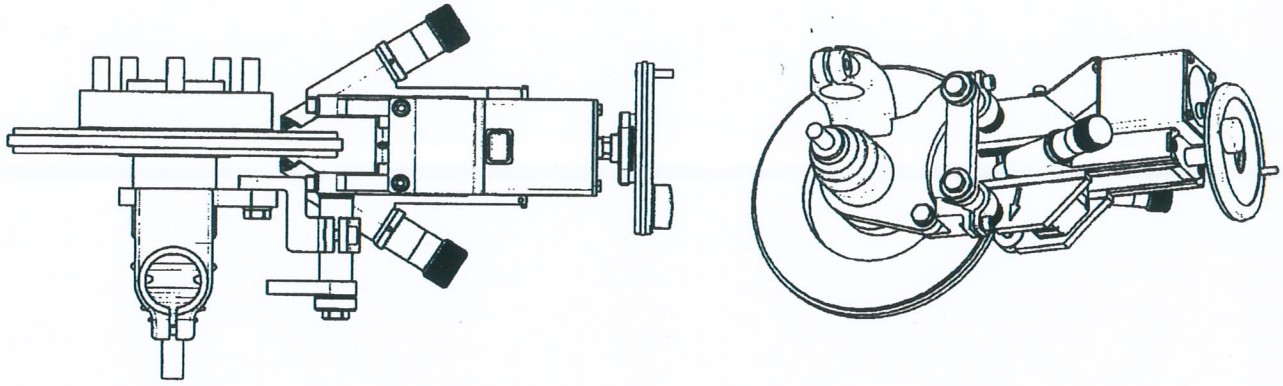


Fig. 30

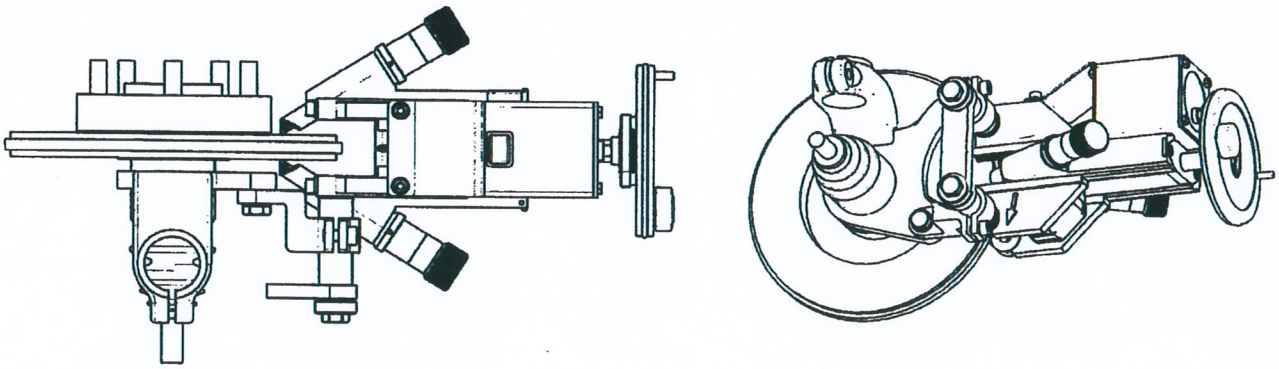
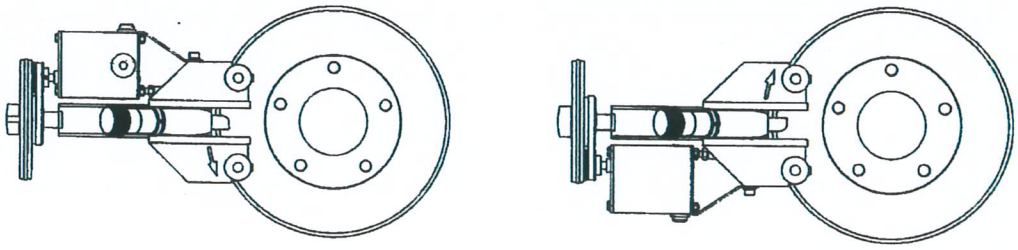


Fig. 31



Fitting the CL801 on the USM & Fitting with Universal Plates

Fitting the CL801 on the USM

1 - Bring the CL801 into correct position, fig.29 - 30.
2 - If necessary turn the CL801 upside down, fig 31.
3 - Mount the CL801 on the slide piece by using the hand knobs.
4 - Slide the CL801 to the middle of the brake disc, until the centreline of the CL801 is in line with the centreline of the brake disc. Fig 32 and 33. Slide on the centre line or maximal 2 mm to the inside of the car.
5 - Ensure that the CL801 does not contact the brake disc.
6 - Tighten one of the hex head bolts with the hex head T-spanner. Now the slide piece is fixed in the mounting bracket.
7 - Tighten all bolts with the prescribed torque, in the prescribed order.
  a - M10 mounting bolts on the calliper ears: torque 50 Nm (red mounting adapter).
  b - Original brake calliper bolts (if larger or the same as M10) torque: 50Nm.
    Brake calliper bolts M8: torque: 25 Nm.
    Brake calliper bolts M9 torque: 30 Nm (blue mounting adapter).
  c - Hand knobs; tighten with 50 Nm.
  d - Hex head bolts of mounting adapter: torque 25 Nm.
8 - Check if the brake disc is free to rotate, with no parts dragging or blocking.

Fitting the CL801 with Universal plates

1 - Move the slides and bit holders of the CL801 in the most rear position.
2 - In this position the tool bits cannot be damaged by touching the brake disc.
3 - Fig. 34 and 36 provides an illustration of the brake caliper ears. If the brake caliper ears are threaded, read further at point 5.
4 - If the brake caliper ears are not threaded, as in fig 34, fasten the red universal plates to the CL801 fixing ears (without thread) manually, Fig 35.
5 - If the brake caliper ears are threaded, as in fig 36, fasten the blue universal plates to the CL801 fixing ears (with thread) manually Fig 37.
6 - On each side of the CL801 there are fixing ears both with and without thread.
7 - Ensure that bolts of correct length are selected, the bolts must not touch the brake disc when fully inserted
8 - If necessary, the spacer tubes provided can be used to achieve the correct bolt length.

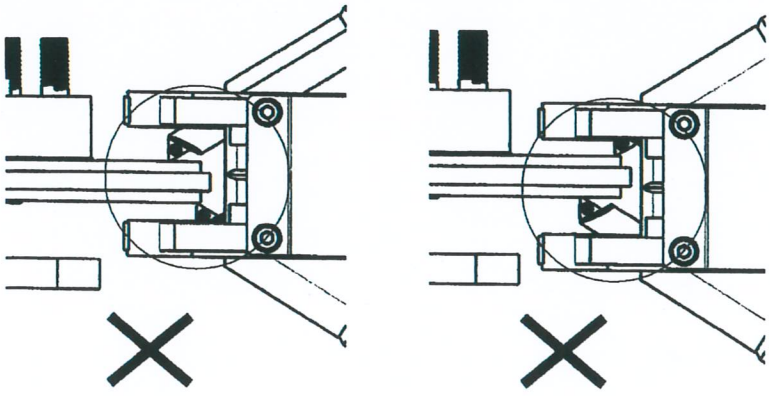


Fig. 32

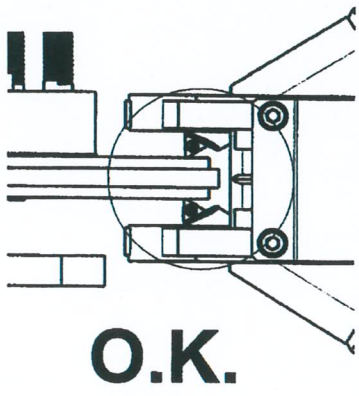


Fig. 33

Fig. 34

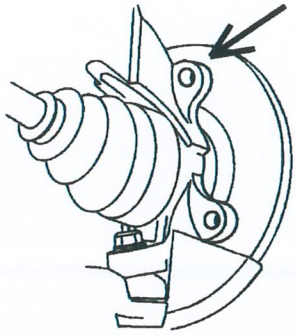


Fig. 35

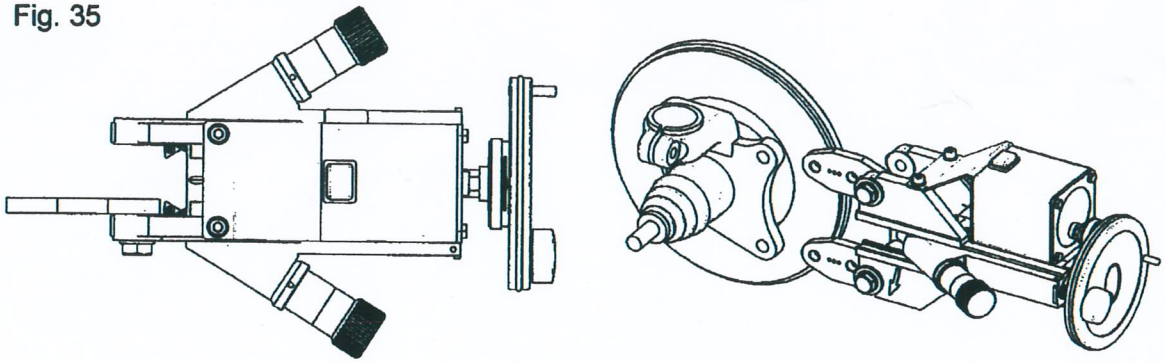


Fig. 36

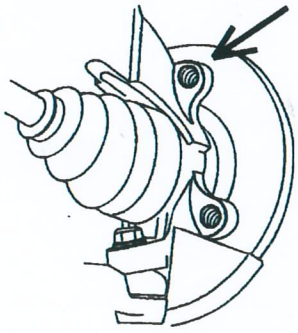
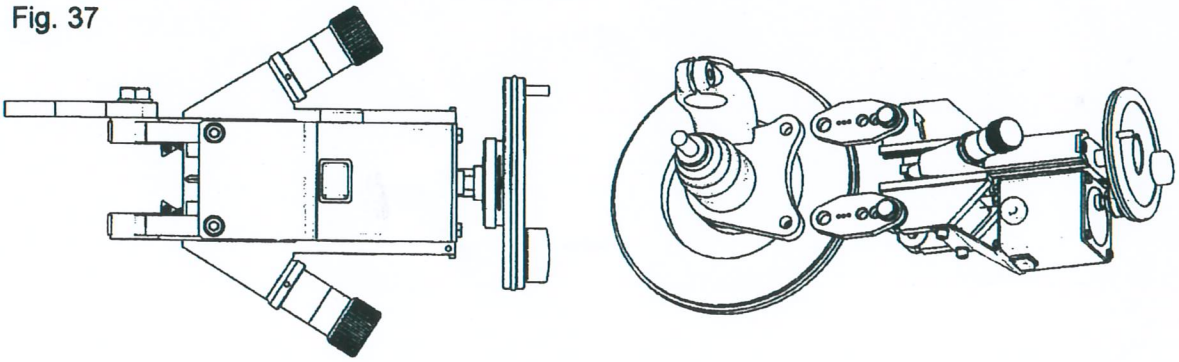


Fig. 37



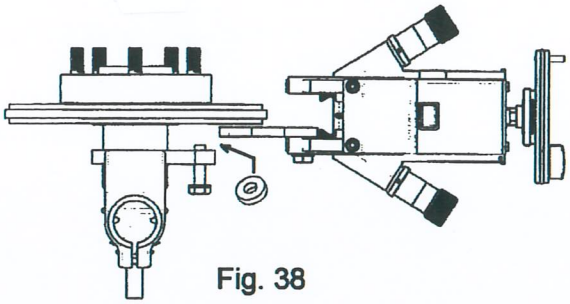


Fig. 38

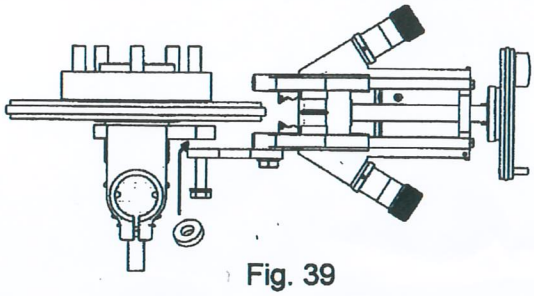


Fig. 39

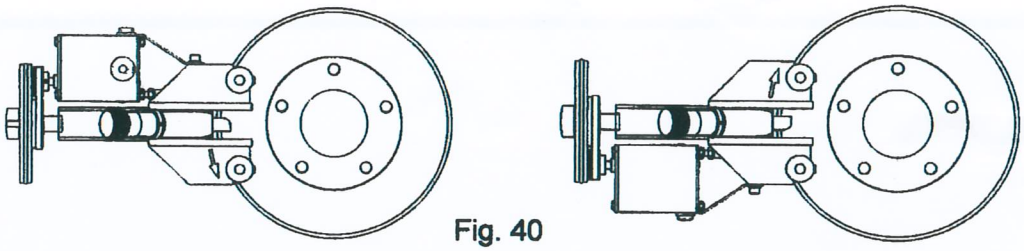


Fig. 40

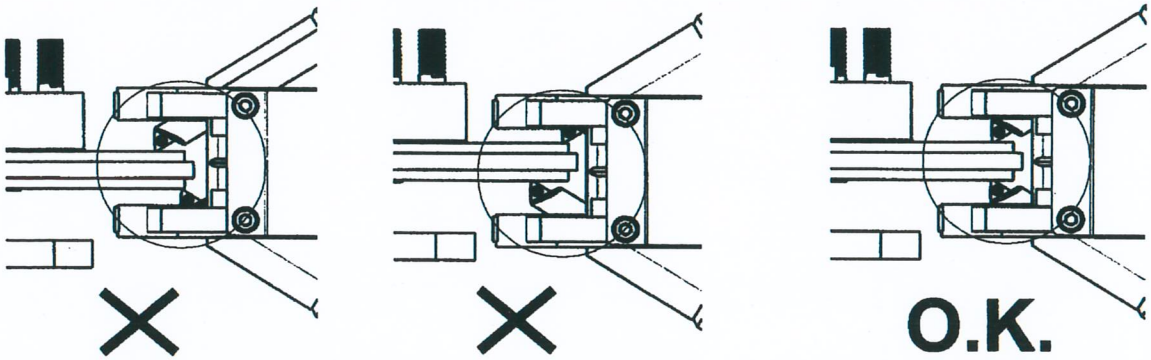


Fig. 41

Fig. 42

Fitting the CL801 with Universal Plates

1 - Bring the CL801 into correct position, fig. 38- 39.

a - The distance between outer ridge of the brake disc and the CL801 must be large enough to insert the rubber silencer.

b - The distance between outer ridge of the brake disc and the CL801 must be as short as possible.

2 - If necessary turn the CL801 180 degrees, with the power feed underneath, fig 40.

3 - Position the CL801 in the middle of the brake disc.

4 - If neccesary, fill the space between universal plates and caliper ears with shims as shown on achieve that the CL801 is inline with the centreline of the brake disc.

5 - Mounting 42 is correct. Avoid mounting fig. 41.

6 - Mount the CL801 in the centre line or maximal 2 mmto the inside of the car.

7 - Ensure that the CL801 does not contact the brake disc.

8 - Tighten all bolts with the prescribed torque;

a - M10 mounting bolts: torque 50 Nm.

b - Original brake calliper bolts (if larger or the same as M10) torque: 50 Nm.

Brake calliper bolts M9 torque: 30 Nm. Brake calliper bolts M8: torque: 25Nm.

9 - Check if the brake disc is free to rotate, with no parts dragging or blocking.

10 - Ensure that bolts of correct length are selected, the bolts must not touch the brake disc when fully inserted. If necessary, washers can be used to achieve the correct bolt length.

Positioning

Positioning Drive Unit

1 - Turn drive adapter horizontal.
2 - Place CL802 in line with the hub.
3 - Loosen the locking handle half a turn, fig 44.
4 - Adjust CL802 to correct height with spindle nut.
5 - Slide the drive yoke on the drive adapter, leaving a 5 mm space, fig. 43.
Drive yoke must point to centre of the hub.
6 - Lock the caster wheel of the stand, fig. 45.
7 - Check that the brake disc is free to rotate, with no parts dragging or blocking.
8 - Note that the brake disc and the drive shaft on the other side of the car may start turning as well, when the drive unit started.

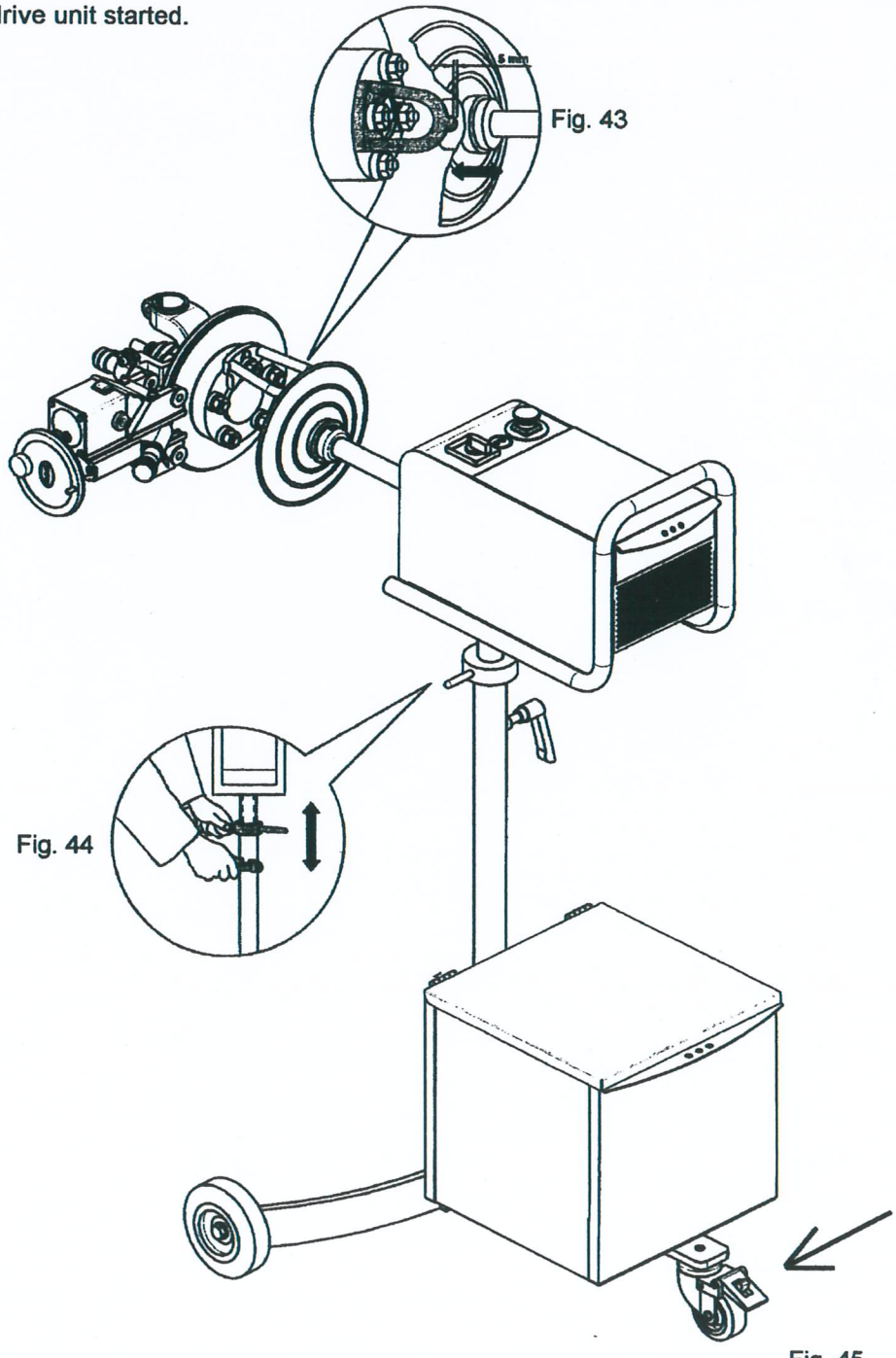


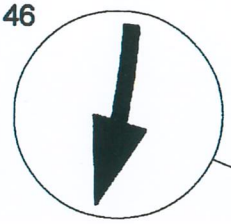
Fig. 43

Fig. 44

Fig. 45

Machining

Fig. 46



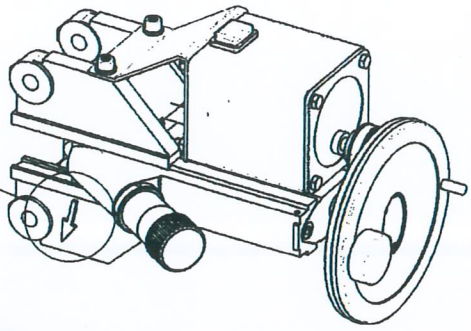
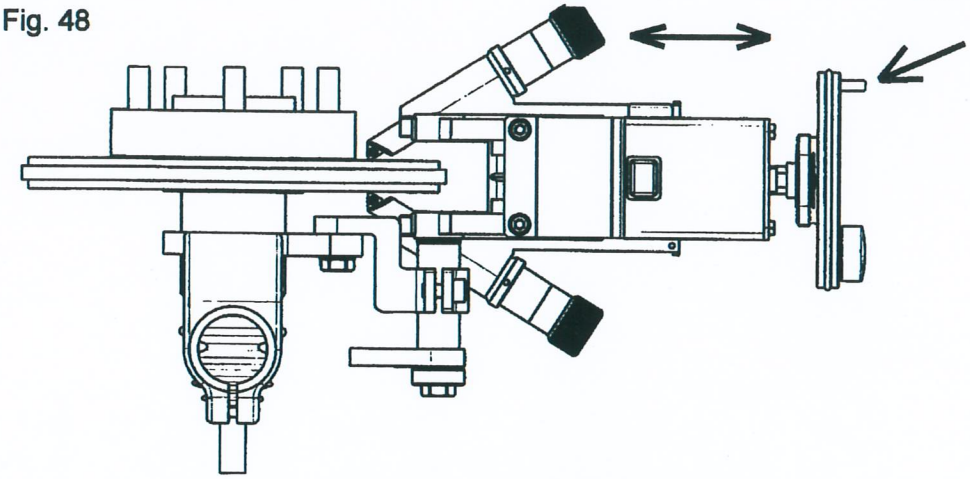


Fig.47

Fig. 48



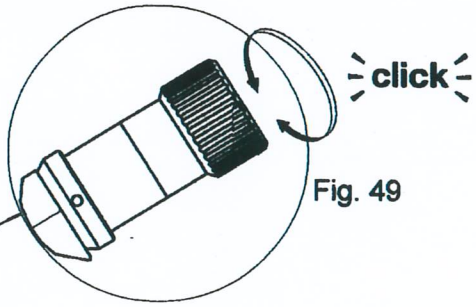


Fig. 49

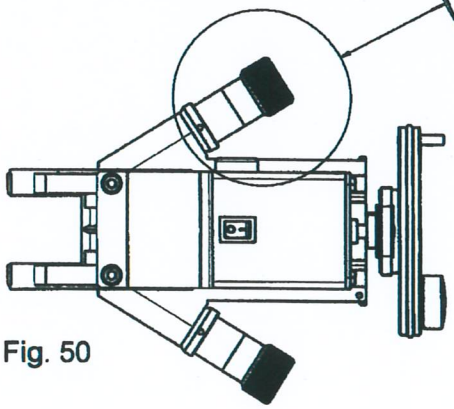


Fig. 50

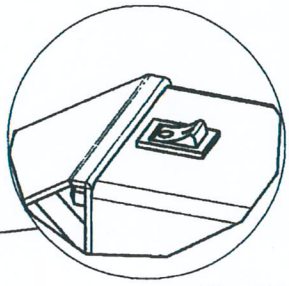


Fig. 51

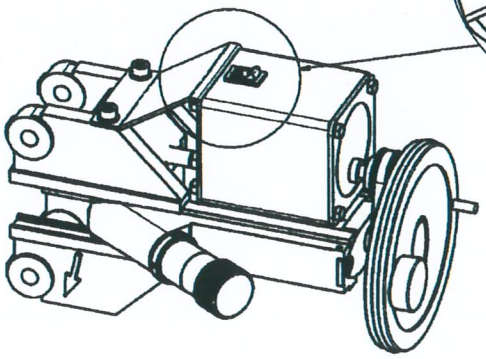


Fig. 52

Follow-up/Trouble shooting

Machining

1 - Determine the correct rotation direction of the drive unit CL802 see arrow on the CL801, fig. 46.
2 - CL802 on 4WD cars: choose position '1' of the motor switch, in the correct rotation direction.
Fig. 15-16.
3 - Keep the locking handle of the drive nit loose half a turn to reduce vibration of the drive unit.
4 - Fine-adjust the height of the drive unit to reduce vibration. Fig. 44.
5 - If there are a large ridges on the brake surface, remove this without exceeding the maximum cutting depth.
6 - Operate the slides of the CL801 Until the tool bits are at the middle of the brake surface.
7 - Turn the adjustment knobs carefully clockwise until the sound of the tool bit touching the brake disc is just audible.
8 - Move the slides carefully to the hub of the brake disc, fig. 48.
9 - The adjustment knob may be tuned in by a maximum of 16 clicks, when using the positive angle tool bit.
10 - The adjustment knob may be tuned in by a maximum of 4 clicks, when using the straight tool bit.
11 - 1 click equals 0.05 mm. Fig.49.
12 - Set the adjustment knobs (clockwise) on the selected value (minimal 0,05 mm, maximal0,8 mm)
13 - Start the autofeed with the switch and by locking the knob in fig. 51 - 52.
14 - After machining, stop the autofeed of the CL801 by pushing the button a second time.
15 - Then stop the drive unit CL802.
16 - Check if the in- and outside of the brake surface are machined completely.
17 - Repeat the machining if necessary.
18 - Check that the brake disc is not thinner than prescribed replacement size indicated in the workshop manual. If this is the case, the brake disc must be replaced.

Follow-up

1 - Rotate the vernier knobs counterclockwise until the tool bit holders are in the most rear position,
2 - Move the slides in the most rear position.
3 - Disconnect the cables.
4 - Remove the CL801
5 - Remove the mounting adapter, loosen the bolts in reverse order.
6 - Remove the rubber silencer from the brake disc, fig. 32.
7 - Remove the drive adapter from the hub.
8 - Note that the brake disc must stay fixed on the hub with at least two wheel nuts or -bolts.
9 - Repeat the total procedure on the brake disc at the other side of the car.
10 - Always machine both brake discs on the same axle at the same time, to prevent unbalanced brake efficiency.
11 - Clean the surrounding area of the brake disc and make sure there are no metal chips on the ABS
12 - Make the brake pad surfaces parallel and flat. Replace the brake pads when mecessary.
13 - Install the brake pads and brake callipers according workshop manual.
14 - In some cases locking or replacing of the calliper bolts is prescribed.
15 - Take the prescribed torque for the calliper bolts into account.
16 - Pump the brake pedal a few times in order to settle the brake pads and to fix the brake disc on the hub.
17 - Place a brake pedal depressor to lock the brake disc, fig. 33.
18 - Remove the wheel nuts -bolts and the conical rings.
19 - Install the wheel according instructions in workshop manual.
20 - Observe the recommended torque for the wheel nuts / bolts.
21 - Check the brake fluid level.

Trouble shooting

Trouble	Cause	Solution
Rough surface or herringbone effect	Vibration	Check rubber silencer band. Check CL801 mounting. Tigthen all bolts M 10 and larger with torque 50Nm before start working. Use conical ring. Mount CL801 close to the hub
	Wheel bearing play	Set/replace
	Cutting depth too deep	Maximal 0,2 mm (0,8 mm with pos.angle toolbit)
	Worn tool bit	Turn or replace
	Tool bit loose	Tigthen screw
	Wrong direction of rotation	See arrow on CL801
	Not aligned with drive adapter	Align
	Drive adapter does not center	Re-install and center

Follow-up

Fig. 53

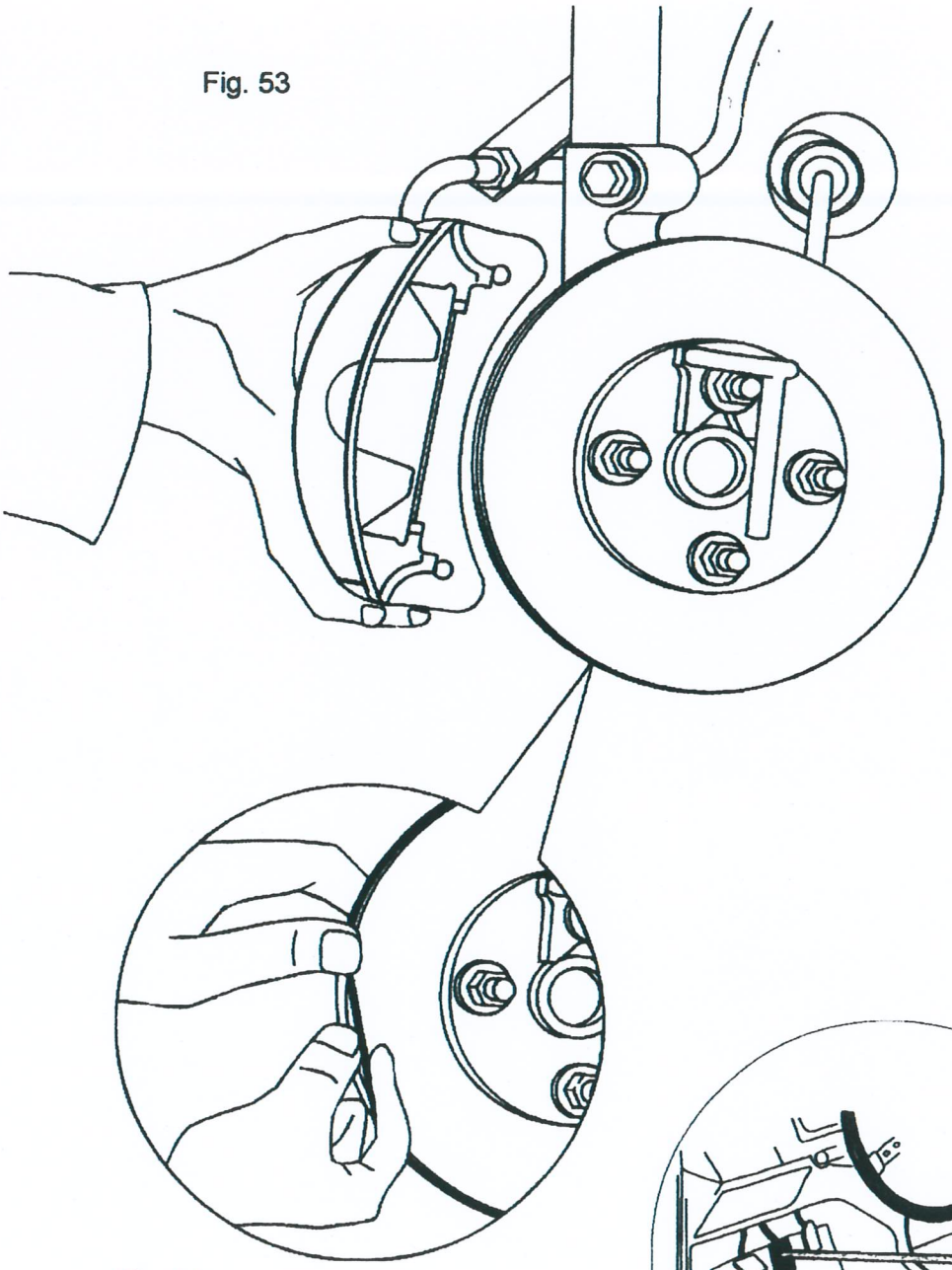


Fig. 54

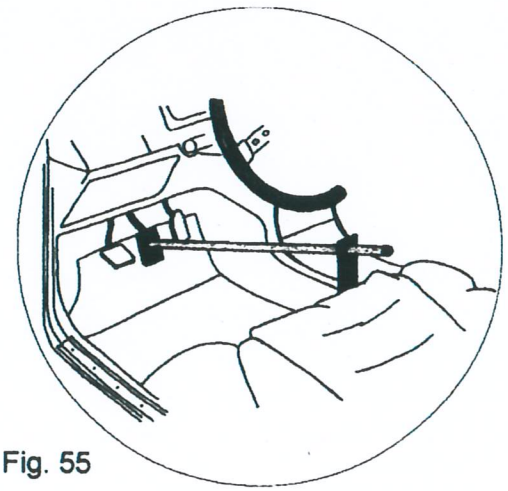
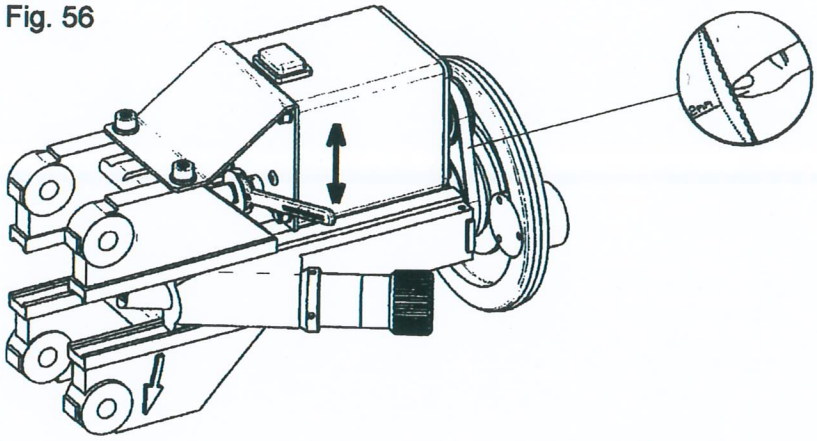


Fig. 55

Maintenance

Fig. 56



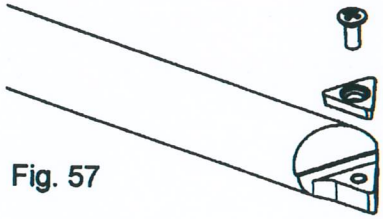


Fig. 57

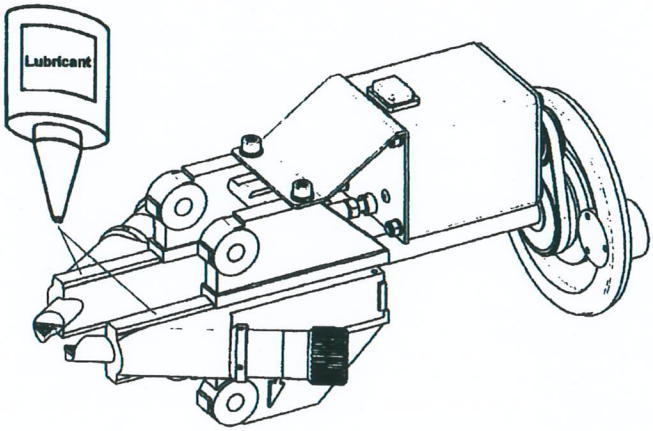


Fig. 58

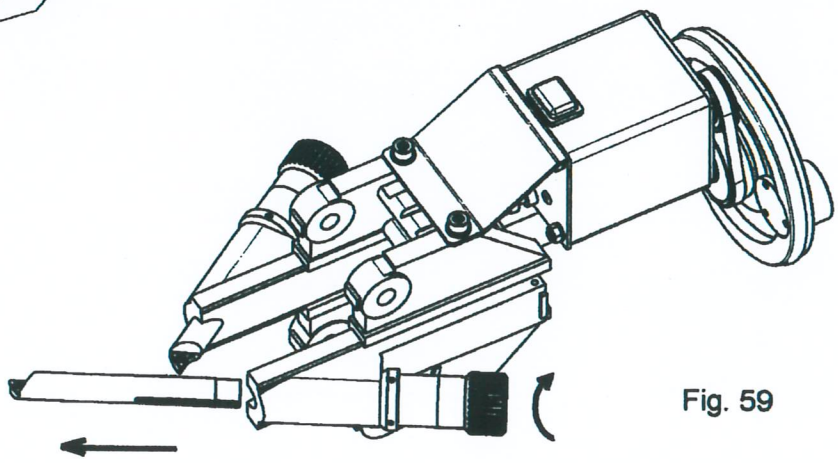


Fig. 59

Tips

Maintenance

Before carrying out maintenance activities, read the safety regulations contained in this manual.

A - Check that the bits are sharp and not damaged (prior to each use).
Turn and replace the bits frequently (at least after every 10 cars).
Clean the mounting surfaces of the bit thoroughly with a brush when turning or replacing the bit.

B - Cleaning of the slides (after every 10 cars).
Clean the guides between the block and the slide with a brush, then apply a small amount of CHARION Disc Lathe oil.

C - Cleaning of the slides (after every 50 cars):
Turn the adjustment knob anti-clockwise until the tool bit holder is completely out of the slide.
Clean the the bit holder and grease lightly. When fitting the bit holder point the slot to the outside of the CL801.

D - Cables (every week). Check cables and extension cables for damage, replace damaged cables immediately.

E - Adjustment of the toothed belt (once every two year). With the slides in the back-most position , turn the adjusting nut until there is a small degree of tension in the toothed belt.

Tips

- While asse mbling the CL801 ensure that the spacing between the brake caliper ears CL801 is even both above and below.
- Turn or change the bits in good time to ensure fresh, sharp cutting faces
- Prior to machining, check that the bits will be able to machine the entire surface of the brake disc.
- Aspecial brochure has been compiled showing the various options. It is available from your CHARION supplier.

Guarantee

- A full year's guarantee is given by the CHARION supplier on all parts with the exception of the bits.
- The guarantee does not apply in cases where it has been established that the equipment has been operated incompetently, has been abused or has suffered accidental damage.

Spare parts

Parts can be ordered from your CHARION supplier. When ordering parts, make use of the order numbers on the parts list that is in cluded with the machine. Always state the serial number of the machine when ordering parts. Store the manual and the list of parts in the storage compartment in the steel box.

Technical specifications

CL801 Disc Lathe	
Maximum brake disc thickness	39 mm
Adjustment knob cutting depth accuracy	0,05mm
Feed rate	8,5mm/min.
Electrical specifications	See information plate
Net weight	6, 2 kg
CL802 Drive Unit	
Working height min./max.	100 / 120 cm
Drive speed	100 rpm
Net weight	52 kg
Electrical specifications	See information plate
Ambient temperature range	-5℃ to 35℃
Year of construction	See information plate
Turning accuracy	
Brake disc runout	0,002 mm
Brake disc thickness variation	0,002 - 0,005 mm
Brake disc surface roughness	Ra 1.0 - 2.0 un
Noise level, excluding a space crrection factor of 4 dB(A)	74 Db (A)