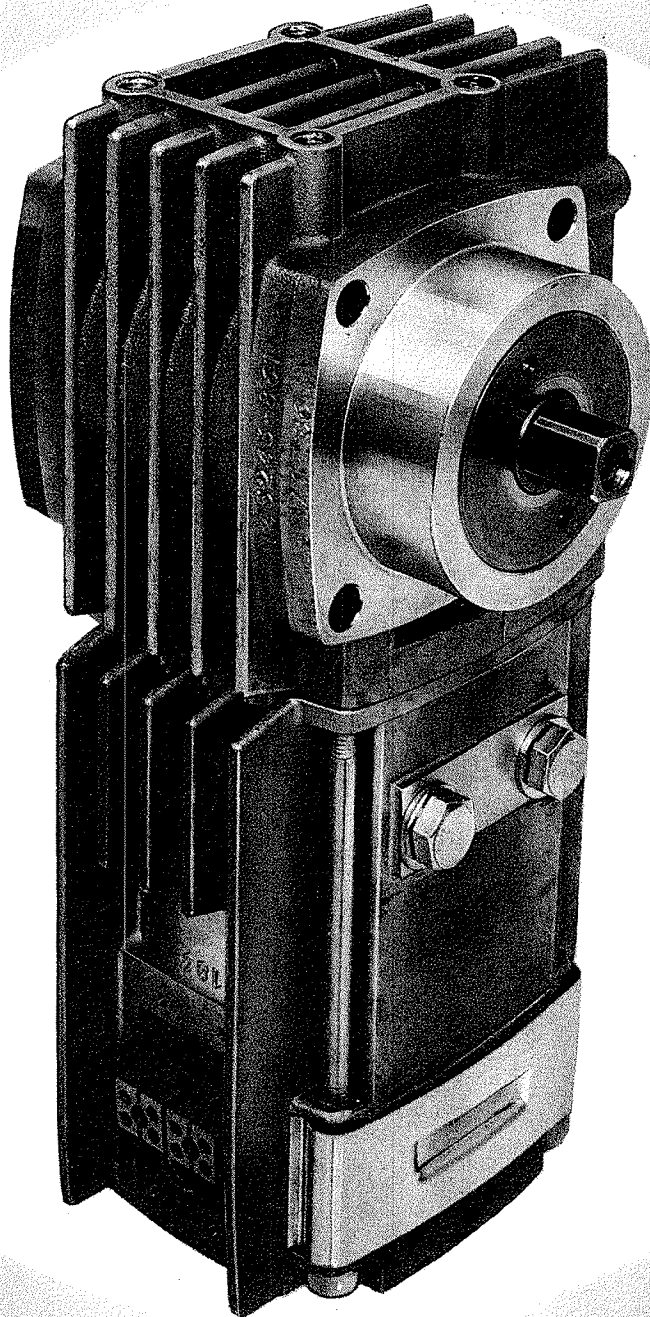


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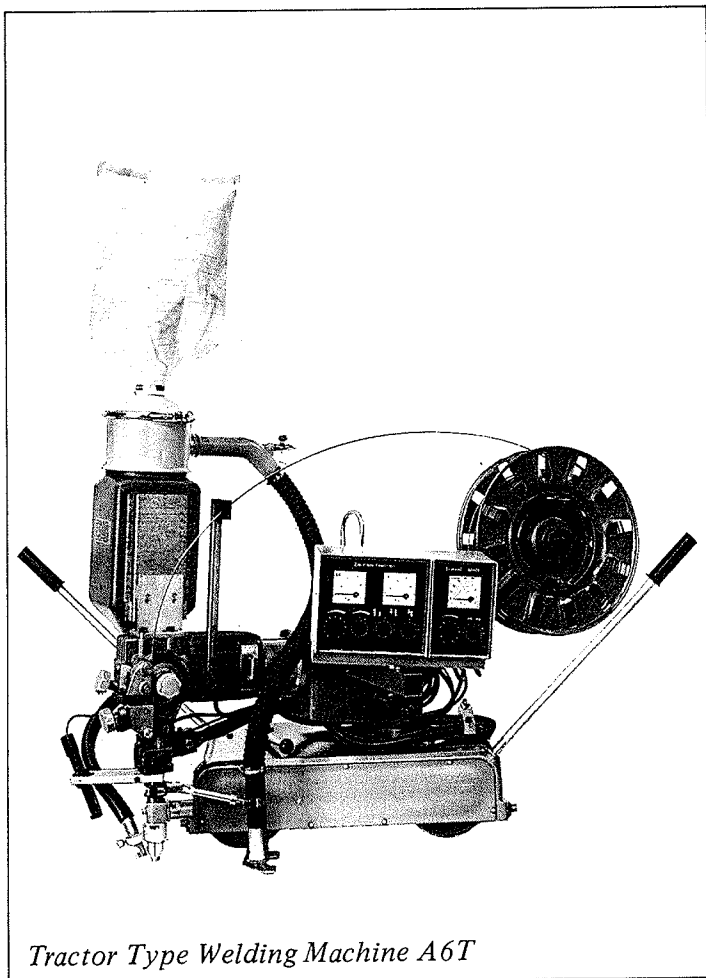
# Motor and Gearbox A6-VEC

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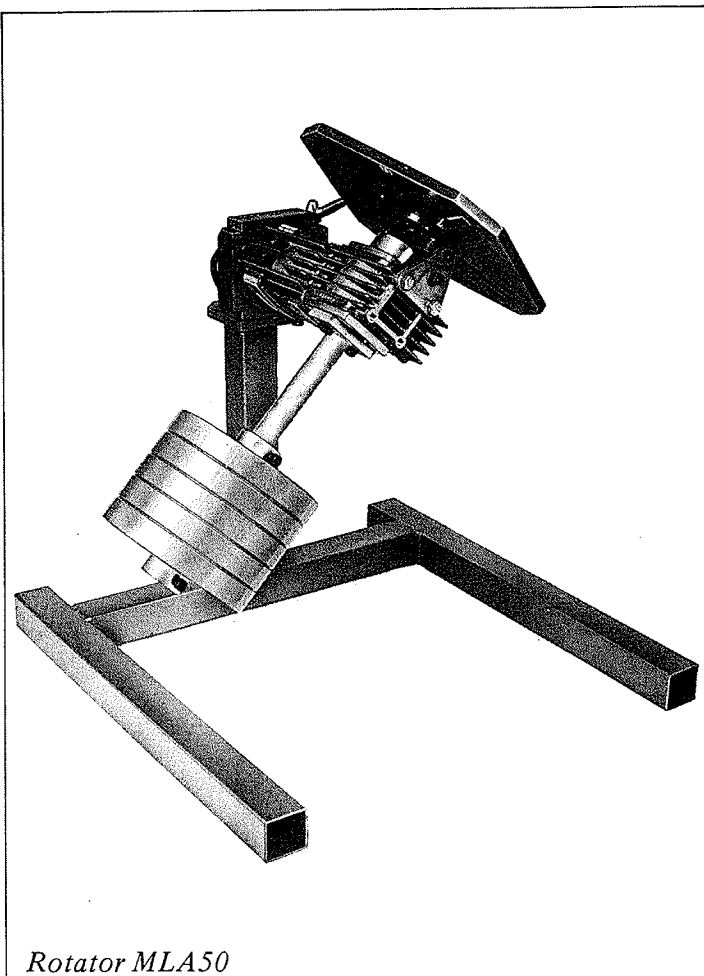
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*Tractor Type Welding Machine A6T*



*Rotator MLA50*

## General

A6-VEC consists of a separately excited d.c. motor with a combined toothed and worm gear.

The gearbox can be supplied with either a conical or square-ended drive shaft depending on the application. The drive shaft is made from hardened steel and is therefore very strong.

A6-VEC can be supplied with a drive shaft for right hand or left hand applications and is also available with a through shaft.

Four gearboxes are available having different gear ratios and there are five motors available having different maximum speeds. The maximum speed of the motor can be changed by changing the armature. The various gearboxes can be combined with the different armatures according to requirements. The A6-VEC body housing is a gamma silumin casting with integral cast fins to give good cooling.

Mounting the A6-VEC is simple since it can always be positioned to suit the

object. It can be mounted either vertically or horizontally, with the motor at the top or at the bottom. Figs. 2 and 5 show the threaded holes which can be used for mounting or for attaching small details to A6-VEC. If none of the holes are suitable, A6-VEC can be fixed by means of the ring flange immediately behind the drive shaft.

In the totally enclosed version, which has reduced power and torque, A6-VEC can be used even under extremely dusty conditions.

When combined with ESAB's PEF or PTF control boxes, precise speed adjustment is obtained. The required speed is set manually after which the control circuits keep the speed constant at the set value. The A6-VEC motor has a constant field voltage of 97 volts d.c. and a d.c. voltage of 75 volts max. on the armature. The latter voltage can be varied according to the speed required. For further information regarding gear ratios and armature types refer to the Technical Data.

## Applications

A6-VEC with a square drive shaft is used as an electrode feed motor in all standard ESAB A6 welding machines such as A6S, A6B, A6T, A6DT, A6DK, A6LBG, A6C, A6CG and A6PK.

A6-VEC with conical drive shaft is used as a travel motor in A6C.

A6-VEC is also used in the following ESAB positioners

- a. Column and Boom MKE
- b. Roller Bed MRB 3
- c. Roller Bed MRB 5/20
- d. Rotator MLA 50
- e. Rotator MLA 500

Since A6-VEC is available with a wide range of speeds, gear ratios and load capacities it is also very suitable for use in other applications of a similar nature.

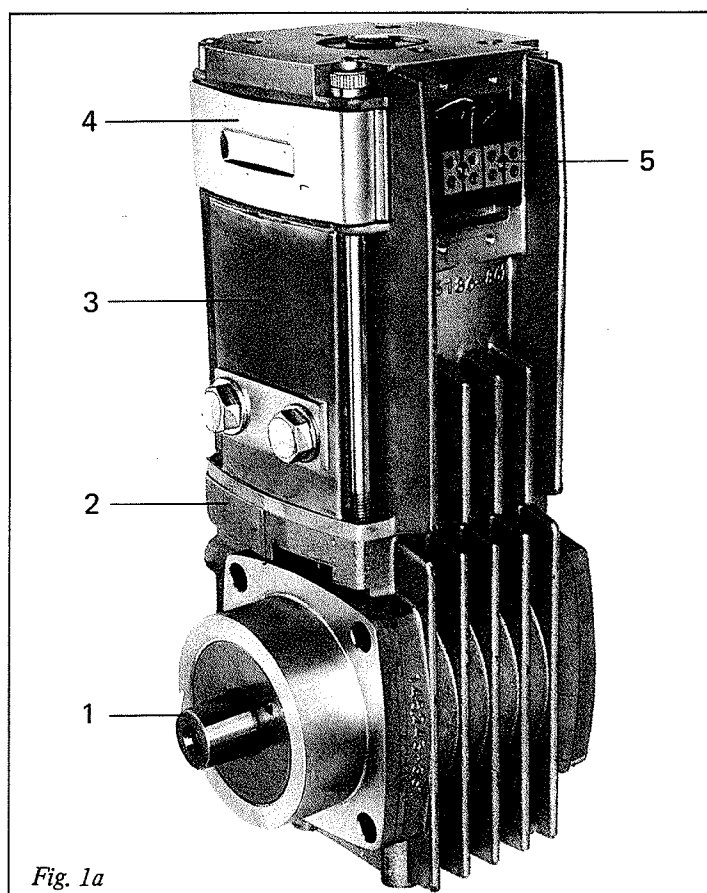


Fig. 1a

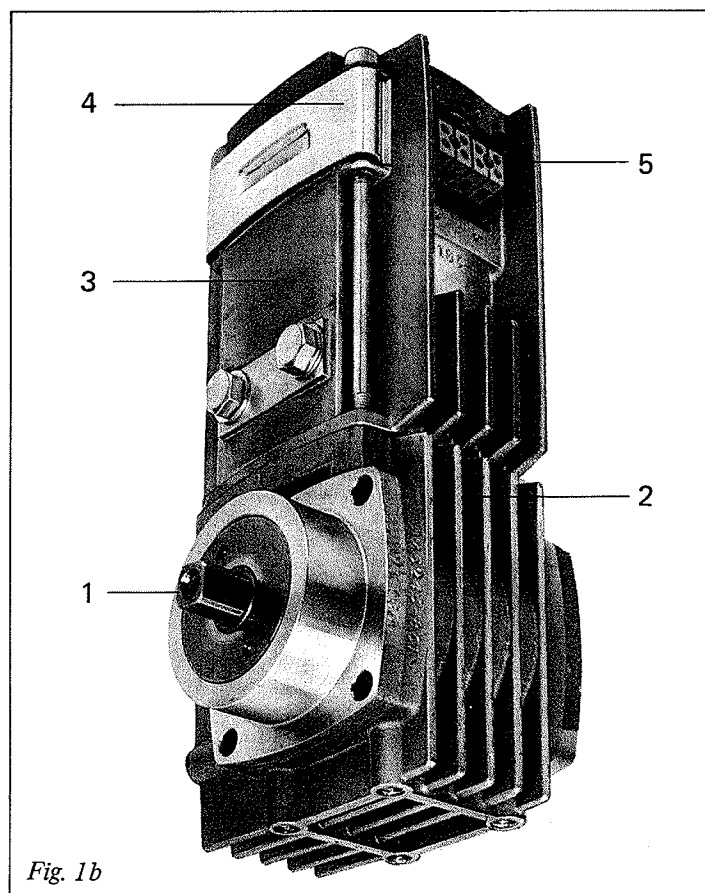


Fig. 1b

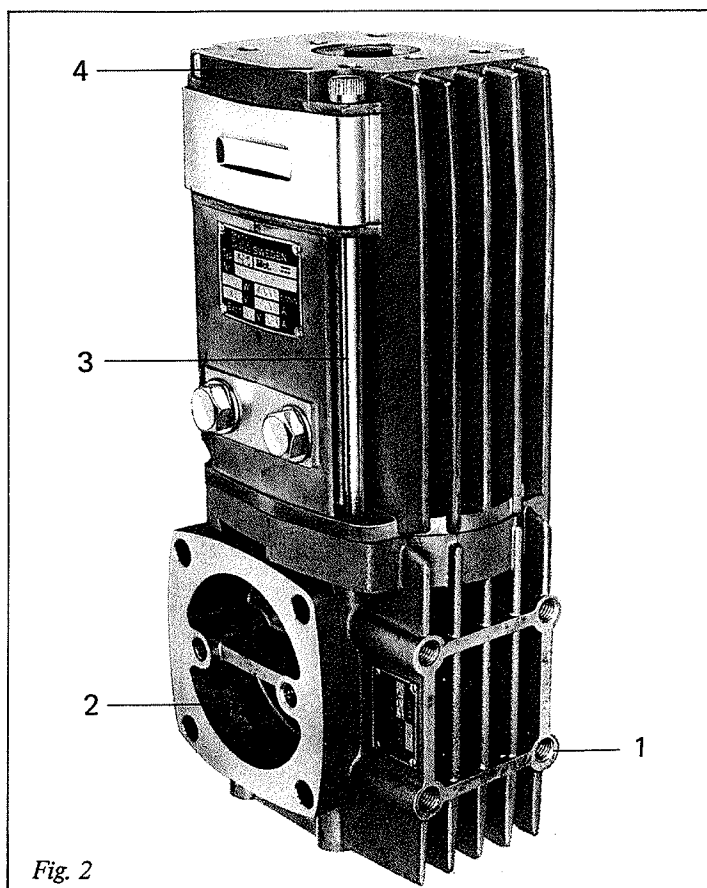


Fig. 2

**Figs. 1a and 1b**

1. Drive shaft with conical end: also available with a square end
2. Gearbox housing
3. Motor housing
4. Protective cover, one on each side. The cover is removed when changing the carbon brushes
5. Terminal block for armature and field voltage cables.

**Fig. 2**

1. Four threaded holes for M10 bolts. The holes are threaded to a depth of 20 mm (see also under Technical Data).
2. Blank flange with two threaded holes for M10 bolts. The holes are threaded to a depth of 20 mm (see also under Technical Data).
3. Four bolts for fastening the motor housing to the gearbox housing.
4. Four threaded holes for M10 bolts. The holes are threaded to a depth of 20 mm.

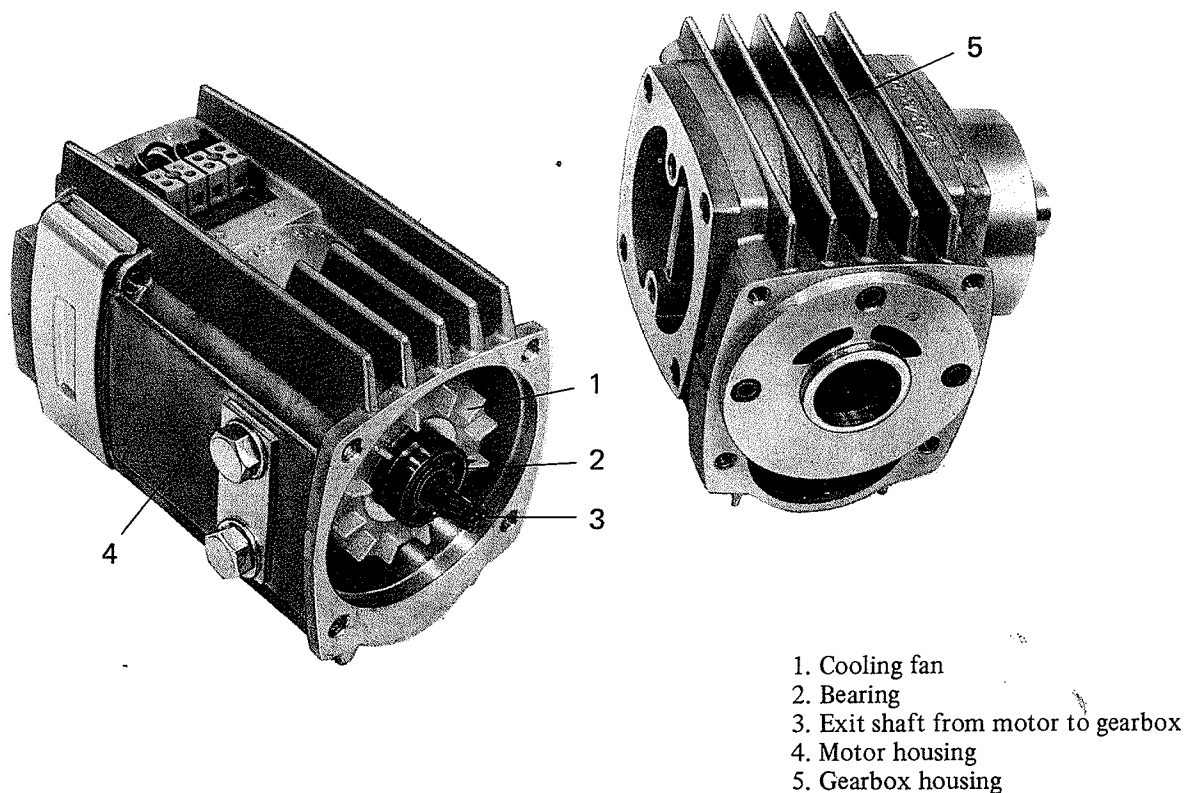


Fig. 3

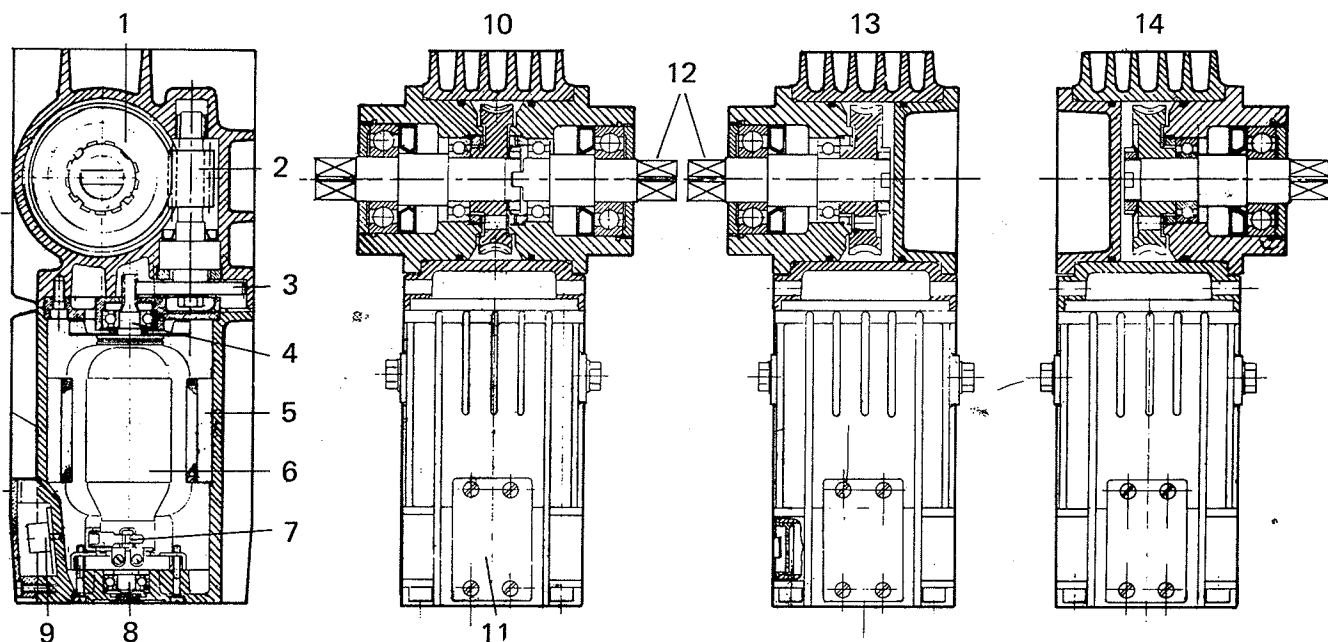


Fig. 4

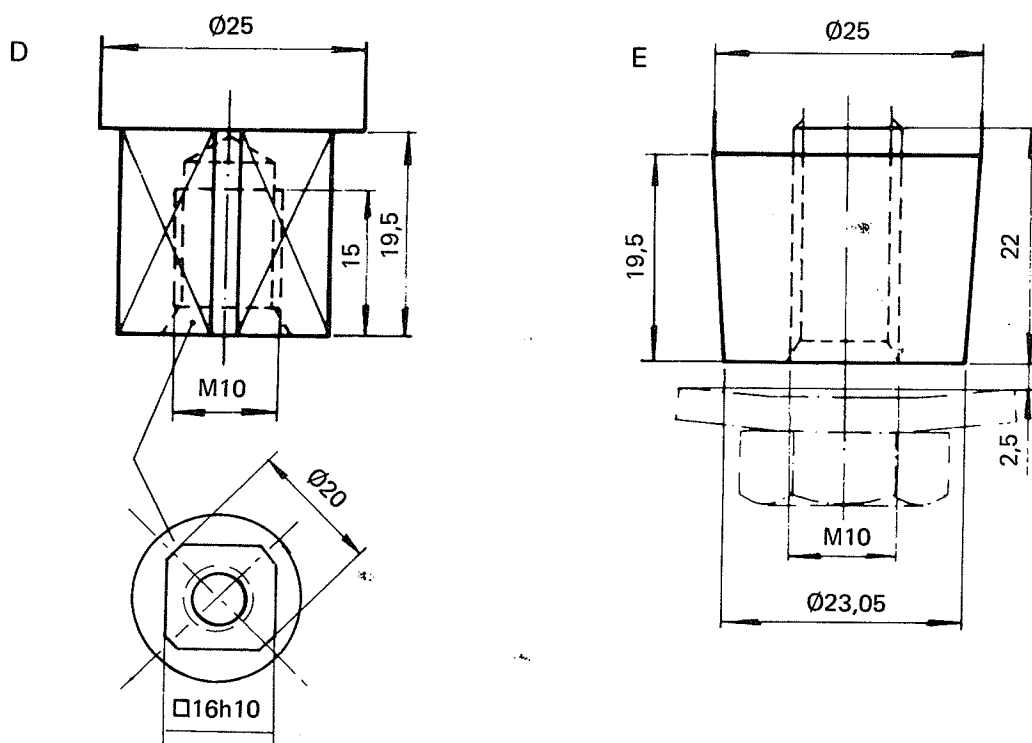
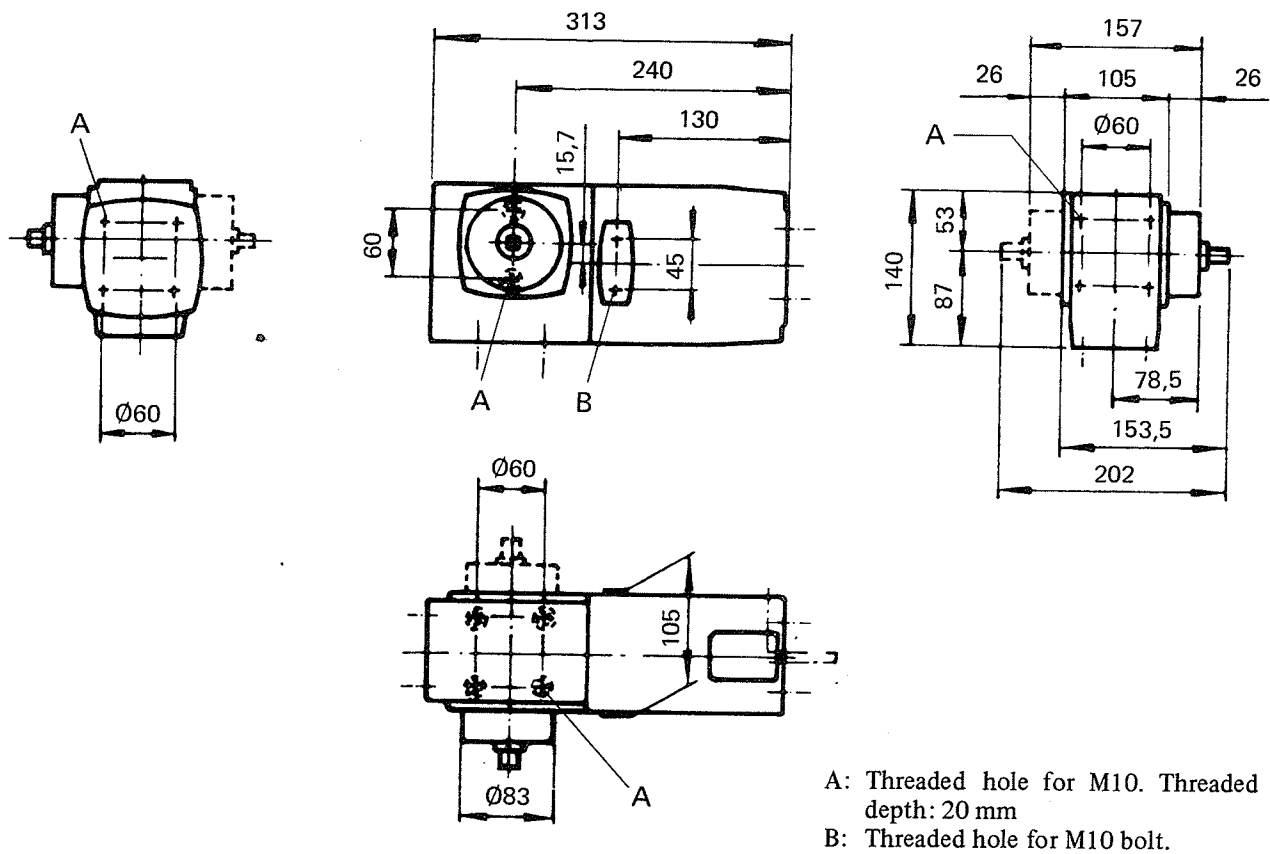


Fig. 6

Gear Ratio	Motors						Gearboxes		Adjustment range for drive shaft speed with the ESAB thyristor control full wave rectification rpm
	Rated speed with different armatures and 75 V armature voltage	Power output W	Armature V A*		Field V A		Maximum permitted torque on the drive shaft på utgående axeltapp kpm		
	Speed rpm						Open version	Totally cenclosed version	
672:1	2000	65	75	1,2	97	0,16	5	5,0	1,0 – 3,0
	3000	97		1,6			5	5,0	0,4 – 4,5
	4000	110		1,9			5	5,0	0,2 – 6
	6000	145		2,6			5	5,0	0,5 – 9
	8000	170		3,4			5	A	0,3 – 12
312:1	2000	65	75	1,2	97	0,16	5,6	3,8	2,1 – 6,4
	3000	97		1,6			5,5	3,4	0,8 – 9,6
	4000	110		1,9			5	3,2	0,4 – 12,8
	6000	145		2,6			4,2	2,5	1,0 – 19,2
	8000	170		3,4			3,6	A	0,6 – 25,7
156:1	2000	65	75	1,2	97	0,16	3,6	2,5	4,3 – 12,8
	3000	97		1,6			3,5	2,3	1,5 – 19,2
	4000	110		1,9			3,2	2,0	0,9 – 25,6
	6000	145		2,6			2,7	1,5	2,1 – 38,4
	8000	170		3,4			2,2	A	1,3 – 51,3
74:1	2000	65	75	1,2	97	0,16	2,6	1,8	9,0 – 27
	3000	97		1,6			2,5	1,7	3,4 – 40,5
	4000	110		1,9			2,3	1,5	1,8 – 54
	6000	145		2,6			2,0	1,1	4,5 – 81
	8000	170		3,4			1,6	A	2,7 – 108

Fig. 7

\*) In the current values quoted repeated starts have not been taken into account.

## Technical data

For the armature variant 8000 rpm the torque of the totally enclosed version is zero at the rated speed during continuous operation.

If on the other hand the operating speed is less than the rated speed the resulting torque will be as follows.

Operating speed rpm	Torque (kpm) at different gear ratios			
	672:1	312:1	156:1	74:1
2.000	4,0	2,9	1,8	1,3
4.000	3,5	2,5	1,5	1,1
6.000	2,5	1,8	1,1	0,8
8.000	0	0	0	0

# BEARING LIFE AS A FUNCTION OF THE LOAD F ON THE DRIVE SHAFT

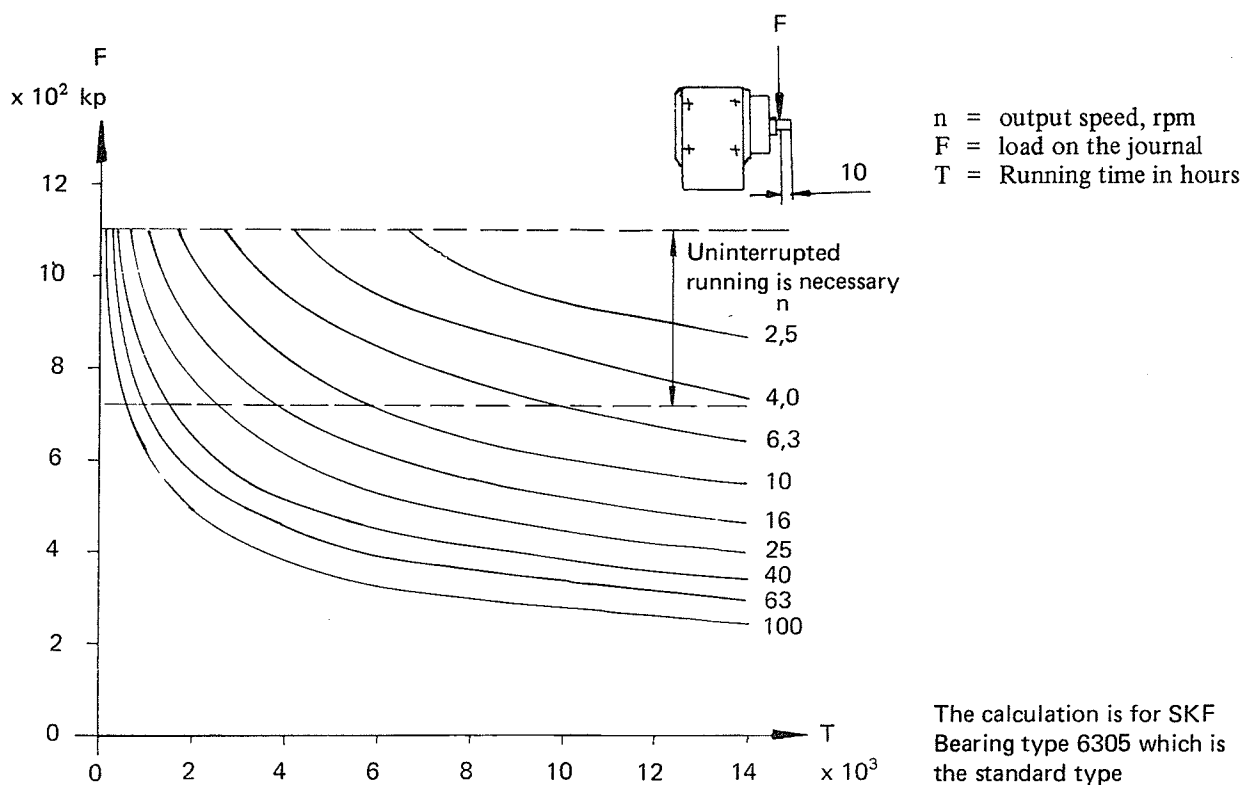


Fig. 8

## Technical Data

1. Voltage range for stable operation  
8.5–75 V
2. Speed range for stable operation  
500 rpm up to rated speed
3. The direction of rotation of the motor depends on the polarity  
Polarity is changed on the armature (only on the armature)
4. Bearing support on the drive shaft:  
 Standard type  
 Dynamic bearing capacity  
 SKF Bearing type 6305  
 1 760 kg  
 Special type according to customers requirements, larger capacity  
 SKF Spherical roller bearing Type 21.305  
 Dynamic bearing capacity  
 3 350 kg  
 NOTE If a special bearing is required it must be precisely specified on the order
5. Definition of right hand and left hand drive shaft.  
See figure 4  
 When the terminal block for the supply cables points upwards the worm gear is on the underside. Looking in the direction from gearbox to motor the right hand type has the drive shaft on the right and the left hand type has the drive shaft on the left.
6. Weight  
9 kg



1. **Every 6 months** check the condition of the carbon brushes and replace when the length is less than 12 mm.

When the unit is working in a dusty corrosive atmosphere check each month that the carbon brushes are not binding in their holders.

2. **Every 12 months** check the grease in the gearbox and the oil level in the worm gear.







Greasing	Lubricant	Note
Gearbox	Grease: Esso Beacon 2	
Worm gear	Oil 0,1 litre ESSO EP 6	Accessible through a plug in the gearbox

The sections are divided from each other by means of a sealing ring.

If this ring is damaged the relatively thin oil from the worm gear can leak into the cog wheel section and eventually get into the motor.



As soon as this is noticed change the sealing ring and refill with new grease and oil.

When ordering A6-VEC please use the part numbers given below:

Gear Ratios	Motor <sup>1)</sup> speed at 75 V rpm	Gearbox max. Output speed rpm	Gearbox <sup>2)</sup> torque mean value kpm	Drive Shafts <sup>3)</sup>							
				 L 145 063	 R 145 063	 L + R 145 063	 L 147 018	 R 147 018	 L + R 147 018		
672:1	2000	3,0	5	900	890	880	900	890	880		
	3000	4,5	5								
	4000	6,0	5	901	891	881	901	891	881		
	6000	9,0	5								
	8000	12,0	5	902	892	882	902	892	882		
312:1	2000	6,4	4	903	893	883	903	893	883		
	3000	9,5	4				908	898			
	4000	12,8	4	904	894	884	904	894	884		
	6000	19,2	4								
	8000	25,7	4	905	895	885	905	895	885		
156:1	2000	12,8	3								
	3000	19,2	3					911			
	4000	25,6	3				909	899			
	6000	38,4	3								
	8000	51,3	3	906	896	886	905	896	886		
74:1	2000	27,0	2				915	910			
	3000	40,5	2								
	4000	54,0	2								
	6000	81,0	2								
	8000	108	2	907	897	887	907	897	887		

1) All motors have a field voltage of 97 V. For details of the adjustment range and torque of the motor refer to the technical description.

2) The torque is reduced for a totally enclosed motor.

3)  = square end  = conical end R = right hand L = left hand.

4) With strengthened bearing.

Example: 145 063 – 895 = Gear ratio 312:1, motor 8000 rpm at 75 V Square drive shaft, right hand type.

**ESAB**

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