

SPARE PARTS LIST

Brottby Variator

Types RPF-1, RPF-2, RPF-2 S, RPF-1V, RPF-2V, RPF-2VS

Operation

The power transmission from the electric motor to the output shaft of the variator is made by rollers which are hardened and ground. The rollers which are running in an oil-bath transmit power from a toroidal driving disc to a driven disc. The pressure between rollers and discs is adjusted by a clutch. The pressure is proportional to the load applied on the output shaft of the variator. When using high-speed variators max. motor power can therefore be transmitted at all speeds. Speed ratio 6:1.

The variator unit has a built-in planetary gearing and a constant torque can be transmitted through the whole speed range.

The planetary gearing produces low output speeds and large variation. The internal gear is journalled in the variator housing and it is driven by the variator. The sun gear is driven by the motor at a constant speed. Through variation of the speed of the internal gear the speed of the output shaft is also varied. When the peripheral speed of the internal gear and that of the sun gear correspond, the speed of the output shaft is zero. The major part of the motor power is transmitted directly through the sun gear. In this way good efficiency and small dimensions are

achieved. The efficiency is calculated as 85–90%. The speed can be accurately adjusted on a scale.

The output speed on the variator model RPF is infinitely variable between zero and the maximum speed. For each model a max. torque is stated which normally must not be exceeded, in order to save the variator from abnormally heavy wear.

The relationship between speed, torque and power is given by the equation.

$$M_v = 716,2 \cdot \frac{N}{n}$$

where

n = speed, rpm

N = power, hp

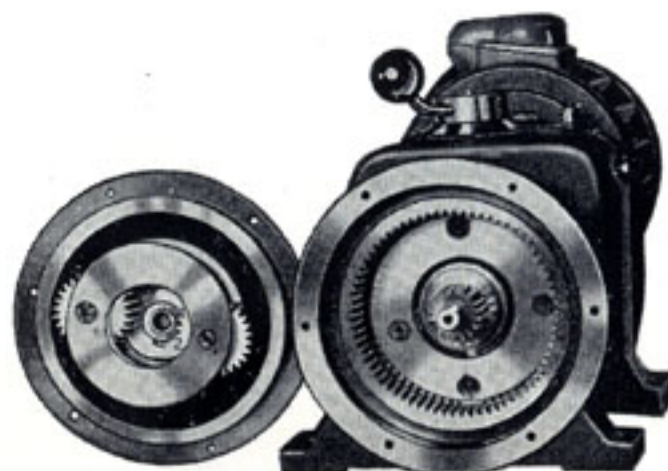
M_v = torque, kp.m.

Ex. When using RPF-4, 0–110 rpm and 2 hp the max. torque allowed is 20 kp.m. Max motor power can

accordingly be transmitted at $\frac{716,2 \cdot 2}{20} = 71.6$ rpm

and speeds above.

Within the range 0–71.6 rpm the electric motor is stronger than the variator. The transmitted power is following a linear curve from 2 hp at 71.6 rpm to 0 hp at 0 rpm.



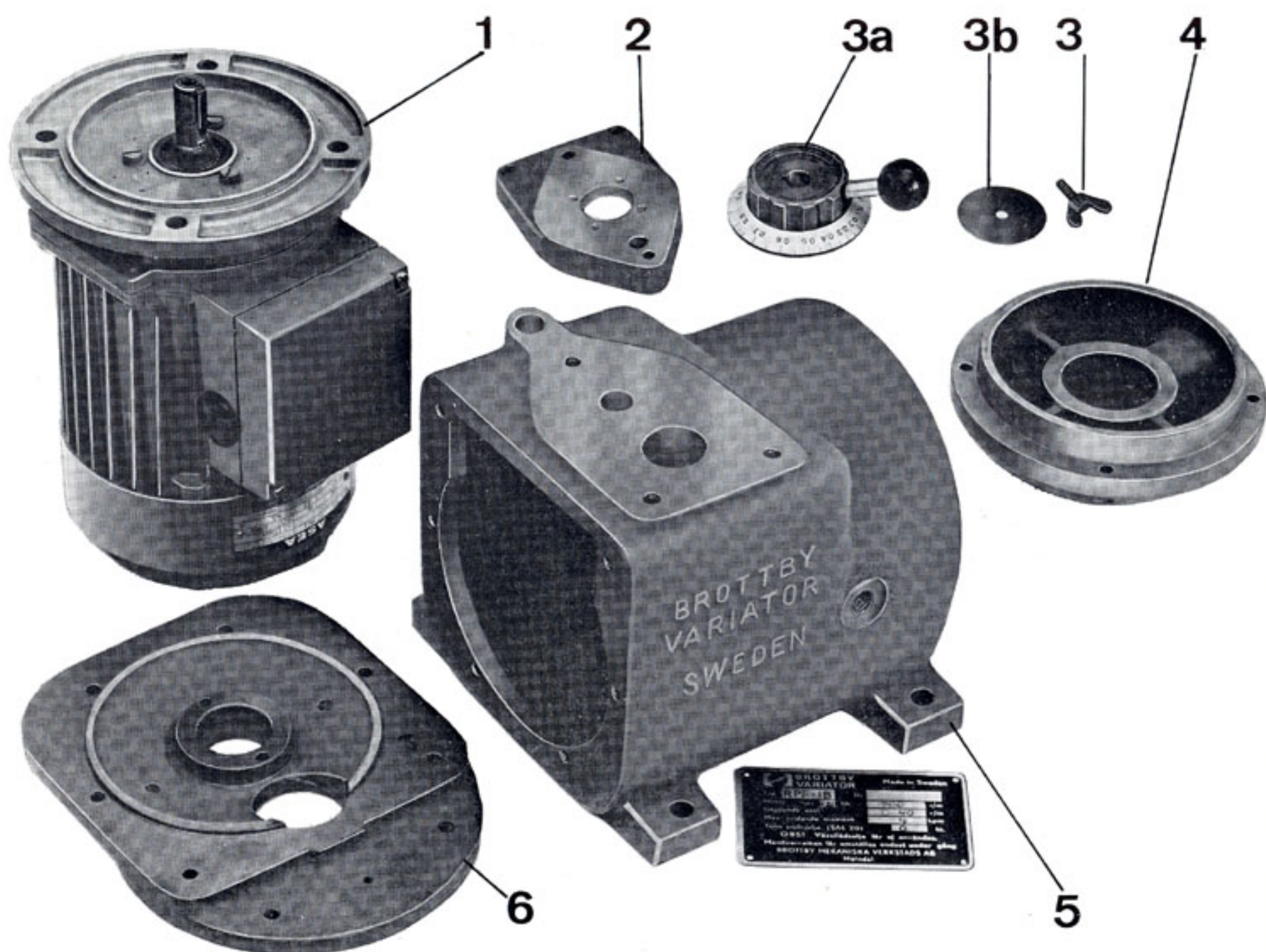


Figure	Symbol	Drawing No.	Number	Price
1	Electric motor	with shaft seal	1	
2	Control cover	4277	1	
3a	Control knob	4314	1	
3b	Spring washer		1	
3	Wing screw		1	
4	End piece	4249—A	1	
5	Housing	4267—B	1	
6	Motor flange	4265	1	

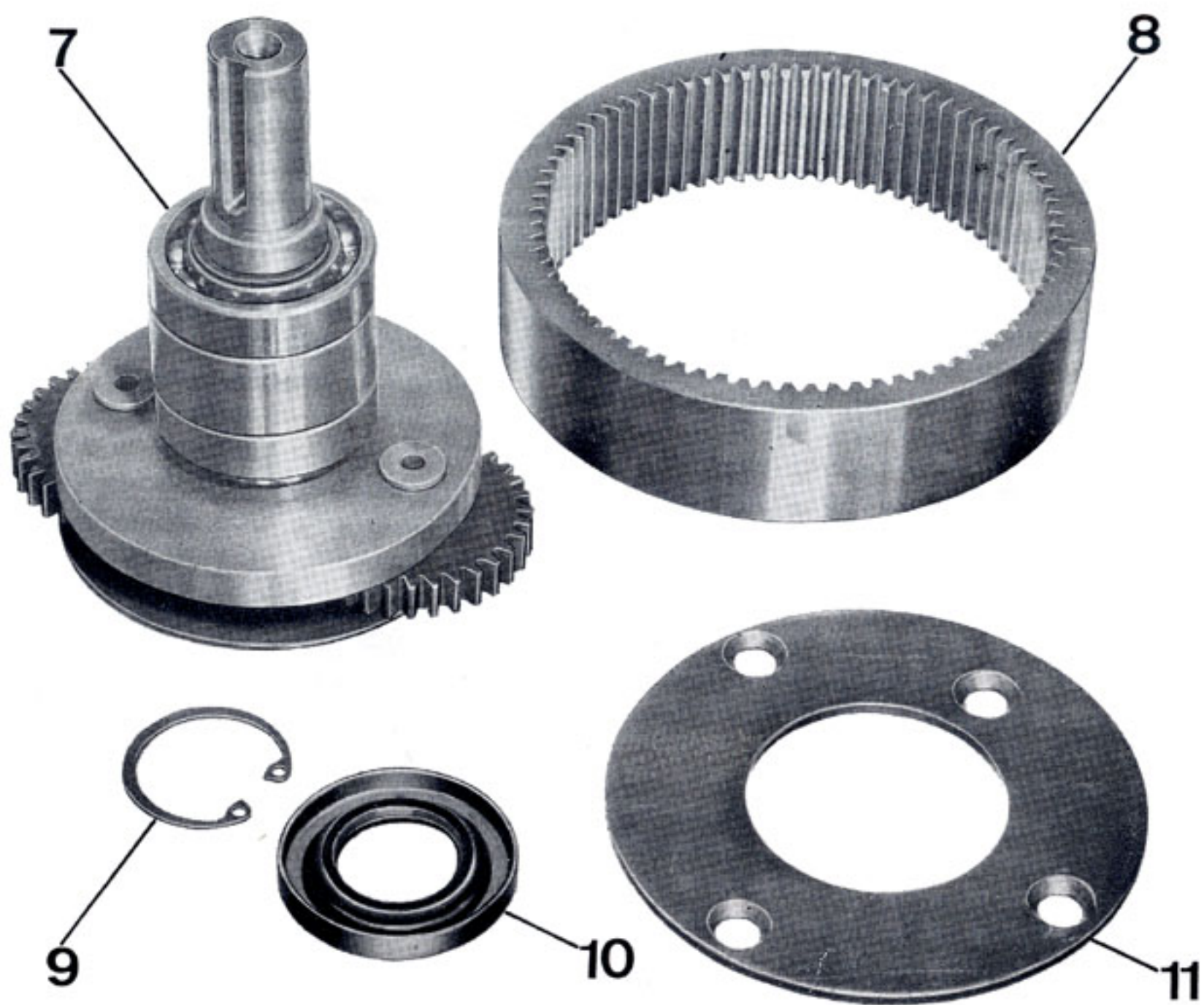


Figure	Symbol	Drawing No.	Number	Price
7	Output shaft unit		1	
8	Gear ring, 76 teeth	4255	1	
9	Snap ring	32 I	1	
10	Seal ring	25×47×7	1	
11	Support plate	2919—14	1	

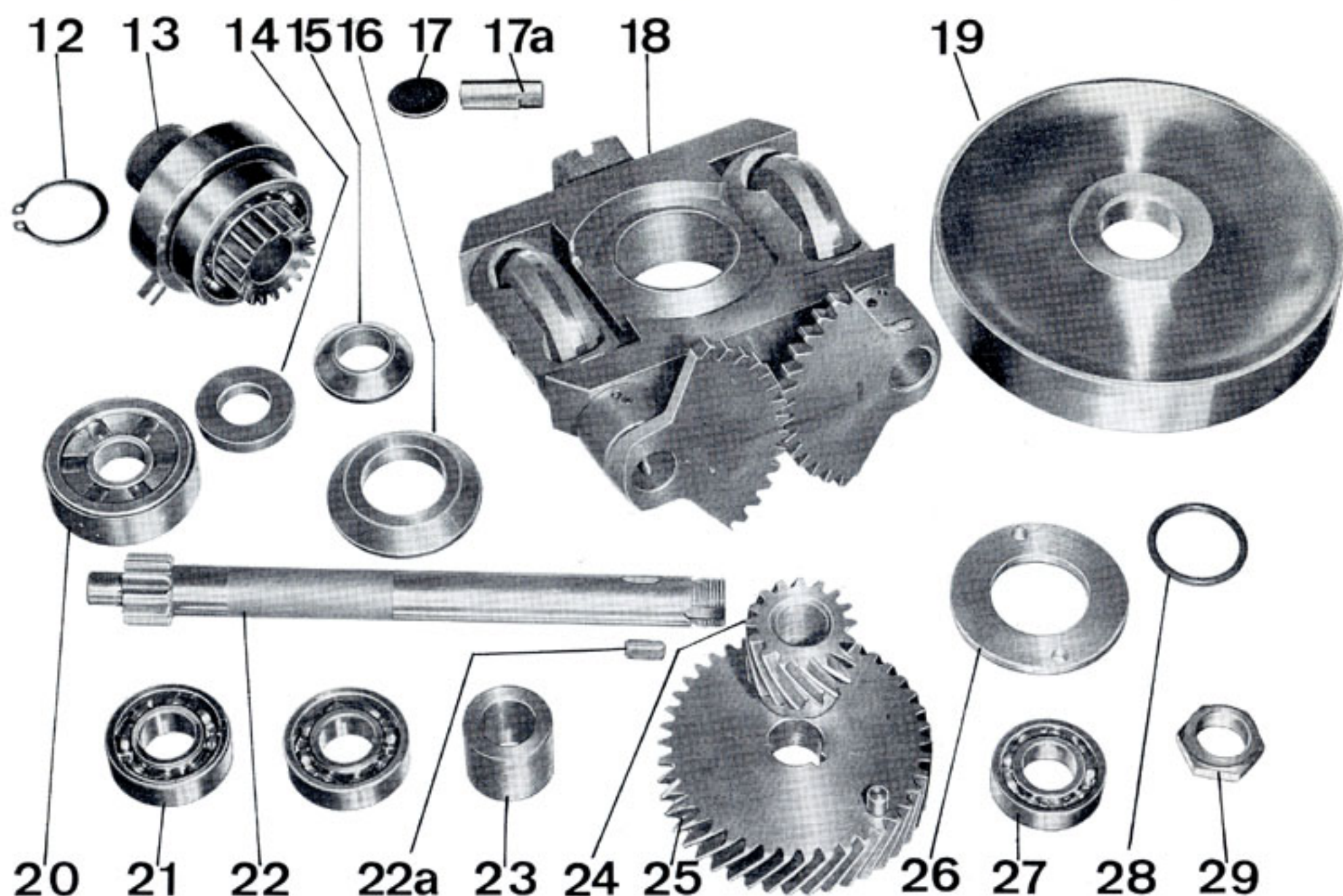


Figure	Symbol	Drawing No.	Number	Price
12	Snap ring	25A	1	
13	Gear set		1	
14	Thrust bearing plate, even	3287C—4	1	
15	Thrust bearing plate, dished	3287C—2	1	
16	Stop ring	4247—1	1	
17	Washer	4296—3	1	
17a	Peg	4296—1	1	
18	Roller set holder		1	
19	Disc	3307	2	
20	Thrust bearing	3287	1	
21	Ball bearing	6202	2	
22	Sun shaft, 12 teeth	4275—1	1	
22a	Key	4 × 12	1	
23	Spacer	4275—5	1	
24	Motor pinion	4243—2	1	
25	Input gear	4274	1	
26	Spring tension plate	4275—4	1	
27	Ball bearing	6002	1	
28	Packing ring	24,2 × 3	1	
29	Sun shaft nut	4275—3	1	



Figure	Symbol	Drawing No.	Number	Price
30	Sleeve, short	2919—8	1	
31	Sleeve, long	2919—7	2	
32	Double wheel pin	2919—6	4	
33	Needle holder	K10×13×13F	2	
33a	Spacer	2919—11	4	
34	Oil plug	R ¹ / ₄ "	3	
35	Compression spring	4243—4	9	
36	Seal ring	R ¹ / ₈ "	2	
37	Air screw	M6	1	
38	Oil plug	R ¹ / ₈ "	2	
39	Screw	F6SM6×12	4	
40	Intermediate gear, 32 teeth	4254—1	1	
41	Double gear, 14/32 teeth	4254—2	1	
42	Control flange	4314—2	1	
43	Control coupling	4279—B	1	
43a	Screw	M5×12	1	
45	Seal ring	R ¹ / ₄ "	3	
47	Control toothed segment	4272	1	
48	Control pinion, 11 teeth	4639—1	1	
48a	Key	5×5	1	

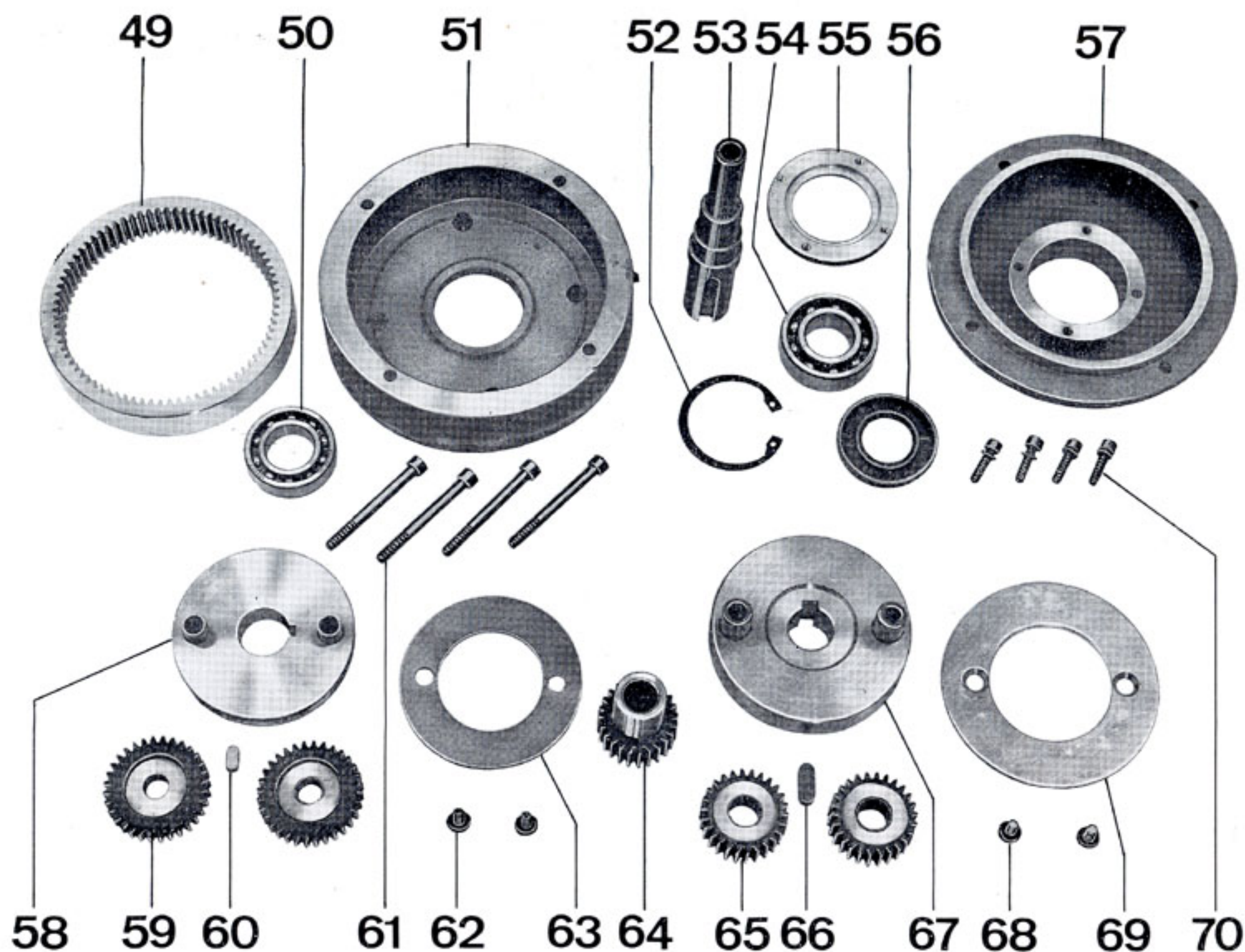
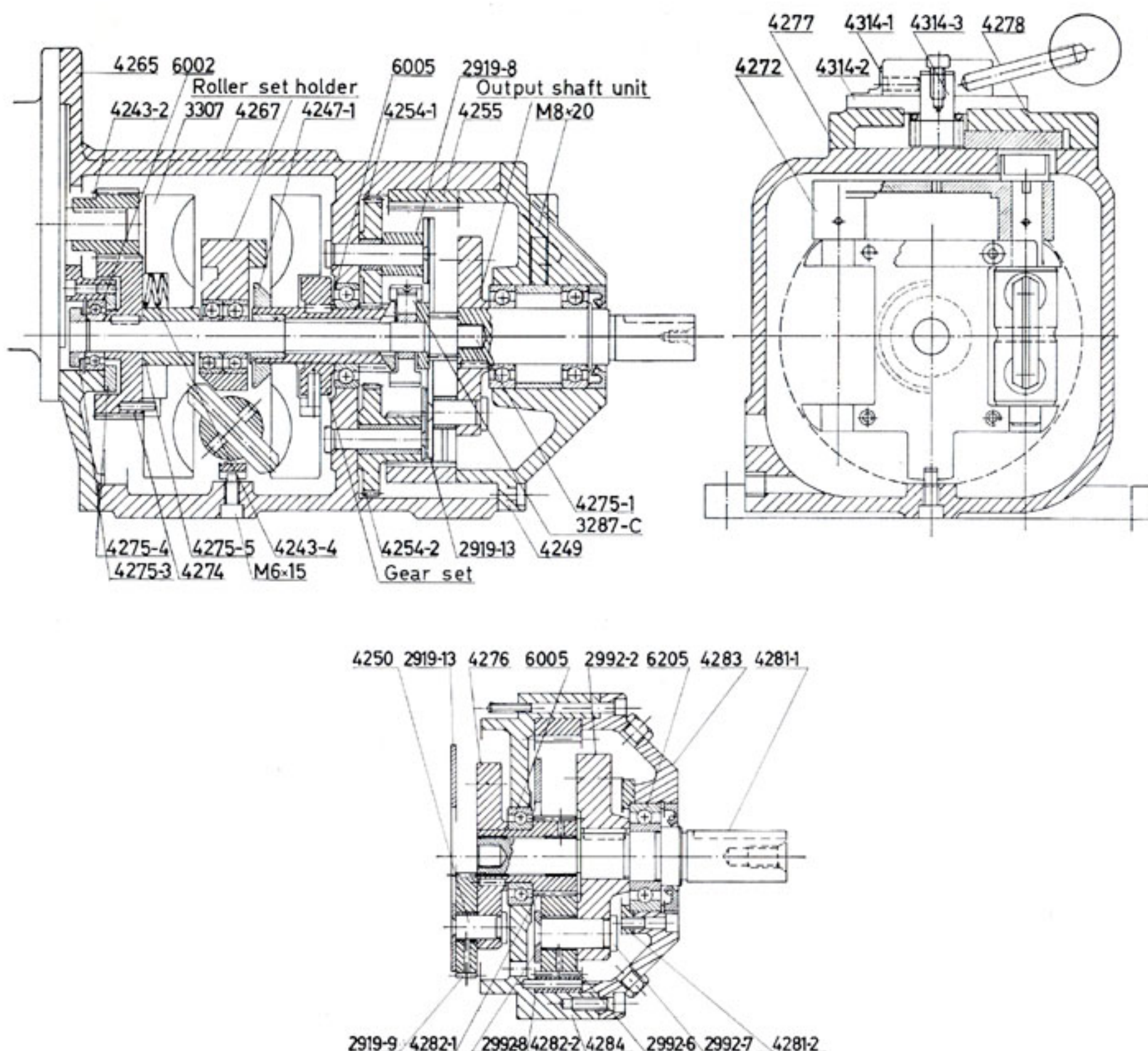
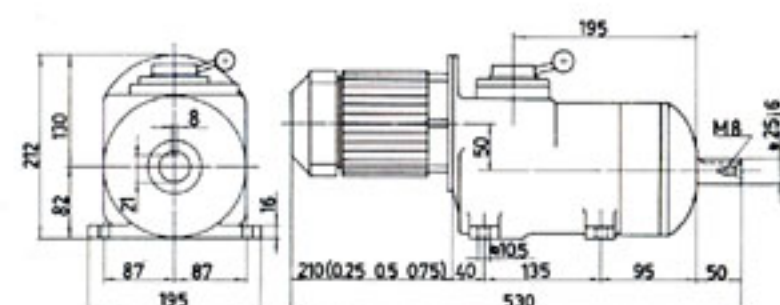
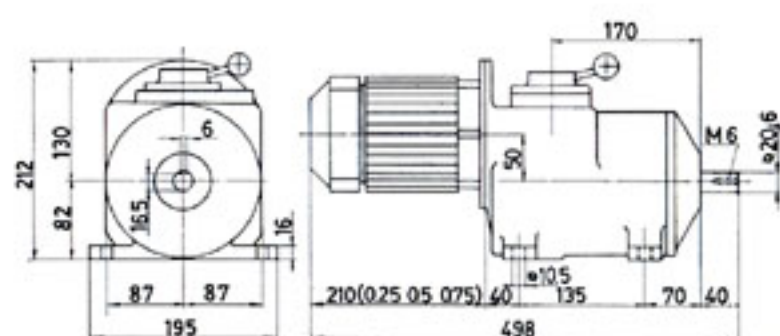


Figure	Symbol	Drawing No.	Number	Price
49	Gear ring	4282—2	1	
50	Ball bearing	6005	1	
51	Gear housing	4284	1	
52	Snap ring	52 I	1	
53	Output shaft	4281—1	1	
54	Ball bearing	6205	1	
55	Guide bearing washer	4281—2	1	
56	Seal ring	28×52×7	1	
57	End piece	4283	1	
58	Input planet hub	4276	1	
59	Planet wheel	2919—9	2	
60	Key	6×6×12	1	
61	Screw	M6×60	4	
62	Screw	F6S 6×12	2	
63	Planet wheel plate	2919—13	1	
64	Sun wheel	4282—1	1	
65	Output planet wheel	2992—6	2	
66	Key	8×7×20	1	
67	Output planet hub	2992—2	1	
68	Screw	F6S 6×12	2	
69	Output planet wheel plate	2992—8	1	
70	Screw	M5×25	4	



Type	RPF-1	RPF-2	RPF-2 S
Motor, kW	0,18	0,37	0,55
hp	0,25	0,5	0,75
rpm	900	1400	2800
Output shaft, rpm	0—40	0—60	0—120
Speed at max. motor power, rpm	—	—	—
Max. torque allowed, kp.m.	4	4	4
Weight, kgs	30	30	30

Type	RPF-1 V	RPF-2 V	RPF-2 VS
Motor, kW	0,18	0,37	0,55
hp	0,25	0,5	0,75
rpm	900	1400	2800
Output shaft, rpm	0—10	0—15	0—30
Speed at max. motor power, rpm	—	—	—
Max. torque allowed, kp.m.	15	15	15
Weight, kgs	35	35	35



PATENTS:

Sweden	157.572	Great Britain	759.773	France	1.143.915	USA	2.716.357
"	170.541	"	759.820	Switzerland	343.184	"	2.730.904
"	170.805	"	791.262	Germany	1.067.266		
"	174.542	"	810.276	"	1.119.076		

Mounting instructions

The "air-screw", which is painted red must first be removed so that overpressure in the variator is avoided, when reaching its operating temperature. If nothing else is mentioned, the variator should be mounted horizontally. Most of the models can, however, after minor adjustments which should be made with the manufacturer, be mounted in any position. The variator can either be connected directly to the driven machine or via a transmission. As a general rule the highest speed of the variator should correspond to that of the driven machine. If for example a model RPF-2 with a speed range of 0–60 rpm is chosen to drive a machine, which will be varied between 5 and 20 rpm a gearing 1:3 should be mounted after the variator, so that 60 rpm in the variator correspond to 20 rpm in the driven machine. That is to say, the variator should not be used as a reduction gear. If this happens there will be reduced control, and at the same time the life of the variator will be shortened. The models with planetary gearing can in such a case not transmit the max. power of the motor. When there is a risk of overloading, a shear pin, or other torque-limiting device, must be mounted into the transmission after the variator.

If the machine is frequently started and reversed, a safety clutch or a similar arrangement (mechanical reversing gear), should be mounted between the variator and the driven machine.

Pulleys, chain wheels and clutches should not have a closer fit than a push fit (hole according to tolerance H 7). They are not allowed to be knocked on, as impact will cause damage in the variator.

Maintenance instructions

Note! The control lever may only be adjusted during running.

Light lubrication oil SAE 20 is filled up to the level

plug on the side of the variator. (At delivery the variator is filled with oil. The oil level should however be checked before starting.)

Heavy oil, for example gearbox oil, must not be used. Bad oil produces resin and pitch. Too much oil will cause high temperature.

The variator has run for 10–15 hours on the bench. In the beginning the temperature can exceed the normal operating temperature (approx. 60° C). However, after running in the variator at different speeds the temperature will decrease.

If the dust and working conditions are normal (8 hours operating) an oil change should be made once or twice a year. However, when the variator is new, the first oil change should be made already after one month.

Guarantee

We guarantee the good function and the quality of the material during a period of one year and 8 hours' operation. During the time of guarantee we repair free of cost if you send the variator free of freight to our works. The guarantee has no reference to damages caused by careless treatment, such as overload. The guarantee does not comprise the electric motor. With the view to avoid interruptions of the service we suggest that you send your variator to our works for control every fourth or fifth year. The overhaul will be carried out at fixed, low prices. When ordering spare parts will you please indicate the type of the variator and the serial number.

Before the variator is returned to the manufacturer, the oil should be drained and all parts such as pulleys etc. which do not belong to the variator should be removed. The electric motor should, however, be returned together with the variator.

When ordering spare parts will you please indicate the type of the variator and the serial number.