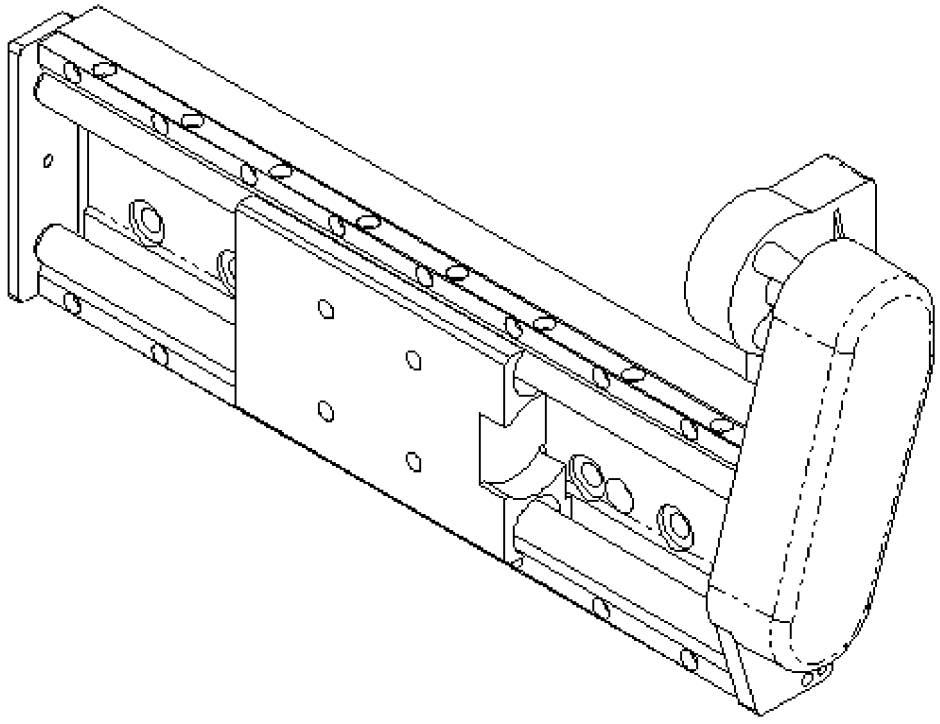
# A6 Slide



**Bruksanvisning**
**Brugsanvisning**
**Bruksanvisning**

**Käyttöohjeet**
**Instruction manual**
**Betriebsanweisung**

**0443 394 060 2006-07-13**

**Valid for serial no. 452-xxx-xxxx**

Pro CADAM A3



ESAB GROUP

EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE Type A6 Slid

443 576

Scale . Mode 1:1

| Year | Week | Design checked by | Accepted for prod.by | Drawing checked by | Drawn by |
|---|---|---|---|---|---|
| 94 | 48 | WDKA/PB | . | KF | WDKA/HL |

V Indicates $R_a$ in µm

Sheet 1 Sent.

**GARANZIA DI CONFORMITÀ ALLE NORME CE**
**GARANTIA DE CONCORDÂNCIA DA CE**
**DECLARACIÓN COMUNITARIA DE CONCORDANCIA**
**DÉCLARATION CE DE CONFORMITÉ**

**ΠΙΣΤΟΠΟΙΗΣΗ ΤΗΡΗΣΗΣ ΟΔΗΓΙΩΝ ΤΗΣ ΕΥΡΩΠΑΙΚΗΣ ΕΝΩΣΗΣ**

| | |
|---|---|
| Il produttore<br>Fabricante<br>Fabricante<br>Le fabricant<br>Ο κατασκευαστής | Esab Welding Equipment AB<br>695 81 LAXÅ<br>SWEDEN |
| Garantisce<br>Garante que a máquina<br>Declara que la máquina<br>Déclare que la machine<br>Πιστοποιεί ότι το εργαλείο | Tipo<br>Tipo<br>Tipo A6 Slid<br>Type<br>Τύπου |
| Numero di serie<br>Nº de série<br>Nº de serie<br>No. de série<br>Αρ. Σειράς | 452 XXX XXXX |

E costruita in conformità alle norme 89/392/EEC, aggiornamenti inclusi.
Foi fabricada em conformidade com a directiva 89/392/EEC incl. suplemento
Ha sido fabricada conforme a la directiva 89/392/EEC, incl. disposición adicional.
Est fabriquée conformément aux directives 89/392/EEC, amendements inclus.
Είναι κατασκευασμένο σύμφωνα με τις οδηγίες 89/392/EEC συμπεριλαμβανομένων και των επιπλέον οδηγιών.

**EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE**
**EF-FORSIKRING OM OVERENSSTEMMELSE**
**OVERENSSTEMMELSESERKLÆRING**
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**EC DECLARATION AS TO CONFORMITY**
**EG-VERSICHERUNG BETREFFS ÜBEREINSTIMMUNG**
**EG-VERKLARING INZAKE OVEREENKOMST**

| | |
|---|---|
| Tillverkare<br>Produsent<br>Producent<br>Valmistaja<br>Manufacturer<br>Hersteller<br>De fabrikant | Esab Welding Equipment AB<br>695 81 LAXÅ<br>SWEDEN |
| Försäkrar att maskin<br>Forsikrer at maskin<br>Forsikrer at maskin<br>Vakuuttaa, että laite<br>Assure that the machine<br>Versichert, dass die Maschine<br>Verklaart dat machine | Typ<br>Type<br>Type<br>Tyyppi A6 Slid<br>Type<br>Typ<br>Type |
| Serienr<br>Serie nr.<br>Serienr.<br>Sarjanro.<br>Serial no.<br>Seriennummer<br>Serienummer | 452 XXX XXXX |

Är tillverkad i överensstämmelse med direktiv 89/392/EEC inkl. tillägg.
Er produsert i overensstemmelse med direktiv 89/392/EEC inkl. tillegg.
Er fremstillet i henhold til direktiv 89/392/EEC inkl. tillæg.
On valmistettu direktiivin 89/392/EEC ja sen lisäysten mukaisesti.
Is manufactured in conformity with the directives 89/392/EEC incl. amendments.
In Übereinstimmung mit den Direktiven 89/392/EEC einschl. Nachträgen hergestellt ist.
Gefabriceerd is overeenkomstig richtlijn 89/392/EEC incl. supplementen.

Laxå 1/12-94

Paul Karlsson
Managing Director

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| Alteration No. | Alteration | sign., year, month entered |
|---|---|---|
| | | |

Tolerances for untoleranced dimensions acc. to ISO 2768-1

Painting No.

Compare No.

# 1 SAFETY

Users of ESAB servo slides have the ultimate responsibility for ensuring that anyone who works on or near the servo slide observes all the relevant safety regulations.

The following recommendations should be observed in addition to the standard regulations that apply to the work place.

1. General

   All manoeuvres must be performed according to the given instructions by personnel well familiar with the functions of the servo slide.

   An incorrect manoeuvre, caused by a wrong move or an incorrect release of a functional sequence, can lead to an abnormal situation that can injure the operator and cause damage to the equipment.

   Personnel working with the servo slide must be well familiar with:

   - the handling of the slide
   - the location of emergency stops
   - the function of the slide
   - all relevant safety regulations

2. Live electrical components are usually semi-protected.
   - Any work on electrical units **shall be carried out by a qualified electrician**.
3. Danger of the load falling down
   - Make sure the base will resist all types of forces coming up during operation.
   - Check that the slide is fastened to the base with at least 4 M10 or M12 Allen screws.
   - Never overload the slide (see on page 88 the carrying capacity of the slide)
   - Check the condition of the belt regularly (at least every 200 hours).
   - Replace the belt at least every 5 years, or as necessary.

     ***N.B.***
     When replacing the belt or the belt pulley the load must be secured. Read the pages 98 - 99.

   ***WARNING!***

   *In case of a belt rupture the load will fall down.*

4. Danger of getting clamped
   - When the runner goes towards its end position
   - When the belt protection is dismounted
5. Maintenance
   - Lubrication and maintenance of the slide must not be carried out when the slide is in operation.

# WARNING

**ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURER'S HAZARD DATA.**

**ELECTRIC SHOCK - Can kill**

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the workpiece.
- Ensure your working stance is safe.

**DANGER OF GETTING CLAMPED**

- Moving parts can cause damage. Therefore, be very careful!

**FUMES AND GASES - Can be dangerous to health**

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and the general area.

**ARC RAYS - Can injure eyes and burn skin**

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

**FIRE HAZARD**

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.

**NOISE - Excessive noise can damage hearing**

- Protect your ears. Use ear defenders or other hearing protection.
- Warn bystanders of the risk.

**MALFUNCTION**

- Call for expert assistance in the event of malfunction.

**READ AND UNDERSTAND THE OPERATING MANUAL BEFORE INSTALLING OR OPERATING.**

**PROTECT YOURSELF AND OTHERS!**

# 2 TECHNICAL DESCRIPTION

## 2.1 General

The A6 slide is designed to carry and transfer welding heads of different types of welding plants. The slide can be mounted across the weld joint – single or in a cross saddle – for adjustment or joint tracking. It can also be mounted along the weld joint to bring about a welding movement.

**The A6 slide is controlled over:**

- Control box A6 GMD for joint tracking. (See instruction manual 443 403 xxx)
- Control box A6 PAK for positioning. (See instruction manual 443 405 xxx)
- Control box PEH for travel motion. (See instruction manual 443 745 xxx)

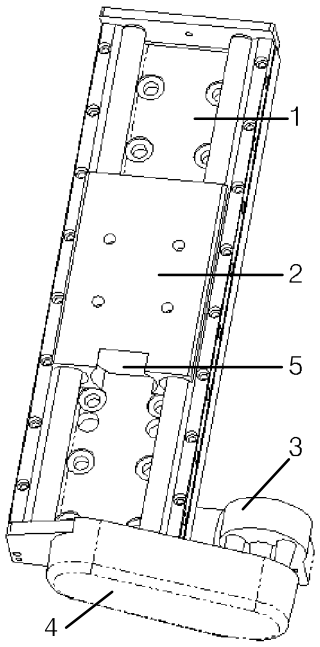
The A6 slide is a motorized linear slide. All movable parts are lodged in ball bearings. The slide is available in different setting lengths from 60 to 1030 mm (see dimension drawing on page 124) and in two different speed ranges.

## 2.2 The A6 slide consists of:

1. Slide profile, stiff U–profile.
2. Runner, lodged in open ball bushings, running over the axes which are supported by the slide profile in their full length.

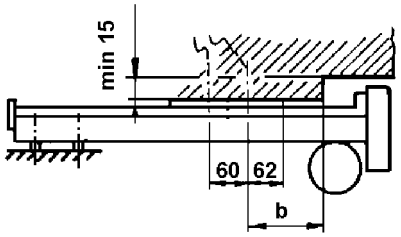
**The driving system contains:**

3. DC motor with worm gear.
4. Tooth belt transmission with built–in friction clutch.
5. Ball screw with nu.



## 2.3 TECHNICAL DATA

| **Setting length (mm)** | 60 | 120 | 180 | 240 | 300 | 420 | 540 | 730 | 1030 |
|---|---|---|---|---|---|---|---|---|---|
| **Total length (mm)** | 305 | 365 | 425 | 485 | 545 | 665 | 785 | 1025 | 1385 |
| **Weight (kg)** | 11,5 | 13,2 | 15,0 | 16,7 | 18,5 | 21,9 | 25,4 | 30,9 | 38,8 |

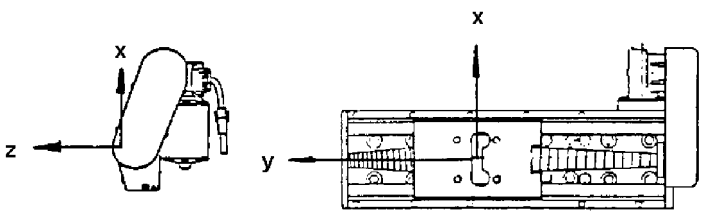
| **A6 Slide** | |
|---|---|
| Max control voltage | 42 V DC |
| Max speed at 42 V DC | 70 cm/min (175 cm/min with reversed gear wheels in transmission) |
| Continuous A-weighted noise pressure | 42 dB |
| Play of runner in the longitudinal direction of the slide | 0,1 mm |
| Other play | 0 |
| Max ambient air temperature | 80°C |
| Max load dimensions at full setting length |  <br>Setting length 60 to 540: b=62<br>Setting length 60 to 730: b=86<br>Setting length 60 to 1030: b=117 |

## 2.4 The carrying capacity of the slide

To simplify the schematical representation it is assumed that the load on the slide is a weight and that the different mounting positions are confined to:

- Vertical position
- Standing horizontal position
- Lying horizontal position.

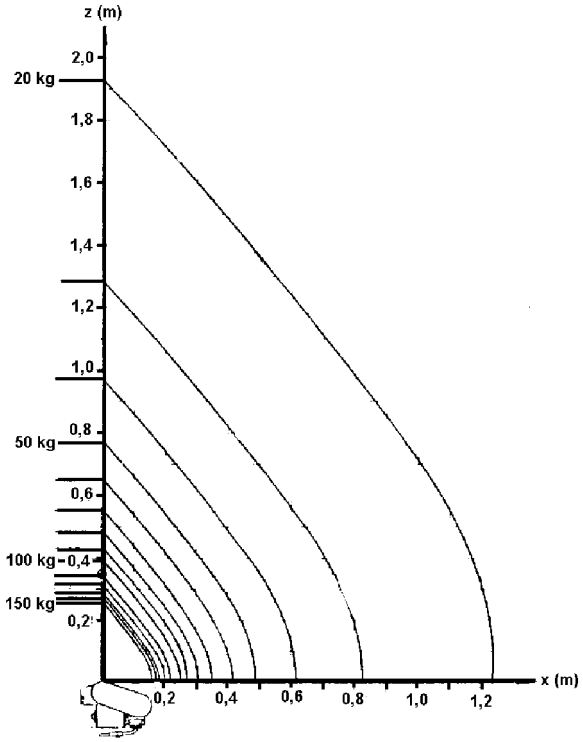
With the following co-ordinate directions the force of gravity works in the y, x and z directions.



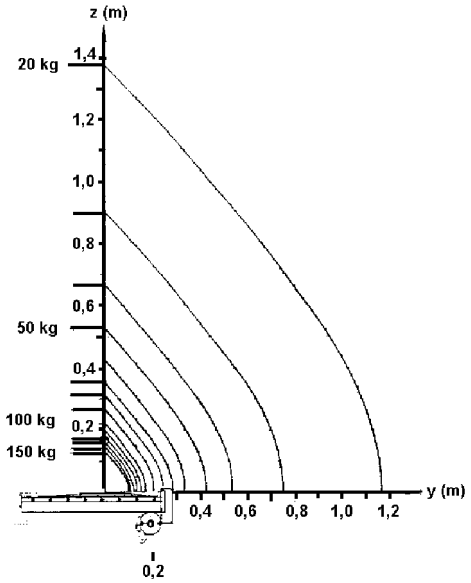
## 2.5 The linear bearing of the runner

Max permissible momemt-free load on the runner of the slide is 150 kg irrespective of the mounting position of the slide.

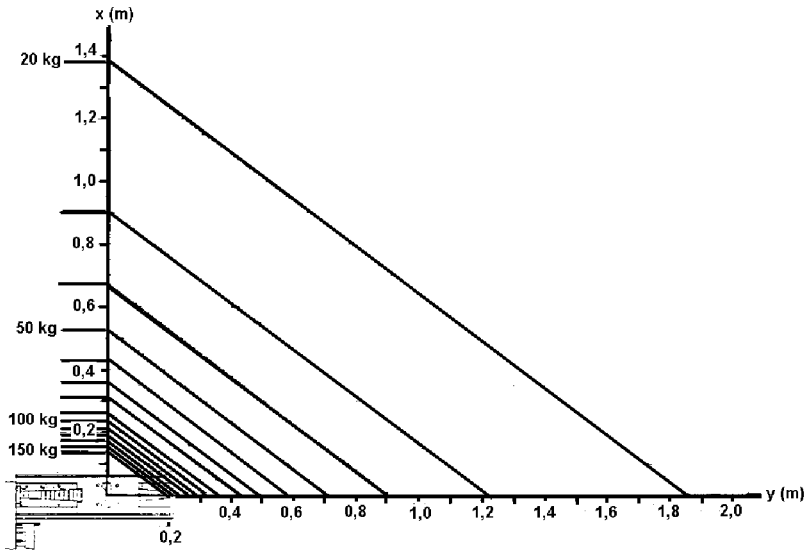
Max permissible moment-generating load on the runner of the slide depends on the mounting position. The centre of gravity of the load can be displaced from the centre of the runner within an area, the further limit of which depends on the size of the load according to the three diagrams below, where the slide is seen from above.




*Max. load at vertical mounting*



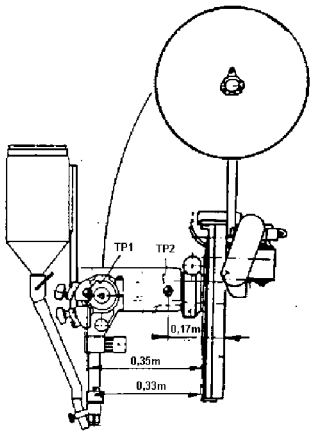

*Max load at standing horizontal mounting*




*Max load at lying horizontal mounting*

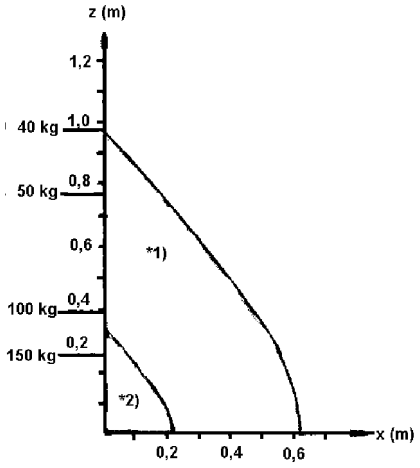
**Examplel 1:**

- An A6 SFD1 automatic welding machine is mounted on a standing cross saddle.
- Note that the wire drum and the drum holder are mounted on th slide profile of the vertical slide.




**Example 1a:**

- The load on the vertical slide is about 43 kg.
- The centre of gravity (TP1) is displaced 0,35 m from the runner of the vertical slide in the z direction.
- The displacement of the centre of gravity in the x direction can be neglected.
- The load is far below the permissible load of 110 kg in this position.

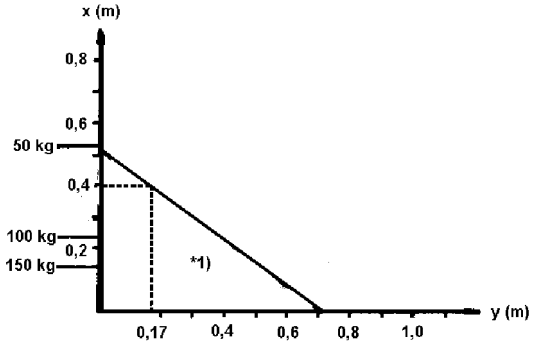



***1)** Permissible position of the centre of gravity at a load of 40 kg.

***2)** Permissible position of the centre of gravity at a load of 100 kg.

**Example 2:**

- A load of 50 kg is fitted on a lying horizontal slide.
- The centre of gravity is displaced 0,4 m in the x direction.
- The centre of gravity can also be displaced 0,17 m in the y direction without the max load being exceeded.




***1)** Permissible position of the centre of gravity at a load of 50 kg.

## 2.6 The distance between the fixation of the slide profile and the line of application of the load

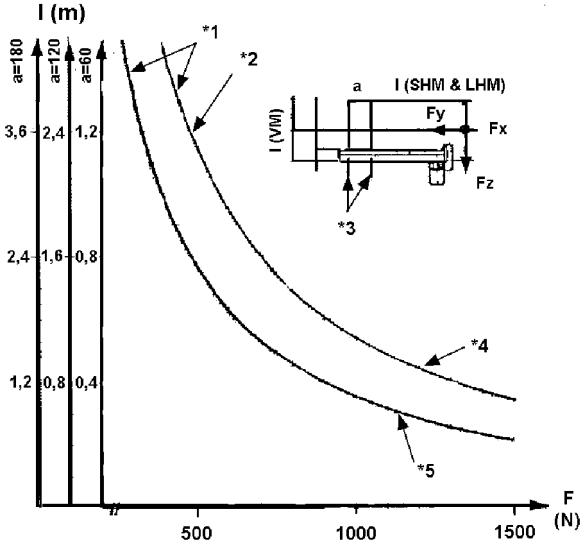
Max permissible forces on the mounting screws of the slide profile limits the distance (l) between the mounting screws and the application line of the load.

At standing horizontal mounting it is assumed that the tightening moment is 48 Nm for an M10 screw and 84 Nm for an M12 screw (friction joint).

Max permissible distance; **l** as a function of the load **F** is shown in the following diagram where **a** is the distance between the screw pairs.

**Example 3**

- The horizontal slide in example 1 is to be fitted on a carrier with 2 pairs of screws with a=60 mm.
- **L** is mmax 0,4 m.
- According to the diagram the actual weight of 100 kg (F=1000 N) requires that the mounting screws are of the M12 dimension and are tightened at 84 Nm.



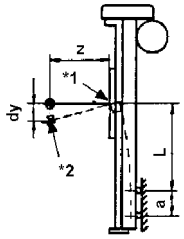

***1)** Standing horizontal mounting (SHM)
***2)** Lying horizontal and vertical mounting (LHM and VM)
***3)** Mounting screw
***4)** 4 M12 screws torque moment 84 Nm
***5)** 4 M10 screws torque moment 48 Nm

## 2.7 Deformation of the slide profile under load

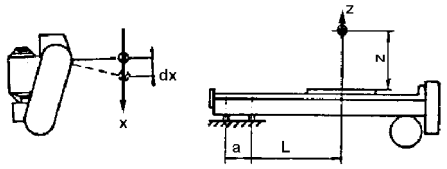
When loaded, the slide profile is deformed (bent, twisted) so that the position of the centre of gravity of the load is changed.

The deflection (d) depends on:

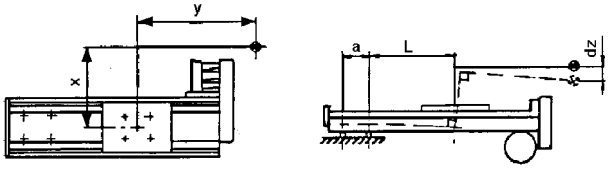
- The size of the load
- The mounting position of the slide
- The distances a, L and x (y, z) are defined in the following fig.




*Vertical mounting*



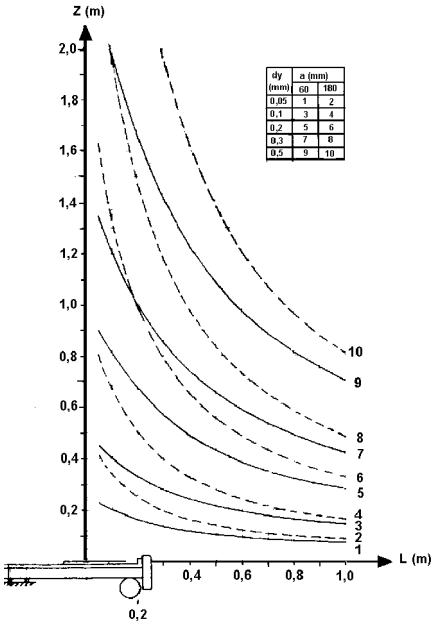

*Standing horizontal mounting*



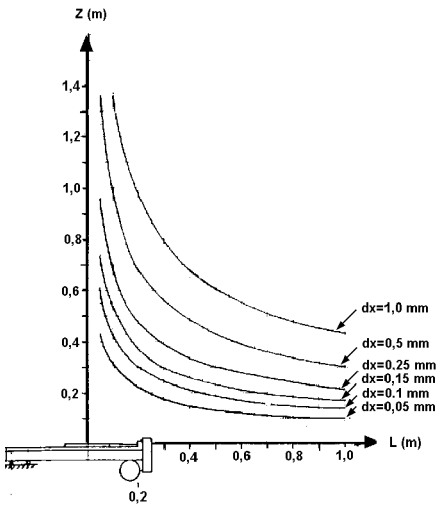

*Lying horizontal mounting*

The deflection d (x, y, z) at the centre of gravity of the load per 10 kg is shown in the following four diagrams, see on page 92 and 94. Lying horizontal mounting gives the deflection $d_z$ as $d_z = d_{zx} + d_{zy}$. The deflection in other points of the load is proportional or approximately propertional to the distance of these points to the runner.

**Note** that the deflection varies with the position of the runner.

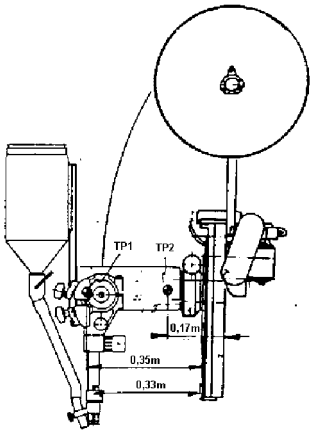



*Vertical mounting. Bending of slide profile.*




*Standing horizontal mounting. Twisting of slide profile.*

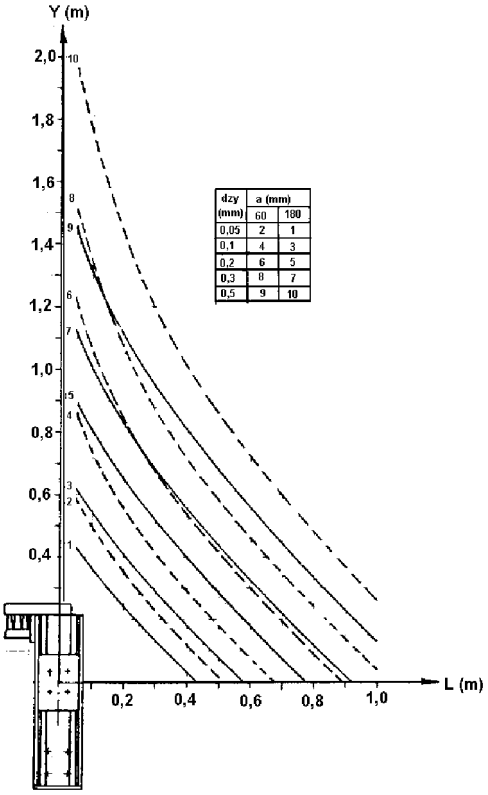
**Example 4:**



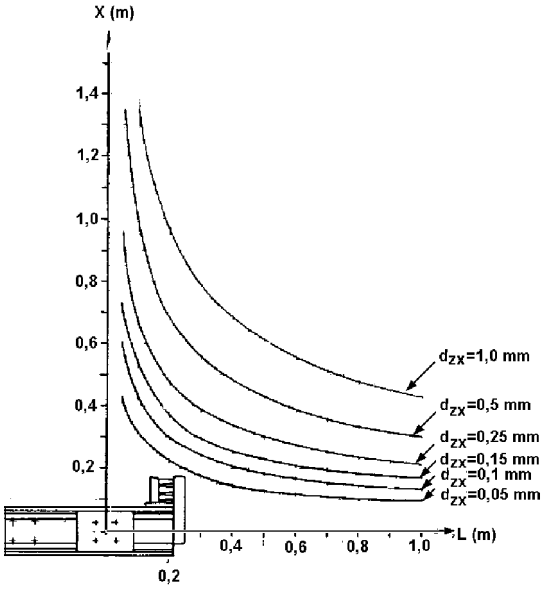

- An automatic welding machine is fitted on a vertical cross saddle.
- The load on the vertical slide is 43 kg.
- The position of the centre of gravity is at the distance z=0,35 m from the runner.
- The load on the horizontal slide is 100 kg and its centre of gravity is at the distance z=0,17 m from the runner.

$L_{max}$ of the vertical slide is 0,1 m and of the horizontal slide 0,4 m. The deflection of the contact device due to the deformation of the slide profiles of the slides can be estimated as follows:

1. Deflection due to deformation of the vertical slide:
   - Insert L=0,1 m and z=0,35 into the left diagram, see on page 94 (the distance to the centre of gravity TP1). In case a=60, use the solid curve lines.
   - Then you will get a point that lies between curve 1 and curve 3 (closer to curve 3).
   - According to the table a=60 the deflection will be between 0,05 and 0,1 mm. It is estimated at 0,08 mm. This is the deflection in the centre of gravity TP1 per 10 kg load.
   - The deflection at 43 kg is: 0,08 x 43/10 = 0,34 mm
   - The deflection of the contact device is then (due to proportinality): 0,34 x 0,33/0,35 = 0,32 mm.
   - 0,33 is the distance to the contact device
   - 0,35 the distance to TP1.
2. Deflection due to deformation of the horizontal slide:
   - Insert in L=0,4 m and z=0,17 m into the diagram on the right, see on page 94 (the distance to the centre of gravity TP2).
   - Then you will get a point indicating a deflection between 0,05 and 0,1 mm. It is estimated at 0,07 mm. This is the deflection of the centre of gravity TP2 per 10 kg load.
   - The defection at 100 kg is: 0,07 x 100/10 = 0,7 mm
   - The deflection of the contact device is then (due to proportionality): 0,07 x 0,33/0,17 = 1,36 mm.
   - 0,33 is the distance to the contact device
   - 0,17 is the distance to TP2.
   - The total deflection of the contact device is then at $L_{max}$ 1,36 + 0,32 = ca 1,7 mm.




*Lying horizontal mounting. Change of the centre of gravity in the Y-direction. The slide profile bends.*




*Lying horizontal mounting, Change of the centre of gravity in the X-direction. The slide profile twists.*

**Example 5:**

A lying horizontal slide with $L_{max}$= 0.4 m is loaded with 50 kg. The distance between the mounting screws is 60 mm. The displacement of the centre of gravity in the in the y direction = 0.17 m and in the x direction 0.4 m.

1. Deflection ($d_{zy}$) at lying horizsontal mounting with displacement of the centre of gravity in the y direction.
   - Insert L=0.4 m and y=0.17 into the diagram on the left, on page 94.
   - Then you will get a point lying on curve 3.
   - According to the table a=60 the deflection will be 0.1 mm. This is the deflection per 10 kg load.
   - Deflection ($d_{zy}$) at 50 kg is: 0,1 x 50/10 = 0,5 mm

2. Deflection ($d_{zx}$) at lying horizontal monunting with displacement of the centre of gravity in the x direction.
   - Insert L=0,4 m and x= 0,4 m into the diagram on the right on page 94.
   - Then you will get a point indicating a deflection between 0,25 and 0,5 mm. It is estimated at 0,35 mm. This is the deflection per 10 kg load.
   - The deflection ($d_{zx}$) at 50 kg is: 0,35 x 50/10 = 1,75 mm
   - The total deflection ($d_z$) at the centre of gravity of the load is: $d_{zy}+d_{zx}$ = 0,5 + 1,75 = 2,25 mm.
   - The deflection at other points of the load is approximately proportional to the distance of the runner in the y and x direction.

## 2.8 Slide transfer

### Current consumption of electric motor and limit to self-braking

The current consumption is linearly depending on the load. In the table the current consumption is indicated for different gear ratios at idle running, full load and sliding . The table shows max load at self-braking of the motor worm gear.

| Gear ratio for max speed (cm/min) | Total gear ratio, motor armature - slide runner (r.p.m.) | Current consumption | | | Max load at self-retarding (N) |
|---|---|---|---|---|---|
| | | Idle running | Load 1500 N | Sliding *1) | |
| 70 | 15,4 | 1,25 | 1,80 | 2,60 | >1500 |
| 175 | 620 | 1,25 | 2,75 | 3,50 | 1000 |

***1)** Adjustable, see on page 99.

# 3 INSTALLATION

## 3.1 General

***The installation must be executed by a professional.***

**WARNING!**
Incorrect installation of the servo slide or incorrect fitting of the load on the slide can cause damage to the machine and injure people.

## 3.2 Connections of the runner

For the attachement of the load there are four M12 holes on the runner at a spacing of 60 mm for M12 screws or M10 Allen screws with washer.

## 3.3 Connections of the slide profile

For the attachement on a carrier there are holes ø 13 at a spacing of 60 mm for M12 Allen screws or M10 Allen screws with washer.

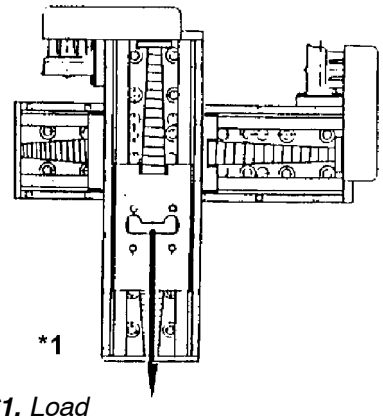
Connect the slide to a suitable drive unit. For this purpose two cables are required which are not included in the supply ot the slide: cable for control box PEH (order no. 456 493) and for control box A6 GMD and A6 PAK (order no. 417 310).

## 3.4 Fitting of vertical cross saddle

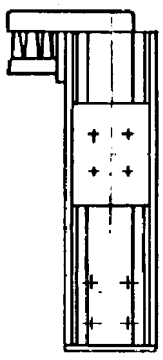
The vertical cross saddle can be mounted in several ways. For heavy loads the vertical slide is to be fitted next to the load to lessen the pressure on the back slide runner.

Recommended fitting for heavy loads: no torque on the back slide runner.

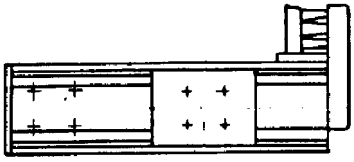
The different mounting positions of the slide are: vertical position, standing horizontal and lying horizontal position.



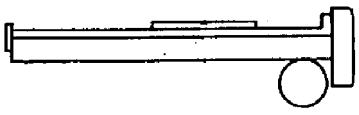

***1.** Load*



*Vertical mounting*



*Standing horizontal mounting*



*Lying horizontal mounting*

## 3.5 Recommended way of lifting servo slides

The dead weight of most slides is so low that manual lifting can take place. For slides with an adjustable length over 540 mm and for assembled cross saddles an approved lifting device should be used.

**NOTE.** The runner must not be used for lifting.

Lifting points can be fitted in the holes on the slide profile. In exceptional cases a soft lifting loop round the slide profile can be used. The loop must be properly secured so as to prevent slipping.

# 4 OPERATION

## 4.1 General

***Caution:***
*Have you read and understood the safety information ?*
*You must not operate the machine before then !*

***General safety regulations for the handling of the equipment can be found on page 85. Read through before you start using the equipment!***

***WARNING***

*Rotating parts can cause injury, take great care.*

## 4.2 Changing the speed range

**WARNING!**
*Falling load can cause damage.*
*When replacing the belt or the belt pulley the load must be secured.*

**Replacing the belt pulley**

Before starting the work, secure the load by running the slide/load to the bottom position in order to prevent the load falling.

| Max speed | Wheel on motor shaft | Wheel on ball screw | Motor 334 322-001 | Cover plate |
|---|---|---|---|---|
| 70 cm/min | 19 teeth | 30 teeth, for slip coupling | shaft journal, length 25 mm | 334 321-001 T=1mm |
| 175 cm/min | 30 teeth, for slip coupling | 19 teeth | shaft journal, length 25 mm | 334 321-001 |
| 110 cm/min | 30 teeth, for slip coupling | 30 teeth | shaft journal, length 25 mm | 334 321-001 |

When replacing the pulley, turn the cover plate between the motor and the motor bracket so that the mounting holes get covered.

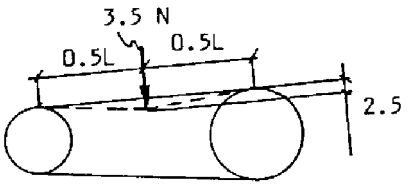
**NB.** When mounting or dismounting the belt pulley with the slip coupling the lubricated cup springs must not get into contact with the friction surface of the pulley, friction ring or friction stop.

### Adjusting the friction moment

- Tighten the centre screw 3/4 turn after the position where the cup springs start working.
- The friction moment can be decreased as necessary (for instance to lessen the friction current) by tightening the centre screw less than 3/4 turn.
- NB. The friction moment must not be set higher as this can cause damage to the slide in the event of blocking.

### Adjusting the tension of the belt

The belt ***must*** be replaced at least every 5 years, or as necessary.




- Make sure the load is secured when performing a piece of work.
- Dismount the belt protection.
- Loosen the motor. In case the pulley with the slip coupling is fitted on the motor shaft the belt drive must first be dismounted (in order that the mounting screws of the motor become accessible), and then remounted again.
- Move the motor sideways until the belt is so tense that a force of 3,5 N applied on the belt right between the pulleys gives a deflection of 2,5 mm.
- Tighten the mounting screws of the motor.
- When the pulley with the slip coupling is on the motor shaft, turn the pulley (slip coupling loosened) until the notch in the edge comes just opposite the screw fitted between the belt sides. Tighten the screw.
- Dismount the belt pulleys to make it possible to tighten the other screws.
- Fit the belt drive and adjust the slip coupling.
- Put back the belt protection.

# 5 MAINTENANCE

## 5.1 General

***Note:***
*All warranty undertakings given by the supplier cease to apply if the customer attempts to rectify any faults on the machine during the warranty period.*

## 5.2 Daily:

- Blow the slide clean from flux and dust.

## 5.3 Every month:

- Check the tooth belt and replace as necessary.

  Note that the belt ***must*** be replaced at least every 5 years.
- **NOTE.** This is a safety requirement at vertical mounting position as the load of the slide will fall down in case of a belt rupture.

  When replacing the belt or the belt pulley the load must be secured. Read the pages 98 – 99.

## 5.4 Every year

- Make sure the slip coupling is adjusted to the right slipping torque. See the pages 98 – 99.

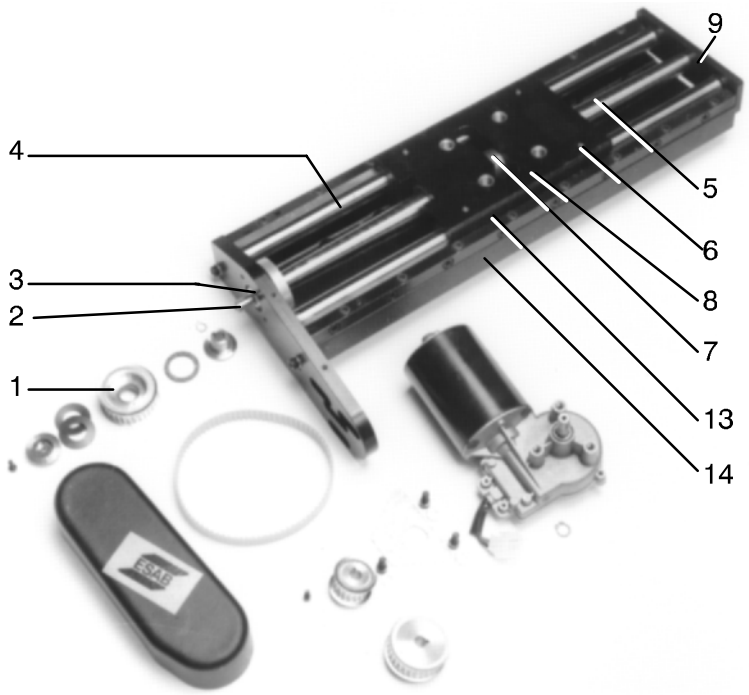
## 5.5 As necessary

- Lubricate the telescope bellows with molybdendisulfide.
- Lubrication of the slip coupling.
- Lubricate the cup springs and the smallest inside diameter of the pulley using molybdendisulfide.
  **NB**. The lubricant must not get into contact with the friction surfaces of the pulley, the friction ring or the friction stud.
- Replace wear parts of the slip coupling.
- Replace the friction ring and/or the cup spring.
- Lubricate according to above recommendations.
- Adjust the friction moment (see also Operation on page 99).
- Tighten the centre screw of the slip coupling 3/4 turn after the position where the cup springs start working.

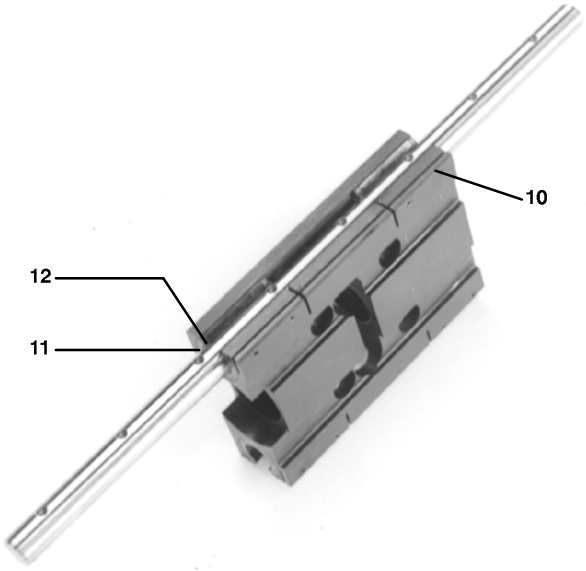
## 5.6 In case of a long standstill

- Lubricate the unprotected surfaces of the steel shafts to avoid corrosion.
- **NB.** Molybdendisulfide must not be used.
- Anti-corrosives in spray packing is recommended to make it possible to reach even hidden surfaces.

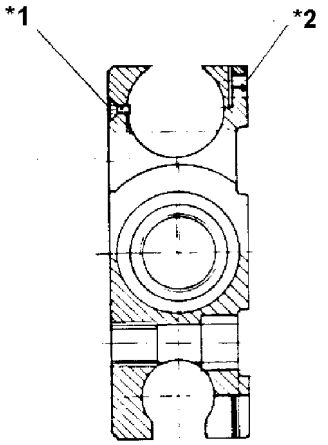
## 5.7 Replacing the linear bearings




The linear bearings of the slide consist of two steel shafts (4) and four ball bushings (12).



**Replacing the ball bushings (12)**



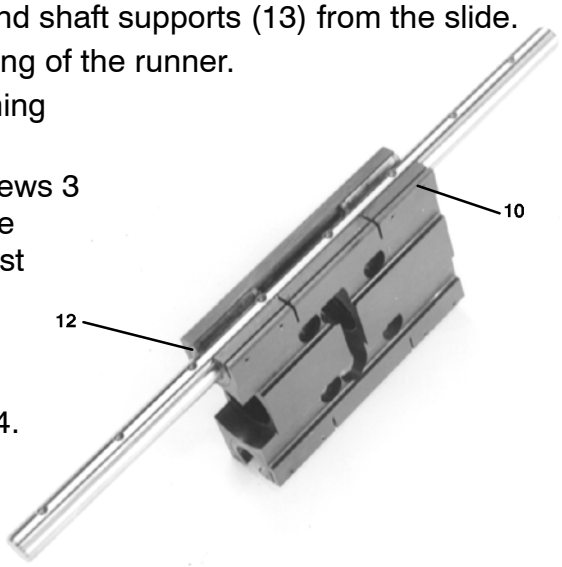

***1** Locking screw*
***2** Adjusting screw*

- Dismount the belt pulley (1), the wedge (2), the ball bearing nut with locking washer (3) and the end washer (9) from the ball screw.
- Draw out the runner (6) with ball screw (5) from the steering steel shafts (4).
- Undo the adjusting screws (10) and the locking screws (8), see fig beside.
- Press the ball bushing (12) out of the runner (6).
- Fasten the locking screws (8), see fig beside.
- Mount the new ball bushing (12) by compressing it till it fits into the locking screw.
- Make sure the locking screw (8) goes into the guiding hole of the ball bushing (12).

Replace the other ball bushing in the same way.

**Replacing the steel shafts (4)**

- Dismount the defective steel shafts (4) and shaft supports (13) from the slide.
- Lead the new shaft (4) into the ball bushing of the runner.
- Lessen the play in the bushing by tightening the adjusting screws (10) 1 and 2.
- Apply some glue (Loctite 242) on the screws 3 and 4 and tighten them by turns the same amount till the play in the bushing only just disappears.
- Undo screws 1 and 2.
- Apply some glue on screws 1 and 2 and tighten them the same way as for 3 and 4.
- Mark the steel shaft (4) in order that it be fitted on the right side of the runner (6).




- Draw the steel shaft (4) out of the ball bushings (12).

Fit the other steel shaft in the same way.

- Screw the steel shafts on their respective supports (13) (in acc. with the markings).
- Apply some glue on the screws (Loctite 242) and tighten, torque 10 Nm.
- Grease the ball bushings (12) using ball bearing grease.
- Lead the steel shafts (4) with their correctly fitted supports (13) into their respective ball bushings (12).
- Fit the ball screw (5) in its bearing.
- Screw the shaft supports (13) onto the slide profile (14) in a way that the ball screw (5) is parallel to the steel shafts (4) and that the runner (6) and ball screw (5) run over the full setting length of the slide without seizing.
- Apply some glue on the screws (Loctite 242) and tighten, torque 10 Nm.

Fit the other parts.

**Replacing the ball screw with nut**

- Dismount the belt pulley (1), the wedge (2), the ball bearing nut with locking washer (3) and the end washer (9) from the ball screw.
- Draw the runner (6) with ball screw (5) out of the steering.
- Screw the ball nut (7) out of the runner (6) using a pair of pliers.
- Apply some glue (Loctite 222) on the thread of the new ball nut and screw the ball nut (7) (ball screw fitted) into the runner (6).
- Fit the runner (6) with the ball screw into the steering and bearing.

Fit the remaining parts.

# 6 ORDERING OF SPARE PARTS

Spare parts are ordered through your nearest ESAB representative, see back cover. When ordering spare parts, please state machine type and number as well as designation and spare part number as shown in the spare parts list on page 125.
This will simplify dispatch and ensure you get the right part.

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