RENOLD

HL Series

Lift Gear Packages

Issue 1

RENOLD
Gears

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Products:

Worm, Helical and Bevel-Helical Speed Reducer Gear Units

Geared Motor Units and Fully Engineered Drive Packages.

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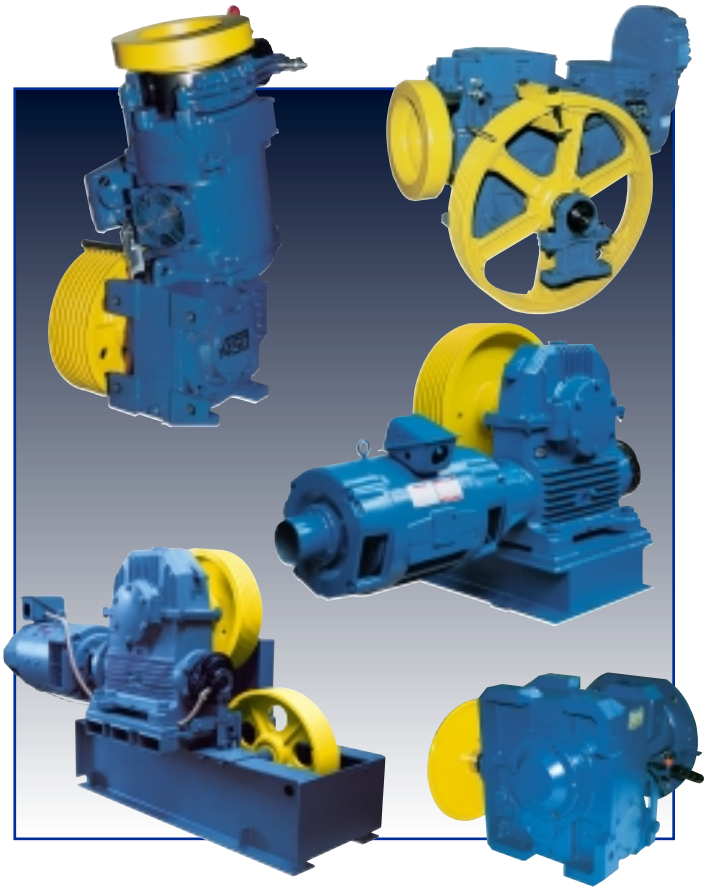
HL Series

For over 100 years RENOLD Gears have been leaders in the design and manufacture of innovative Power Transmission products and solutions and RENOLD Gears is once again breaking new ground with the launch of the revolutionary HL Series.



Renold Gears has developed considerable expertise in both engineered solutions for elevator applications and service and repair. Renold has the unique capability to not only offer a comprehensive standard range of elevator drive sets, but also application specific units including both adapted 'standards' and bespoke assemblies. Its unique design and manufacturing ability, together with full project management ensures every customer receives the most appropriate solution for their application needs. This could include, for example, extended output shafts, bespoke drives for basement drive applications, as well as small passenger and large goods lifts. RENOLD Gears also offers a hand winding solution for both geared and gearless machines.

Being UK-based, Renold Gears is ideally placed to provide service support to UK companies - with total back-up on Renold manufactured units and repairs schemes for any other gear unit, irrespective of age or original manufacturer. As well as factory-based repairs, Renold can provide a range of on-site and support services, which can include: on-site maintenance and in-situ repairs; surveys for planned maintenance, and technical design expertise for all applications and design requirements.

- Rims electron beam fused to centres for strength.
- 100 year gear design and capability.
- Gears and gear sets computer designed.
- BS EN ISO 9001:1994 approved.
- Unique Holroyd tooth form for high efficiency and product life.
- Centre distances up to 42.00" (1067mm).
- Application design support.

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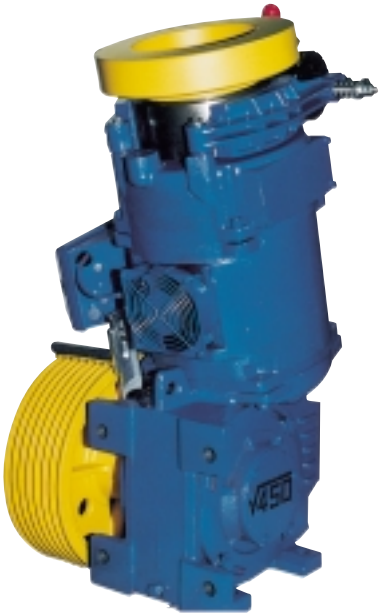
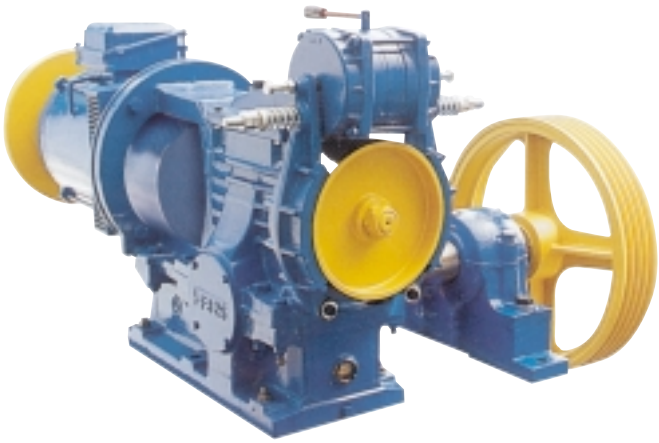
HL Series - Standard Solutions

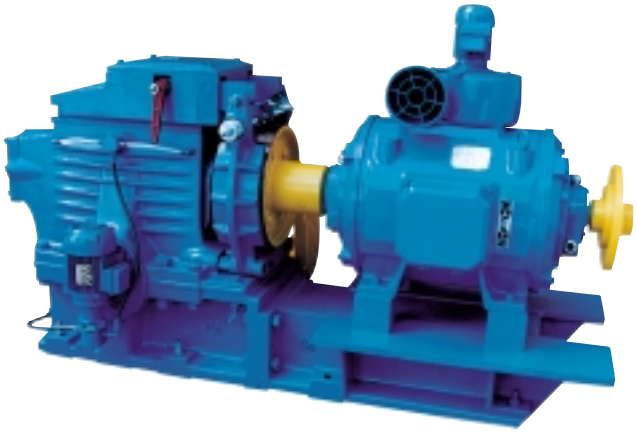


Compact Drive Overhung

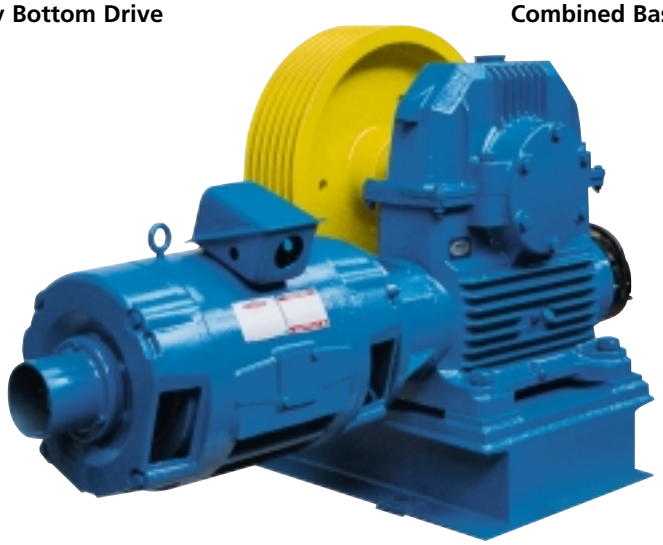
Medium Capacity Standard Drive



Medium Capacity Bottom Drive



Combined Baseplate and Drive



Large Capacity Combination Baseplate and Drive

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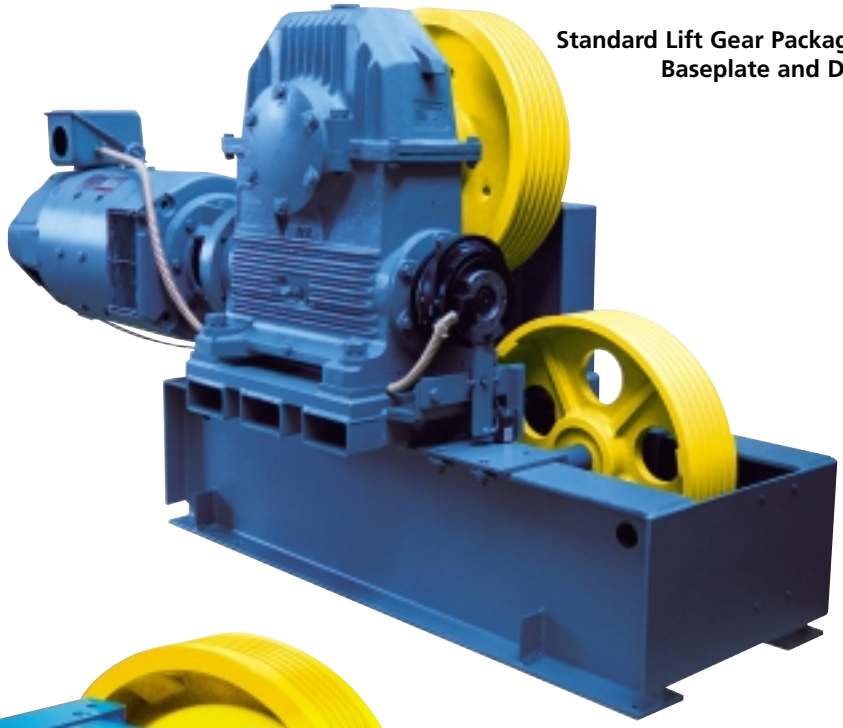
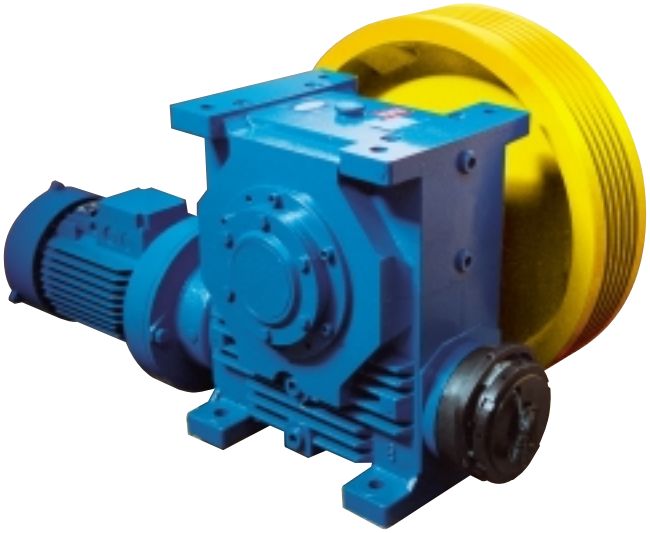
HL Series - Engineering Solutions

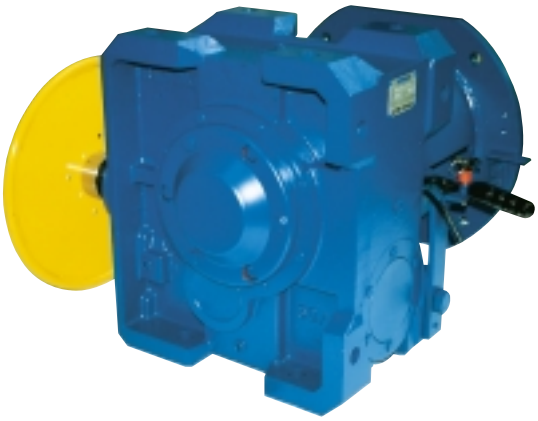


Standard Lift Gear Package with Bespoke Baseplate and Diverter



Medium Capacity Special Drive Package

Small Capacity Overhead Drive



Hand Winding Drive Solution for Both Geared and Gearless Machines

GENERAL RECOMMENDATIONS

The aim of the tables in this "general section " is to offer a clear guide in order to decide the most suitable type of lift gear package and should therefore be followed.
Note that all the capacity load tables in this catalogue, unless otherwise stated, have been drawn up based on the following conditions:

- Systems in STANDARD conditions as shown in figures 1 and 2 on page 2.2, for 1:1 and 2:1 suspensions respectively.
- 2:1 suspension means with single tackle.
- System balancing is always considered at 50% of the working capacity load and at 100% of the remaining weights (car, sling, shoes, etc.).
- Duty up to 120 starts/h (without auxiliary motor ventilation).
- Motor power calculated for location of systems up to 1000 m above sea level.
- Ambient temperature not above 40° C.

HL Series - Mounting and Handing

CHOICE OF THE TYPE OF LIFT GEAR PACKAGE

The lift gear package should be chosen first of all in relation to the following basic factors:

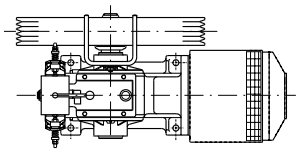
a - Max. applied static load
b - Working capacity load to be raised
c - Car speed
d - Necessary motor power
e - Type of suspension (1:1 - 2:1)

Many other factors, however, must also be taken into account when determining the most suitable type of lift gear package for the specific requirements, for example:

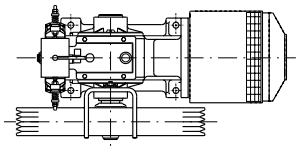
- Length of travel
- Intensity of duty
- Location of the machine
- Number of return and deflection sheaves of the system
- Limitation of the driving pulley diameter
- Particular environmental conditions
- Any other requirements and conditions, etc.

DETERMINING THE HANDING OF THE LIFT GEAR PACKAGE

The position of the lift gear package, RIGHT or LEFT, is determined by the handing of the low-speed shaft when viewed from the motor, as shown in the following figure:



RIGHT winch



LEFT winch

The position (right or left-hand) of the winch must always be indicated at the time of ordering.

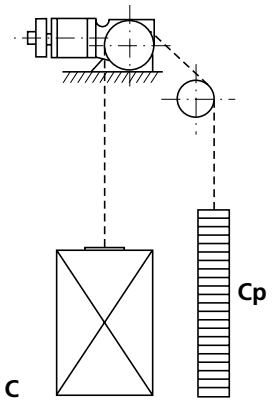
Standard Type Systems - Resulting Load on a Low-speed Shaft

STANDARD TYPE SYSTEMS

All the data and calculations given in this catalogue, unless otherwise specified, refer to the standard systems shown in figures 1 and 2 below:

1:1 Suspension

(fig.1)

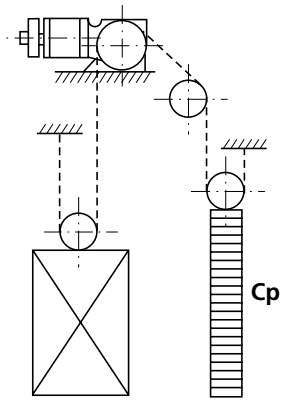


Direct traction

1 return sheave

2:1 Suspension

(fig.2)



Cutting traction

1 return sheave
2 tackles

RESULTING STATIC LOAD ON A LOW-SPEED SHAFT - P

This is the sum total of all the loads which act vertically down on the low-speed shaft of the lift gear package. It is calculated as follows:

1:1 Suspension (Direct traction)

$$P = Q + C + Cp + f \quad \text{(kg) without rope compensation} \quad (1)$$

$$P = Q + C + Cp + 2f \quad \text{(kg) with rope compensation} \quad (2)$$

where
- Q = effective working capacity load of the system (kg)
- C = total weight of car, sling, shoes, etc. (kg)
- Cp = weight of counterweight (kg)
- f = rope weight (kg)

2:1 Suspension (Cutting traction)

In this case equations (1) and (2) become

$$P = \frac{Q + C + Cp + f}{2} \quad \text{(kg) without rope compensation} \quad (3)$$

$$P = \frac{Q + C + Cp + 2f}{2} \quad \text{(kg) with rope compensation} \quad (4)$$

Also P obtained from (1) and (2) will be $\frac{P}{3}$, $\frac{P}{4}$ etc. for 3:1, 4:1 suspensions and so on.

Attention: The values of P calculated in this way should always be lower than or equal to the Pmax values indicated in the catalogue for each single winch and version of low-speed shaft.

Rope and Car Speeds

SPEED

The tables in this catalogue give the rated speed (V_s) and the effective speed V_{eff} with full car load separately for 1:1 and 2:1 suspensions, with motors at 1500 rpm (and if necessary at 1000 rpm).

Rope speed

A) Rated speed $\quad V_s = \dfrac{\pi \times Dp \times n' \times \tau}{1000 \times 60}$ m/sec (5)

B) Effective speed $\quad V_{eff} = V_s \times 0.93$ m/sec (6)

where: Dp = driving pulley pitch diameter (mm)
n' = theoretical motor revs (rpm)
τ = lift gear ratio (z_1 / z_2)

N.B.: V_{eff} is calculated taking a maximum electric motor slip at full load of about 7%.

Car speed

Direct traction - 1:1 suspension

The relative car speeds V_s and V_{eff} given in the tables are those resulting from equations (5) and (6).

Cutting traction - 2:1 - 3:1 suspension etc.

The relative car speeds V_s and V_{eff} are calculated by dividing the values obtained from equations (5) and (6) by the number of tackles in the system.
In the specific case of the tables for 2:1 suspension capacity load in this catalogue, the equations are respectively:

$$V_s = \frac{\pi \times Dp \times n' \times \tau}{1000 \times 60 \times 2} \text{ m/sec} \quad (7)$$

$$V_{eff} = \frac{V_s \times 0.93}{2} \text{ m/sec} \quad (8)$$

Efficiency: System ηi - Lift Gear Package ηa

EFFICIENCY

In standard systems, two types of efficiency in equation (11) have to be considered to decide the capacity load of the lift gear package:

- Efficiency of the system ηi
- Efficiency of the lift gear package ηa

System efficiency ηi

This incorporates the efficiency of all the moving parts of the system, except the lift gear package.
It basically depends on the following factors:

- friction of the shoes, car guides and counterweight
- friction of the return sheave on the relative axes
- friction of the ropes on the races, etc.

The extent of these losses should be calculated case by case according to the type of guides, shoes, return sheaves mounted on bushings or bearings, etc.
For the sake of simplicity, however, the following values of ηi have been used in determining the capacity load with equation (11), for STANDARD systems:

1:1 suspension (direct traction) : $\eta_i = 0.8$ (9)
(see page 4 - fig. 1, table 2.1.T.073)

2:1 suspension (cutting traction) : $\eta_i = 0.75$ (10)
(see page 4 - fig. 2, table 2.1.T073)

For all systems other than standard, see "Capacity load reduction coefficients" on pages 2.7 - 2.8

Lift gear package efficiency ηa

Winch efficiency is determined by taking into account not only the wormgear combination efficiency, but also all the various losses due to friction on the moving parts in relation to the reduction gear with mineral oil.
The absolute values of ηa have been suitably lowered in consideration of the fact that the systems generally run under conditions of intermittent service and only occasionally does a steady state exist.
However, it has been noted experimentally that the efficiency of our worm gear and consequently the ηa values, are generally higher than those given on page 2.12.

Capacity Load and Effective Working Capacity Load

CAPACITY LOADS

The difference between the **Overall capacity load "Qt"** (shown in the tables of this catalogue) and the **Working capacity load "Q"** that may effectively be trasported in the car should always be taken into account.

Overall capacity load Qt (indicated in the capacity load tables)

This includes the rope weight, considered according to the cases as described in the effective working capacity load Q paragraph.

$$Qt = \frac{75 \times HP \times \eta i \times \eta a}{V_s \times k} \times 2 \quad \text{(kg)} \qquad (11)$$

where:
- Hp = motor power given in HP
- ηi = system efficiency (see page 2.4)
- ηa = winch efficiency (see page 2.4)
- V_s = rated (or synchronous) speed in m/sec
- k = safety coefficient (assumed 1.05)

In the case of motor power given in kW, (11) becomes:

$$Qt = \frac{102 \times kW \times \eta i \times \eta a}{V_s \times k} \times 2 \quad \text{(kg)} \qquad (12)$$

Equations (11) and (12) have been used to calculate all the capacity load values given in this catalogue, separately for motors at 1500 and 1000 rpm and for 1:1 and 2:2 suspensions respectively, assuming the following conditions exist:

- Standard type systems as shown in figs. 1 and 2 on page 2.2
- Balancing at 50 % of the effective working capacity load Q
- Balancing at 100 % of the other suspended loads (car, shoes, slings, etc.) excluding ropes
- Electric motors for duty of up to 120 starts/h, without auxiliary ventilation
- Location of system up to a max. of 1000 m above sea level
- Temperature not exceeding 40° C.

Effective working capacity load Q

This is the effective working load that may be trasported in the car and is obtained from the following equations:

A) Standard systems on page 2.2, 1:1 suspension (fig.1)

$$Q = Qt - 2f \quad \text{from which} \quad Qt = Q + 2f \quad \text{(kg)} \qquad (13)$$

where f = rope weight

Capacity Load and Effective Working Capacity Load

B) Standard systems on page 4 (table 2.1.T.073) 2:1 suspension (fig. 2)

$Q = Qt - f$ from which $Qt = Q + f$ (kg) (14)

For stardard systems with rope compensation (at 100% for 1:1 susp. and at 50% for 2:2 susp.), equations (13) and (14) both become:

$Q = Qt$ (kg) (15)

C) Non-standard systems

For systems other than the standard types given on page 2.2 (table 2.1.T.073) figs. 1 and 2, the overall capacity load value Qt to be found in the tables, given the working car capacity load, is calculated by applying suitable "working capacity load reduction coefficients " k_1, k_2 ... k_n according to the type, as specified on pages 2.7 and 2.8.
In various cases equations (13) - (14) - (15) may therefore become:

$Qt = (Q + 2f) \times k_1 \times k_2 \times \ldots \times k_\eta$ (kg) for 1:1 suspension without rope compensation (16)

$Qt = (Q + f) \times k_1 \times k_2 \times \ldots \times k_\eta$ (kg) for 2:1 suspension without rope compensation (17)

$Qt = Q \times k_1 \times k_2 \times \ldots \times k_\eta$ (kg) for 1:1 and 2:1 suspension without rope compensation (18)

where:
- k_1 = reduction coefficient for return sheaves in excess of the number considered in standard systems, see page 2.7
- k_2 = reduction coefficient for unbalanced system see page 2.7
- k_η = any other reduction coefficients for special systems or unfavourable conditions, see page 2.8.

Note : Incidence of rope weight in non-standard systems

- Machine at bottom installations: The rope weight is not considered in equations (16) and (17), because in this case the ropes may be considered as self-balanced. Equation (18) is therefore always applied.

- Multiple tackle suspension (3:1, 4:1, etc.): In these cases the value to be added to Q to obtain Qt is given by $\frac{2f}{t}$, where t is the number of tackles.
  Equation (18) therefore becomes:

  - for 3:1 susp. : $Qt = \frac{(Q + 2f)}{3} \times k_1 \times k_2 \times \ldots \times k_\eta$ (19)

  - for 4:1 susp. : $Qt = \frac{(Q + 2f)}{4} \times k_1 \times k_2 \times \ldots \times k_\eta$ (20)

  and so on.

Capacity Load Reduction Coefficients

CAPACITY LOAD REDUCTION COEFFICIENTS

A) Reduction coefficient k_1 for return sheaves in excess

For systems with the number sheaves exceeding that considered in the standard versions on page 2.2 figs. 1 and 2, the coefficient k_1 must be adopted in the following table values:

Type of suspension	Type of return sheave	k_1 values for total number return sheaves on system									
		0-1	2	3	4	5	6	7	8	9	10
1:1 Direct	on bearing	1	1.020	1.042	1.065	1.087	1.110	1.135	1.160	1.190	
	on bushing	1	1.042	1.087	1.135	1.190	1.250	1.315	1.390	1.470	
2:1 Cutting	on bearing	–	1	1	1.010	1.025	1.042	1.060	1.075	1.093	1.10
	on bushing	–	1	1	1.030	1.065	1.090	1.135	1.175	1.220	1.265

B) Reduction coefficient k_2 for unbalanced system

For systems with working capacity load not perfectly balanced at 50%, a further reduction coefficient k_1 must be adopted in the following table values:

System balancing Percentage of balanced working capacity load	50 %	45 % o 55 %	40 % o 60 %	35 % o 65 %	30 % o 70 %	25 % o 70 %	20 % o 80 %	15 % o 85 %	10 % o 90 %	5 % o 95 %	0 % o 100 %
k_2	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2

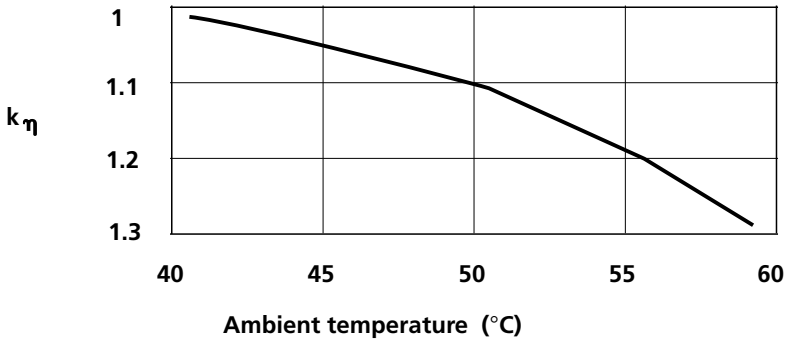
Note : For systems without counterweights (e.g. with winding drum), the effective working capacity load is therefore half the capacity load Qt in the table.

Capacity Load Reduction Coefficients

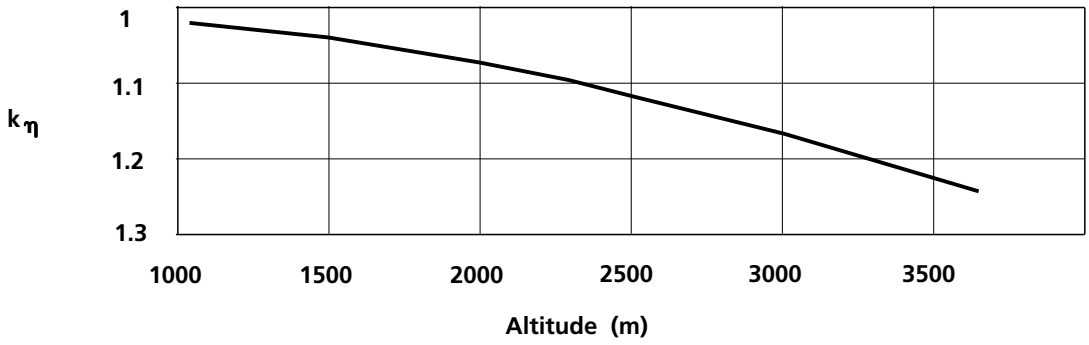
C) Further reduction coefficients k_η for special cases or unfavourable conditions

- System with work cycle exceeding 120 starts/h and motor without auxiliary ventilation.
  Adopt a reduction coefficient $k_\eta = 1.15$

- System with ambient temperature above 40°C and motor without auxiliary ventilation.
  Reduce the capacity load according to the following diagram:



- System located at an altitude over 1000m above sea level and motor without auxiliary ventilation
  Reduce the capacity load according to the following diagram:



Note: It is advisable to contact our Technical Office for further information in the event of special systems or conditions.

Example of Lift Gear Package Characteristics

Example 1 (bottom drive)

Data from the enquiry:

- Working capacity load	Q	450	kg
- Speed	V	1.00	m/sec
- Suspension		1:1	kg
- Weight of car + slings, etc.	C	550	kg
- Travel		20	m
- Rope weight	f	40	kg
- Return sheaves		5	on bearings
- System balancing		50 %	
- 1500 rpm motor, 50 Hz, 120 starts/h			

Counterweight Cp = C + (50 % Q) = 775 kg

Static load P = Q + C + Cp + f = 1815 kg

Incidence of rope weight: nil for machine installed at bottom

For 5 return sheaves on bearings and 1:1 suspension, use k1 = 1.087 see page 2.7

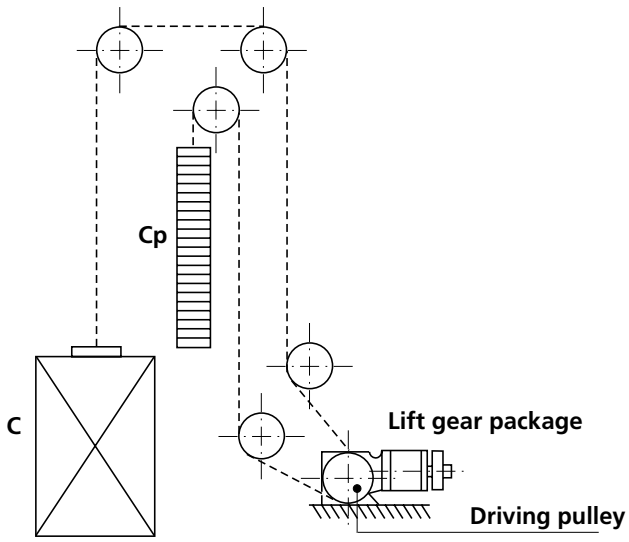
For system balancing at 50 % of working capacity load Q, use k 2= 1 see page 2.7

For ambient temperature up to 45°C, use k_3 = 1.06 see page 2.8

Overall capacity load determination:

$$Qt = Q \times k_1 \times k_2 \times k_3 = 450 \times 1.087 \times 1 \times 1.06 = 518.5 \text{ kg}$$

The following should be found in the capacity load tables for 1:1 suspension:
Type of lift gear package, driving pulley diameter and motor power corresponding to a Qt $\geq$ 518.5 kg, P $\geq$ 1815 kg and car speed of 1 m/sec.



Example of Lift Gear Package Characteristics

Example 2 (top drive)

Data from the enquiry:

- Working capacity load	Q	1600	kg
- Speed	V	1.00	m/sec
- Suspension		2:1	kg
- Weight of car + slings, etc.	C	800	kg
- Travel		30	m
- Rope weight	f	450	kg
- Return sheaves		4	on bushing
- System balancing		40%	

- 1500 rpm motor, 50 Hz, 180 starts/h with forced ventilation

Counterweight $Cp = C + (40\,\%\,Q) = 1440$ kg

Static load $P = \frac{Q + C + Cp + f}{2} = 2145$ kg

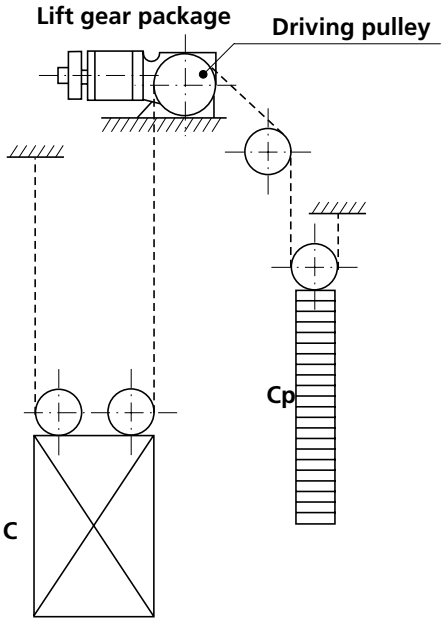
For 4 return sheaves on bushing and 2:1 suspension, use $k_1 = 1.03$ see page 2.7

For system balancing at 40% of working capacity load Q, use $k_2 = 1.2$ see page 2.7

Overall capacity load determination:

$$Qt = (Q + f) \times k_1 \times k_2 = (1600 + 450) \times 1.03 \times 1.20 = 2534 \text{ daN}$$

The following should be found in the capacity load tables for 2:1 suspension:
type of lift gear package, driving pulley diameter and motor power corresponding to a Qt $\geqslant$ 2534 kg, P $\geqslant$ 2145 kg and car speed of 1 m/sec.



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Selection Data

Motor Type	Lift Gear Type	Reduction Gear Ratio	Max motor power at 1500 rpm kW	Max motor power at 1500 rpm HP	Permissible torque Nm	Maximum static low speed shaft load Type	Ref	kg	Brake Band dia mm	Brake Type	Braking torque Nm
A4	FF 330	2/59 2/37	5.5 7.5	7.5 10.2	470 430	overhung		1800	185	AD1	100
A4	FF 340	1/72 1/62 1/53 1/45 1/45s 1/42 1/37 1/37s 2/37	3 3.7 5 5 6.1 5.5 5.5 7.5 7.5	4.1 5 6.8 6.8 8.3 7.5 7.5 10.2 10.2	500 560 690 630 830 630 580 870 460	with external support overhung extended	 T1264	2500 1800 1800	185	AD1	100
A4	FF 360	1/72 1/62 1/53 1/45 1/45s 1/42 1/37 1/37s 2/37	3 3.7 5 5 6.1 5.5 5.5 7.5 7.5	4.1 5 6.8 6.8 8.3 7.5 7.5 10.2 10.2	520 580 720 650 850 650 600 900 480	overhung extended	 T1270	2500 2200	185	AD1	100
A4	V 450	1/43 2/47	4.6 6.8	6.3 9.2	670 610	overhung		2500	185	AD1	100
B9	FF 610	1/59 1/49 1/49p 1/40p 2/47	5.2 7.4 9.2 11.5 11.5	7.1 10.1 12.5 15.6 15.6	900 1140 1400 1520 980	overhung		3200	185	AD1	100
B9	FF 620	1/59 1/49 1/49p 1/40p 2/47	5.2 7.4 9.2 11.5 11.5	7.1 10.1 12.5 15.6 15.6	900 1140 1400 1520 980	with external support extended extended extended	 T20.111 T 20.108 T 1265	3700 3500 3500 2600	185	AD1	100
B9	FF 630	1/40p 2/47	11.5 11.5	15.6 15.6	1400 920	overhung		2500	185	AD1	100
B9	FF 650	1/61 1/50 1/42 2/49 3/41	7.4 9.2 12 16 16	10.1 12.5 16.3 21.8 21.8	1320 1440 1650 1450 860	overhung extended extended	 T 31.005 T 31.006	4000 3500 2600	185	AD1	100
B9	FF 800	1/61 1/49 1/40 2/59 2/49	9.2 11.5 13.8 16.6 16.6	12.5 15.6 18.8 22.6 22.6	1750 1850 1900 1800 1520	with external support extended extended	 T 26.99 T 1266	4500 4500 3000	250	-AD3 -F	156
B9	FF 825	1/61 1/49 1/40 2/59 2/49	9.2 11.5 13.8 16.6 16.6	12.5 15.6 18.8 22.6 22.6	1750 1850 1900 1800 1520	with external support		5500	250	-AD3 -F	156
B9	FF 850	2/49 3/48	20.6 24.3	28 33	1900 1500	with external support extended extended	 T 26.99 T 1266	5500 4500 3000	250	-AD3 -F	156
B9	FF 1150	1/49 1/40 2/51 2/37	18.4 23 30 33.1	25 31.3 40.8 45	2950 3100 2880 2350	with external support extended	 T 25.66	8000 5000	300	AD4	170
B3	F 1500	1/50 1/41	30 39.7	40.8 54	4600 5250	with external support		9500	360	AD5	
ST	TW1000	1/70 1/60 1/50 1/40 2/59 2/49 3/64 3/44	15 15 18.5 22 30 30 37 45	20 20 25 30 40 40 50 60	2994 3362 3383 3388 3277 3207 3021 3030	External support Overhead Basement		8845 8845	Dual Circuit Disk		500
ST	TW1200	1/70 1/60 1/50 1/42 2/59 2/49 3/64 3/44	18.5 22 30 30 37 45 45 55	25 30 40 40 50 60 60 75	4811 5430 5296 5418 5234 5036 4892 4714	External support Overhead Basement		11340 10200	Dual Circuit Disk		500
ST	TW1400	1/70 1/60 1/50 2/79 2/69 2/59 3/64 4/59	30 37 37 45 45 55 75 110	40 50 50 60 60 75 100 150	7140 8080 8322 6775 6930 7890 7655 7985	External support Overhead Basement		15875 13060	Dual Circuit Disk		1000

* Consult Renold if higher brake capacity required

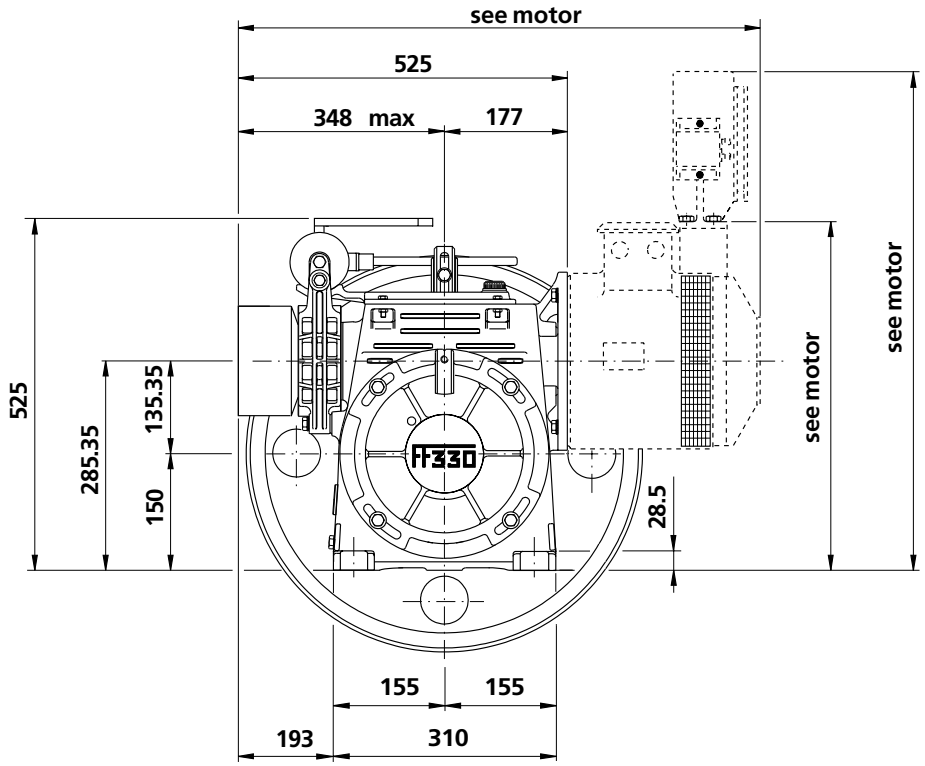
Theoretical Efficiency of Lift Gear Package

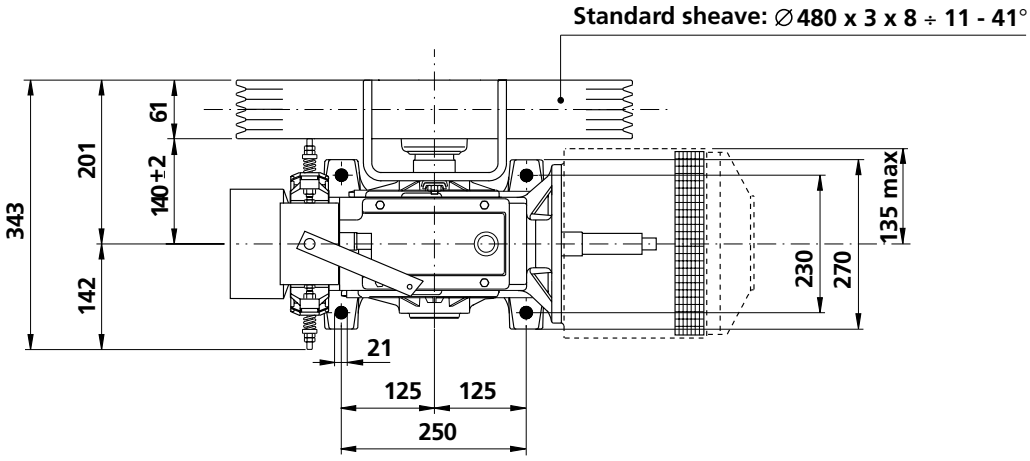
ratio	FF330	FF340	FF360	V450	FF610	FF620	FF630	FF650	FF800	FF825	FF850	FF1150	FF1500	TW1000	TW1200	TW1400
1/72		0.485	0.500													
1/70														0.770	0.780	0.780
1/62		0.513	0.528													
1/61								0.609	0.639	0.639						
1/60														0.810	0.810	0.810
1/59					0.610	0.610										
1/53		0.549	0.564													
1/50								0.648					0.633	0.820	0.830	0.830
1/49					0.641	0.641			0.677	0.677		0.677				
1/49p					0.641	0.641										
1/45		0.575	0.590													
1/45s		0.635	0.635													
1/43				0.685												
1/42		0.574	0.589					0.679							0.860	
1/41													0.668			
1/40					0.678	0.678	0.678		0.704	0.704		0.697		0.850		
2/79																0.860
1/37		0.595	0.610													
1/37s		0.659	0.659													
2/69																0.870
2/59	0.640								0.753	0.753				0.890	0.890	0.900
2/51												0.772				
2/49								0.760	0.775	0.775	0.775			0.900	0.900	
2/47				0.786	0.753	0.753	0.753									
3/64														0.910	0.920	0.920
2/37	0.690	0.690	0.705									0.791				
3/48											0.801					
4/59																0.930
3/44														0.930	0.930	
3/41								0.815								

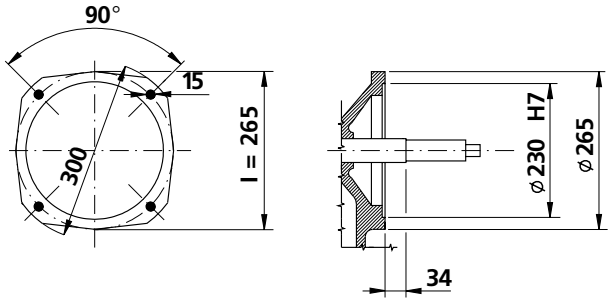
General Features - FF330 Lift Gear Package

 **Electric motor**	type A4 - with 2 speeds and governed speed **(Pay attention to max. applicable motor size)**
 **Power range**	2.8 to 7.5 kW (3.8 to 10.2 HP)
 **Reduction gear**	2/59 2/37
 **Low-speed shaft**	overhung (standard), static load 1800 kg
 **Driving pulley**	integral $\varnothing_{pr}$ 480 x 3 x 8 to 11 (blind)
 **Brake electromagnet**	type AD1 in dc, volt 48, 60, 110, 180
 **Compensating flywheel**	opposite side to motor
 **Rope guide**	for pull downwards (machine at top)
 **Sump capacity**	3.0 Litres
 **Special applications (on request)**	Customised side cover Aluminium handwheel on motor side Aluminium handwheel on opposite side to motor and space Tacho/encoder Driving sheave with hardened grooves Brake electromagnet special voltages Brake electromagnet with IP55 rating

Dimensions - FF 330







Detail of motor coupling flange

Winch weight	**110 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**3.0 Litres**	
Max static load	**1800 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 330

2:1 suspension - cutting traction **motor 4-4/16 poles**

Speed sync. m/s	Speed eff. m/s	Reduction gear	Sheave ⌀p mm		Required effective power										
				kW	2.8	3	3.4	3.7	4	4.6	5	5.5	6.1	6.8	7.5
				HP	3.8	4.1	4.6	5	5.4	6.3	6.8	7.5	8.3	9.2	10.2
0.64	0.59	2/59	480		410	440	490	540	590	670	730	810			
1.02	0.95	2/37	480		270	290	340	370	400	450	490	540	600	670	740

See general section for effective working capacity load Q

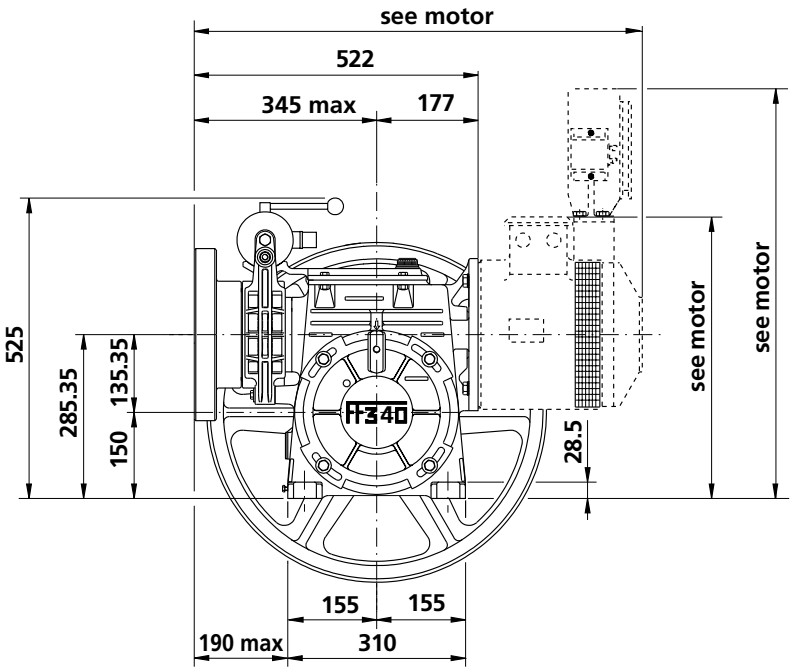
Low-speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	172	65	1800

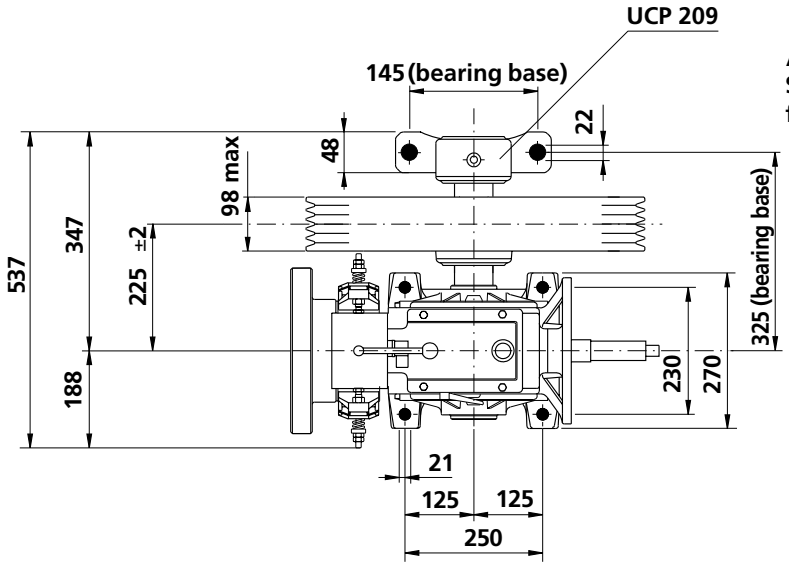
ATTENTION: See page 3.1. H for max overall dimensions applied.

General Features - FF 340 Lift Gear Package

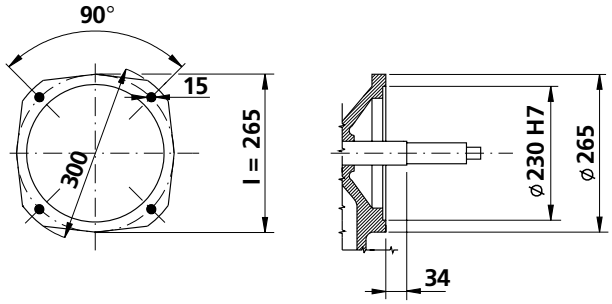
Electric motor	**type A4 - with 2 speeds and governed speed**
Power range	**2.8 to 7.5 kW (3.8 to 10.2 HP)**
Reduction gear	**1/72 1/62 1/53 1/45 1/45S 1/42 1/37 1/37S 2/37**
Low-speed shaft	**with external mounting (standard), static load 2500 kg** **overhung (standard), static load 1800 kg** **extended T 1264, static load 1800 kg**
Driving pulley	**integral $\varnothing_{pr}$ 440 to 580 mm**
Brake electromagnet	**type AD1 in dc, volt 48, 60, 110, 180**
Compensating flywheel	**opposite side to motor**
Rope guide	**for pull downwards (machine at top)**
Sump capacity	**3.0 Litres**
Special applications (on request)	**Special low-speed shaft versions on request** **Customised side cover** **Aluminium handwheel on motor side** **Aluminium handwheel on opposite side to motor and spacer** **Tacho/encoder** **Driving sheave with hardened grooves** **Split driving sheave** **Rope-locking clamp** **Brake electromagnet special voltages** **Brake electromagnet with IP55 rating** **Rope guide for upward pull or to side** **External strengthened support type SN**

Dimensions - Normal Shaft - FF 340





ATTENTION:
See page 19.3
for flywheel-sheave assembly limits

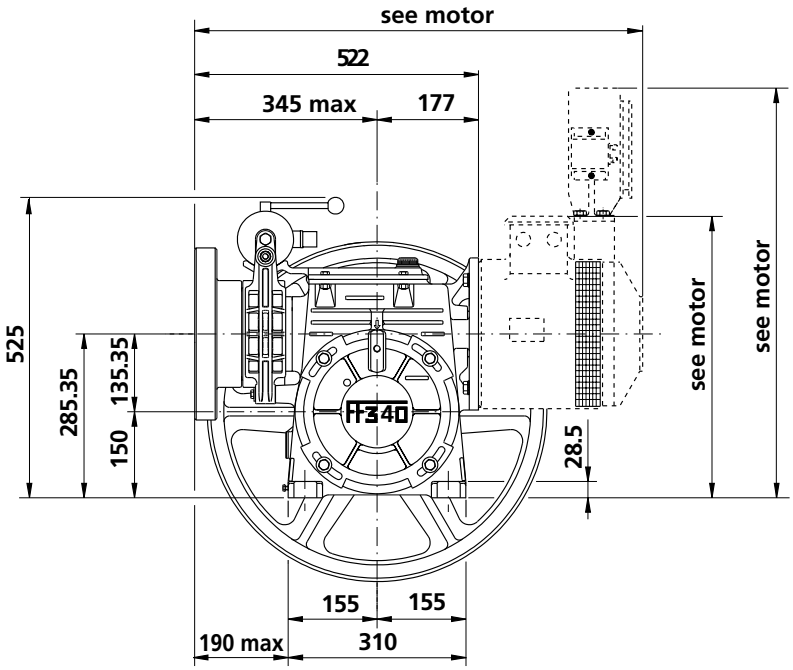


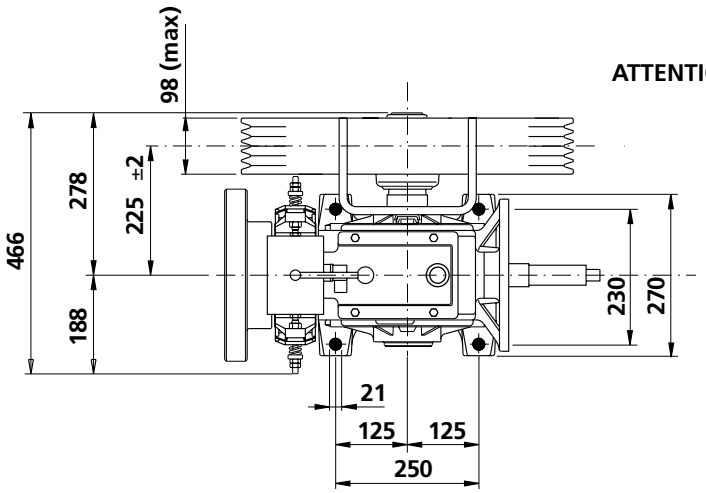
Detail of motor coupling flange

Winch weight	105 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.0 Litres	
Max static load	**2500 kg**	

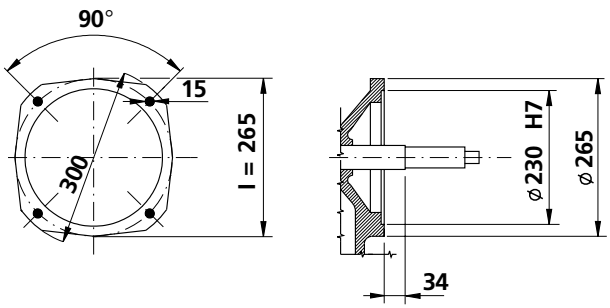
- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Dimensions - Overhung Shaft - FF 340





ATTENTION : See page 19.3 for handwheel-sheave assembly limits

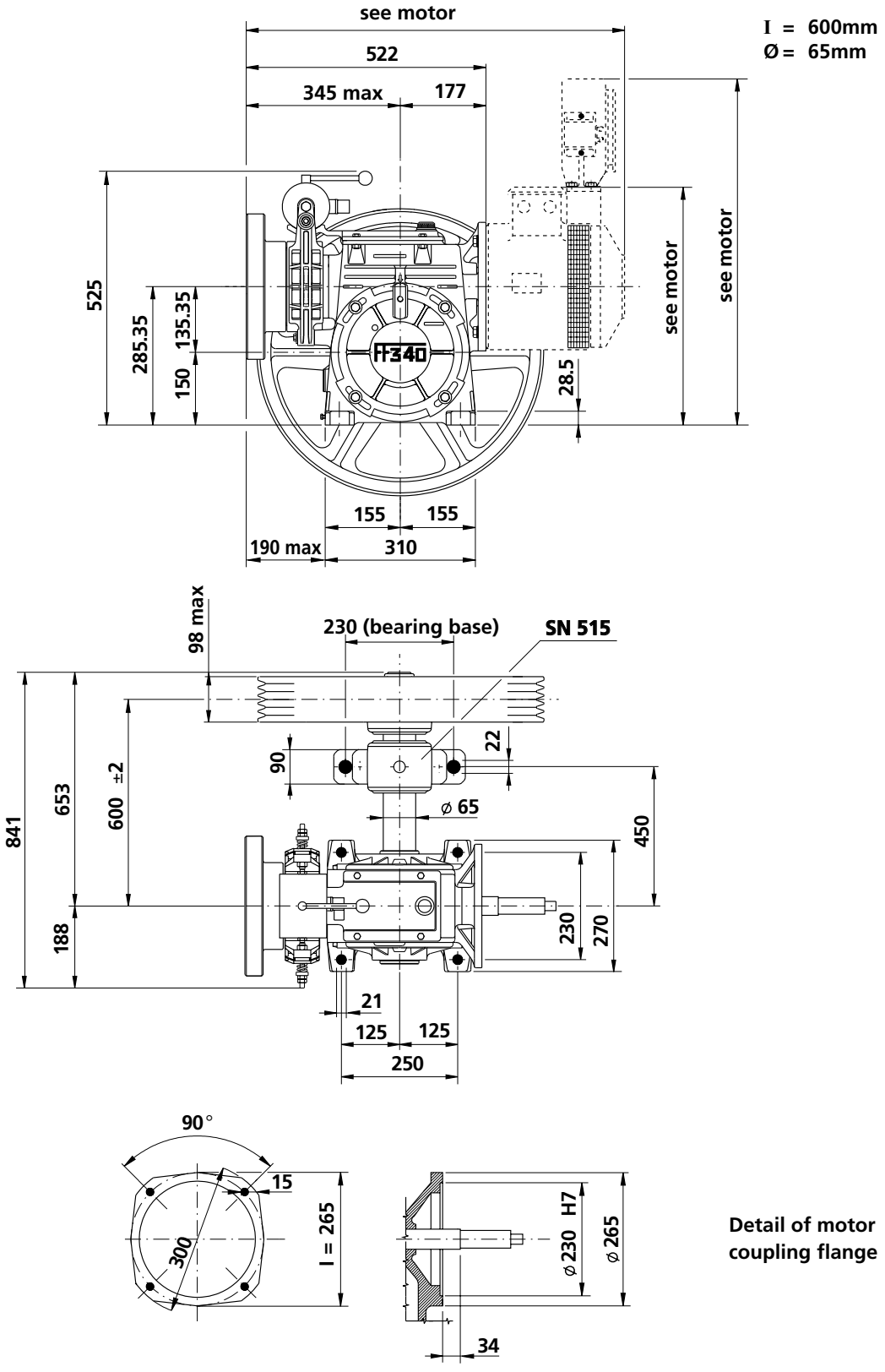


Detail of motor coupling flange

Winch weight	100 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.0 Litres	
Max static load	**1800 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Dimensions - Extended Shaft - FF 340



Detail of motor coupling flange

Winch weight	113 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.0 Litres	
Max static load	**1800 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 340

1:1 suspension - direct traction — **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	2.8 / 3.8	3 / 4.1	3.4 / 4.6	3.7 / 5	4 / 5.4	4.6 / 6.3	5 / 6.8	5.5 / 7.5	6.1 / 8.3	6.8 / 9.2	7.5 / 10.2
0.48	0.45	1/72	440		440	470									
0.52	0.49	1/72	480		400	430									
0.56	0.52	1/62	440		400	430	480	530							
0.57	0.53	1/72	520		380	400									
0.60	0.56	1/72	550		360	380									
0.61	0.57	1/62	480		370	400	450	480							
0.63	0.59	1/72	580		340	360									
0.65	0.61	1/53	440		370	390	440	480	520	600	650				
0.66	0.61	1/62	520		340	370	410	450							
0.70	0.65	1/62	550		320	350	390	420							
0.71	0.66	1/53	480		340	360	410	440	480	560	600				
0.73	0.68	1/62	580		300	320	370	400							
0.77	0.71	1/45	440		320	350	400	430	460	530	590				
0.77	0.71	1/45 s	440								640	700	790		
0.77	0.72	1/53	520		310	340	380	410	440	510	560				
0.82	0.76	1/53	550		290	310	360	390	420	480	520				
0.82	0.77	1/42	440		300	320	370	400	430	500	540	600			
0.84	0.78	1/45	480		300	320	370	400	430	490	530				
0.84	0.78	1/45 s	480								590	650	720		
0.86	0.80	1/53	580		280	290	340	370	400	460	490				
0.90	0.83	1/42	480		280	290	340	370	400	460	490	540			
0.91	0.84	1/45	520		270	290	340	370	400	450	490				
0.91	0.84	1/45s	520								540	600	660		
0.93	0.87	1/37	440		270	290	340	370	400	450	490	540			
0.93	0.87	1/37 s	440									610	670	740	830
0.96	0.89	1/45	550		260	280	310	350	380	430	460				
0.96	0.89	1/45 s	550								510	570	630		
0.97	0.90	1/42	520		260	270	310	340	370	420	460	500			
1.01	0.94	1/45	580		250	260	300	320	360	410	440				
1.01	0.94	1/45 s	580								490	530	600		
1.02	0.95	1/37	480		250	270	300	340	370	420	450	500			
1.02	0.95	1/37 s	480									560	620	680	750
1.03	0.96	1/42	550		260	270	310	340	370	420	460	480			
1.08	1.01	1/42	580		230	250	280	300	320	380	410	450			
1.10	1.03	1/37	520		230	250	280	310	340	390	420	460			
1.10	1.03	1/37 s	520									510	570	630	690
1.17	1.09	1/37	550		220	240	270	290	310	370	400	440			
1.17	1.09	1/37 s	550									480	530	600	660
1.23	1.14	1/37	580		210	230	250	280	300	350	380	410			
1.23	1.14	1/37 s	580									460	500	570	630
1.87	1.74	2/37	440		160	170	200	210	230	260	280	310	350	390	430
2.04	1.90	2/37	480		150	160	180	200	210	240	260	290	320	360	400
2.21	2.05	2/37	520		140	150	170	180	200	220	240	270	290	340	370
2.33	2.17	2/37	550		130	140	160	170	190	210	230	250	280	310	350
2.46	2.29	2/37	580		130	130	150	160	180	200	220	240	260	290	320

See general section for effective working capacity load Q

Low speed shaft versions	Pitch l mm	Diameter mm	Max static load kg	Applicable power kW	
normal	225	65	**2500**	000	000
overhung	225	65	**1800**	000	000
extended T 1264	600	65	**1800**	000	

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 340

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	2.8 / 3.8	3 / 4.1	3.4 / 4.6	3.7 / 5	4 / 5.4	4.6 / 6.3	5 / 6.8	5.5 / 7.5	6.1 / 8.3	6.8 / 9.2	7.5 / 10.2
0.24	0.22	1/72	440		830	880									
0.26	0.24	1/72	480		750	810									
0.28	0.26	1/62	440		750	810	910	1000							
0.28	0.26	1/72	520		700	740									
0.30	0.28	1/72	550		660	700									
0.30	0.28	1/62	480		690	730	840	910							
0.32	0.29	1/72	580		630	670									
0.33	0.30	1/53	440		690	730	840	910	980	1130	1230				
0.33	0.31	1/62	520		640	680	780	840							
0.35	0.32	1/62	550		600	640	730	800							
0.36	0.33	1/53	480		630	670	760	830	900	1040	1120				
0.37	0.34	1/62	580		570	610	690	750							
0.38	0.36	1/45	440		610	650	740	810	870	1010	1090				
0.38	0.36	1/45 s	440								1200	1330	1470		
0.39	0.36	1/53	520		580	620	700	760	830	950	1040				
0.41	0.38	1/53	550		540	590	670	720	790	900	980				
0.41	0.38	1/42	440		570	610	690	750	820	930	1020	1120			
0.42	0.39	1/45	480		560	600	680	740	800	920	1000				
0.42	0.39	1/45 s	480								1100	1220	1350		
0.43	0.40	1/53	580		520	560	630	690	740	860	930				
0.45	0.42	1/42	480		520	560	630	690	740	860	930	1030			
0.45	0.42	1/45	520		510	560	630	680	730	850	920				
0.45	0.42	1/45 s	520								1020	1120	1250		
0.47	0.43	1/37	440		520	560	630	690	740	860	930	1020			
0.47	0.43	1/37 s	440									1130	1260	1390	1540
0.48	0.45	1/45	550		490	520	600	650	700	810	870				
0.48	0.45	1/45 s	550								960	1060	1170		
0.49	0.45	1/42	520		480	510	590	640	690	800	860	940			
0.51	0.47	1/45	580		460	490	570	610	660	760	830				
0.51	0.47	1/45 s	580								910	1010	1110		
0.51	0.47	1/37	480		470	510	580	630	680	790	850	930			
0.51	0.47	1/37 s	480									1040	1150	1280	1410
0.51	0.48	1/42	550		450	490	560	600	650	740	820	890			
0.54	0.50	1/42	580		430	460	520	570	620	710	780	850			
0.55	0.51	1/37	520		440	470	530	580	630	720	790	860			
0.55	0.51	1/37 s	520									950	1060	1180	1310
0.58	0.54	1/37	550		420	450	500	540	600	680	740	820			
0.58	0.54	1/37 s	550									900	1010	1120	1240
0.62	0.57	1/37	580		400	420	480	520	570	650	700	780			
0.62	0.57	1/37 s	580									860	950	1060	1170
0.93	0.87	2/37	440		300	320	370	400	430	490	530	600	660	730	810
1.02	0.95	2/37	480		270	290	340	370	400	450	490	540	600	670	740
1.10	1.03	2/37	520		250	270	310	340	370	420	450	500	560	620	680
1.17	1.09	2/37	550		240	260	290	310	350	400	430	470	520	590	650
1.23	1.14	2/37	580		230	240	280	300	320	380	410	450	500	560	610

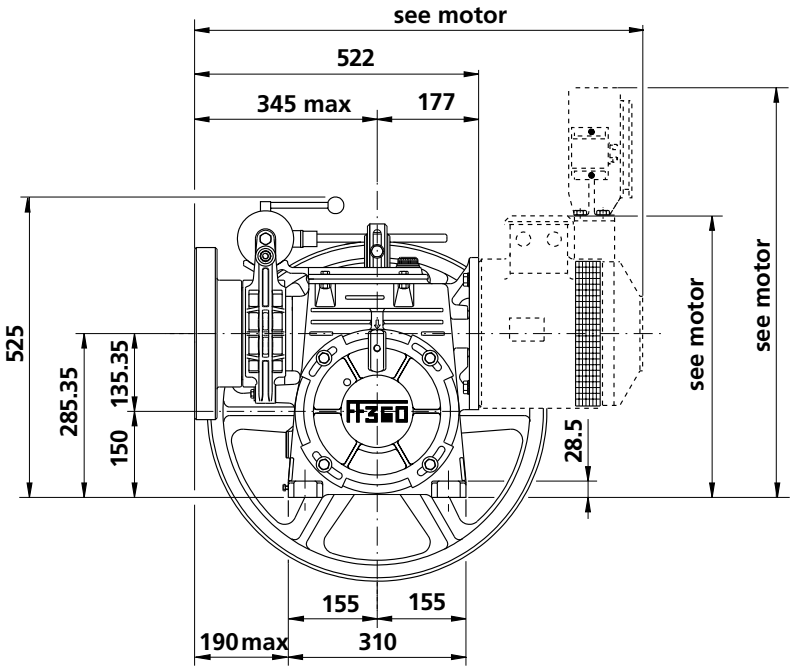
See general section for effective working capacity load Q

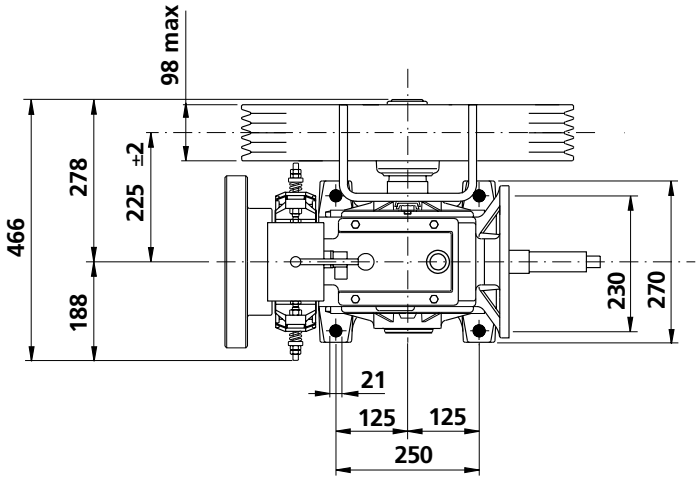
Low speed shaft versions	Pitch l mm	Diameter mm	Max static load kg	Applicable power kW	
normal	225	65	**2500**	000	000
overhung	225	65	**1800**	000	000
extended T 1264	600	65	**1800**	000	

General Features - FF 360 Lift Gear Package

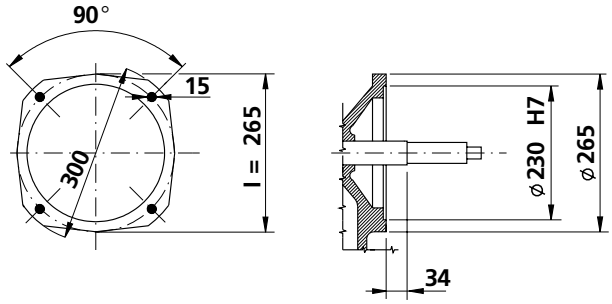
Electric motor	**type A4 - with 2 speeds and governed speed**
Power range	**2.8 to 7.5 kW (3.8 to 10.2 HP)**
Reduction gear	**1/72 1/62 1/53 1/45 1/45S 1/42 1/37 1/37S 2/37**
Low-speed shaft	**overhung (standard), static load 2500 kg** **extended T 1270,static load 2200 kg**
Driving pulley	**integral $\varnothing_{pr}$ 440 to 580 mm**
Brake electromagnet	**type AD1 in dc, volt 48, 60, 110, 180**
Compensating flywheel	**opposite side to motor**
Rope guide	**for pull downwards (machine at top)**
Sump capacity	**3.0 Litres**
Special applications (on request)	**Special low-speed shaft versions on request** **Customised side cover** **Aluminium handwheel on motor side** **Aluminium handwheel on opposite side to motor and spacer** **Tacho/encoder** **Driving sheave with hardened grooves** **Split driving sheave** **Rope-locking clamp** **Brake electromagnet special voltages** **Brake electromagnet with IP55 rating** **Rope guide for upward pull or to side**

Dimensions - Normal Shaft - FF 360





ATTENTION:
See table page 19.3
for handwheel-sheave assembly limits

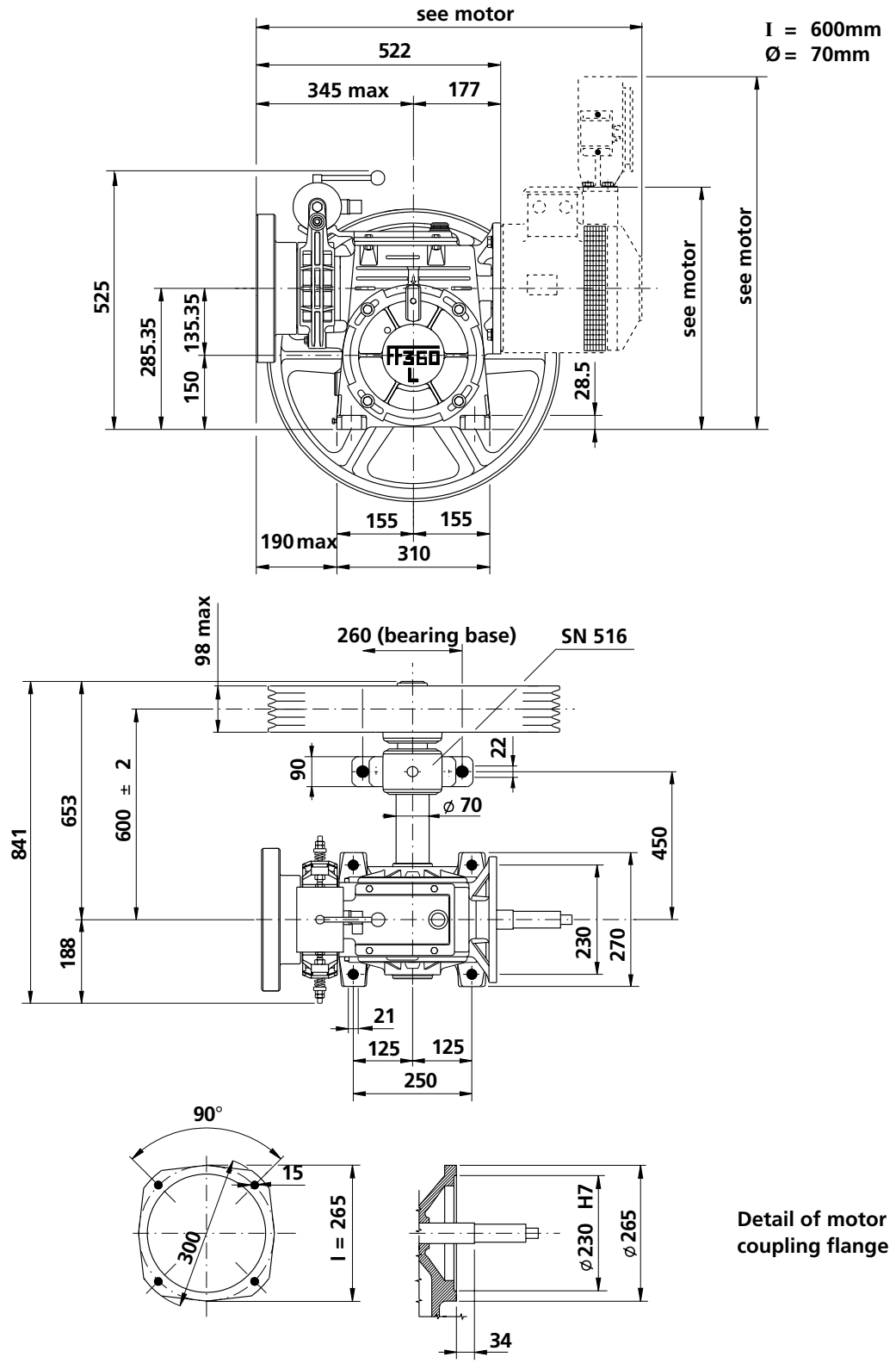


Detail of motor coupling flange

Winch weight	**110 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**3.0 Litres**	
Max static load	**2500 kg**	

- **See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.**
- **See relative catalogues for motor dimensions.**

Dimensions - Extended Shaft - FF 360



Detail of motor coupling flange

Winch weight	120 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.0 Litres	
Max static load	**2200 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 360

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	2.8 / 3.8	3 / 4.1	3.4 / 4.6	3.7 / 5	4 / 5.4	4.6 / 6.3	5 / 6.8	5.5 / 7.5	6.1 / 8.3	6.8 / 9.2	7.5 / 10.2
0.48	0.45	1/72	440		450	480									
0.52	0.49	1/72	480		420	450									
0.56	0.52	1/62	440		410	440	500	540							
0.57	0.53	1/72	520		390	410									
0.60	0.56	1/72	550		370	390									
0.61	0.57	1/62	480		380	410	460	500							
0.63	0.59	1/72	580		350	370									
0.65	0.61	1/53	440		380	410	460	490	530	620	670				
0.66	0.61	1/62	520		350	380	420	460							
0.70	0.65	1/62	550		320	360	400	440							
0.71	0.66	1/53	480		350	370	420	460	490	570	620				
0.73	0.68	1/62	580		310	340	380	410							
0.77	0.71	1/45	440		340	360	410	440	480	540	600				
0.77	0.71	1/45 s	440								640	700	790		
0.77	0.72	1/53	520		310	350	390	420	450	520	570				
0.82	0.76	1/53	550		300	320	370	400	430	490	530				
0.82	0.77	1/42	440		310	340	380	410	440	510	560	610			
0.84	0.78	1/45	480		300	320	380	410	440	500	540				
0.84	0.78	1/45 s	480								590	650	720		
0.86	0.80	1/53	580		280	300	350	380	410	470	510				
0.90	0.83	1/42	480		280	300	350	380	410	470	510	570			
0.91	0.84	1/45	520		280	300	350	380	410	460	500				
0.91	0.84	1/45 s	520								540	600	660		
0.93	0.87	1/37	440		280	300	350	380	410	470	500	560			
0.93	0.87	1/37 s	440									610	670	740	830
0.96	0.89	1/45	550		270	280	320	360	380	440	480				
0.96	0.89	1/45 s	550								510	570	630		
0.97	0.90	1/42	520		260	280	320	350	380	430	470	510			
1.01	0.94	1/45	580		250	270	300	340	370	420	450				
1.01	0.94	1/45 s	580								490	530	600		
1.02	0.95	1/37	480		260	280	310	350	380	430	460	510			
1.02	0.95	1/37 s	480									560	620	680	750
1.03	0.96	1/42	550		260	280	320	350	380	430	470	490			
1.08	1.01	1/42	580		240	250	280	310	340	390	420	460			
1.10	1.03	1/37	520		240	260	290	310	350	400	430	470			
1.10	1.03	1/37 s	520									510	570	630	690
1.17	1.09	1/37	550		230	240	270	300	320	380	410	450			
1.17	1.09	1/37 s	550									480	530	600	660
1.23	1.14	1/37	580		220	230	260	280	300	360	390	420			
1.23	1.14	1/37 s	580									460	500	570	630
1.87	1.74	2/37	440		170	180	200	220	230	270	290	320	360	400	440
2.04	1.90	2/37	480		150	160	180	200	220	250	270	290	320	370	400
2.21	2.05	2/37	520		140	150	170	190	200	230	250	270	300	340	380
2.33	2.17	2/37	550		140	140	160	180	190	220	230	260	280	310	360
2.46	2.29	2/37	580		130	140	150	170	180	210	220	240	270	300	340

See general section for effective working capacity load Q

Low speed shaft versions	Pitch l mm	Diameter mm	Max static load kg
normal	225	70	**2500**
extended T 1270	600	70	**2200**

Total Capacity Load - Qt kg - 50 Hz - FF 360

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	2.8 / 3.8	3 / 4.1	3.4 / 4.6	3.7 / 5	4 / 5.4	4.6 / 6.3	5 / 6.8	5.5 / 7.5	6.1 / 8.3	6.8 / 9.2	7.5 / 10.2
0.24	0.22	1/72	440		850	910									
0.26	0.24	1/72	480		780	840									
0.28	0.26	1/62	440		780	830	940	1030							
0.28	0.26	1/72	520		720	780									
0.30	0.28	1/72	550		680	730									
0.30	0.28	1/62	480		710	750	860	930							
0.32	0.29	1/72	580		650	690									
0.33	0.30	1/53	440		700	750	860	930	1010	1160	1260				
0.33	0.31	1/62	520		650	700	800	870							
0.35	0.32	1/62	550		620	660	750	820							
0.36	0.33	1/53	480		650	690	790	860	920	1060	1150				
0.37	0.34	1/62	580		590	630	710	780							
0.38	0.36	1/45	440		630	670	760	830	890	1030	1120				
0.38	0.36	1/45 s	440								1200	1330	1470		
0.39	0.36	1/53	520		600	640	720	790	850	980	1070				
0.41	0.38	1/53	550		570	610	680	740	810	930	1010				
0.41	0.38	1/42	440		590	630	710	780	840	960	1050	1150			
0.42	0.39	1/45	480		580	620	700	750	820	940	1030				
0.42	0.39	1/45 s	480								1100	1220	1350		
0.43	0.40	1/53	580		530	580	650	710	760	880	950				
0.45	0.42	1/42	480		530	580	650	710	760	880	950	1050			
0.45	0.42	1/45	520		530	570	640	700	750	870	940				
0.45	0.42	1/45 s	520								1020	1120	1250		
0.47	0.43	1/37	440		530	580	650	700	760	880	950	1050			
0.47	0.43	1/37 s	440									1130	1260	1390	1540
0.48	0.45	1/45	550		500	530	610	660	710	830	890				
0.48	0.45	1/45 s	550								960	1060	1170		
0.49	0.45	1/42	520		490	530	600	650	700	820	880	970			
0.51	0.47	1/45	580		470	510	580	630	680	790	850				
0.51	0.47	1/45 s	580								910	1010	1110		
0.51	0.47	1/37	480		490	520	600	650	700	810	870	960			
0.51	0.47	1/37 s	480									1040	1150	1280	1410
0.51	0.48	1/42	550		470	500	570	620	670	760	840	920			
0.54	0.50	1/42	580		440	470	530	590	630	720	800	870			
0.55	0.51	1/37	520		450	480	540	600	640	740	810	890			
0.55	0.51	1/37 s	520									950	1060	1180	1310
0.58	0.54	1/37	550		430	460	510	570	610	700	760	840			
0.58	0.54	1/37 s	550									900	1010	1120	1240
0.62	0.57	1/37	580		410	430	490	530	580	660	720	800			
0.62	0.57	1/37 s	580									860	950	1060	1170
0.93	0.87	2/37	440		300	320	380	410	440	500	540	610	670	740	830
1.02	0.95	2/37	480		280	300	350	380	400	460	500	560	620	680	750
1.10	1.03	2/37	520		260	280	310	350	380	430	460	510	570	630	700
1.17	1.09	2/37	550		250	260	300	320	360	410	440	480	530	600	660
1.23	1.14	2/37	580		230	250	280	300	340	390	420	460	510	570	630

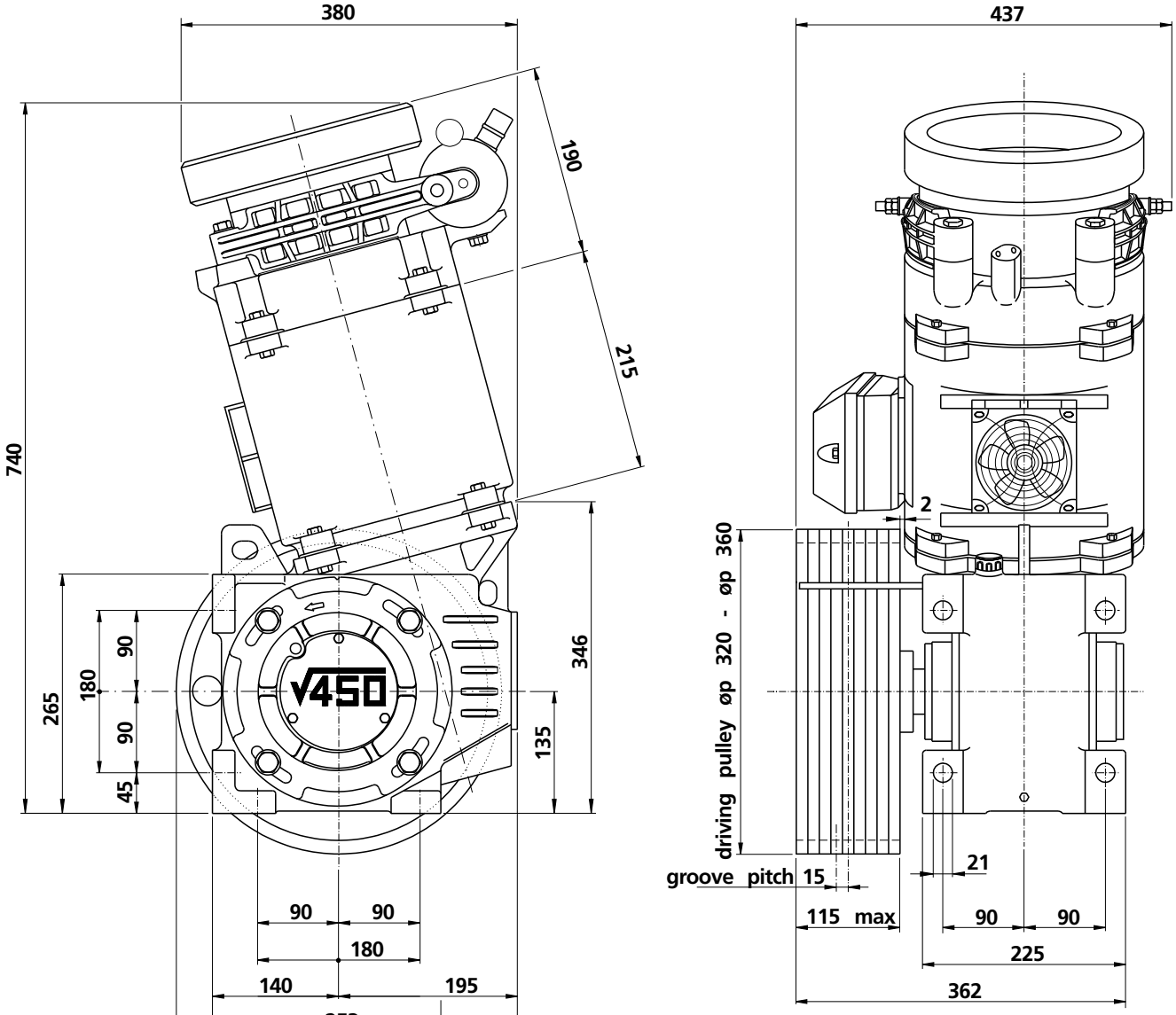
See general section for effective working capacity load Q

Low speed shaft versions	Pitch l mm	Diameter mm	Max static load kg
normal	225	70	**2500**
extended T 1270	600	70	**2200**

General Features - V 450 Lift Gear Package

Electric motor	type A4 - with 2 speeds and governed speed
Power range	2.8 to 6.8 kW (3.8 to 9.2 HP)
Reduction gear	1/43 2/47
Low-speed shaft	overhung (standard), static load 2500 kg
Driving pulley	integral $\varnothing_{pr}$ 320 to 360 mm (max. band width 115)
Brake electromagnet	type AD1 in dc, volt 48, 60, 110, 180
Compensating flywheel	motor side
Rope guide	for pull downwards (machine at top)
Sump capacity	1.4 Litres (synthetic type 'For Life')
Special applications (on request)	Customised side cover Aluminium handwheel on motor side Tacho/encoder Driving sheave with hardened grooves Rope-locking clamp Brake electromagnet special voltages Brake electromagnet with IP55 rating Rope guide for upward pull or to side

Dimensions - Standing Position - Normal Shaft - V 450



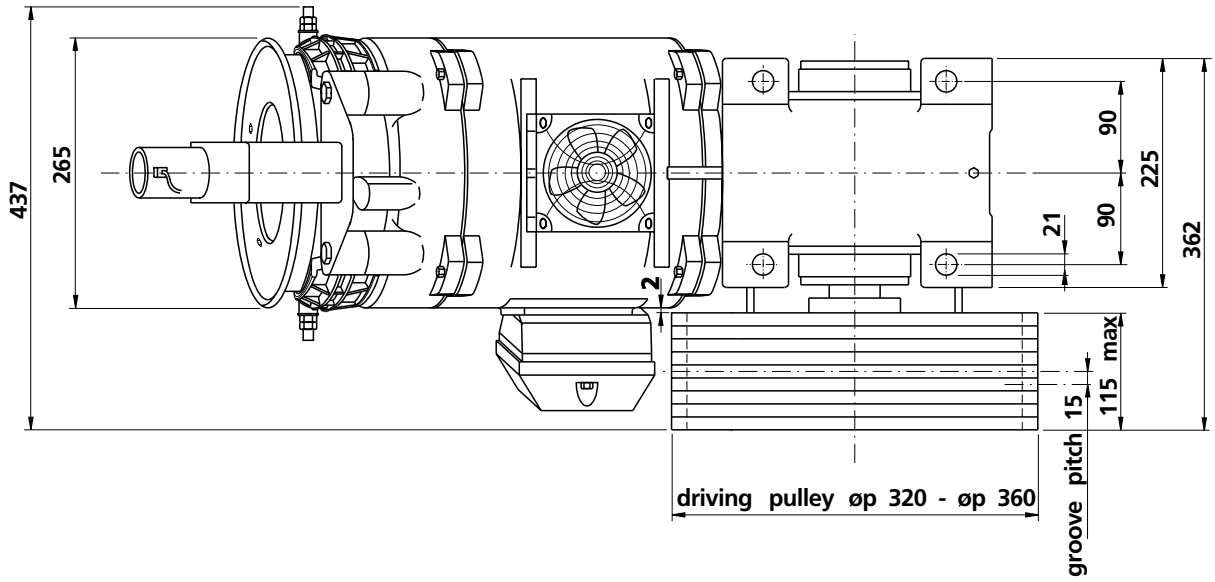
DRIV. PUL.		A
⌀Pr	⌀e	
320	330	360
360	370	380

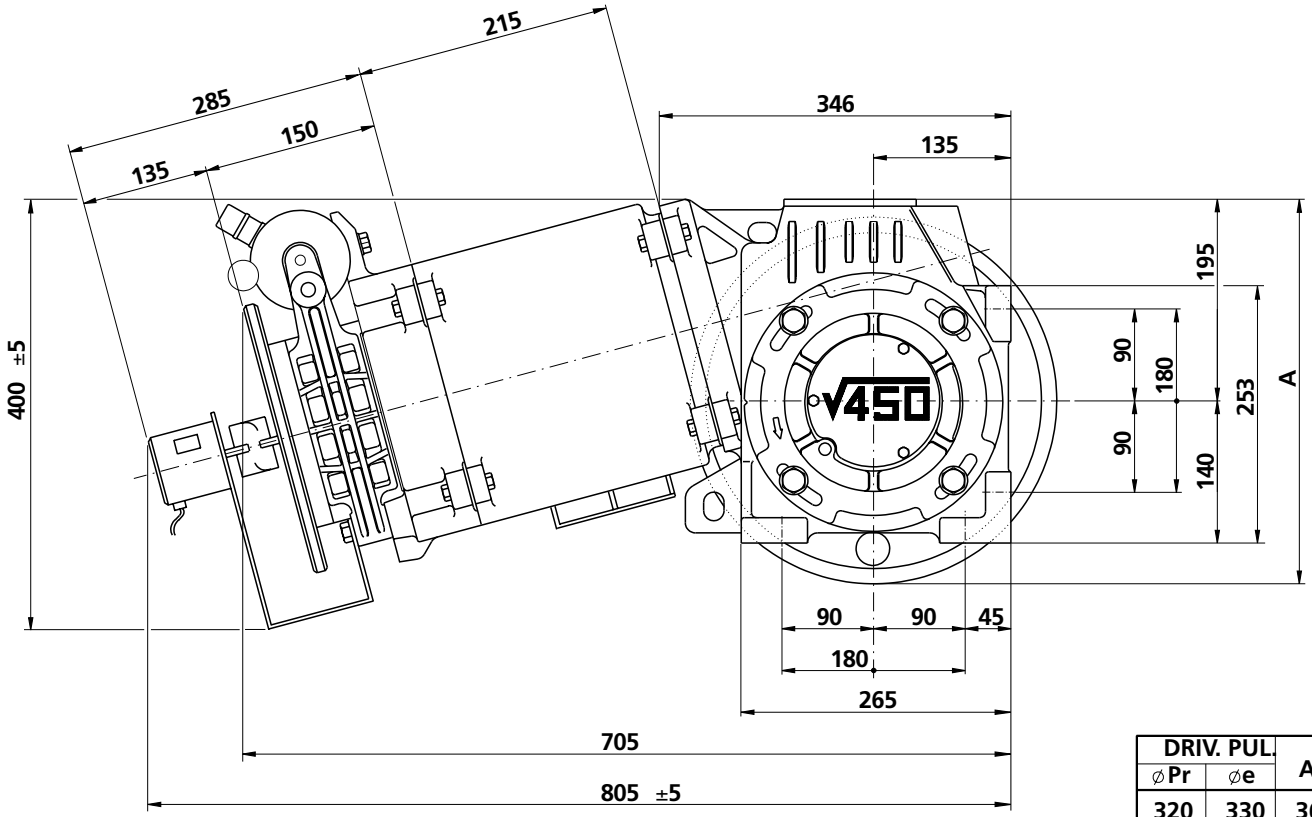
Winch weight	190 kg	(with motor, traction pulley and handwheel)
Oil quantity	1.4 Litres	
Max static load	**2500 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

RENOLD

Dimensions with Tacho/Encoder - V 450





DRIV. PUL.		A
⌀Pr	⌀e	
320	330	360
360	370	380

Winch weight	175 kg	(with motor, traction pulley and handwheel)
Oil quantity	1.4 Litres	
Max static load	**2500 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - V 450

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	2.8 / 3.8	3 / 4.1	3.4 / 4.6	3.7 / 5	4 / 5.4	4.6 / 6.3	5 / 6.8	5.5 / 7.5	6.1 / 8.3	6.8 / 9.2
0.58	0.54	1/43	320		510	550	620	670	720	840				
0.66	0.61	1/43	360		450	490	550	600	640	750				
1.07	0.99	2/47	320		320	340	390	420	450	530	570	630	700	770
1.20	1.12	2/47	360		280	310	340	370	400	470	510	560	620	690

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	192	70	**2500**

Total Capacity Load - Qt kg - 50 Hz - V 450

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW asyn HP	2.8 3.8	3 4.1	3.4 4.6	3.7 5	4 5.4	4.6 6.3	5 6.8	5.5 7.5	6.1 8.3	6.8 9.2
0.29	0.27	1/43	320		960	1020	1160	1260	1370	1570				
0.33	0.31	1/43	360		850	910	1030	1120	1210	1400				
0.53	0.50	2/47	320		600	640	730	790	860	990	1070	1180	1310	1460
0.60	0.56	2/47	360		530	570	650	700	760	880	950	1050	1160	1290

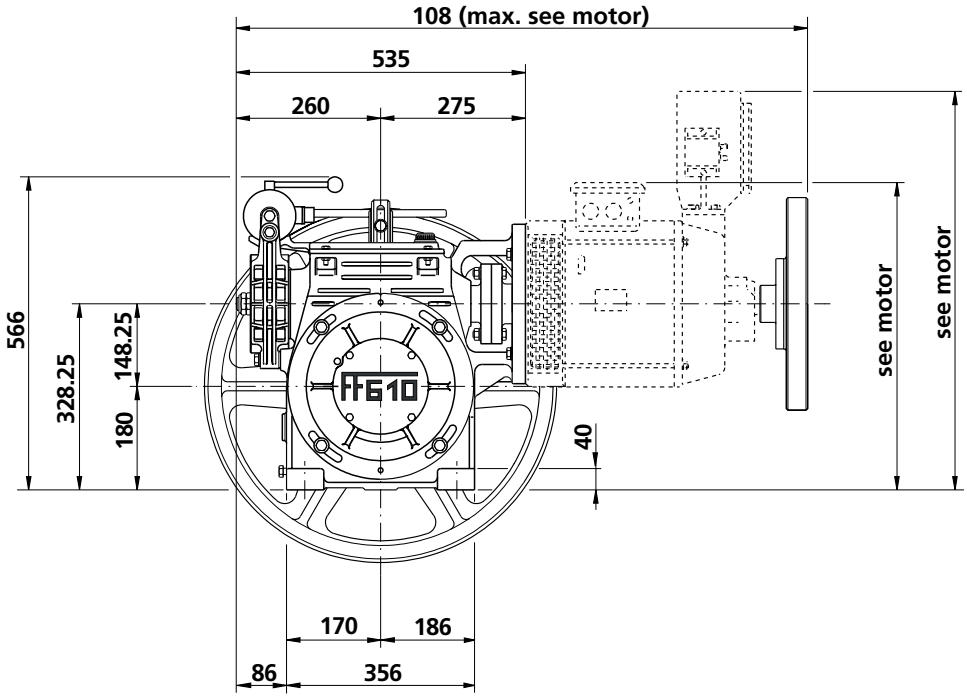
See general section for effective working capacity load Q

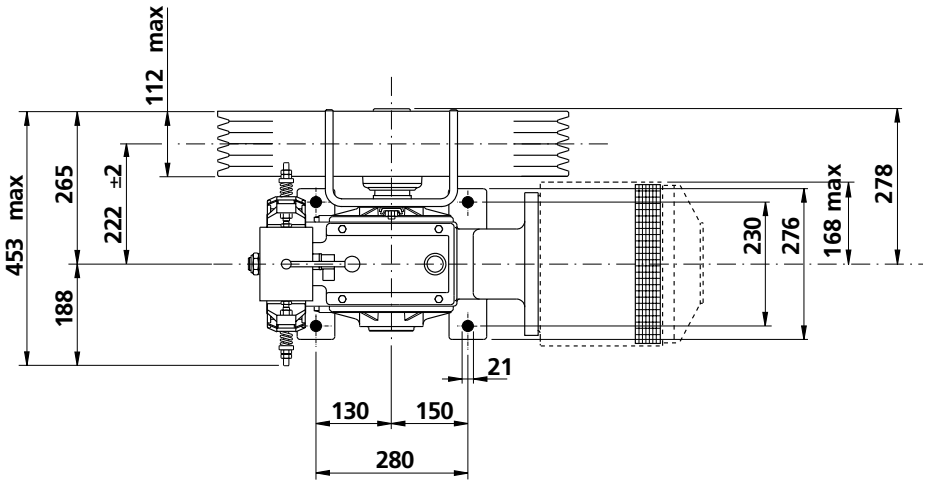
Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	192	70	**2500**

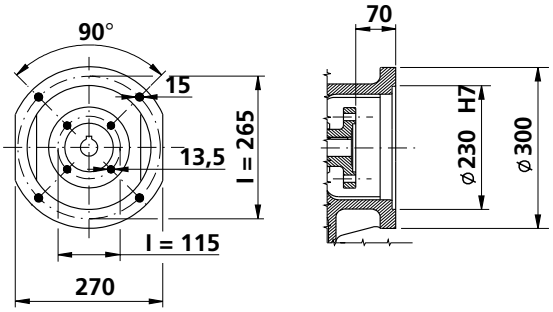
General Features - FF 610 Lift Gear Package

Electric motor	type B9 - with 2 speeds and governed speed (Pay attention to max. applicable motor size: 160)
Power range	3.7 to 11.5 kW (5 to 15.6 HP)
Reduction gear	1/59 1/49 1/49P 1/40P 2/47
Low-speed shaft	overhung (standard), static load 3200 kg
Driving pulley	integral $\varnothing_{pr}$ 440 to 630 mm
Brake electromagnet	type AD1 in dc, volt 48, 60, 110, 180
Compensating flywheel	motor side
Rope guide	for pull downwards (machine at top)
Sump capacity	3.2 Litres
Special applications (on request)	Customised side cover Aluminium handwheel on motor side Tacho/encoder Driving sheave with hardened grooves Split driving sheave Rope-locking clamp Brake electromagnet special voltages Brake electromagnet with IP55 rating Rope guide for upward pull or to side
Note	You must contact our technical office for more information when you have motor size 200 and/or driving pulley with band width more than 112 mm

Dimensions - Normal shaft - FF 610







Detail of motor coupling flange

Winch weight	155 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.2 Litres	
Max static load	**3200 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 610

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	3.7	4.1	4.6	5.2	6.2	6.5	6.9	7.4	7.8	8.3	9.2	10.3	11.5
				HP	5	5.6	6.3	7.1	8.4	8.8	9.4	10.1	10.6	11.3	12.5	14	15.6
0.59	0.54	1/59	440		600	660	740	840									
0.64	0.59	1/59	480		540	610	680	780									
0.67	0.62	1/59	500		520	590	660	740									
0.69	0.64	1/59	520		500	570	630	710									
0.71	0.66	1/49	440			580	650	730	880	920	970	1050					
0.71	0.66	1/49 p	440									1050	1100	1170	1300		
0.73	0.68	1/59	550		480	530	600	670									
0.77	0.72	1/49	480			530	600	670	810	840	890	960					
0.77	0.72	1/49 p	480									960	1010	1080	1190		
0.80	0.74	1/59	600		440	480	540	620									
0.80	0.75	1/49	500			510	580	650	780	810	860	920					
0.80	0.75	1/49 p	500									920	970	1030	1140		
0.83	0.78	1/49	520			490	540	620	740	780	830	880					
0.83	0.78	1/49 p	520									880	930	1000	1100		
0.84	0.78	1/59	630		420	460	520	590									
0.86	0.80	1/40 p	440			500	570	640	750	800	840	900	950	1020	1120	1260	1400
0.88	0.82	1/49	550			460	520	590	700	730	780	840					
0.88	0.82	1/49 p	550									840	880	940	1040		
0.94	0.88	1/40 p	480			460	510	580	690	720	780	830	870	930	1030	1150	1290
0.96	0.89	1/49	600			430	470	530	640	670	710	760					
0.96	0.89	1/49 p	600									760	810	860	950		
0.98	0.91	1/40 p	500			440	490	560	670	700	740	800	840	890	980	1110	1240
1.01	0.94	1/49	630			410	450	510	610	640	680	730					
1.01	0.94	1/49 p	630									730	760	820	910		
1.02	0.95	1/40 p	520			420	470	530	640	670	710	760	810	860	950	1060	1180
1.08	1.00	1/40 p	550			400	450	500	610	640	670	720	760	810	900	1010	1120
1.18	1.10	1/40 p	600			370	410	460	560	580	620	660	700	740	830	920	1030
1.24	1.15	1/40 p	630			350	390	440	520	560	590	630	660	700	790	880	980
1.47	1.37	2/47	440				370	420	490	510	540	590	620	660	730	820	910
1.60	1.49	2/47	480				340	380	450	470	500	540	570	610	670	750	840
1.67	1.55	2/47	500				320	370	430	450	480	510	540	580	650	720	810
1.74	1.62	2/47	520				310	350	420	440	460	500	520	560	620	690	780
1.84	1.71	2/47	550				290	340	400	420	440	470	490	520	590	660	730
2.01	1.86	2/47	600				270	300	370	380	400	430	450	480	530	600	670
2.11	1.96	2/47	630				250	290	350	360	390	410	430	460	510	580	640

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	222	75	**3200**

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 610

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	3.7	4.1	4.6	5.2	6.2	6.5	6.9	7.4	7.8	8.3	9.2	10.3	11.5
				HP	5	5.6	6.3	7.1	8.4	8.8	9.4	10.1	10.6	11.3	12.5	14	15.6
0.29	0.27	1/59	440		1120	1250	1390	1580									
0.32	0.30	1/59	480		1030	1140	1280	1450									
0.33	0.31	1/59	500		980	1100	1230	1390									
0.35	0.32	1/59	520		950	1060	1180	1330									
0.35	0.33	1/49	440			1090	1220	1370	1640	1720	1820	1960					
0.35	0.33	1/49 p	440									1960	2060	2200	2440		
0.37	0.34	1/59	550		900	1000	1120	1270									
0.38	0.36	1/49	480			1000	1120	1270	1510	1580	1680	1800					
0.38	0.36	1/49 p	480									1800	1900	2010	2230		
0.40	0.37	1/59	600		830	910	1030	1150									
0.40	0.37	1/49	500			950	1070	1220	1450	1520	1610	1730					
0.40	0.37	1/49 p	500									1730	1820	1940	2150		
0.42	0.39	1/49	520			920	1030	1160	1390	1460	1550	1660					
0.42	0.39	1/49 p	520									1660	1750	1860	2060		
0.42	0.39	1/59	630		790	870	970	1100									
0.43	0.40	1/40 p	440			940	1050	1190	1410	1490	1580	1700	1780	1900	2110	2360	2630
0.44	0.41	1/49	550			870	970	1100	1310	1370	1470	1570					
0.44	0.41	1/49 p	550									1570	1660	1760	1950		
0.47	0.44	1/40 p	480			860	960	1090	1300	1360	1450	1550	1630	1740	1930	2160	2410
0.48	0.45	1/49	600			800	890	1010	1200	1270	1340	1440					
0.48	0.45	1/49 p	600									1440	1520	1610	1790		
0.49	0.46	1/40 p	500			830	920	1050	1250	1310	1390	1490	1570	1670	1850	2070	2320
0.50	0.47	1/49	630			750	850	960	1140	1200	1280	1370					
0.50	0.47	1/49 p	630									1370	1450	1540	1700		
0.51	0.47	1/40 p	520			800	890	1010	1200	1260	1330	1440	1510	1600	1780	1990	2220
0.54	0.50	1/40 p	550			750	840	950	1130	1190	1270	1350	1420	1520	1690	1890	2110
0.59	0.55	1/40 p	600			690	780	870	1040	1090	1150	1240	1310	1390	1540	1730	1930
0.62	0.58	1/49 p	630			660	730	830	1000	1040	1100	1180	1250	1330	1470	1640	1830
0.74	0.68	2/47	440				690	780	920	970	1030	1100	1160	1240	1370	1540	1720
0.80	0.75	2/47	480				630	710	850	890	940	1020	1070	1130	1260	1400	1570
0.84	0.78	2/47	500				610	680	820	850	900	970	1030	1090	1200	1350	1510
0.87	0.81	2/47	520				580	660	790	820	870	930	980	1050	1160	1300	1460
0.92	0.85	2/47	550				540	620	740	780	830	880	930	1000	1100	1230	1370
1.00	0.93	2/47	600				500	570	680	710	750	810	850	910	1010	1130	1260
1.05	0.98	2/47	630				480	540	650	680	720	780	820	870	960	1070	1190

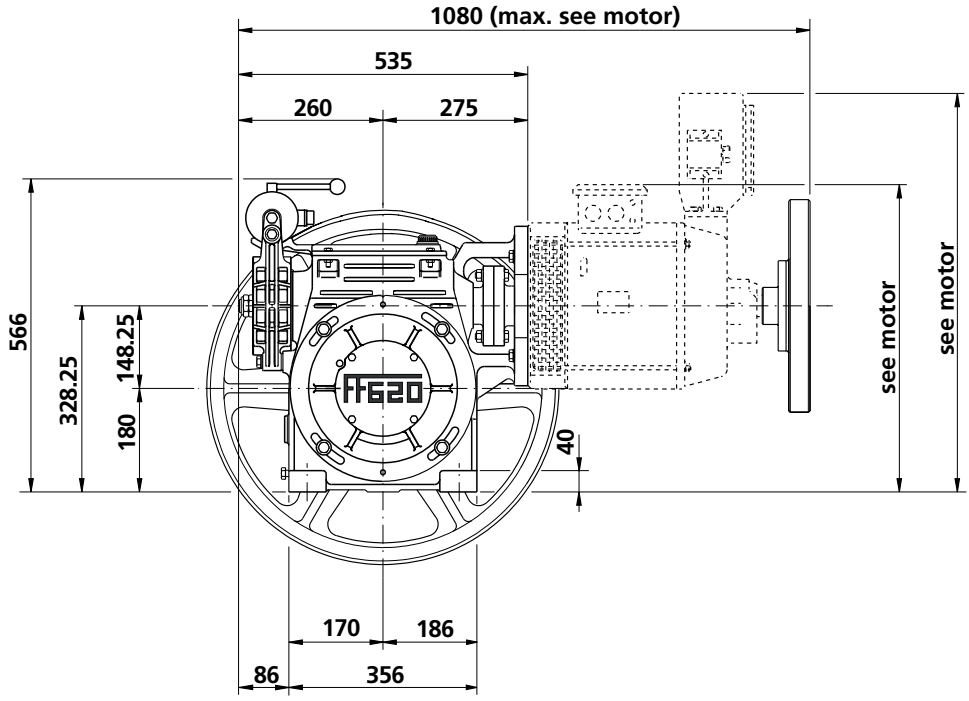
See general section for effective working capacity load Q

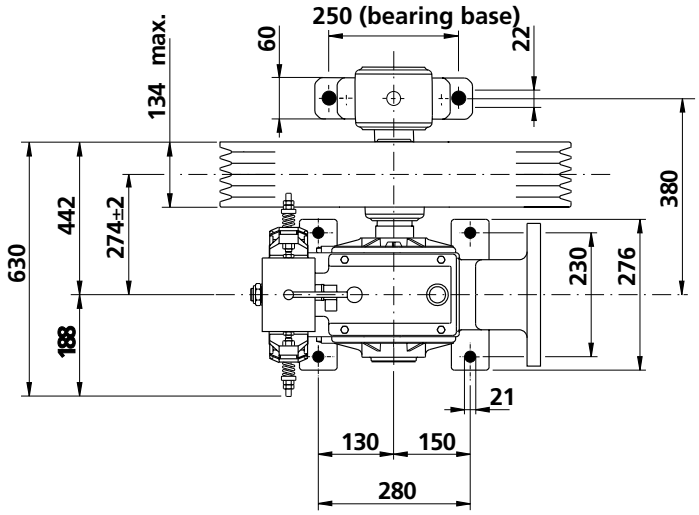
Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	222	75	**3200**

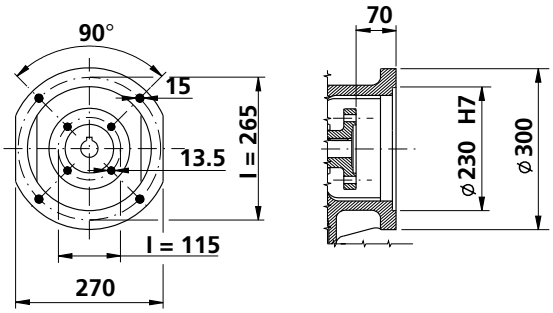
General Features - FF 620 Lift Gear Package

Electric motor	type B9 - with 2 speeds and governed speed
Power range	3.7 to 11.5 kW (5 to 15.6 HP)
Reduction gear	1/59 1/49 1/49P 1/40P 2/47
Low-speed shaft	withexternal support,tstatic load 3700 kg extended T 20.111,static load 3500 kg extended T 20.108, static load 3500 kg extended T 1265, static load 2600 kg
Driving pulley	integral $\varnothing_{pr}$ 440 to 630 mm
Brake electromagnet	type AD1 in dc, volt 48, 60, 110, 180
Compensating flywheel	motor side
Rope guide	for pull downwards (machine at top)
Sump capacity	3.2 Litres
Special applications (on request)	Customised side cover Aluminium handwheel on motor side Tacho/encoder Driving sheave with hardened grooves Split driving sheave Rope-locking clamp Brake electromagnet special voltages Brake electromagnet with IP55 rating Rope guide for upward pull or to side External strengthened support type SN

Dimensions - Normal Shaft - FF 620





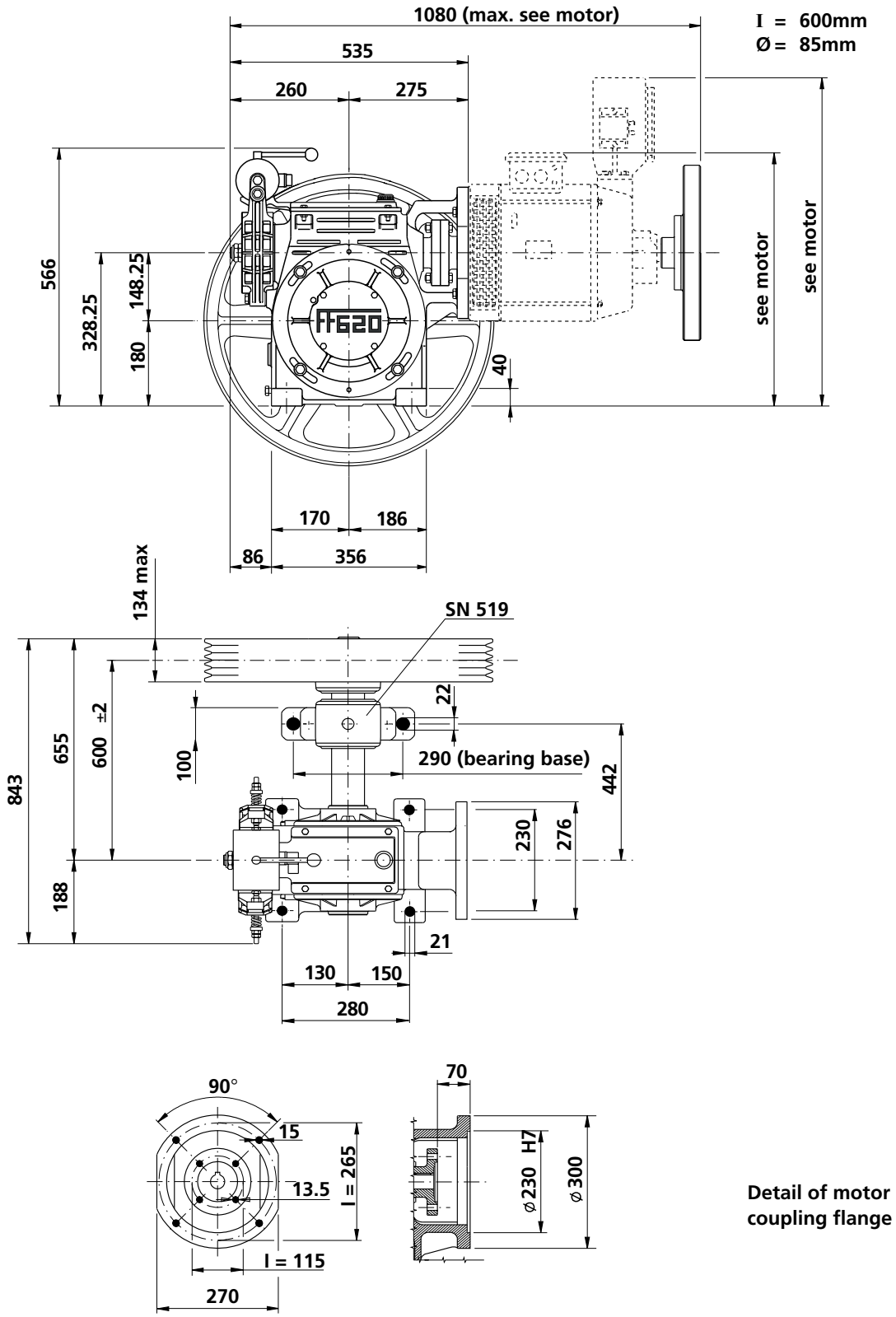


Detail of motor coupling flange

Winch weight	**172 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**3.2 Litres**	
Max static load	**3700 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Dimensions - Extended Shaft - FF 620

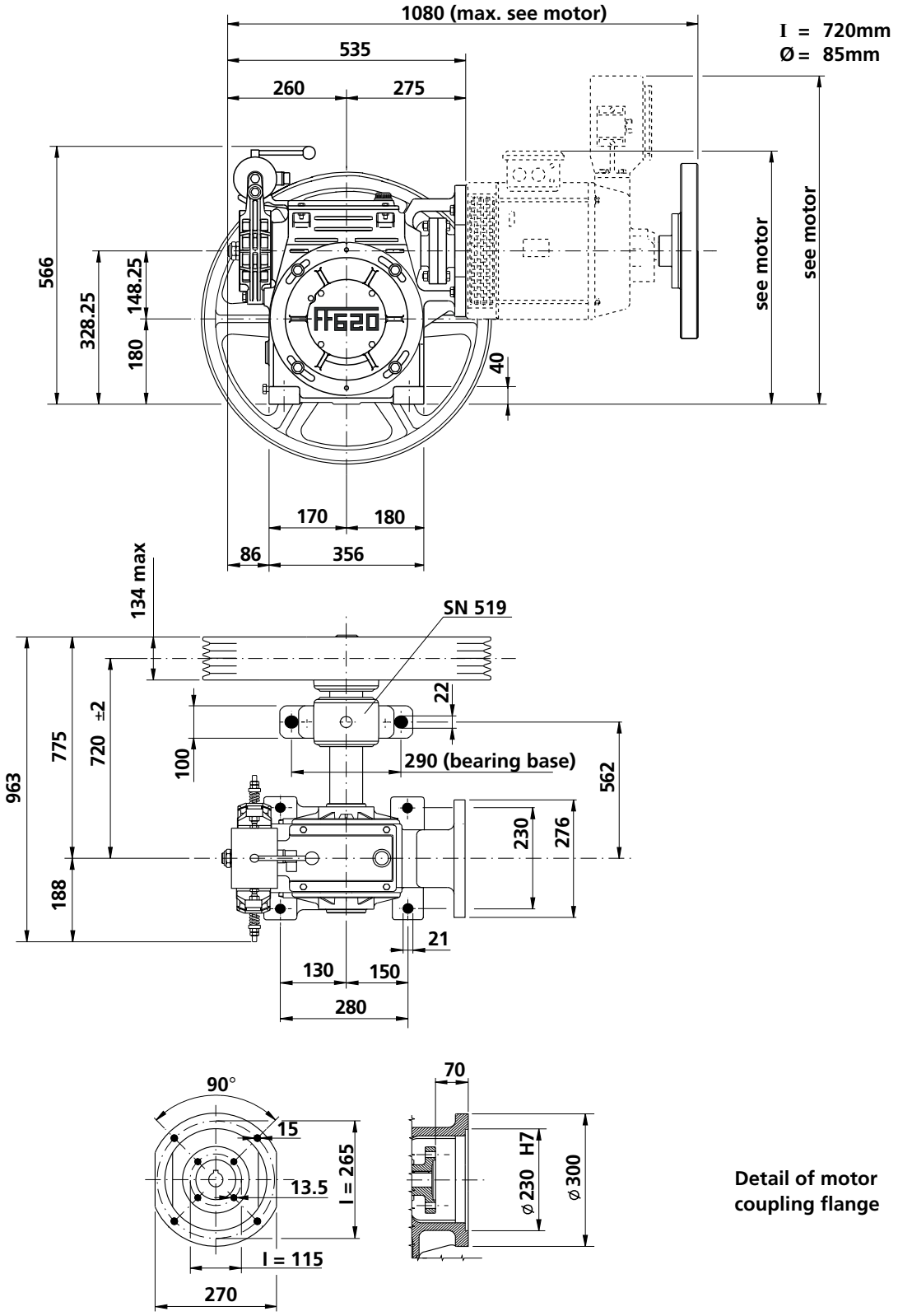


Detail of motor coupling flange

Winch weight	172 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.2 Litres	
Max static load	**3500 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

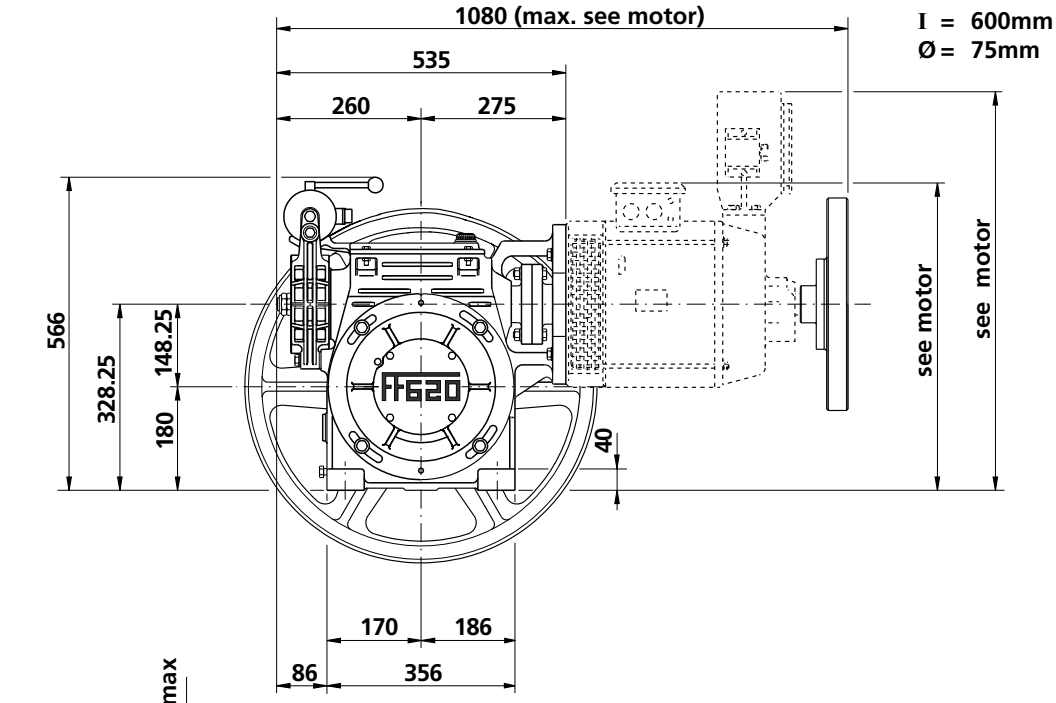
Dimensions - Extended Shaft - FF 620

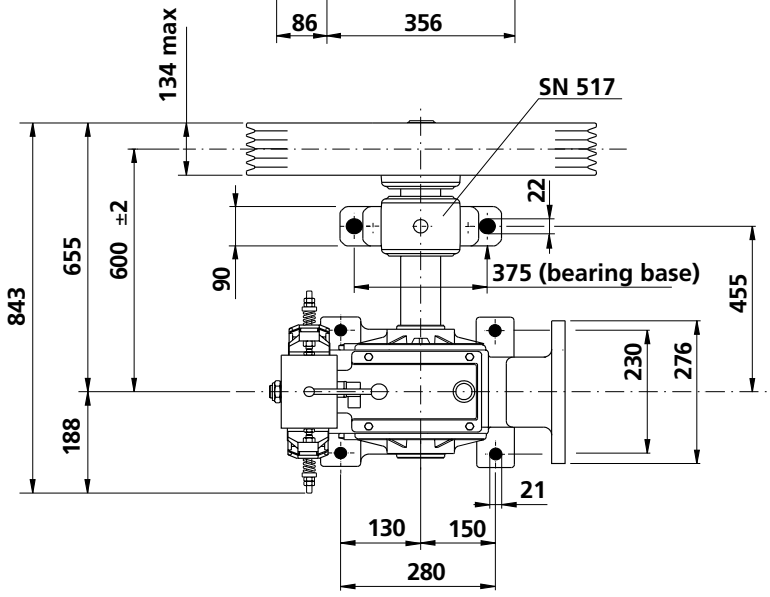


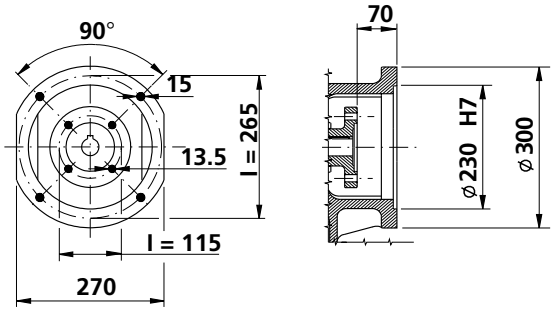
Detail of motor coupling flange

Winch weight	172 kg	(electric motor, traction pulley, handwheel, oil excluded)	- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
Oil quantity	3.2 Litres		
Max static load	**3500 kg**		- See relative catalogues for motor dimensions.

Dimensions - Extended Shaft - FF 620







Detail of motor coupling flange

Max applicable power at 1500 rpm

Reduction gear	kW
1/40p	7.4
1/49	6.5
1/49p	6.9
1/59	4.6
2/47	10.3

with this version

Winch weight	172 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.2 Litres	
Max static load	**2600 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

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Total Capacity Load - Qt kg - 50 Hz - FF 620

1:1 suspension - direct traction — **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	3.7	4.1	4.6	5.2	6.2	6.5	6.9	7.4	7.8	8.3	9.2	10.3	11.5
				HP	5	5.6	6.3	7.1	8.4	8.8	9.4	10.1	10.6	11.3	12.5	14	15.6
0.59	0.54	1/59	440		600	660	740	840									
0.64	0.59	1/59	480		540	610	680	780									
0.67	0.62	1/59	500		520	590	660	740									
0.69	0.64	1/59	520		500	570	630	710									
0.71	0.66	1/49	440			580	650	730	880	920	970	1050					
0.71	0.66	1/49 p	440									1050	1100	1170	1300		
0.73	0.68	1/59	550		480	530	600	670									
0.77	0.72	1/49	480			530	600	670	810	840	890	960					
0.77	0.72	1/49 p	480									960	1010	1080	1190		
0.80	0.74	1/59	600		440	480	540	620									
0.80	0.75	1/49	500			510	580	650	780	810	860	920					
0.80	0.75	1/49 p	500									920	970	1030	1140		
0.83	0.78	1/49	520			490	540	620	740	780	830	880					
0.83	0.78	1/49 p	520									880	930	1000	1100		
0.84	0.78	1/59	630		420	460	520	590									
0.86	0.80	1/40 p	440			500	570	640	750	800	840	900	950	1020	1120	1260	1400
0.88	0.82	1/49	550			460	520	590	700	730	780	840					
0.88	0.82	1/49 p	550									840	880	940	1040		
0.94	0.88	1/40 p	480			460	510	580	690	720	780	830	870	930	1030	1150	1290
0.96	0.89	1/49	600			430	470	530	640	670	710	760					
0.96	0.89	1/49 p	600									760	810	860	950		
0.98	0.91	1/40 p	500			440	490	560	670	700	740	800	840	890	980	1110	1240
1.01	0.94	1/49	630			410	450	510	610	640	680	730					
1.01	0.94	1/49 p	630									730	760	820	910		
1.02	0.95	1/40 p	520			420	470	530	640	670	710	760	810	860	950	1060	1180
1.08	1.00	1/40 p	550			400	450	500	610	640	670	720	760	810	900	1010	1120
1.18	1.10	1/40 p	600			370	410	460	560	580	620	660	700	740	830	920	1030
1.24	1.15	1/40 p	630			350	390	440	520	560	590	630	660	700	790	880	980
1.47	1.37	2/47	440				370	420	490	510	540	590	620	660	730	820	910
1.60	1.49	2/47	480				340	380	450	470	500	540	570	610	670	750	840
1.67	1.55	2/47	500				320	370	430	450	480	510	540	580	650	720	810
1.74	1.62	2/47	520				310	350	420	440	460	500	520	560	620	690	780
1.84	1.71	2/47	550				290	340	400	420	440	470	490	520	590	660	730
2.01	1.86	2/47	600				270	300	370	380	400	430	450	480	530	600	670
2.11	1.96	2/47	630				250	290	350	360	390	410	430	460	510	580	640

See general section for effective working capacity load Q

Low speed shaft versions	Pitch l mm	Diameter mm	Max static load kg	Applicable power kW	
normal	275	75	**3700**	000	000
extended T 20.111	720	85	**3500**	000	000
extended T 20.108	600	85	**3500**	000	000
* extended T 1265	600	75	**2600**	000	

* limited motor-power version (see overall dimensions table)

Total Capacity Load - Qt kg - 50 Hz - FF 620

2:1 suspension - cutting traction — **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	3.7	4.1	4.6	5.2	6.2	6.5	6.9	7.4	7.8	8.3	9.2	10.3	11.5
				HP	5	5.6	6.3	7.1	8.4	8.8	9.4	10.1	10.6	11.3	12.5	14	15.6
0.29	0.27	1/59	440		1120	1250	1390	1580									
0.32	0.30	1/59	480		1030	1140	1280	1450									
0.33	0.31	1/59	500		980	1100	1230	1390									
0.35	0.32	1/59	520		950	1060	1180	1330									
0.35	0.33	1/49	440			1090	1220	1370	1640	1720	1820	1960					
0.35	0.33	1/49 p	440									1960	2060	2200	2440		
0.37	0.34	1/59	550		900	1000	1120	1270									
0.38	0.36	1/49	480			1000	1120	1270	1510	1580	1680	1800					
0.38	0.36	1/49 p	480									1800	1900	2010	2230		
0.40	0.37	1/59	600		830	910	1030	1150									
0.40	0.37	1/49	500			950	1070	1220	1450	1520	1610	1730					
0.40	0.37	1/49 p	500									1730	1820	1940	2150		
0.42	0.39	1/49	520			920	1030	1160	1390	1460	1550	1660					
0.42	0.39	1/49 p	520									1660	1750	1860	2060		
0.42	0.39	1/59	630		790	870	970	1100									
0.43	0.40	1/40 p	440			940	1050	1190	1410	1490	1580	1700	1780	1900	2110	2360	2630
0.44	0.41	1/49	550			870	970	1100	1310	1370	1470	1570					
0.44	0.41	1/49 p	550									1570	1660	1760	1950		
0.47	0.44	1/49 p	480			860	960	1090	1300	1360	1450	1550	1630	1740	1930	2160	2410
0.48	0.45	1/49	600			800	890	1010	1200	1270	1340	1440					
0.48	0.45	1/49 p	600									1440	1520	1610	1790		
0.49	0.46	1/40 p	500			830	920	1050	1250	1310	1390	1490	1570	1670	1850	2070	2320
0.50	0.47	1/49	630			750	850	960	1140	1200	1280	1370					
0.50	0.47	1/49 p	630									1370	1450	1540	1700		
0.51	0.47	1/40 p	520			800	890	1010	1200	1260	1330	1440	1510	1600	1780	1990	2220
0.54	0.50	1/40 p	550			750	840	950	1130	1190	1270	1350	1420	1520	1690	1890	2110
0.59	0.55	1/40 p	600			690	780	870	1040	1090	1150	1240	1310	1390	1540	1730	1930
0.62	0.58	1/40 p	630			660	730	830	1000	1040	1100	1180	1250	1330	1470	1640	1830
0.74	0.68	2/47	440				690	780	920	970	1030	1100	1160	1240	1370	1540	1720
0.80	0.75	2/47	480				630	710	850	890	940	1020	1070	1130	1260	1400	1570
0.84	0.78	2/47	500				610	680	820	850	900	970	1030	1090	1200	1350	1510
0.87	0.81	2/47	520				580	660	790	820	870	930	980	1050	1160	1300	1460
0.92	0.85	2/47	550				540	620	740	780	830	880	930	1000	1100	1230	1370
1.00	0.93	2/47	600				500	570	680	710	750	810	850	910	1010	1130	1260
1.05	0.98	2/47	630				480	540	650	680	720	780	820	870	960	1070	1190

See general section for effective working capacity load Q

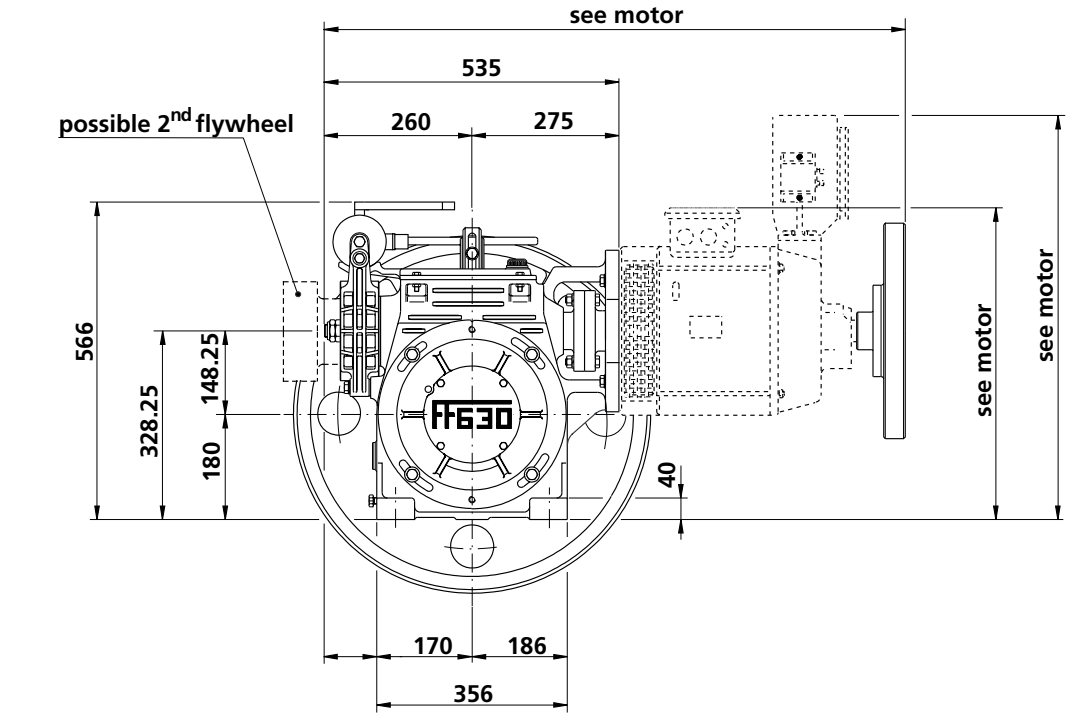
Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg	Applicable power kW	
normal	275	75	**3700**	000	000
extended T 20.111	720	85	**3500**	000	000
extended T 20.108	600	85	**3500**	000	000
* extended T 1265	600	75	**2600**	000	

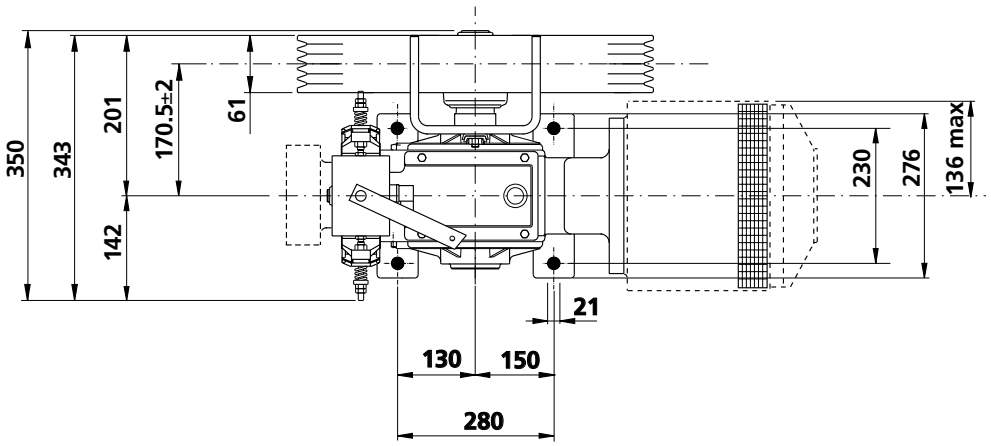
* limited motor-power version (see overall dimensions table)

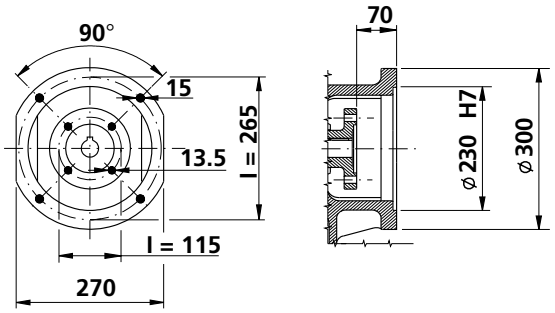
General Features - FF 630 Lift Gear Package

Electric motor	type B9 - with 2 speeds and governed speed (Pay attention to max. applicable motor size)
Power range	3.7 to 11.5 kW (5 to 15.6 HP)
Reduction gear	1/40P 2/47
Low-speed shaft	overhung (standard), static load 2500 kg
Driving pulley	integral $\varnothing_{pr}$ 630 x 3 x 8 to 11 (blind)
Brake electromagnet	type AD1 in dc, volt 48, 60, 110, 180
Compensating flywheel	motor side
Rope guide	for pull downwards (machine at top)
Sump capacity	3.0 Litres
Special applications (on request)	Customised side cover Compensating handwheel on opposite side to motor Aluminium handwheel on motor side Aluminium handwheel on opposite side to motor and spacer Tacho/encoder Driving sheave with hardened grooves Brake electromagnet special voltages Brake electromagnet with IP55 rating

Dimensions - Normal Shaft - FF 630







Detail of motor coupling flange

Winch weight	160 kg	(electric motor, traction pulley, handwheel, oil excluded)	- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
Oil quantity	3.0 Litres		
Max static load	**2500 kg**		- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 630

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	3.7	4.1	4.6	5.2	6.2	6.5	6.9	7.4	7.8	8.3	9.2	10.3	11.5
				HP	5	5.6	6.3	7.1	8.4	8.8	9.4	10.1	10.6	11.3	12.5	14	15.6
0.62	0.58	1/40 p	630			660	730	830	1000	1040	1100	1180	1250	1330	1470	1640	1830
1.05	0.98	2/47	630		390	430	480	540	650	680	720	780	820	870	960	1070	1190

See general section for effective working capacity load Q

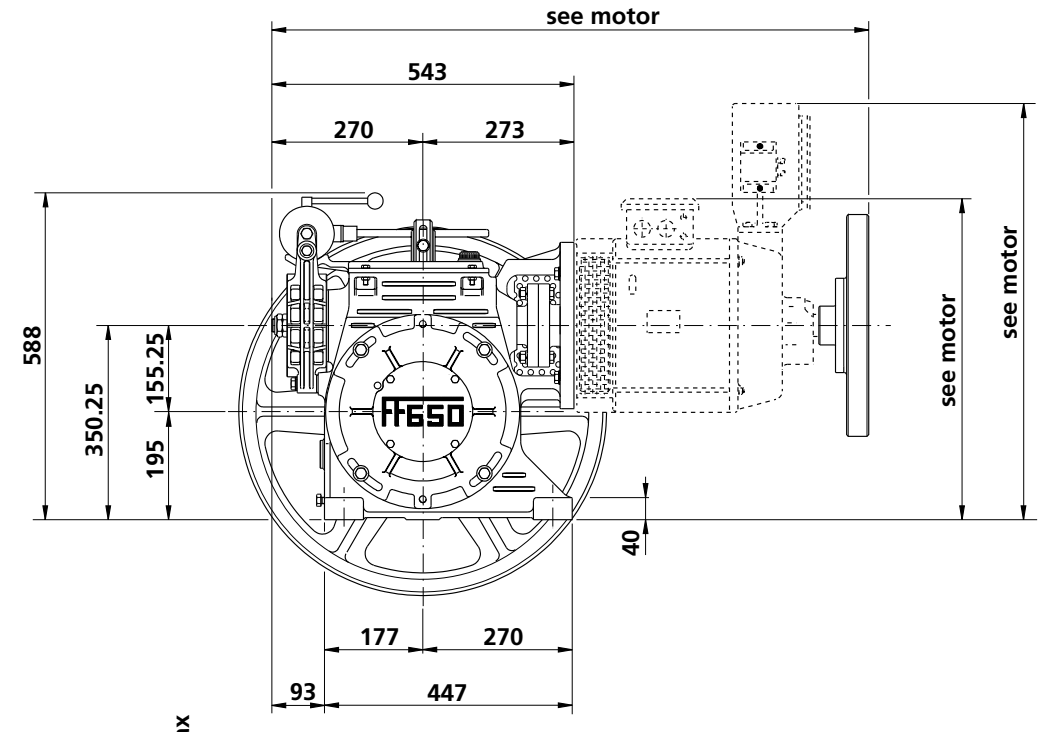
Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	170.5	75	**2500**

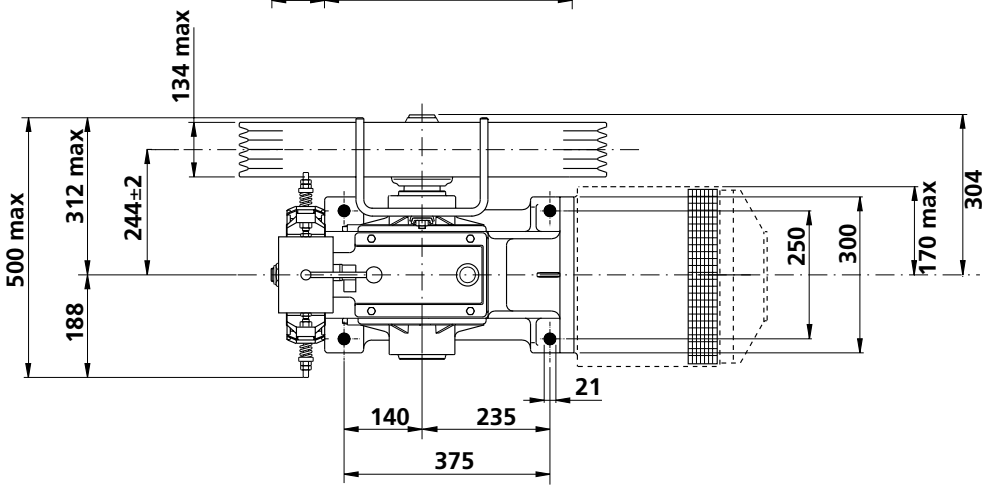
ATTENTION: See page 9.1 Rev. F for max applicable motor size.

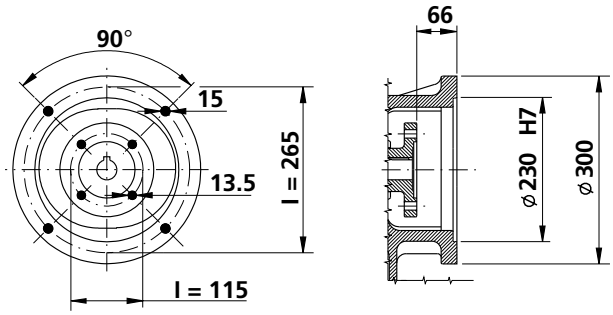
General Features - FF 650 Lift Gear Package

Electric motor	**type B9 - with 2 speeds and governed speed** **(Pay attention to max. applicable motor size for overhung shaft)**
Power range	**5.2 to 16 kW (7.1 to 22 HP)**
Reduction gear	**1/61 1/50 1/42 2/49 3/41**
Low-speed shaft	**overhung (standard), static load 4000 kg** **extended T 31.005,static load 3500 kg** **extended T 31.006, static load 2600 kg**
Driving pulley	**integral $\varnothing_{pr}$ 480 to 650 mm**
Brake electromagnet	**type AD1 in dc, volt 48, 60, 110, 180**
Compensating flywheel	**motor side**
Rope guide	**for pull downwards (machine at top)**
Sump capacity	**3.0 Litres**
Special applications (on request)	**Low-speed shaft special versions on request** **Customised side cover** **Aluminium handwheel on motor side** **Tacho/encoder** **Driving sheave with hardened grooves** **Split driving sheave** **Rope-locking clamp** **Brake electromagnet special voltages** **Brake electromagnet with IP55 rating** **Rope guide for upward pull or to side**

Dimensions - Normal Shaft - FF 650





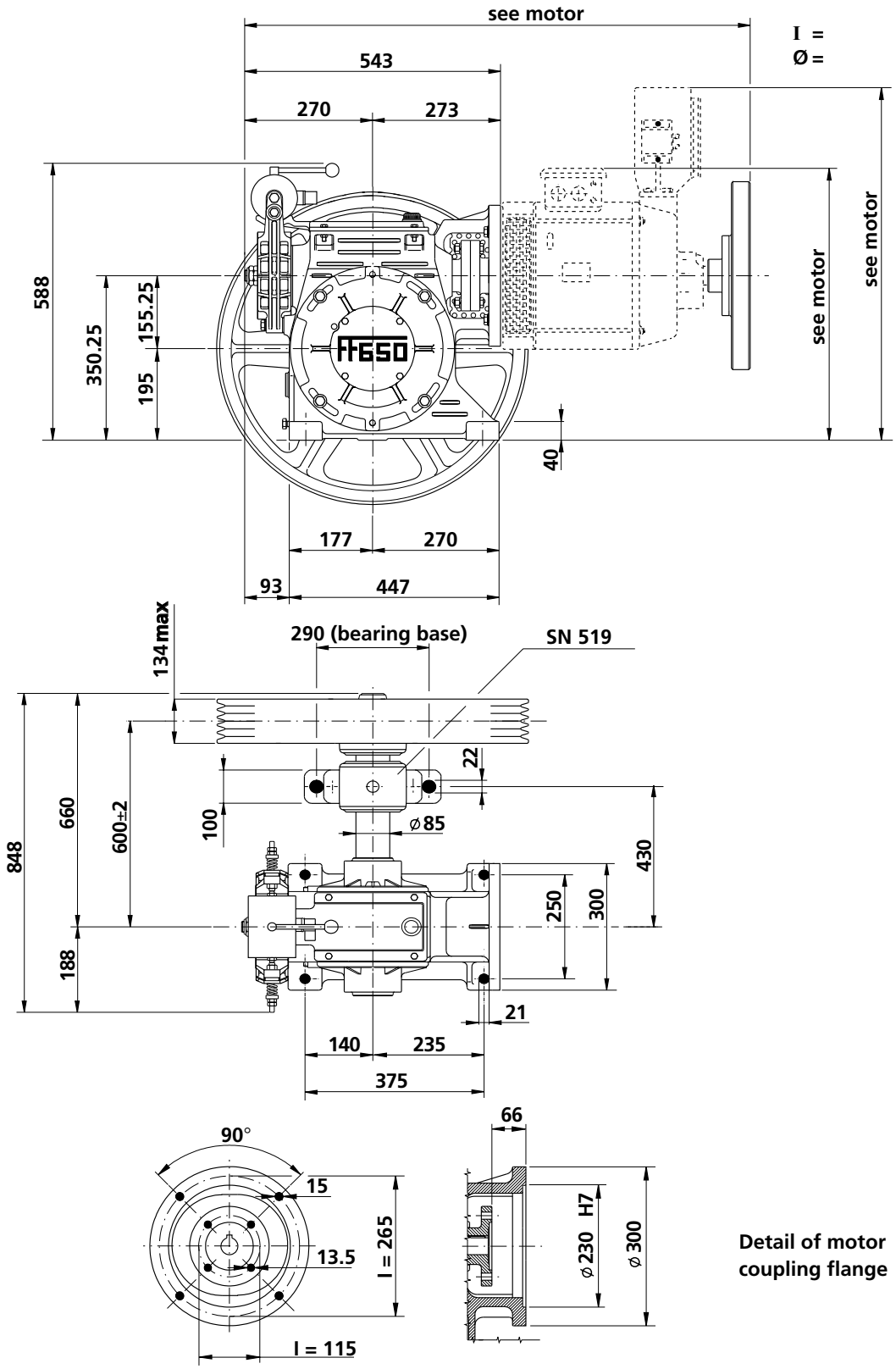


Detail of motor coupling flange

Winch weight	180 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.0 Litres	
Max static load	**4000 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

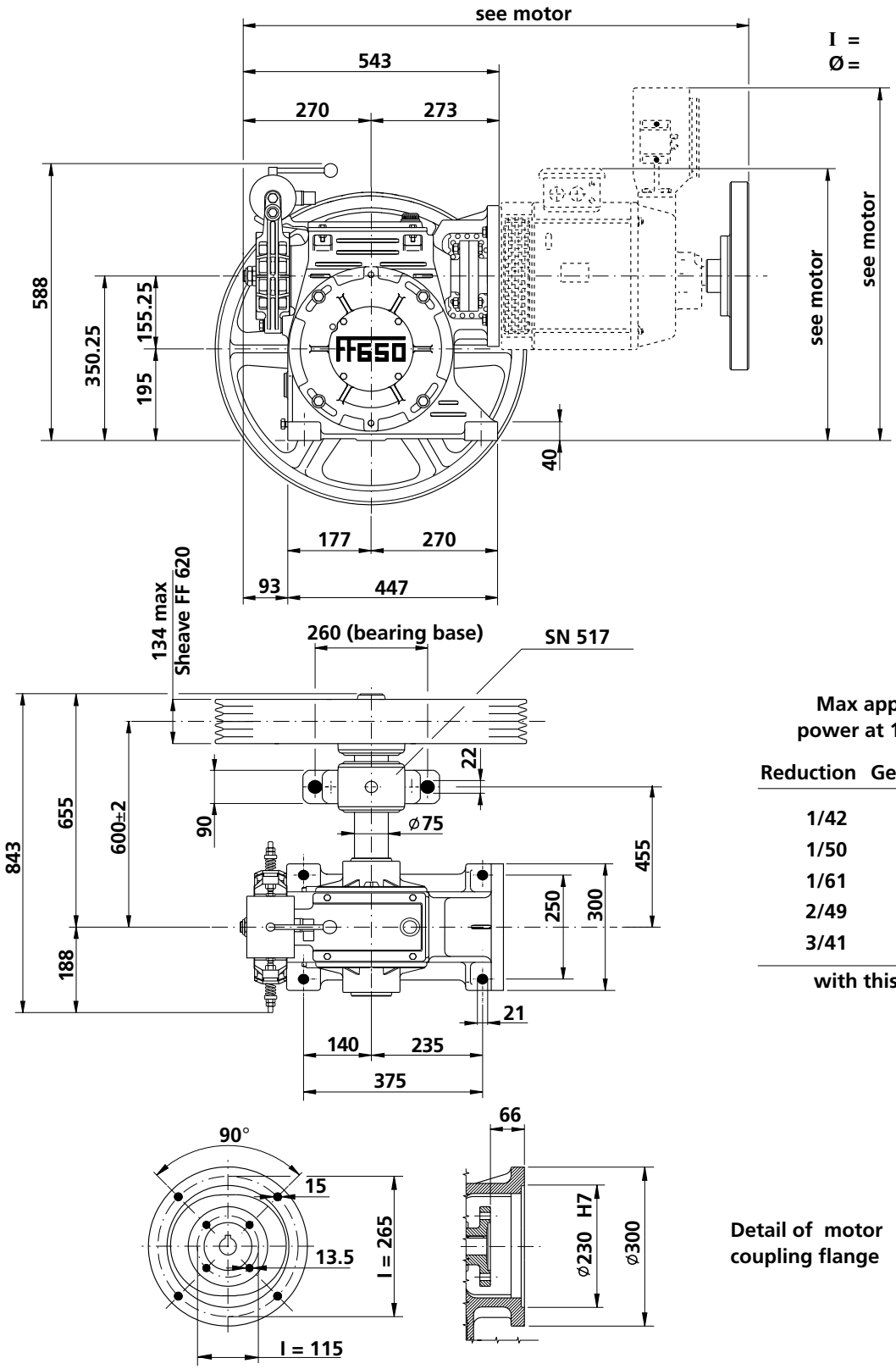
Dimensions - Extended Shaft - FF 650



Detail of motor coupling flange

Winch weight	220 kg	(electric motor, traction pulley, handwheel, oil excluded)	- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
Oil quantity	3.0 Litres		
Max static load	**3500 kg**		- See relative catalogues for motor dimensions.

Dimensions - Extended Shaft - FF 650



I = 600mm
Ø = 75mm

Max applicable power at 1500 rpm

Reduction Gear	kW
1/42	7.4
1/50	6.5
1/61	5.2
2/49	10.3
3/41	16

with this version

Detail of motor coupling flange

Winch weight	210 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.0 Litres	
Max static load	**2600 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 650

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	5.2	6.2	6.5	6.9	7.4	7.8	8.3	9.2	10.3	11.5	12	13	15	16
				HP	7.1	8.4	8.8	9.4	10.1	10.6	11.3	12.5	14	15.6	16.3	17.7	20.4	21.8
0.62	0.57	1/61	480		800	950	1000	1060	1130									
0.67	0.62	1/61	520		730	880	920	970	1050									
0.71	0.66	1/61	550		690	830	870	920	980									
0.75	0.70	1/50	480		690	830	870	920	980	1040	1110	1230						
0.77	0.72	1/61	600		640	760	800	850	910									
0.81	0.75	1/61	630		610	720	750	810	860									
0.82	0.76	1/50	520		640	760	810	850	910	960	1030	1130						
0.84	0.78	1/61	650		590	700	730	780	840									
0.86	0.80	1/50	550		610	720	750	810	860	910	960	1070						
0.90	0.83	1/42	480		610	730	760	810	870	920	970	1080	1220	1350	1410			
0.94	0.88	1/50	600		560	660	690	730	790	840	890	980						
0.97	0.90	1/42	520		570	670	700	740	810	850	900	1000	1120	1250	1300			
0.99	0.92	1/50	630		530	630	660	700	750	800	850	930						
1.02	0.95	1/50	650		510	610	640	680	730	760	820	910						
1.03	0.96	1/42	550		530	640	670	710	750	800	850	940	1060	1180	1240			
1.12	1.04	1/42	600		490	590	610	650	690	730	790	870	960	1080	1130			
1.18	1.10	1/42	630		460	560	590	620	660	700	740	830	920	1030	1080			
1.22	1.13	1/42	650		450	530	570	600	640	680	720	800	890	1000	1040			
1.54	1.43	2/49	480		400	470	500	530	570	600	640	700	790	880	920	1000	1150	1230
1.67	1.55	2/49	520		370	440	460	490	520	560	590	650	730	820	850	920	1060	1130
1.76	1.64	2/49	550		350	420	440	460	490	520	560	620	690	780	810	870	1010	1070
1.92	1.79	2/49	600		310	380	400	420	450	480	510	570	630	700	730	800	920	980
2.02	1.88	2/49	630		300	370	380	410	430	460	480	530	610	670	700	760	880	930
2.08	1.94	2/49	650		290	360	370	390	420	440	470	520	590	650	680	730	850	910
2.76	2.57	3/41	480		240	280	290	310	340	360	380	420	470	520	560	600	690	730
2.99	2.78	3/41	520		220	260	270	290	310	340	360	390	440	490	510	560	640	680
3.16	2.94	3/41	550		210	250	260	270	290	310	340	370	410	460	480	520	600	640
3.45	3.21	3/41	600		190	230	240	250	270	280	300	340	380	420	440	480	560	590
3.62	3.37	3/41	630		180	220	230	240	260	270	290	320	360	400	420	450	520	560
3.74	3.47	3/41	650		180	210	220	230	250	260	280	310	350	390	410	440	510	540

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg	Applicable power kW	
normal	244	80	4000	000	000
extended T 31.005	600	85	3500	000	000
* extended T 31.006	600	75	2600	000	

* limited motor-power version (see overall dimensions table)

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 650

2:1 suspension - cutting traction — **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	5.2 / 7.1	6.2 / 8.4	6.5 / 8.8	6.9 / 9.4	7.4 / 10.1	7.8 / 10.6	8.3 / 11.3	9.2 / 12.5	10.3 / 14	11.5 / 15.6	only regulated speed motors: 12 / 16.3	13 / 17.7	15 / 20.4	16 / 21.8
0.31	0.29	1/61	480		1500	1780	1860	1980	2130									
0.33	0.31	1/61	520		1380	1640	1730	1830	1960									
0.35	0.33	1/61	550		1300	1550	1630	1730	1850									
0.38	0.35	1/50	480		1300	1550	1620	1730	1850	1960	2080	2300						
0.39	0.36	1/61	600		1190	1420	1500	1580	1700									
0.41	0.38	1/61	630		1140	1360	1420	1510	1620									
0.41	0.38	1/50	520		1200	1440	1510	1590	1710	1800	1920	2130						
0.42	0.39	1/61	650		1100	1320	1380	1470	1570									
0.43	0.40	1/50	550		1140	1350	1420	1510	1610	1710	1810	2010						
0.45	0.42	1/42	480		1140	1370	1440	1520	1630	1720	1830	2030	2270	2540	2650			
0.47	0.44	1/50	600		1040	1250	1300	1380	1490	1560	1670	1840						
0.49	0.45	1/42	520		1060	1260	1320	1400	1510	1590	1690	1880	2100	2340	2440			
0.49	0.46	1/50	630		1000	1180	1240	1320	1410	1490	1580	1760						
0.51	0.47	1/50	650		960	1150	1200	1280	1370	1450	1540	1700						
0.51	0.48	1/42	550		1010	1190	1250	1330	1420	1500	1590	1770	1980	2210	2300			
0.56	0.52	1/42	600		920	1090	1140	1220	1310	1370	1470	1620	1810	2030	2120			
0.59	0.55	1/42	630		870	1040	1090	1160	1250	1310	1390	1550	1730	1930	2010			
0.61	0.57	1/42	650		850	1010	1060	1120	1200	1270	1350	1500	1680	1880	1960			
0.77	0.72	2/49	480		740	890	930	1000	1070	1120	1190	1320	1490	1660	1730	1880	2160	2300
0.83	0.78	2/49	520		690	830	860	920	980	1040	1100	1230	1370	1530	1590	1730	1990	2130
0.88	0.82	2/49	550		650	780	820	870	930	980	1050	1150	1300	1450	1510	1630	1890	2010
0.96	0.89	2/49	600		600	710	740	800	850	900	950	1060	1180	1320	1380	1500	1730	1840
1.01	0.94	2/49	630		570	680	710	750	810	860	910	1010	1130	1260	1320	1420	1640	1760
1.04	0.97	2/49	650		560	660	690	730	790	830	880	970	1100	1230	1280	1380	1590	1700
1.38	1.28	3/41	480		450	530	560	600	640	670	710	800	890	1000	1040	1120	1290	1380
1.49	1.39	3/41	520		410	490	510	540	590	620	660	730	820	910	950	1040	1190	1270
1.58	1.47	3/41	550		390	460	490	520	560	590	630	690	780	870	900	970	1130	1200
1.72	1.60	3/41	600		360	430	450	470	510	530	580	640	710	800	830	900	1040	1100
1.81	1.68	3/41	630		350	410	430	450	480	510	540	610	680	750	790	850	980	1050
1.87	1.74	3/41	650		340	400	410	440	470	490	520	590	660	730	760	830	950	1020

See general section for effective working capacity load Q

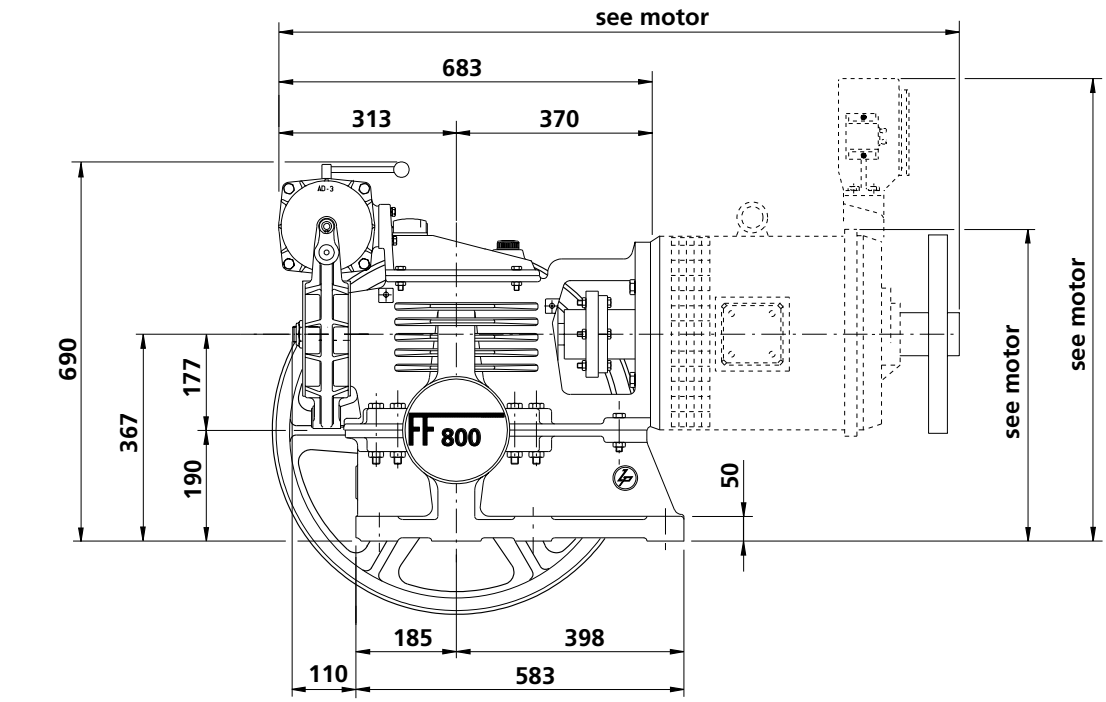
Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg	Applicable power kW	
normal	244	80	**4000**	000	000
extended T 31.005	600	85	**3500**	000	000
* extended T 31.006	600	75	**2600**	000	

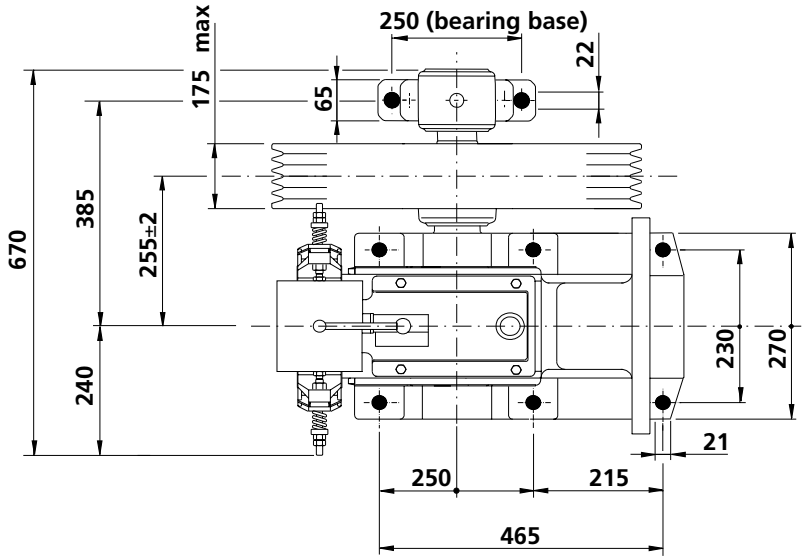
* limited motor-power version (see overall dimensions table)

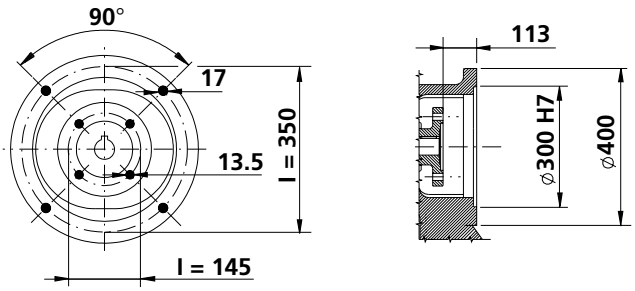
General Features - FF 800 Lift Gear Package

Electric motor	type B9 - with 2 speeds and governed speed
Power range	6.5 to 16.6 kW (8.8 to 22.6 HP)
Reduction gear	1/61 1/49 1/40 2/59 2/49
Low-speed shaft	with external mounting (standard), static load 4500 kg extended T 1266,static load 3000 kg extended T 26.99, static load 4500 kg
Driving pulley	integral $\varnothing_{pr}$ 480 to 670 mm
Brake electromagnet	type AD3 in dc, volt 48, 60, 110, 180
Compensating flywheel	motor side
Rope guide	for pull downwards (machine at top)
Sump capacity	3.4 Litres
Special applications (on request)	Low-speed shaft special versions on request Customised side cover Aluminium handwheel on motor side Tacho/encoder Driving sheave with hardened grooves Split driving sheave Rope-locking clamp Brake electromagnet special voltages Brake electromagnet with IP55 rating Rope guide for upward pull or to side External strengthened support type SN

Dimensions - Normal Shaft - FF 800







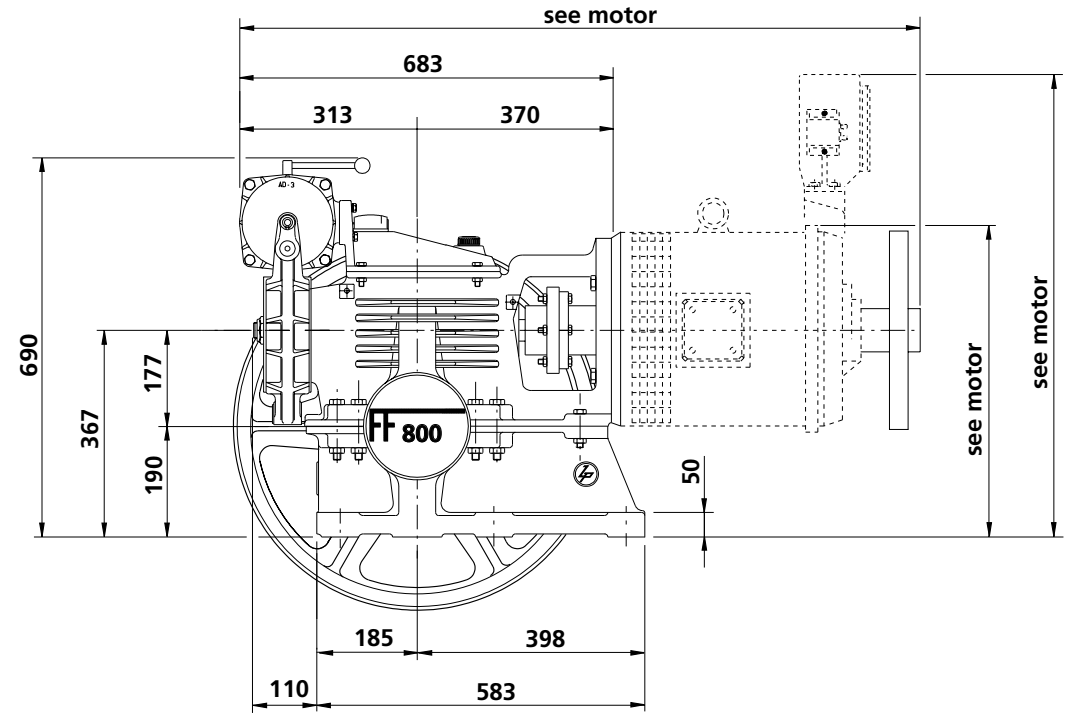
Detail of motor coupling flange

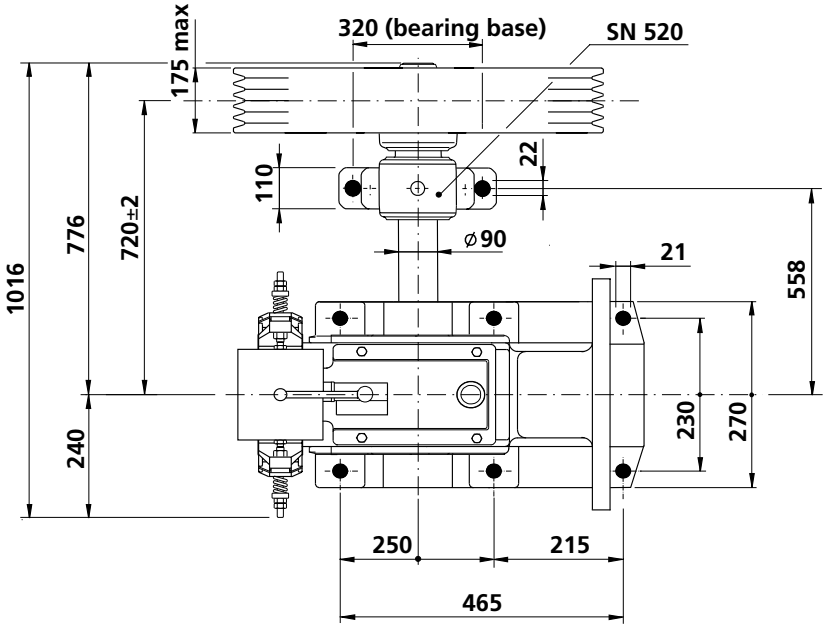
Winch weight	**271 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**3.4 Litres**	
Max static load	**4500 kg**	

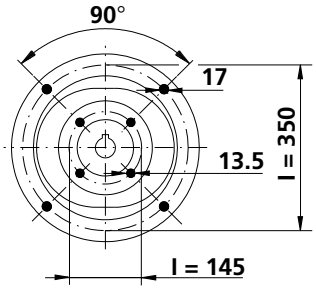
- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

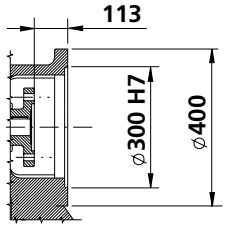
Dimensions - Extended Shaft - FF 800

I = 720mm
Ø = 90mm









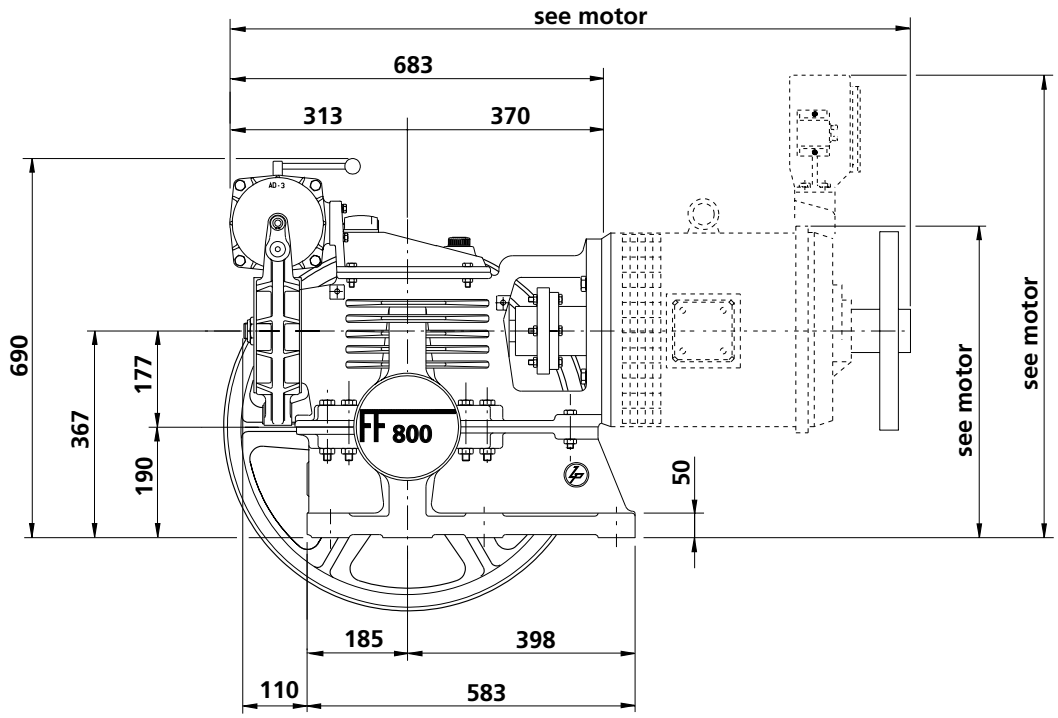
Detail of motor coupling flange

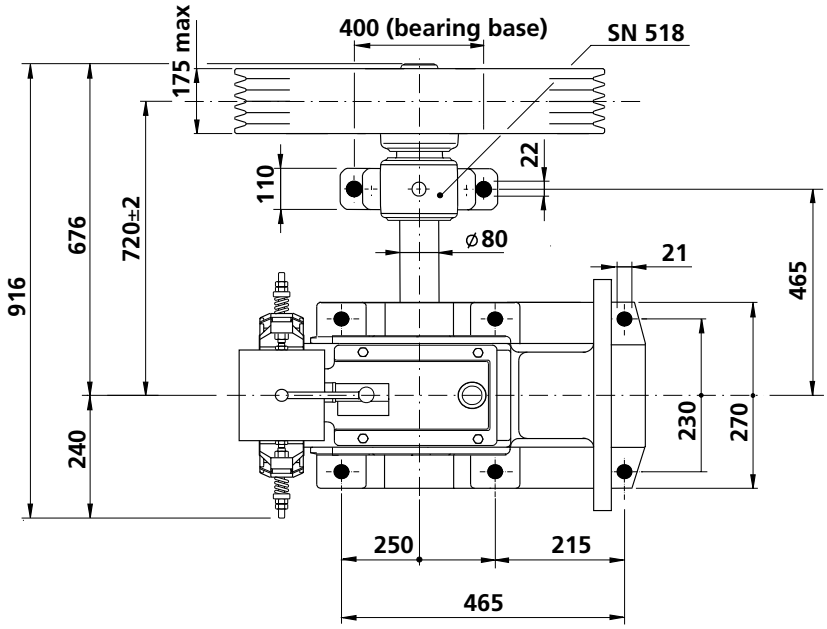
Winch weight	285 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.4 Litres	
Max static load	**4500 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Dimensions - Extended Shaft - FF 800

I = 620mm
Ø = 80mm

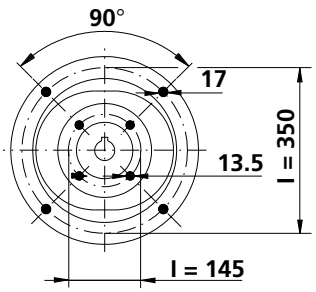


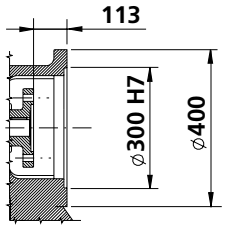


Max applicable power at 1500 rpm

Reduction gear	kW
1/61	8.3
1/49	9.2
1/40	11.5
2/59	13.8
2/49	16.6

with this version





Detail of motor coupling flange

Winch weight	280 kg	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	3.4 Litres	
Max static load	**3000 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 800

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	6.5 / 8.8	6.9 / 9.4	7.4 / 10.1	7.8 / 10.6	8.3 / 11.3	9.2 / 12.5	10.3 / 14	11.5 / 15.6	12.1 / 16.5	13.8 / 18.8	14.7 / 20	15.6 / 21.2	16.6 / 22.6
0.62	0.57	1/61	480		1050	1110	1190	1260	1330	1480							
0.67	0.62	1/61	520		960	1030	1100	1150	1240	1360							
0.71	0.66	1/61	550		910	960	1040	1090	1160	1290							
0.77	0.72	1/49	480		890	940	1020	1070	1130	1260	1400	1570					
0.77	0.72	1/61	600		840	890	950	1010	1070	1180							
0.81	0.75	1/61	630		800	850	900	950	1020	1130							
0.83	0.77	1/49	520		820	870	930	980	1050	1160	1300	1450					
0.86	0.80	1/61	670		740	800	850	900	950	1060							
0.88	0.82	1/49	550		780	820	880	930	980	1100	1230	1370					
0.94	0.88	1/40	480		750	800	860	900	960	1070	1190	1330	1400	1600			
0.96	0.89	1/49	600		710	750	810	850	910	1010	1120	1260					
1.01	0.94	1/49	630		680	720	760	810	860	950	1070	1190					
1.02	0.95	1/40	520		690	740	800	840	890	980	1100	1240	1300	1480			
1.07	1.00	1/49	670		640	670	720	760	820	900	1010	1120					
1.08	1.00	1/40	550		660	700	750	790	840	930	1050	1160	1230	1390			
1.18	1.10	1/40	600		610	640	690	720	780	860	950	1070	1120	1280			
1.24	1.15	1/40	630		580	610	650	690	730	820	910	1020	1070	1230			
1.28	1.19	2/59	480		600	630	680	710	760	840	940	1060	1110	1270	1350	1420	1520
1.32	1.22	1/40	670		540	580	620	650	690	760	860	950	1010	1150			
1.38	1.29	2/59	520		540	590	630	660	700	780	870	970	1030	1160	1250	1320	1400
1.46	1.36	2/59	550		520	560	590	630	660	730	830	920	960	1100	1170	1250	1330
1.54	1.43	2/49	480		510	540	580	610	650	720	810	900	940	1080	1150	1230	1300
1.60	1.49	2/59	600		470	500	540	580	610	670	750	840	890	1020	1080	1140	1220
1.67	1.55	2/49	520		470	500	530	270	600	660	740	830	870	1000	1060	1130	1200
1.68	1.56	2/59	630		450	480	510	540	580	640	720	810	850	960	1030	1090	1160
1.76	1.64	2/49	550		440	470	500	530	570	630	700	790	830	940	1010	1070	1130
1.78	1.66	2/59	670		430	450	480	510	540	610	680	750	800	900	960	1030	1090
1.92	1.79	2/49	600		410	430	460	490	520	580	650	720	750	860	920	970	1040
2.02	1.88	2/49	630		390	410	440	460	490	540	620	680	720	830	880	930	1000
2.15	2.00	2/49	670		370	390	420	440	460	510	580	650	680	780	830	880	930

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg	Applicable power kW	
normal	255	80	**4500**	000	000
extended T 26.99	720	90	**4500**	000	000
* extended T 1266	620	80	**3000**	000	

* limited motor-power version (see overall dimensions table)

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 800

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	6.5 / 8.8	6.9 / 9.4	7.4 / 10.1	7.8 / 10.6	8.3 / 11.3	9.2 / 12.5	10.3 / 14	11.5 / 15.6	12.1 / 16.5	13.8 / 18.8	14.7 / 20	15.6 / 21.2	16.6 / 22.6
0.31	0.29	1/61	480		1960	2070	2230	2350	2500	2780							
0.33	0.31	1/61	520		1810	1920	2050	2170	2300	2560							
0.35	0.33	1/61	550		1710	1810	1950	2050	2180	2420							
0.38	0.36	1/49	480		1670	1770	1900	2000	2130	2360	2640	2940					
0.39	0.36	1/61	600		1570	1670	1780	1880	2000	2220							
0.41	0.38	1/61	630		1490	1580	1700	1790	1910	2120							
0.42	0.39	1/49	520		1540	1630	1750	1840	1960	2180	2430	2720					
0.43	0.40	1/61	670		1400	1490	1590	1690	1790	1990							
0.44	0.41	1/49	550		1460	1540	1660	1740	1850	2050	2300	2570					
0.47	0.44	1/40	480		1410	1500	1610	1700	1800	2000	2240	2500	2630	3010			
0.48	0.45	1/49	600		1330	1410	1520	1600	1700	1890	2110	2360					
0.50	0.47	1/49	630		1270	1340	1450	1520	1620	1790	2010	2240					
0.51	0.47	1/40	520		1310	1380	1490	1570	1670	1840	2070	2320	2430	2780			
0.54	0.50	1/49	670		1190	1270	1360	1440	1520	1690	1890	2110					
0.54	0.50	1/40	550		1240	1310	1400	1480	1580	1750	1960	2190	2290	2620			
0.59	0.55	1/40	600		1130	1200	1290	1360	1450	1600	1790	2000	2110	2400			
0.62	0.58	1/40	630		1080	1140	1230	1290	1370	1530	1710	1910	2010	2280			
0.64	0.59	2/59	480		1120	1180	1270	1340	1420	1580	1770	1980	2070	2370	2520	2680	2850
0.66	0.61	1/40	670		1020	1080	1150	1220	1300	1440	1600	1790	1890	2150			
0.69	0.64	2/59	520		1030	1090	1170	1240	1320	1460	1630	1820	1920	2190	2330	2470	2630
0.73	0.68	2/59	550		970	1040	1110	1170	1250	1380	1540	1730	1810	2060	2200	2340	2480
0.77	0.72	2/49	480		950	1020	1090	1140	1220	1350	1510	1690	1780	2020	2160	2290	2440
0.80	0.74	2/59	600		890	940	1020	1070	1140	1270	1410	1580	1670	1900	2020	2150	2280
0.83	0.78	2/49	520		880	930	1010	1060	1120	1250	1390	1560	1630	1860	1990	2120	2250
0.84	0.78	2/59	630		850	900	960	1020	1090	1200	1350	1510	1580	1880	1930	2040	2170
0.88	0.82	2/49	550		830	880	940	1000	1060	1170	1320	1480	1550	1770	1890	2000	2130
0.89	0.83	2/59	670		800	850	910	960	1020	1130	1270	1410	1490	1700	1810	1920	2040
0.96	0.89	2/49	600		760	810	870	910	970	1080	1200	1350	1420	1620	1730	1830	1950
1.01	0.94	2/49	630		720	780	830	870	930	1030	1150	1290	1350	1540	1640	1750	1850
1.07	1.00	2/49	670		680	720	780	820	870	960	1080	1200	1270	1460	1550	1640	1750

See general section for effective working capacity load Q

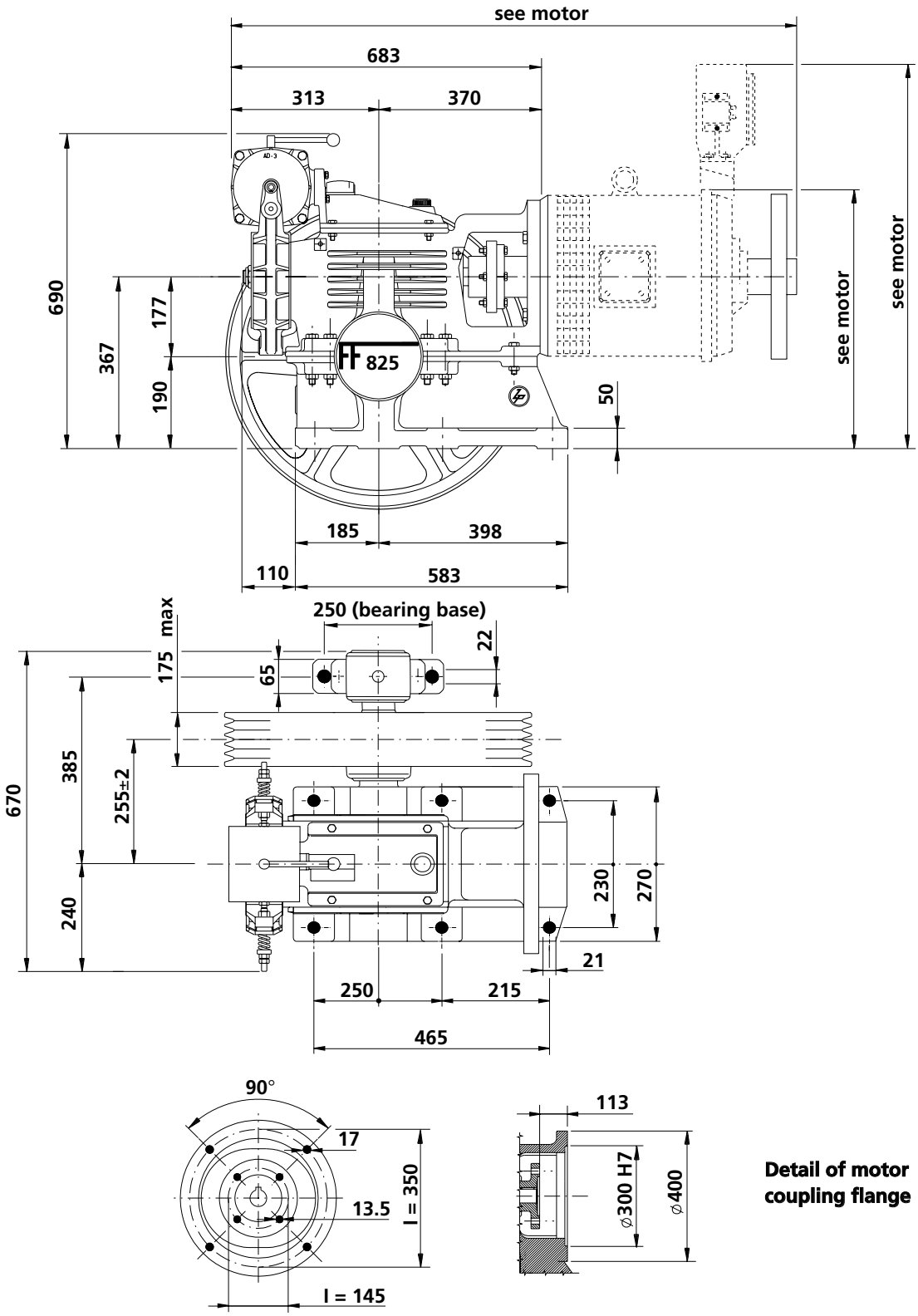
Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg	Applicable power kW	
normal	255	80	4500	000	000
extended T 26.99	720	90	4500	000	000
* extended T 1266	620	80	3000	000	

* limited motor-power version (see overall dimensions table)

General Features - FF 825 Lift Gear Package

Electric motor	**type B9 - with 2 speeds and governed speed**
Power range	**6.5 to 16.6 kW (8.8 to 22.6 HP)**
Reduction gear	**1/61 1/49 1/40 2/59 2/49**
Low-speed shaft	**with external mounting (standard), static load 5500 kg**
Driving pulley	**integral $\varnothing_{pr}$ 480 to 670 mm**
Brake electromagnet	**type AD3 in dc, volt 48, 60, 110, 180**
Compensating flywheel	**motor side**
Rope guide	**for pull downwards (machine at top)**
Sump capacity	**3.4 Litres**
Special applications (on request)	**Customised side cover** **Aluminium handwheel on motor side** **Tacho/encoder** **Driving sheave with hardened grooves** **Split driving sheave** **Rope-locking clamp** **Brake electromagnet special voltages** **Brake electromagnet with IP55 rating** **Rope guide for upward pull or to side** **External strengthened Support type SN**

Dimensions - Normal Shaft - FF 825



Detail of motor coupling flange

Winch weight	**271 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**3.4 Litres**	
Max static load	**5500 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 825

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	6.5 / 8.8	6.9 / 9.4	7.4 / 10.1	7.8 / 10.6	8.3 / 11.3	9.2 / 12.5	10.3 / 14	11.5 / 15.6	12.1 / 16.5	13.8 / 18.8	14.7 / 20	15.6 / 21.2	16.6 / 22.6
0.62	0.57	1/61	480		1050	1110	1190	1260	1330	1480							
0.67	0.62	1/61	520		960	1030	1100	1150	1240	1360							
0.71	0.66	1/61	550		910	960	1040	1090	1160	1290							
0.77	0.72	1/49	480		890	940	1020	1070	1130	1260	1400	1570					
0.77	0.72	1/61	600		840	890	950	1010	1070	1180							
0.81	0.75	1/61	630		800	850	900	950	1020	1130							
0.83	0.77	1/49	520		820	870	930	980	1050	1160	1300	1450					
0.86	0.80	1/61	670		740	800	850	900	950	1060							
0.88	0.82	1/49	550		780	820	880	930	980	1100	1230	1370					
0.94	0.88	1/40	480		750	800	860	900	960	1070	1190	1330	1400	1600			
0.96	0.89	1/49	600		710	750	810	850	910	1010	1120	1260					
1.01	0.94	1/49	630		680	720	760	810	860	950	1070	1190					
1.02	0.95	1/40	520		690	740	800	840	890	980	1100	1240	1300	1480			
1.07	1.00	1/49	670		640	670	720	760	820	900	1010	1120					
1.08	1.00	1/40	550		660	700	750	790	840	930	1050	1160	1230	1390			
1.18	1.10	1/40	600		610	640	690	720	780	860	950	1070	1120	1280			
1.24	1.15	1/40	630		580	610	650	690	730	820	910	1020	1070	1230			
1.28	1.19	2/59	480		600	630	680	710	760	840	940	1060	1110	1270	1350	1420	1520
1.32	1.22	1/40	670		540	580	620	650	690	760	860	950	1010	1150			
1.38	1.29	2/59	520		540	590	630	660	700	780	870	970	1030	1160	1250	1320	1400
1.46	1.36	2/59	550		520	560	590	630	660	730	830	920	960	1100	1170	1250	1330
1.54	1.43	2/49	480		510	540	580	610	650	720	810	900	940	1080	1150	1230	1300
1.60	1.49	2/59	600		470	500	540	580	610	670	750	840	890	1020	1080	1140	1220
1.67	1.55	2/49	520		470	500	530	570	600	660	740	830	870	1000	1060	1130	1200
1.68	1.56	2/59	630		450	480	510	540	580	640	720	810	850	960	1030	1090	1160
1.76	1.64	2/49	550		440	470	500	530	570	630	700	790	830	940	1010	1070	1130
1.78	1.66	2/59	670		430	450	480	510	540	610	680	750	800	900	960	1030	1090
1.92	1.79	2/49	600		410	430	460	490	520	580	650	720	750	860	920	970	1040
2.02	1.88	2/49	630		390	410	440	460	490	540	620	680	720	830	880	930	1000
2.15	2.00	2/49	670		370	390	420	440	460	510	580	650	680	780	830	880	930

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	255	80	**5500**

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 825

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	6.5 / 8.8	6.9 / 9.4	7.4 / 10.1	7.8 / 10.6	8.3 / 11.3	9.2 / 12.5	10.3 / 14	11.5 / 15.6	12.1 / 16.5	13.8 / 18.8	14.7 / 20	15.6 / 21.2	16.6 / 22.6
0.31	0.29	1/61	480		1960	2070	2230	2350	2500	2780							
0.33	0.31	1/61	520		1810	1920	2050	2170	2300	2560							
0.35	0.33	1/61	550		1710	1810	1950	2050	2180	2420							
0.38	0.36	1/49	480		1670	1770	1900	2000	2130	2360	2640	2940					
0.39	0.36	1/61	600		1570	1670	1780	1880	2000	2220							
0.41	0.38	1/61	630		1490	1580	1700	1790	1910	2120							
0.42	0.39	1/49	520		1540	1630	1750	1840	1960	2180	2430	2710					
0.43	0.40	1/61	670		1400	1490	1590	1690	1790	1990							
0.44	0.41	1/49	550		1460	1540	1660	1740	1850	2050	2300	2570					
0.47	0.44	1/40	480		1410	1500	1610	1700	1800	2000	2240	2500	2630	3010			
0.48	0.45	1/49	600		1330	1410	1520	1600	1700	1890	2110	2360					
0.50	0.47	1/49	630		1270	1340	1450	1520	1620	1790	2010	2240					
0.51	0.47	1/40	520		1310	1380	1490	1570	1670	1840	2070	2320	2430	2780			
0.54	0.50	1/49	670		1190	1270	1360	1440	1520	1690	1890	2110					
0.54	0.50	1/40	550		1240	1310	1400	1480	1580	1750	1960	2190	2290	2620			
0.59	0.55	1/40	600		1130	1200	1290	1360	1450	1600	1790	2000	2110	2400			
0.62	0.58	1/40	630		1080	1140	1230	1290	1370	1530	1710	1910	2010	2280			
0.64	0.59	2/59	480		1120	1180	1270	1340	1420	1580	1770	1980	2070	2370	2520	2680	2850
0.66	0.61	1/40	670		1020	1080	1150	1220	1300	1440	1600	1790	1890	2150			
0.69	0.64	2/59	520		1030	1090	1170	1240	1320	1460	1630	1820	1920	2190	2330	2470	2630
0.73	0.68	2/59	550		970	1040	1110	1170	1250	1380	1540	1730	1810	2060	2200	2340	2480
0.77	0.72	2/49	480		950	1020	1090	1140	1220	1350	1510	1690	1780	2020	2160	2290	2440
0.80	0.74	2/59	600		890	940	1020	1070	1140	1270	1410	1580	1670	1900	2020	2150	2280
0.83	0.78	2/49	520		880	930	1010	1060	1120	1250	1390	1560	1630	1860	1990	2120	2250
0.84	0.78	2/59	630		850	900	960	1020	1090	1200	1350	1510	1580	1800	1930	2040	2170
0.88	0.82	2/49	550		830	880	940	1000	1060	1170	1320	1480	1550	1770	1890	2000	2130
0.89	0.83	2/59	670		800	850	910	960	1020	1130	1270	1410	1490	1700	1810	1920	2040
0.96	0.89	2/49	600		760	810	870	910	970	1080	1200	1350	1420	1620	1730	1830	1950
1.01	0.94	2/49	630		720	780	830	870	930	1030	1150	1290	1350	1540	1640	1750	1850
1.07	1.00	2/49	670		680	720	780	820	870	960	1080	1200	1270	1460	1550	1640	1750

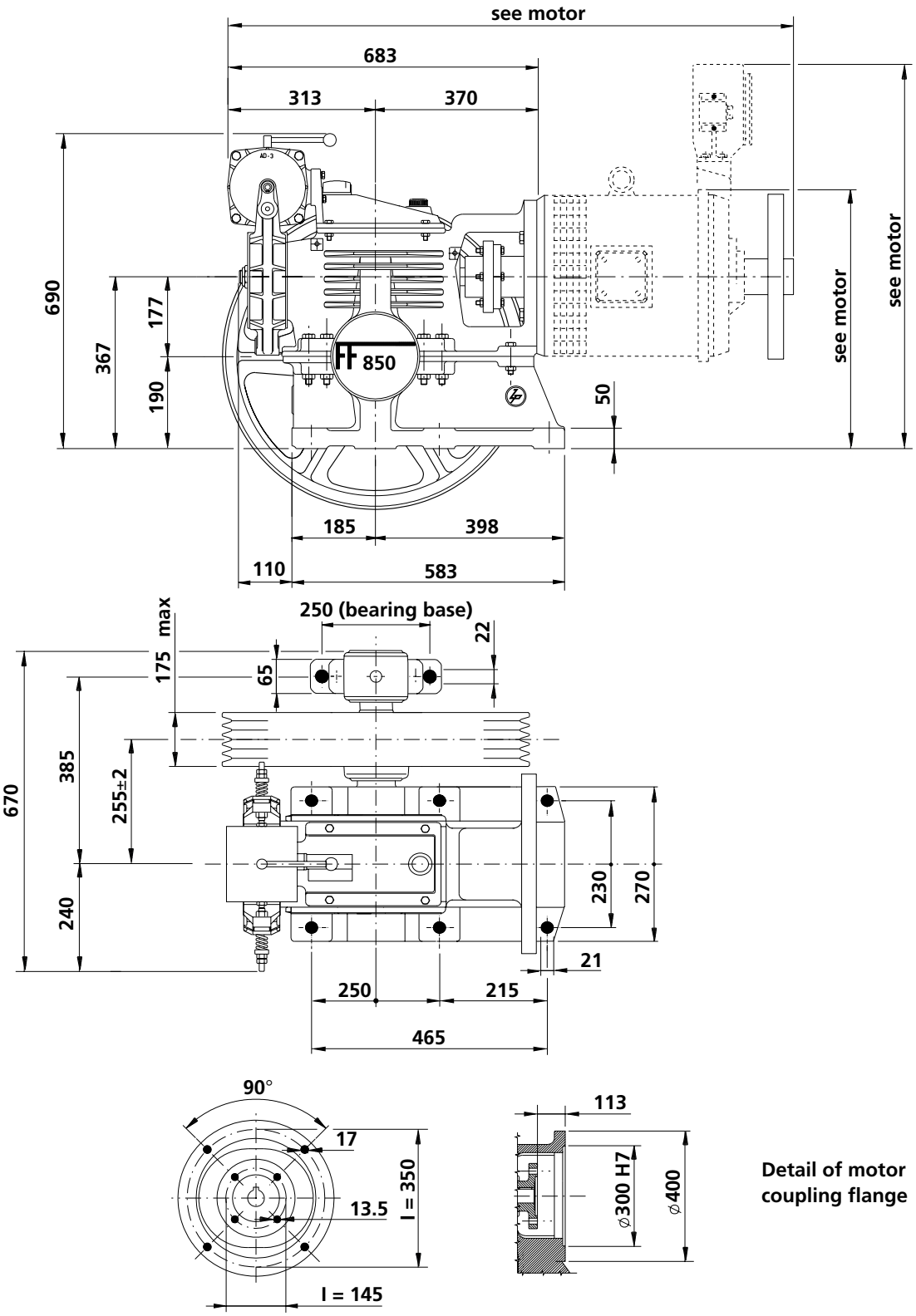
See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	255	80	**5500**

General Features - FF 850 Lift Gear Package

Electric motor	type B9 - with 2 speeds and governed speed
Power range	15.6 to 24.3 kW (21.2 to 33 HP)
Reduction gear	2/49 3/48
Low-speed shaft	with external mounting (standard), static load 5500 kg extended T 1266,static load 3000 kg extended T 26.99, static load 4500 kg
Driving pulley	integral $\varnothing_{pr}$ 480 to 670 mm
Brake electromagnet	type AD3 in dc, volt 48, 60, 110,180
Compensating flywheel	motor side
Rope guide	for pull downwards (machine at top)
Sump capacity	3.4 Litres
Special applications (on request)	Low-speed shaft special versions on request Customised side cover Aluminium handwheel on motor side Tacho/encoder Driving sheave with hardened grooves Split driving sheave Rope-locking clamp Brake electromagnet special voltages Brake electromagnet with IP55 rating Rope guide for upwards pull or to side External strengthened support type SN

Dimensions - Normal Shaft - FF 850



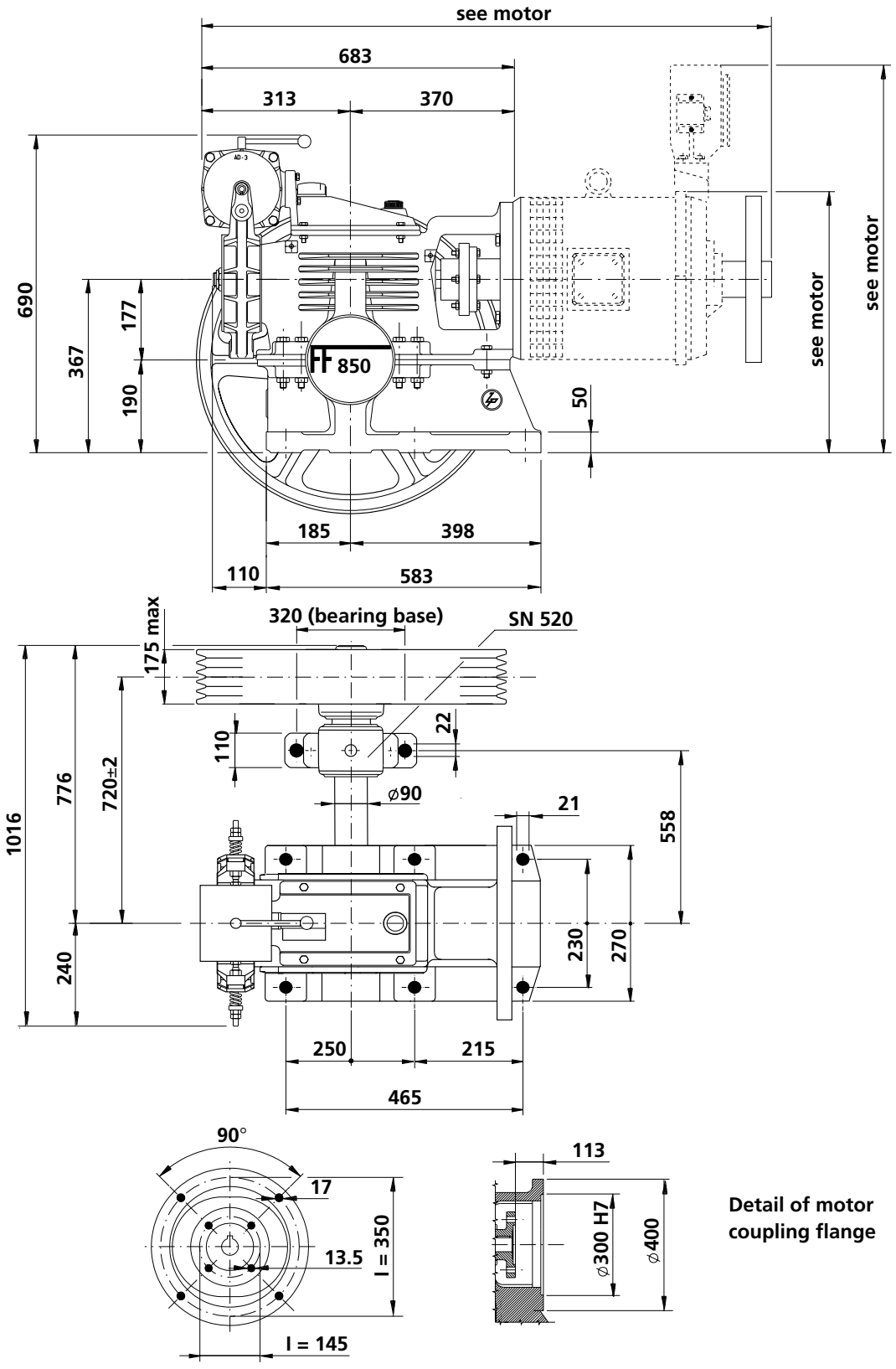
Detail of motor coupling flange

Winch weight	**273 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**3.4 Litres**	
Max static load	**5500 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Dimensions - Extended Shaft - FF 850

I = 720mm
Ø = 90mm

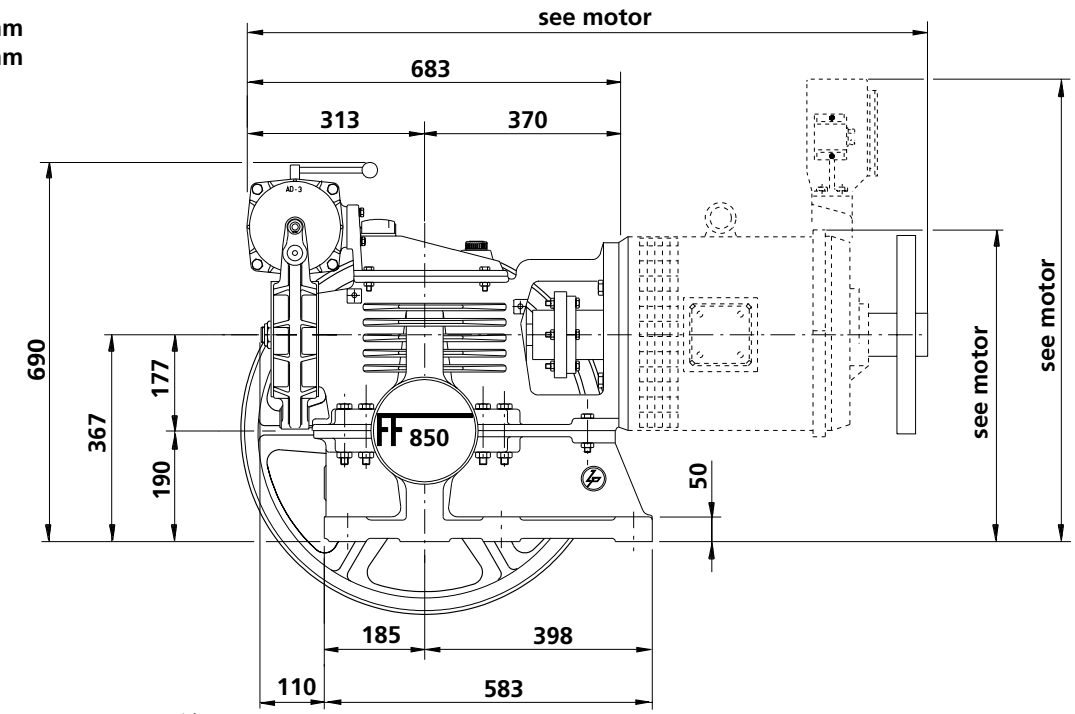


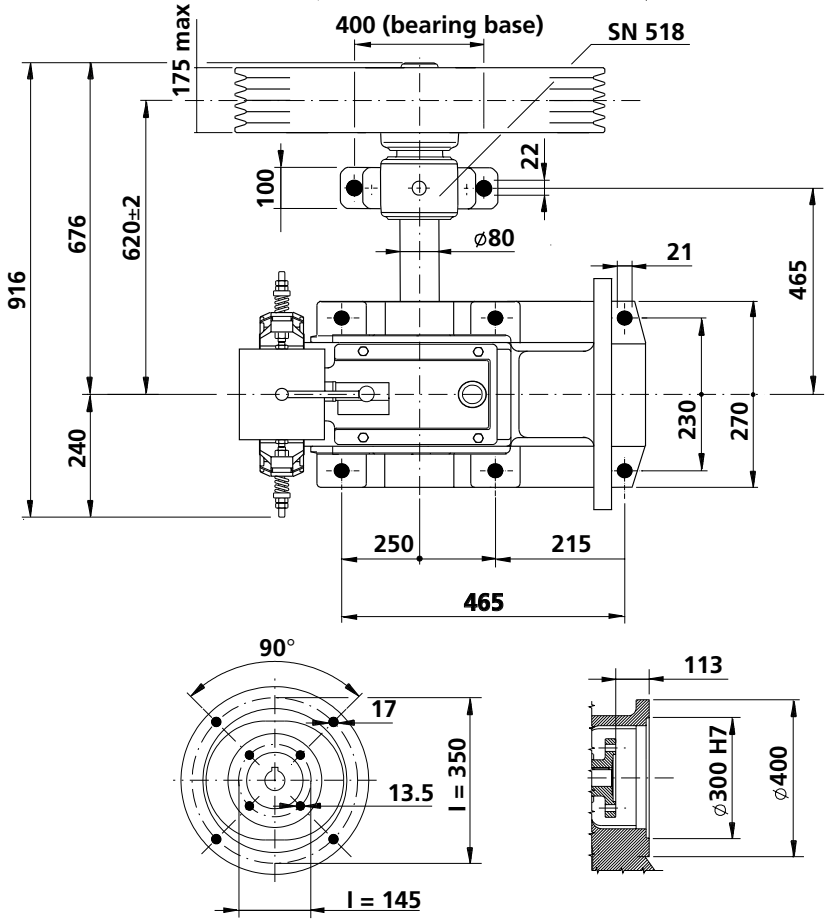
Detail of motor coupling flange

Winch weight	**287 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**	**- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.**
Oil quantity	**3.4 Litres**		
Max static load	**4500 kg**		**- See relative catalogues for motor dimensions.**

Dimensions - Extended Shaft - FF 850

I = 620mm
Ø = 80mm





Detail of motor coupling flange

Max applicable power at 1500 rpm

Reductiongear	kW
2/49	16.6
3/48	24.3

with this version

Winch weight	**282 kg**	(electric motor, traction pulley, handwheel, oil excluded)
Oil quantity	**3.4 Litres**	
Max static load	**3000 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Total Capacity Load - Qt kg - 50 Hz - FF 850

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	15.6 / 21.2	16.6 / 22.6	18.4 / 25	19.5 / 26.5	20.6 / 28	22.1 / 30	24.3 / 33
1.54	1.43	2/49	480		1230	1300	1440	1530	1610		
1.67	1.55	2/49	520		1130	1200	1330	1410	1490		
1.76	1.64	2.49	550		1070	1130	1260	1330	1400		
1.92	1.79	2/49	600		970	1040	1150	1230	1290		
2.02	1.88	2/49	630		930	1000	1100	1160	1230		
2.15	2.00	2/49	670		880	930	1040	1090	1150		
2.36	2.19	3/48	480		830	880	970	1030	1090	1160	1290
2.55	2.37	3/48	520		760	810	900	950	1010	1080	1180
2.70	2.51	3/48	550		720	760	850	900	950	1020	1120
2.95	2.74	3/48	600		660	700	780	830	870	930	1030
3.09	2.88	3/48	630		630	670	740	790	830	890	970
3.29	3.06	3/48	670		590	630	690	730	780	840	920

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg	Applicable power kW	
normal	255	80	**4500**	000	000
extended T 26.99	720	90	**4500**	000	000
* extended T 1266	620	80	**3000**	000	

*** limited motor-power version (see overall dimensions table)**

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Total Capacity Load - Qt kg - 50 Hz - FF 850

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	15.6 / 21.2	16.6 / 22.6	18.4 / 25	19.5 / 26.5	20.6 / 28	22.1 / 30	24.3 / 33
0.77	0.72	2/49	480		2290	2440	2700	2860	3030		
0.83	0.78	2/49	520		2120	2250	2490	2640	2790		
0.88	0.82	2/49	550		2000	2130	2360	2490	2640		
0.96	0.89	2/49	600		1830	1950	2160	2990	2420		
1.01	0.94	2/49	630		1750	1850	2050	2180	2300		
1.07	1.00	2/49	670		1640	1750	1940	2050	2170		
1.18	1.10	3/48	480		1550	1640	1820	1930	2040	2190	2410
1.28	1.19	3/48	520		1420	1520	1690	1780	1890	2020	2220
1.35	1.26	3/48	550		1350	1440	1590	1690	1780	1910	2110
1.47	1.37	3/48	600		1240	1320	1460	1550	1630	1750	1930
1.55	1.44	3/48	630		1170	1260	1390	1480	1550	1670	1830
1.64	1.53	3/48	670		1110	1170	1310	1380	1470	1570	1730

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg	Applicable power kW	
normal	255	80	**5500**	000	000
extended T 26.99	720	90	**4500**	000	000
* extended T 1266	620	80	**3000**	000	

* limited motor-power version (see overall dimensions table)

General Features - FF 1150 Lift Gear Package

Electric motor	type B9 - with 2 speeds and governed speed

Power range	10.3 to 33.1 kW (14 to 45 HP)

Reduction gear	1/49 1/40 2/51 2/37

Low-speed shaft	with external support (standard), static load 8000 kg extended T 25.66, static load 5000 kg

Driving pulley	integral $\varnothing_{pr}$ 520 to 770 mm

Brake electromagnet	type AD4 in dc, volt 48, 60, 110, 180

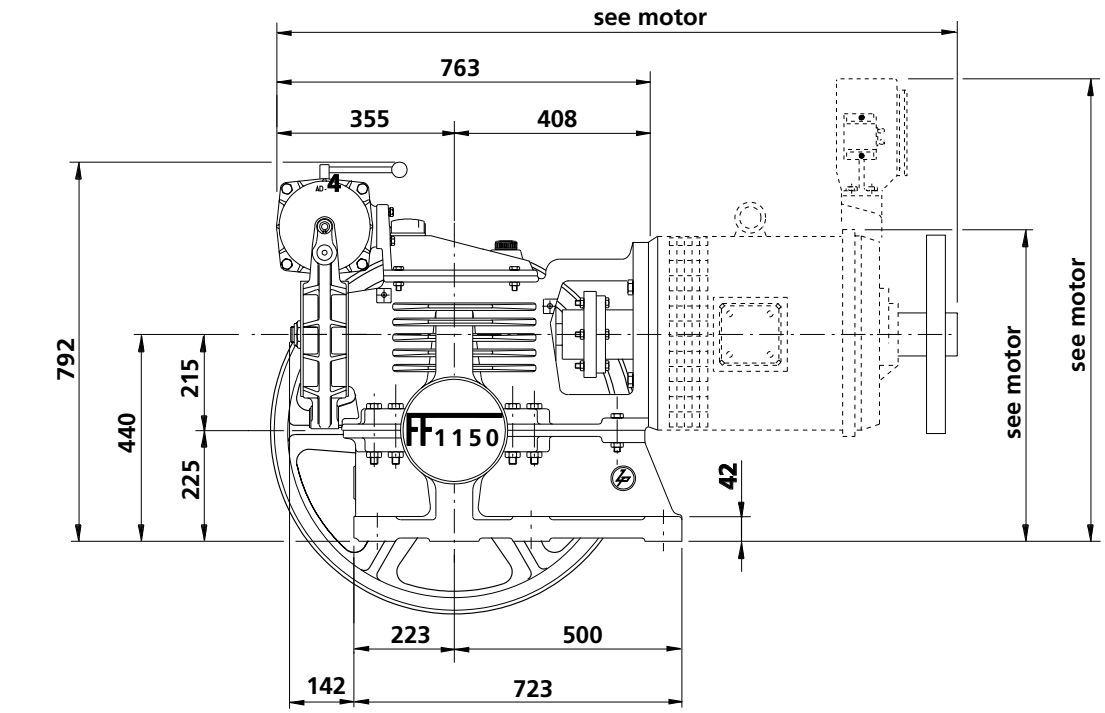
Compensating flywheel	motor side

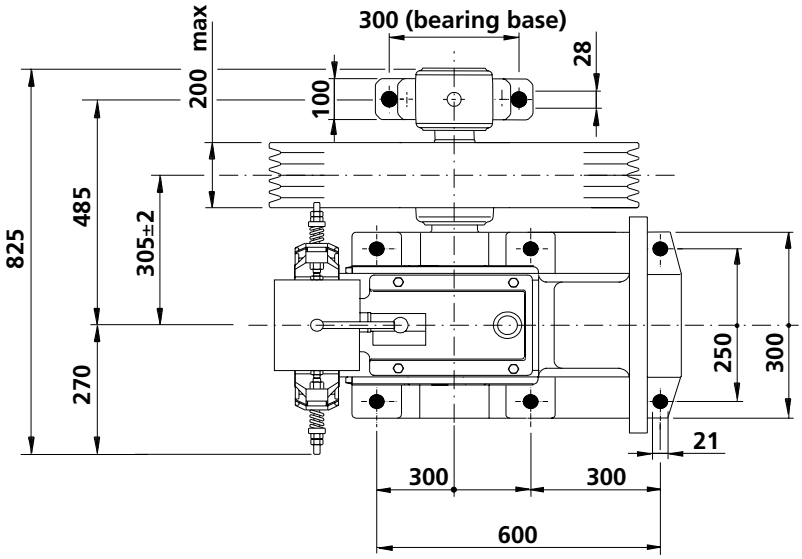
Rope guide	for pull downwards (machine at top)

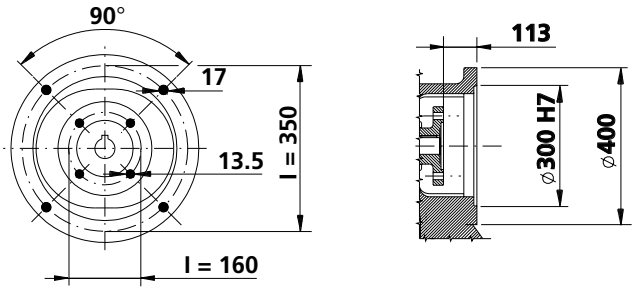
Sump capacity	6.2 Litres

Special applications (on request)	Low-speed shaft special versions on request Customised side cover Aluminium handwheel on motor side Tacho/encoder Driving sheave with hardened grooves Split driving sheave Rope-locking clamp Brake electromagnet special voltages Brake electromagnet with IP55 rating Rope guide for upwards pull or to side

Dimensions - Normal Shaft - FF 1150





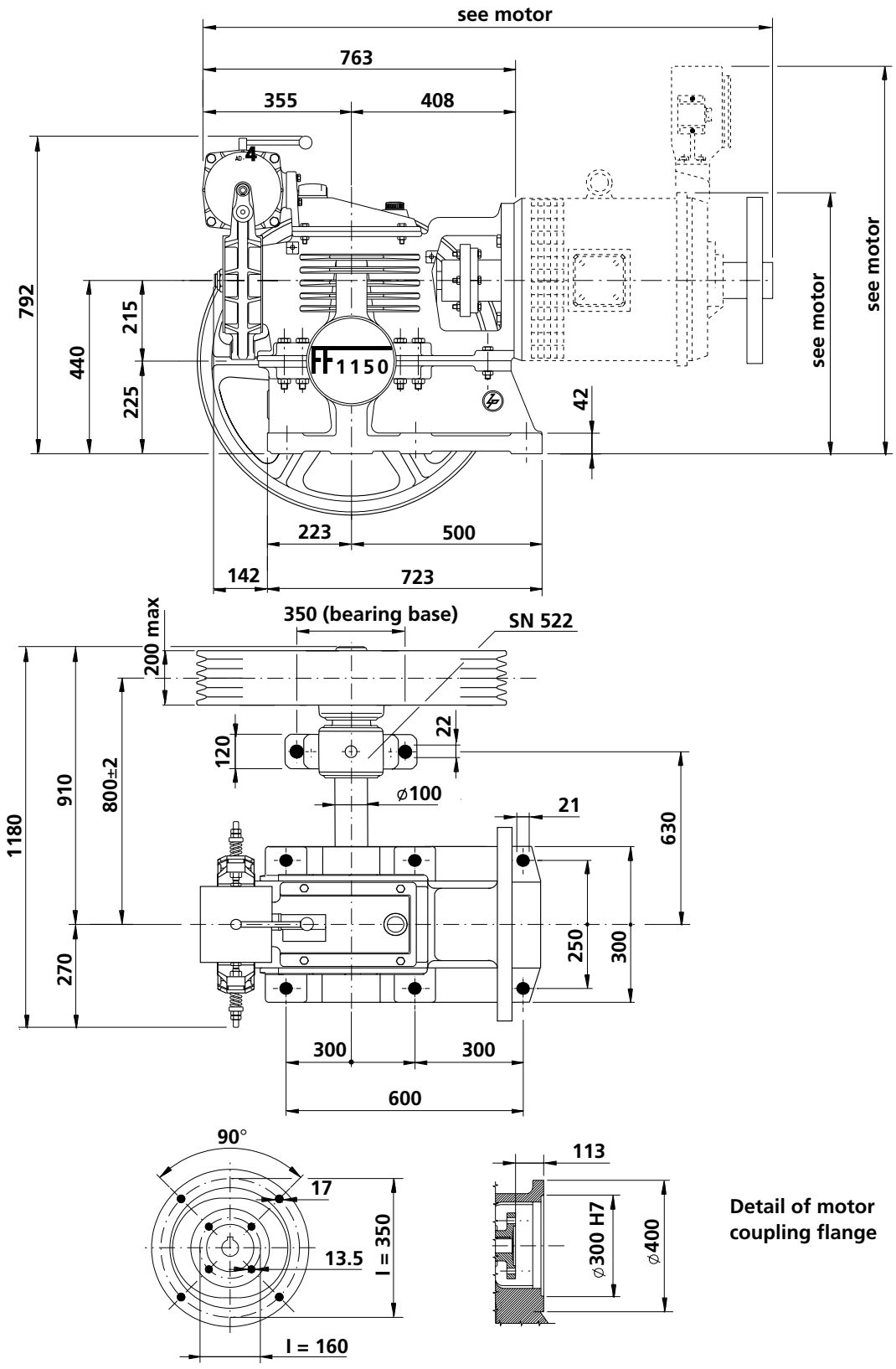


Detail of motor coupling flange

Winch weight	**490 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**6.2 Litres**	
Max static load	**8000 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

Dimensions - Extended Shaft - FF 1150



Detail of motor coupling flange

Winch weight	**520 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**	**- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.**
Oil quantity	**6.2 Litres**		
Max static load	**5000 kg**		**- See relative catalogues for motor dimensions.**

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 1150

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	10.3	11.5	12.1	13.8	14.7	15.6	16.6	18.4	19.5	20.6	23	26	30	33.1
				HP	14	15.6	16.5	18.8	20	21.2	22.6	25	26.5	28	31.3	35.4	40.8	45
0.83	0.78	1/49	520		1300	1460	1530	1740	1850	1970	2100	2330						
0.88	0.82	1/49	550		1230	1370	1450	1640	1750	1860	1980	2200						
0.96	0.89	1/49	600		1130	1260	1320	1510	1610	1710	1810	2010						
1.02	0.95	1/40	520		1090	1220	1290	1470	1560	1660	1760	1950	2060	2190	2440			
1.04	0.97	1/49	650		1040	1160	1230	1390	1490	1570	1680	1850						
1.08	1.00	1/40	550		1040	1150	1220	1380	1480	1560	1670	1840	1960	2060	2300			
1.12	1.04	1/49	700		960	1080	1130	1300	1380	1470	1560	1730						
1.18	1.10	1/40	600		940	1060	1110	1270	1350	1440	1530	1700	1790	1900	2120			
1.23	1.15	1/49	770		880	980	1030	1170	1260	1330	1410	1570						
1.28	1.19	1/40	650		870	970	1030	1170	1250	1320	1410	1560	1660	1750	1950			
1.37	1.28	1/40	700		810	910	950	1090	1160	1230	1310	1450	1540	1620	1810			
1.51	1.41	1/40	770		730	830	870	980	1060	1120	1190	1320	1390	1480	1640			
1.60	1.49	2/51	520		780	860	910	1040	1100	1170	1250	1380	1460	1540	1720	1950	2250	
1.69	1.58	2/51	550		730	820	860	970	1040	1100	1170	1300	1380	1460	1630	1840	2130	
1.85	1.72	2/51	600		670	740	790	900	950	1020	1080	1190	1270	1340	1500	1690	1950	
2.00	1.86	2/51	650		620	690	720	830	880	930	1000	1100	1170	1240	1380	1560	1800	
2.16	2.01	2/51	700		580	640	670	760	820	870	920	1030	1090	1140	1280	1450	1670	
2.21	2.05	2/37	520		580	640	670	760	820	870	920	1030	1090	1150	1280	1450	1670	1840
2.33	2.17	2/37	550		540	610	640	720	780	820	870	960	1030	1090	1220	1370	1580	1740
2.37	2.21	2/51	770		520	590	610	700	740	790	840	930	980	1040	1160	1320	1520	
2.55	2.37	2/37	600		490	560	590	670	710	750	800	890	940	1000	1110	1260	1450	1590
2.76	2.57	2/37	650		460	510	530	620	660	690	740	820	870	920	1030	1160	1340	1480
2.97	2.76	2/37	700		430	470	500	570	610	650	690	760	810	850	950	1080	1240	1370
3.27	3.04	2/37	770		390	430	450	520	560	590	630	690	730	780	870	970	1130	1250

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	305	100	**8000**
extended T 25.66	800	100	**5000**

Total Capacity Load - Qt kg - 50 Hz - FF 1150

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	10.3	11.5	12.1	13.8	14.7	15.6	16.6	18.4	19.5	20.6	23	26	30	33.1
				HP	14	15.6	16.5	18.8	20	21.2	22.6	25	26.5	28	31.3	35.4	40.8	45
0.42	0.39	1/49	520		2440	2720	2860	3270	3480	3690	3930	4360						
0.44	0.41	1/49	550		2300	2580	2700	3090	3290	3490	3720	4120						
0.48	0.45	1/49	600		2120	2360	2480	2830	3020	3200	3400	3770						
0.51	0.47	1/40	520		2050	2280	2410	2740	2920	3100	3300	3660	3880	4100	4580			
0.52	0.48	1/49	650		1950	2180	2290	2610	2790	2950	3140	3490						
0.54	0.50	1/40	550		1940	2160	2270	2600	2770	2930	3120	3460	3670	3880	4330			
0.56	0.52	1/49	700		1810	2020	2130	2430	2590	2740	2920	3240						
0.59	0.55	1/40	600		1780	1980	2080	2380	2540	2690	2860	3170	3360	3550	3970			
0.62	0.57	1/49	770		1640	1830	1940	2210	2350	2490	2650	2940						
0.64	0.59	1/40	650		1630	1830	1930	2200	2340	2480	2640	2930	3100	3280	3660			
0.69	0.64	1/40	700		1520	1700	1790	2040	2170	2300	2450	2720	2880	3050	3390			
0.76	0.70	1/40	770		1380	1540	1620	1850	1980	2100	2230	2470	2620	2770	3090			
0.80	0.74	2/51	520		1450	1610	1700	1940	2060	2190	2340	2590	2730	2890	3230	3660	4210	
0.85	0.79	2/51	550		1370	1530	1600	1830	1950	2070	2200	2440	2590	2730	3060	3460	3980	
0.92	0.86	2/51	600		1260	1400	1480	1680	1790	1900	2020	2240	2380	2500	2800	3160	3660	
1.00	0.93	2/51	650		1150	1290	1360	1550	1660	1750	1860	2060	2190	2320	2590	2920	3370	
1.08	1.00	2/51	700		1080	1200	1270	1440	1530	1620	1730	1920	2030	2150	2400	2710	3130	
1.10	1.03	2/37	520		1080	1200	1270	1450	1540	1620	1730	1920	2030	2150	2400	2710	3130	3460
1.17	1.09	2/37	550		1020	1130	1190	1360	1460	1540	1630	1810	1930	2030	2270	2570	2960	3270
1.19	1.10	2/51	770		970	1090	1150	1310	1390	1480	1570	1750	1850	1960	2180	2460	2850	
1.27	1.18	2/37	600		930	1040	1100	1250	1330	1410	1510	1670	1760	1860	2080	2360	2710	3000
1.38	1.28	2/37	650		860	960	1010	1150	1230	1300	1380	1540	1620	1720	1920	2170	2500	2770
1.49	1.38	2/37	700		800	890	940	1070	1140	1220	1290	1420	1510	1600	1780	2020	2330	2570
1.63	1.52	2/37	770		720	810	850	970	1040	1100	1170	1300	1370	1460	1620	1830	2120	2340

See general section for effective working capacity load Q

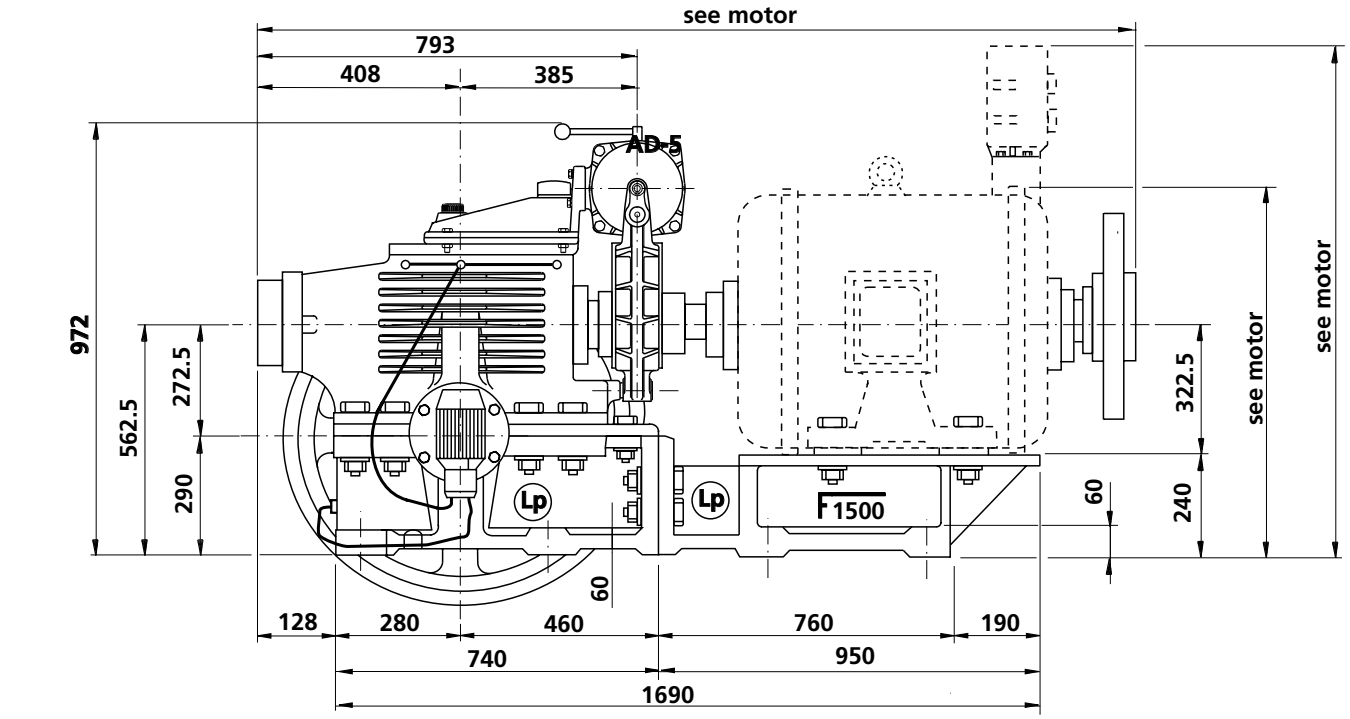
Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	305	100	**8000**
extended T 25.66	800	100	**5000**

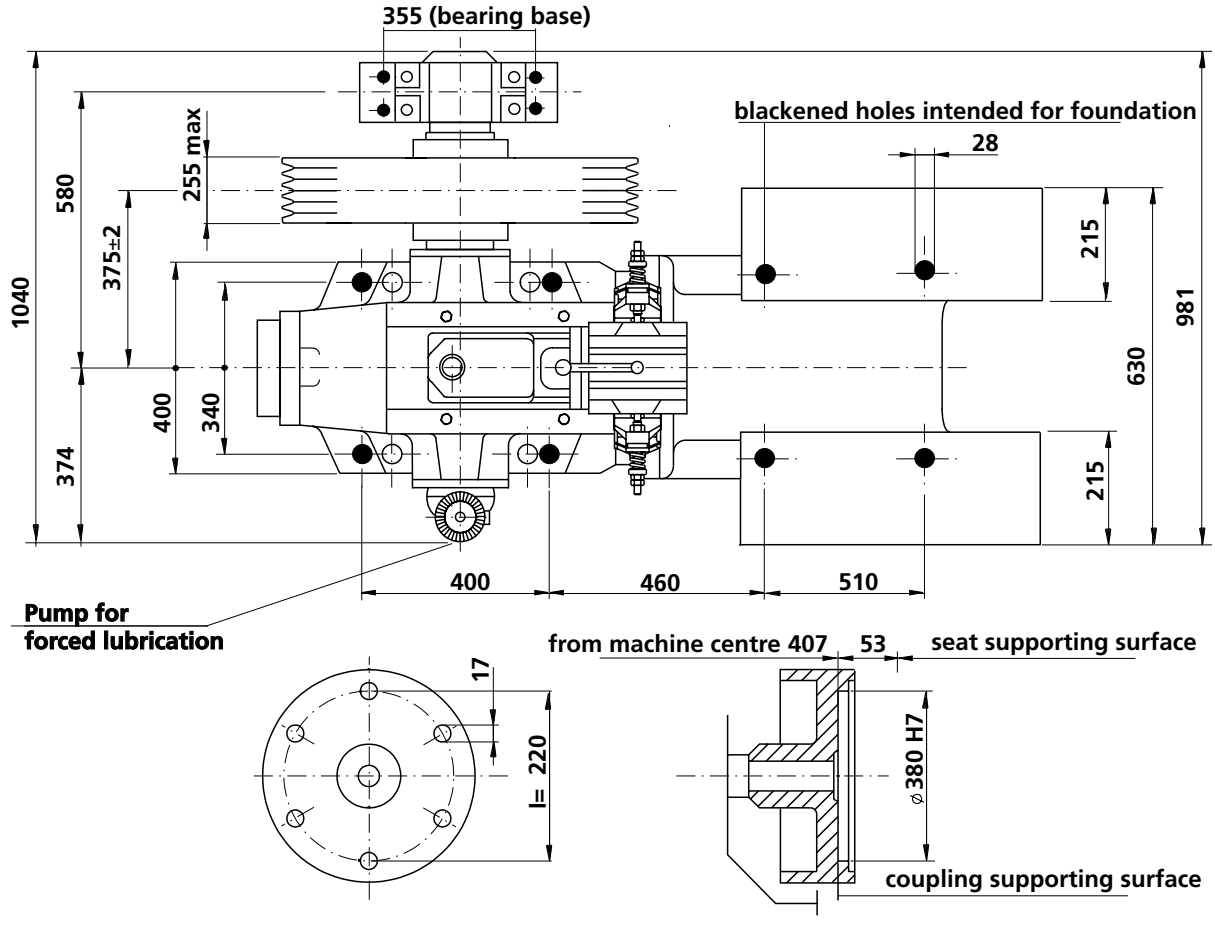
RENOLD

General Features - FF 1500 Lift Gear Package

Electric motor	type B3 - with 2 speeds and governed speed
Power range	14.7 to 39.7 kW (20 to 54 HP)
Reduction gear	1/50 1/41
Low-speed shaft	with external mounting (standard), static load 9500 kg
Driving pulley	integral $\varnothing_{pr}$ 520 to 900 mm
Brake electromagnet	type AD5 in dc, volt 48, 60, 110, 180
Compensating flywheel	motor side
Rope guide	for pull downwards (machine at top)
Sump capacity	15.3 Litres with motor-driven pump for forced lubrication of the fast axis
Special applications (on request)	Low-speed shaft special versions on request Customised side cover Aluminium handwheel on motor side Tacho/encoder Driving sheave with hardened grooves Split driving sheave Rope-locking clamp Brake electromagnet special voltages Brake electromagnet with IP55 rating Rope guide for upward pull or to side

Dimensions - Normal Shaft - FF 1500





Winch weight	**1085 kg**	**(electric motor, traction pulley, handwheel, oil excluded)**
Oil quantity	**15.3 Litres**	
Max static load	**9500 kg**	

- See relative tables in the standard section of this catalogue for handwheel and sheave dimensions.
- See relative catalogues for motor dimensions.

RENOLD

Total Capacity Load - Qt kg - 50 Hz - FF 1500

1:1 suspension - direct traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW / HP	14.7 / 20	15.6 / 21.2	16.6 / 22.6	18.4 / 25	19.5 / 26.5	20.6 / 28	23 / 31.3	26 / 35.4	30 / 40.8	33.1 / 45	36.8 / 50	39.7 / 54
0.82	0.76	1/50	520		1770	1880	2000	2220	2350	2480	2770	3130	3610			
0.86	0.80	1/50	550		1680	1780	1890	2100	2220	2350	2620	2960	3420			
1.00	0.93	1/41	520								2400	2710	3120	3450	3830	4140
1.02	0.95	1/50	650		1410	1500	1600	1770	1880	1980	2220	2500	2890			
1.05	0.98	1/41	550								2260	2570	2950	3260	3620	3910
1.18	1.10	1/50	750		1230	1300	1380	1540	1620	1720	1920	2170	2500			
1.25	1.16	1/41	650								1920	2170	2500	2760	3070	3310
1.41	1.31	1/50	900		1030	1090	1150	1280	1360	1440	1600	1810	2080			
1.44	1.34	1/41	750								1670	1880	2170	2390	2660	2870
1.72	1.60	1/41	900								1380	1560	1800	1990	2220	2390

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	375	100	**9500**

Total Capacity Load - Qt kg - 50 Hz - FF 1500

2:1 suspension - cutting traction **motor 4-4/16 poles**

Required effective power

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave Øp mm	kW	14.7	15.6	16.6	18.4	19.5	20.6	23	26	30	33.1	36.8	39.7
				HP	20	21.2	22.6	25	26.5	28	31.3	35.4	40.8	45	50	54
0.41	0.38	1/50	520		3320	3520	3750	4160	4400	4650	5200	5880	6780			
0.43	0.40	1/50	550		3140	3330	3540	3930	4160	4400	4910	5550	6400			
0.50	0.46	1/41	520								4490	5080	5870	6460	7200	7760
0.51	0.47	1/50	650		2660	2820	3000	3320	3520	3720	4160	4690	5420			
0.53	0.49	1/41	550								4250	4810	5540	6120	6800	7330
0.59	0.55	1/50	750		2300	2440	2600	2880	3050	3230	3600	4080	4690			
0.62	0.58	1/41	650								3590	4060	4690	5180	5750	6200
0.71	0.66	1/50	900		1920	2030	2170	2400	2550	2690	3000	3390	3920			
0.72	0.67	1/41	750								3110	3520	4060	4480	4990	5370
0.86	0.80	1/41	900								2600	2930	3380	3740	4160	4480

See general section for effective working capacity load Q

Low speed shaft versions	Pitch I mm	Diameter mm	Max static load kg
normal	375	100	**9500**

RENOLD

General Features - TW 1000 Lift Gear Package

Electric motor	**Flange mounted 2 speed or VVVF**

Power range	**7.5 to 45 kW (10 to 60 HP)**

Reduction gear	**1/70 1/60 1/50 1/40 2/59 2/49 3/64 3/44**

Low-speed shaft	**overhead type (OH) max static load 8845kg** **basement type (BA) max static load 8845kg**

Driving pulley	**integral $\varnothing_{pr}$ 550 to 720 mm**

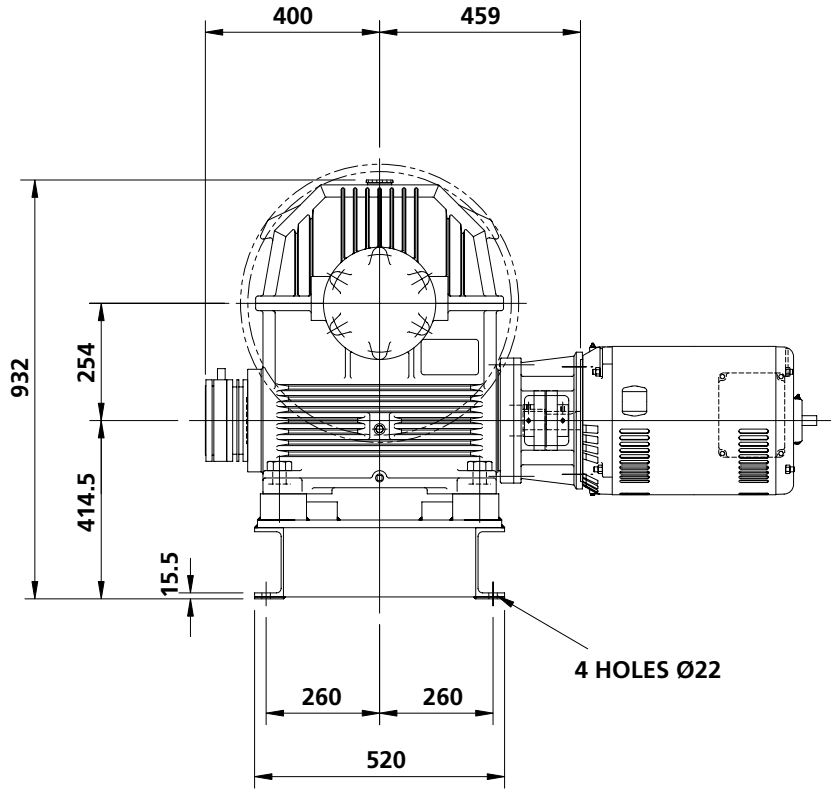
Brake electromagnet	**dual circuit disk, volts - consult Renold**

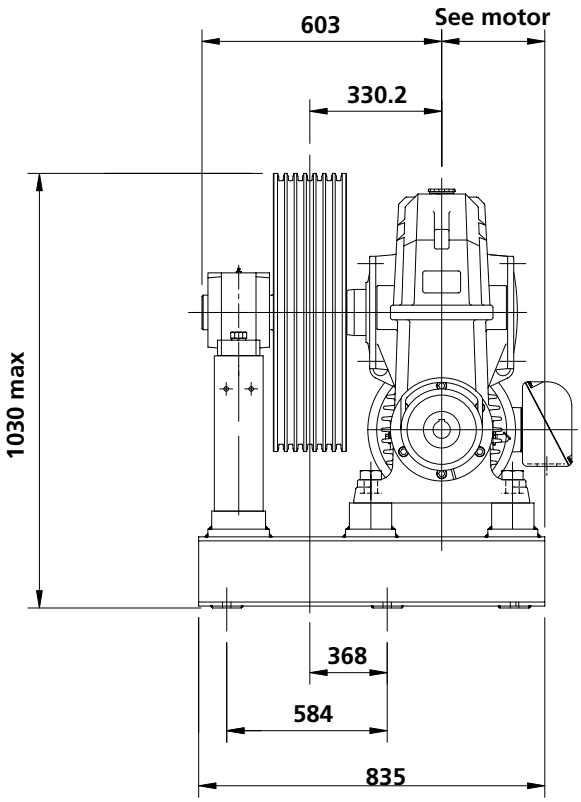
Rope guide	**for pull downwards (machine at top)**

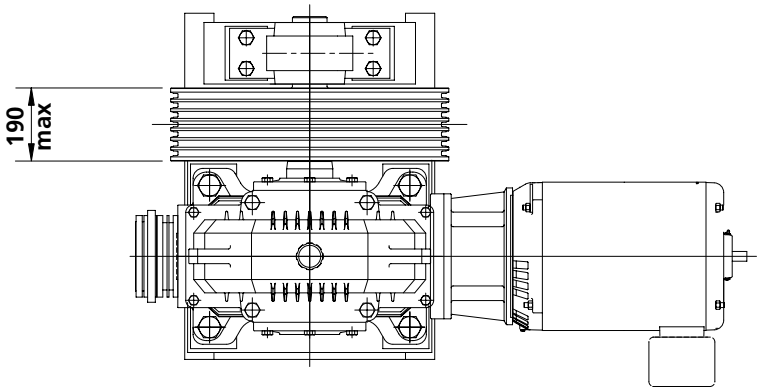
Sump capacity	**8.6 Litres**

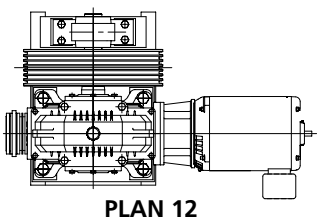
Special applications (on request)	**Special low-speed shaft versions on request**
	Handwheel on motor side
	Handwheel on opposite side to motor and spacer
	Tacho/encoder
	Compensating handwheel - opposite side to motor
	Brake electromagnet special voltages
	Brake electromagnet with IP55 rating
	Rope guide for upward pull or to side
	Foot mounted motors

Dimensions - Normal Shaft - TW 1000

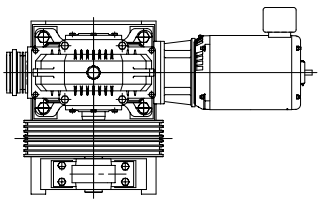








PLAN 12
(RIGHT HAND)



PLAN 11
(LEFT HAND)

RENOLD

Total Capacity Load - Qt kg - 50 Hz TW 1000

Suspension ratio 1:1

motor 4 pole - 50Hz (VVVF)
1500 rpm Synchronous
1440 rpm Effective

Total capacity load, Qt (kg), for motor power:

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave PCD mm	kW / HP	7.5 / 10	11 / 15	15 / 20	18.5 / 25	22 / 30	30 / 40	37 / 50	45 / 60
0.62	0.59	1 / 70	550		1414	2074	2220					
0.70	0.67	1 / 70	620		1254	1839	1970					
0.72	0.69	1 / 60	550		1275	1870	2409					
0.74	0.71	1 / 70	660		1178	1728	1850					
0.81	0.78	1 / 70	720		1080	1584	1696					
0.81	0.78	1 / 60	620		1131	1659	2137					
0.86	0.83	1 / 60	660		1062	1558	2007					
0.86	0.83	1 / 50	550		1075	1577	2151	2367				
0.94	0.90	1 / 60	720		974	1428	1840					
0.97	0.93	1 / 50	620		954	1399	1908	2100				
1.04	1.00	1 / 50	660		896	1314	1792	1973				
1.08	1.04	1 / 40	550		892	1308	1784	2200	2338			
1.13	1.09	1 / 50	720		821	1205	1643	1808				
1.22	1.17	1 / 40	620		791	1160	1582	1951	2074			
1.30	1.24	1 / 40	660		743	1090	1486	1833	1948			
1.41	1.36	1 / 40	720		681	999	1362	1680	1786			
1.46	1.41	2 / 59	550		689	1010	1377	1699	2020	2349		
1.65	1.58	2 / 59	620		611	896	1222	1507	1792	2084		
1.76	1.69	2 / 59	660		574	842	1148	1416	1683	1958		
1.76	1.69	2 / 49	550		578	848	1157	1427	1697	2274		
1.92	1.84	2 / 59	720		526	772	1052	1298	1543	1795		
1.99	1.91	2 / 49	620		513	752	1026	1266	1505	2017		
2.02	1.94	3 / 64	550		509	747	1018	1256	1494	2037	2150	
2.12	2.03	2 / 49	660		482	707	964	1189	1414	1895		
2.28	2.19	3 / 64	620		452	663	903	1114	1325	1807	1907	
2.31	2.22	2 / 49	720		442	648	884	1090	1296	1737		
2.43	2.33	3 / 64	660		424	622	849	1047	1245	1697	1792	
2.65	2.54	3 / 64	720		389	570	778	959	1141	1556	1642	
2.95	2.83	3 / 44	550		358	525	716	882	1049	1431	1765	2029
3.32	3.19	3 / 44	620		317	465	635	783	931	1269	1566	1800
3.53	3.39	3 / 44	660		298	437	596	735	875	1193	1471	1691
3.86	3.70	3 / 44	720		273	401	547	674	802	1093	1348	1550

Machine weight	630 kg	(Electric motor, traction sheave & oil excluded)			
Oil quantity	8.6 L				
Machine type	**Sheave shaft support**		**Pitch [mm]**	**Diameter [mm]**	**Max static load (P) [kg]**
Overhead (OH)	Outboard support		330.2	Tapered	8845
Basement (BA)	Outboard support		330.2	Tapered	8845

Total Capacity Load - Qt kg - 50 Hz TW 1000

Suspension ratio 2:1

motor 4 pole - 50Hz (VVVF)
1500 rpm Synchronous
1440 rpm Effective

Total capacity load, Qt (kg), for motor power:

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave PCD mm	kW / HP	7.5 / 10	11 / 15	15 / 20	18.5 / 25	22 / 30	30 / 40	37 / 50	45 / 60
0.31	0.30	1/70	550		2651	3888	4163					
0.35	0.33	1/70	620		2352	3449	3693					
0.37	0.36	1/70	660		2209	3240	3469					
0.36	0.35	1/60	550		2390	3506	4516					
0.40	0.39	1/70	720		2025	2970	3180					
0.41	0.39	1/60	620		2120	3110	4006					
0.43	0.41	1/60	660		1992	2921	3764					
0.43	0.41	1/50	550		2016	2957	4033	4439				
0.47	0.45	1/60	720		1826	2678	3450					
0.49	0.47	1/50	620		1789	2623	3577	3937				
0.52	0.50	1/50	660		1680	2464	3361	3699				
0.54	0.52	1/40	550		1672	2452	3344	4125	4383			
0.57	0.54	1/50	720		1540	2259	3081	3391				
0.61	0.58	1/40	620		1483	2176	2967	3659	3888			
0.65	0.62	1/40	660		1393	2044	2787	3437	3652			
0.71	0.68	1/40	720		1277	1873	2555	3151	3348			
0.73	0.70	2/59	550		1291	1894	2582	3185	3788	4405		
0.83	0.79	2/59	620		1145	1680	2291	2825	3360	3908		
0.88	0.84	2/59	660		1076	1578	2152	2654	3156	3671		
0.88	0.85	2/49	550		1084	1590	2169	2675	3181	4263		
0.96	0.92	2/59	720		986	1447	1973	2433	2893	3365		
0.99	0.95	2/49	620		962	1411	1924	2373	2822	3782		
1.01	0.97	3/64	550		955	1400	1909	2355	2801	3819	4031	
1.06	1.02	2/49	660		904	1325	1807	2229	2651	3553		
1.14	1.10	3/64	620		847	1242	1694	2089	2484	3388	3576	
1.15	1.11	2/49	720		828	1215	1657	2043	2430	3256		
1.21	1.17	3/64	660		796	1167	1591	1963	2334	3182	3360	
1.33	1.27	3/64	720		729	1070	1459	1799	2139	2917	3080	
1.47	1.41	3/44	550		671	984	1342	1655	1968	2683	3309	3804
1.66	1.59	3/44	620		595	873	1190	1468	1746	2380	2936	3375
1.77	1.70	3/44	660		559	820	1118	1379	1640	2236	2758	3170
1.93	1.85	3/44	720		512	752	1025	1264	1503	2050	2528	2906

Machine weight	630 kg	(Electric motor, traction sheave & oil excluded)
Oil quantity	8.6 L	

Machine type	Sheave shaft support	Pitch [mm]	Diameter [mm]	Max static load (P) [kg]
Overhead (OH)	Outboard support	330.2	Tapered	8845
Basement (BA)	Outboard support	330.2	Tapered	8845

RENOLD

General Features - TW 1200 Lift Gear Package

Electric motor — Flange mounted 2 speed or VVVF

Power range — 11 to 55 kW (15 to 75 HP)

Reduction gear — 1/70 1/60 1/50 1/42 2/59 2/49 3/64 3/44

Low-speed shaft — overhead type (OH) max static load 11340kg
basement type (BA) max static load 10200kg

Driving pulley — integral $\varnothing_{pr}$ 620 to 820 mm

Brake electromagnet — dual circuit disk, volts - consult Renold

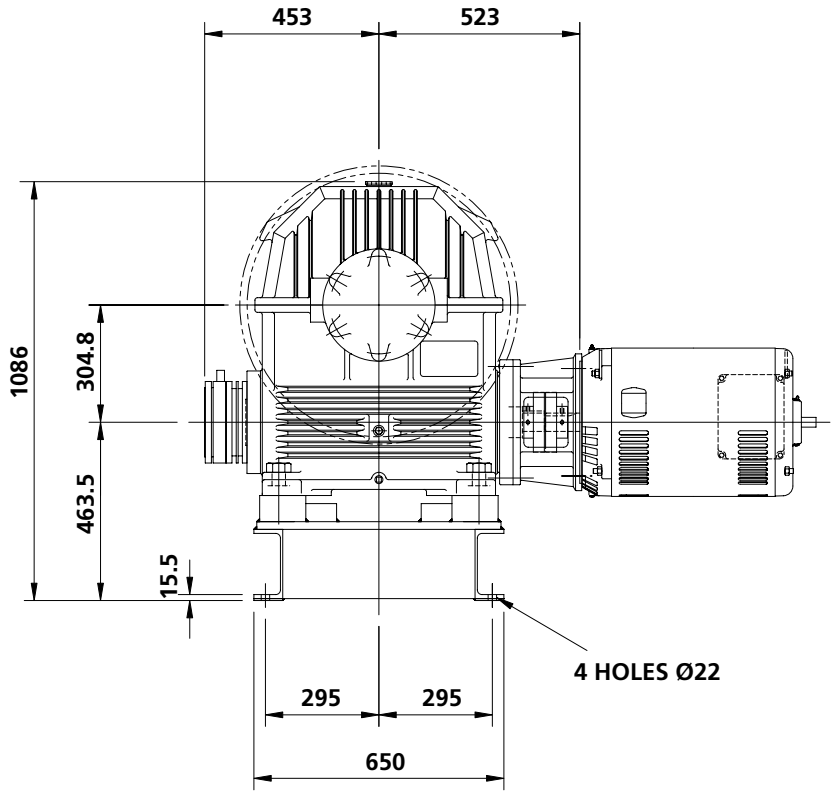
Rope guide — for pull downwards (machine at top)

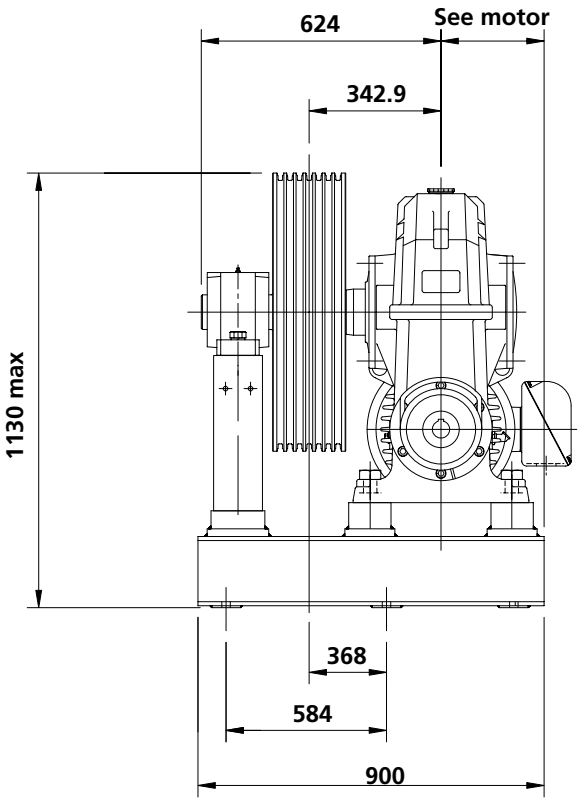
Sump capacity — 12.5 Litres

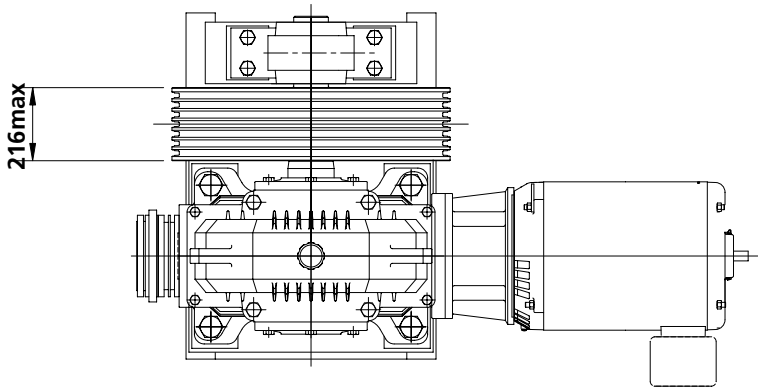
Special applications (on request)

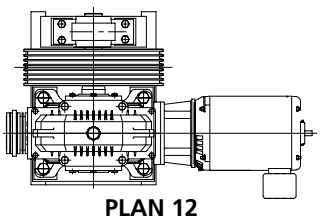
- Special low-speed shaft versions on request
- Handwheel on motor side
- Handwheel on opposite side to motor and spacer
- Tacho/encoder
- Compensating handwheel - opposite side to motor
- Brake electromagnet special voltages
- Brake electromagnet with IP55 rating
- Rope guide for upward pull or to side
- Foot mounted motors

Dimensions - Normal Shaft - TW 1200

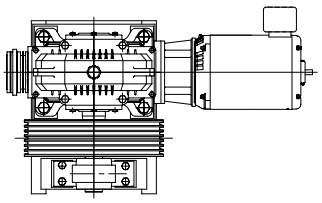








PLAN 12
(RIGHT HAND)



PLAN 11
(LEFT HAND)

RENOLD

Total Capacity Load - Qt kg - 50 Hz TW 1200

Suspension ratio 1:1

motor 4 pole - 50Hz (VVVF)
1500 rpm Synchronous
1440 rpm Effective

Total capacity load, Qt (kg), for motor power:

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave PCD mm	kW / HP	11 / 15	15 / 20	18.5 / 25	22 / 30	30 / 40	37 / 50	45 / 60	55 / 75
0.70	0.67	1/70	620		1863	2541	2984					
0.74	0.71	1/70	660		1750	2387	2803					
0.81	0.78	1/70	720		1604	2188	2570					
0.81	0.78	1/60	620		1659	2262	2789	3005				
0.86	0.83	1/60	660		1558	2125	2620	2823				
0.92	0.88	1/70	820		1409	1921	2256					
0.94	0.90	1/60	720		1428	1948	2402	2588				
0.97	0.93	1/50	620		1416	1931	2382	2832	2958			
1.04	1.00	1/50	660		1330	1814	2237	2661	2779			
1.07	1.03	1/60	820		1254	1710	2109	2272				
1.13	1.09	1/50	720		1220	1663	2051	2439	2547			
1.16	1.11	1/42	620		1233	1681	2073	2465	2937			
1.23	1.18	1/42	660		1158	1579	1947	2316	2759			
1.29	1.24	1/50	820		1071	1460	1801	2142	2236			
1.35	1.29	1/42	720		1061	1447	1785	2123	2529			
1.53	1.47	1/42	820		932	1271	1567	1864	2220			
1.65	1.58	2/59	620		896	1222	1507	1792	2444	2932		
1.76	1.69	2/59	660		842	1148	1416	1683	2295	2754		
1.92	1.84	2/59	720		772	1052	1298	1543	2104	2524		
1.99	1.91	2/49	620		752	1026	1266	1505	2052	2531	2847	
2.12	2.03	2/49	660		707	964	1189	1414	1928	2378	2675	
2.18	2.10	2/59	820		677	924	1139	1355	1848	2217		
2.28	2.19	3/64	620		670	913	1126	1340	1827	2253	2740	
2.31	2.22	2/49	720		648	884	1090	1296	1767	2180	2452	
2.43	2.33	3/64	660		629	858	1058	1258	1716	2116	2574	
2.63	2.52	2/49	820		569	776	957	1138	1552	1914	2153	
2.65	2.54	3/64	720		577	786	970	1154	1573	1940	2359	
3.02	2.90	3/64	820		506	691	852	1013	1381	1703	2072	
3.32	3.19	3/44	620		465	635	783	931	1269	1566	1904	2327
3.53	3.39	3/44	660		437	596	735	875	1193	1471	1789	2186
3.86	3.70	3/44	720		401	547	674	802	1093	1348	1640	2004
4.39	4.22	3/44	820		352	480	592	704	960	1184	1440	1760

Machine weight	830 kg	(Electric motor, traction sheave & oil excluded)		
Oil quantity	12.5 L			
Machine type	**Sheave shaft support**	**Pitch [mm]**	**Diameter [mm]**	**Max static load (P) [kg]**
Overhead (OH)	Outboard support	342.9	Tapered	11340
Basement (BA)	Outboard support	342.9	Tapered	10200

Total Capacity Load - Qt kg - 50 Hz TW 1200

Suspension ratio 2:1

motor 4 pole - 50Hz (VVVF)
1500 rpm Synchronous
1440 rpm Effective

Total capacity load, Qt (kg), for motor power:

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave PCD mm	kW / HP	11 / 15	15 / 20	18.5 / 25	22 / 30	30 / 40	37 / 50	45 / 60	55 / 75
0.35	0.33	1/70	620		3494	4764	5595					
0.37	0.36	1/70	660		3282	4475	5256					
0.40	0.39	1/70	720		3008	4102	4818					
0.41	0.39	1/60	620		3110	4241	5230	5635				
0.43	0.41	1/60	660		2921	3984	4913	5293				
0.46	0.44	1/70	820		2642	3602	4231					
0.47	0.45	1/60	720		2678	3652	4504	4852				
0.49	0.47	1/50	620		2655	3621	4466	5311	5546			
0.52	0.50	1/50	660		2495	3402	4195	4989	5210			
0.54	0.52	1/60	820		2351	3206	3954	4260				
0.57	0.54	1/50	720		2287	3118	3846	4573	4776			
0.58	0.56	1/42	620		2311	3152	3887	4622	5506			
0.62	0.59	1/42	660		2171	2961	3651	4342	5173			
0.64	0.62	1/50	820		2008	2738	3377	4016	4193			
0.67	0.65	1/42	720		1990	2714	3347	3980	4742			
0.77	0.74	1/42	820		1747	2383	2939	3495	4163			
0.83	0.79	2/59	620		1680	2291	2825	3360	4582	5497		
0.88	0.84	2/59	660		1578	2152	2654	3156	4304	5163		
0.96	0.92	2/59	720		1447	1973	2433	2893	3945	4733		
0.99	0.95	2/49	620		1411	1924	2373	2822	3848	4746	5339	
1.06	1.02	2/49	660		1325	1807	2229	2651	3615	4458	5015	
1.09	1.05	2/59	820		1270	1732	2136	2540	3464	4156		
1.14	1.10	3/64	620		1256	1713	2112	2512	3425	4224	5138	
1.15	1.11	2/49	720		1215	1657	2043	2430	3313	4087	4597	
1.21	1.17	3/64	660		1180	1609	1984	2359	3217	3968	4826	
1.31	1.26	2/49	820		1067	1455	1794	2134	2909	3588	4037	
1.33	1.27	3/64	720		1081	1475	1819	2163	2949	3637	4424	
1.51	1.45	3/64	820		950	1295	1597	1899	2590	3194	3884	
1.66	1.59	3/44	620		873	1190	1468	1746	2380	2936	3570	4364
1.77	1.70	3/44	660		820	1118	1379	1640	2236	2758	3354	4099
1.93	1.85	3/44	720		752	1025	1264	1503	2050	2528	3075	3758
2.20	2.11	3/44	820		660	900	1110	1320	1800	2220	2700	3300

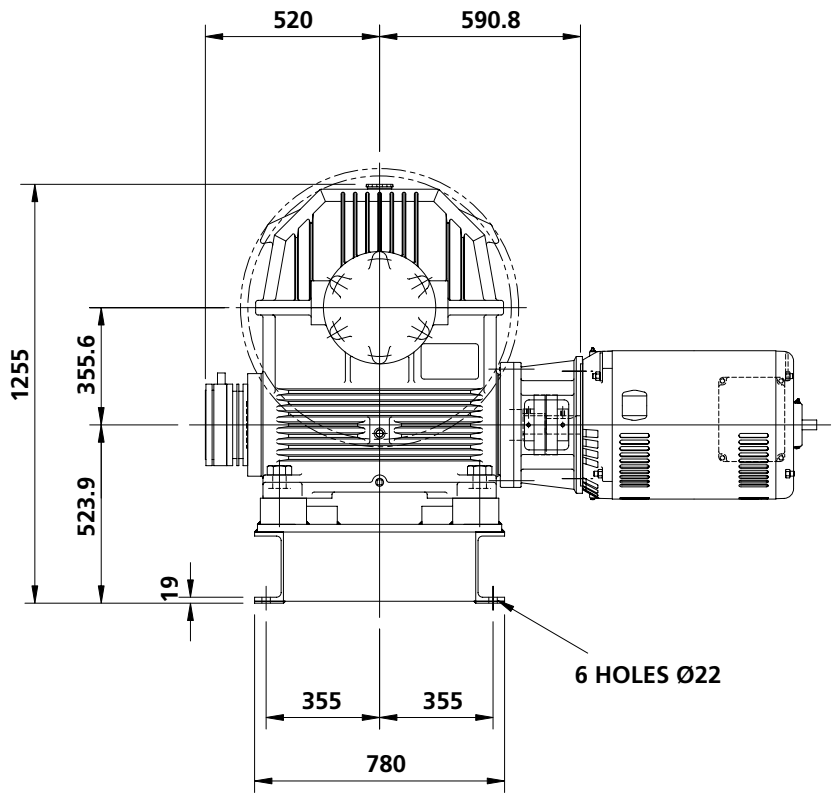
Machine weight	830 kg	(Electric motor, traction sheave & oil excluded)
Oil quantity	12.5 L	

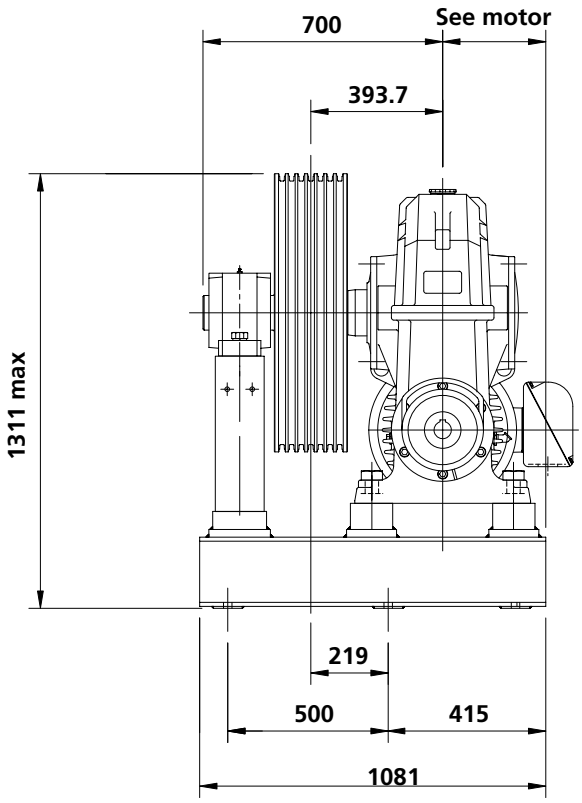
Machine type	Sheave shaft support	Pitch [mm]	Diameter [mm]	Max static load (P) [kg]
Overhead (OH)	Outboard support	342.9	Tapered	11340
Basement (BA)	Outboard support	342.9	Tapered	10200

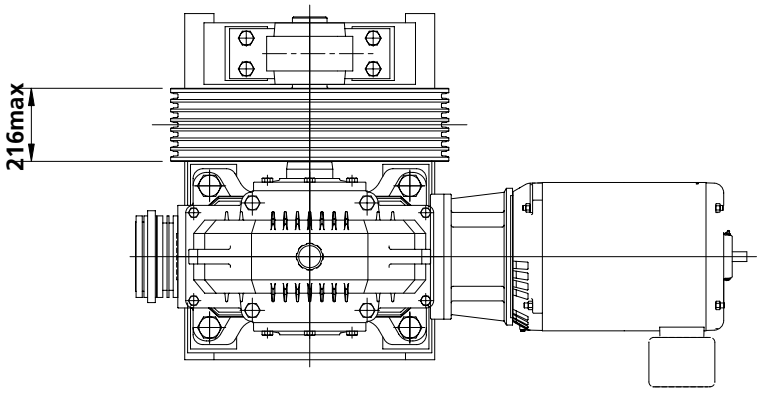
General Features - TW 1400 Lift Gear Package

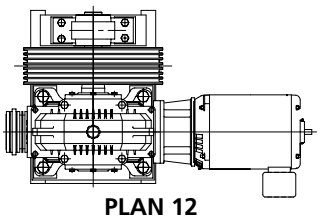
Electric motor	**Flange mounted 2 speed or VVF**
Power range	**15 to 110 kW (20 to 150 HP)**
Reduction gear	**1/70 1/60 1/50 2/79 2/69 2/59 3/64 4/59**
Low-speed shaft	**overhead type (OH) max static load 15875kg** **basement type (BA) max static load 13060kg**
Driving pulley	**integral $\varnothing_{pr}$ 620 to 820 mm**
Brake electromagnet	**dual circuit disk, volts - consult Renold**
Rope guide	**for pull downwards (machine at top)**
Sump capacity	**18.6 Litres**
Special applications (on request)	**Special low-speed shaft versions on request** **Handwheel on motor side** **Handwheel on opposite side to motor and spacer** **Tacho/encoder** **Compensating handwheel - opposite side to motor** **Brake electromagnet special voltages** **Brake electromagnet with IP55 rating** **Rope guide for upward pull or to side** **Foot mounted motors**

Dimensions - Normal Shaft - TW 1400

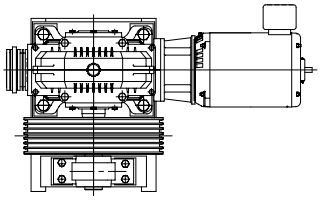








PLAN 12
(RIGHT HAND)



PLAN 11
(LEFT HAND)

RENOLD

Total Capacity Load - Qt kg - 50 Hz TW 1400

Suspension ratio 1:1

motor 4 pole - 50Hz (VVVF)
1500 rpm Synchronous
1440 rpm Effective

Total capacity load, Qt (kg), for motor power:

Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave PCD mm	kW / HP	15 / 20	18.5 / 25	22 / 30	30 / 40	37 / 50	45 / 60	55 / 75	75 / 100	110 / 150
0.70	0.67	1/70	620		2541	3134	3727	4324					
0.74	0.71	1/70	660		2387	2944	3501	4062					
0.81	0.78	1/70	720		2188	2698	3209	3723					
0.81	0.78	1/60	620		2262	2789	3317	4523	4589				
0.86	0.83	1/60	660		2125	2620	3116	4249	4311				
0.92	0.88	1/70	820		1921	2369	2818	3269					
0.94	0.90	1/60	720		1948	2402	2856	3895	3952				
0.97	0.93	1/50	620		1931	2382	2832	3862	4568				
1.04	1.00	1/50	660		1814	2237	2661	3628	4291				
1.07	1.03	1/60	820		1710	2109	2508	3420	3470				
1.13	1.09	1/50	720		1663	2051	2439	3326	3934				
1.23	1.18	2/79	620		1581	1950	2319	3162	3899	4457			
1.29	1.24	1/50	820		1460	1801	2142	2920	3454				
1.31	1.26	2/79	660		1485	1832	2178	2970	3663	4187			
1.41	1.35	2/69	620		1397	1723	2049	2794	3445	4176			
1.43	1.37	2/79	720		1361	1679	1997	2723	3358	3838			
1.50	1.44	2/69	660		1312	1618	1924	2624	3237	3923			
1.63	1.57	2/79	820		1195	1474	1753	2390	2948	3370			
1.64	1.57	2/69	720		1203	1483	1764	2406	2967	3596			
1.65	1.58	2/59	620		1236	1524	1812	2471	3048	3707	4460		
1.76	1.69	2/59	660		1161	1431	1702	2321	2863	3482	4190		
1.87	1.79	2/69	820		1056	1303	1549	2112	2605	3157			
1.92	1.84	2/59	720		1064	1312	1560	2128	2624	3192	3841		
2.18	2.10	2/59	820		934	1152	1370	1868	2304	2803	3372		
2.28	2.19	3/64	620		913	1126	1340	1827	2253	2740	3349	4231	
2.43	2.33	3/64	660		858	1058	1258	1716	2116	2574	3146	3975	
2.65	2.54	3/64	720		786	970	1154	1573	1940	2359	2884	3644	
3.02	2.90	3/64	820		691	852	1013	1381	1703	2072	2532	3199	
3.30	3.17	4/59	620		638	787	936	1277	1575	1915	2341	3192	3990
3.51	3.37	4/59	660		600	740	880	1199	1479	1799	2199	2998	3748
3.83	3.68	4/59	720		550	678	806	1099	1356	1649	2016	2748	3435
4.37	4.19	4/59	820		483	595	708	965	1191	1448	1770	2413	3017

Machine weight	1265 kg	(Electric motor, traction sheave & oil excluded)			
Oil quantity	18.6 L				
Machine type	**Sheave shaft support**		**Pitch [mm]**	**Diameter [mm]**	**Max static load (P) [kg]**
Overhead (OH)	Outboard support		393.7	Tapered	15875
Basement (BA)	Outboard support		393.7	Tapered	13060

Total Capacity Load - Qt kg - 50 Hz TW 1400

Suspension ratio 2:1

motor 4 pole - 50Hz (VVVF)
1500 rpm Synchronous
1440 rpm Effective

Total capacity load, Qt (kg), for motor power:

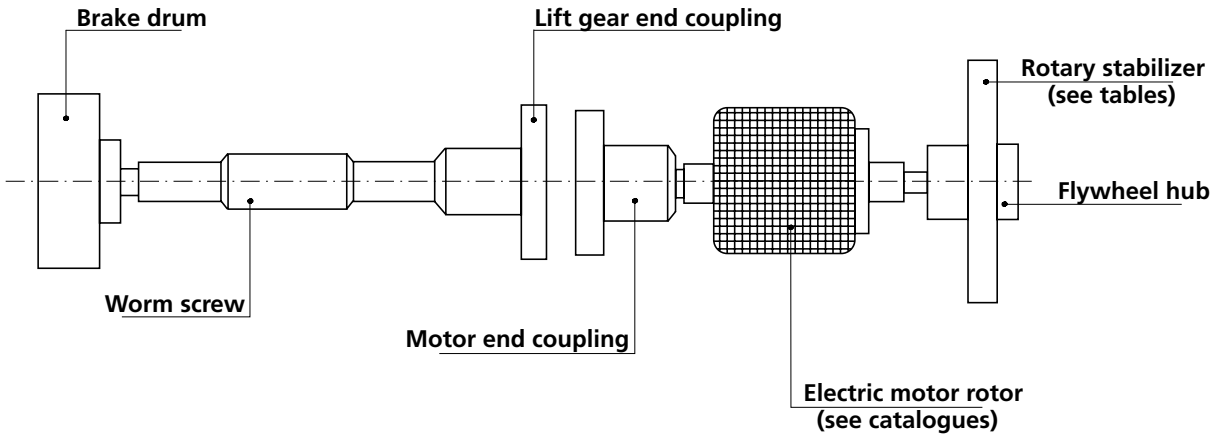
Speed sync. m/s	Speed eff. m/s	Reduction Gear	Sheave PCD mm	kW / HP	15 / 20	18.5 / 25	22 / 30	30 / 40	37 / 50	45 / 60	55 / 75	75 / 100	110 / 150
0.35	0.33	1/70	620		4764	5876	6987	8108					
0.37	0.36	1/70	660		4475	5520	6564	7616					
0.40	0.39	1/70	720		4102	5060	6017	6981					
0.41	0.39	1/60	620		4241	5230	6219	8481	8605				
0.43	0.41	1/60	660		3984	4913	5843	7967	8084				
0.46	0.44	1/70	820		3602	4443	5283	6130					
0.47	0.45	1/60	720		3652	4504	5356	7303	7410				
0.49	0.47	1/50	620		3621	4466	5311	7242	8566				
0.52	0.50	1/50	660		3402	4195	4989	6803	8046				
0.54	0.52	1/60	820		3206	3954	4703	6413	6506				
0.57	0.54	1/50	720		3118	3846	4573	6236	7376				
0.62	0.59	2/79	620		2964	3656	4347	5928	7311	8357			
0.64	0.62	1/50	820		2738	3377	4016	5476	6476				
0.66	0.63	2/79	660		2784	3434	4084	5569	6868	7851			
0.71	0.68	2/69	620		2619	3230	3841	5238	6460	7830			
0.72	0.69	2/79	720		2552	3148	3743	5105	6296	7196			
0.75	0.72	2/69	660		2460	3034	3608	4920	6069	7355			
0.82	0.78	2/79	820		2241	2764	3287	4482	5528	6319			
0.82	0.79	2/69	720		2255	2781	3308	4510	5563	6742			
0.83	0.79	2/59	620		2317	2857	3398	4633	5714	6950	8363		
0.88	0.84	2/59	660		2176	2684	3192	4352	5368	6529	7856		
0.93	0.90	2/69	820		1980	2442	2904	3960	4884	5920			
0.96	0.92	2/59	720		1995	2460	2926	3990	4921	5985	7201		
1.09	1.05	2/59	820		1752	2160	2569	3503	4321	5255	6323		
1.14	1.10	3/64	620		1713	2112	2512	3425	4224	5138	6279	7934	
1.21	1.17	3/64	660		1609	1984	2359	3217	3968	4826	5899	7453	
1.33	1.27	3/64	720		1475	1819	2163	2949	3637	4424	5407	6832	
1.51	1.45	3/64	820		1295	1597	1899	2590	3194	3884	4748	5999	
1.65	1.58	4/59	620		1197	1476	1755	2394	2952	3591	4389	5985	7481
1.76	1.69	4/59	660		1124	1387	1649	2249	2773	3373	4123	5622	7027
1.92	1.84	4/59	720		1031	1271	1512	2061	2542	3092	3779	5153	6442
2.18	2.10	4/59	820		905	1116	1327	1810	2232	2715	3318	4525	5656

Machine weight	830 kg	(Electric motor, traction sheave & oil excluded)
Oil quantity	12.5 L	

Machine type	Sheave shaft support	Pitch [mm]	Diameter [mm]	Max static load (P) [kg]
Overhead (OH)	Outboard support	393.7	Tapered	15875
Basement (BA)	Outboard support	393.7	Tapered	13060

RENOLD

Moment of Inertia of High Speed Shaft



Moment of inertia GD² (kg×m²)

Lift Gear type	Worm screw kg×m²	Brake drum kg×m²	Gear end coupling kg×m²	Motor end coupling kg×m²	Handwheel hub kg×m²	Total high speed spaft kg×m²	Handwheel hub L mm
FF 330	0.0065	0.1346	———	———	———	**0.1414**	———
FF 340	0.0065	0.1346	———	———	———	**0.1414**	———
FF 360	0.0065	0.1346	———	———	———	**0.1414**	———
V 450	0.0065	0.1346	———	———	———	**0.1414**	———
FF 610	0.0037	0.1306	0.0471	0.0267	0.0473	**0.2554**	80
FF 620	0.0037	0.1306	0.0471	0.0267	0.0473	**0.2554**	80
FF 630	0.0037	0.1306	0.0471	0.0267	0.0473	**0.2554**	80
FF 650	0.0040	0.3059	0.0471	0.0267	0.0473	**0.4313**	80
FF 800	0.0044	0.4311	0.0769	0.1017	0.0584	**0.6420**	110
FF 825	0.0044	0.4311	0.0769	0.1017	0.0584	**0.6420**	110
FF 850	0.0044	0.4311	0.0769	0.1017	0.0584	**0.6420**	110
FF 1150	0.0177	1.0738	0.1242	0.1617	0.0584	**1.4360**	110
F 1500	0.0560	3.6031	———	0.4841	0.0584	**4.2017**	110
TW 1000	Consult Renold						
TW 1200	Consult Renold						
TW 1400	Consult Renold						

Note: When choosing the compensating flywheel, take into account that the sum of the GD² of all the rotating counterweights must not exceed the outside GD² of the chosen motor, givin in the catalogues of the actual motors (GD² = 4 x J).

Lubrication

Unless otherwise indicated, the lift gear package is delivered without oil for lubricating the gearbox and the motor bushing if mounted.

Before starting the machine, it should therefore be lubricated.

The following types of oil are recommended for this purpose:

Lift Gear Packages - 330, 340, 360, 450, 610, 620, 630, 650, 800, 850, 1150 & 1500

		Esso	Agip	Mobil	Shell
mineral	type	SPARTAN EP 220	BLASIA 220	MOBILGEAR 630	OMALA OIL 220
	viscosity E/50° C	15.1	18.0	15.8	15.1
synthetic	type	EZL 502	BLASIA S220	GLYGOYLE 30	TIVELA WB
	viscosity E/50° C	19.0	21.0	19.4	20.0

Lift Gear Packages - TW 1000, 1200 & 1400

	Esso	Castrol	Mobil	Shell
synthetic	SPARTAN 320	ALPHASYN T320	SHC 632	OMALA RL 320

The above specifications are to be considered approximate for medium-heavy duty applications. As a general rule, it is advisable to use oils with lower viscosity values for small sizes of lift gear units or in the presence of lower ambient temperatures. Vice versa, oils with a higher viscosity value are recommended with higher ambient or working temperatures.

- In the case of an electric motor on bushing, the latter should be lubricated using an oil with a viscosity of 3 to 4 E/50°C (e.g. Teresso 32).
- When there are end or intermediate bearings on the low speed shaft, lubricate them using the following type of grease:

normal duty : calcium soap grease (limit temperature -20° C to +155°C)
heavy duty : calcium or lithium soap grease with lead soap added (EP greases)

Grease once/twice a year according to intensity of duty.

Reduction gear oil change:

1st change - mineral : after about 350 hours of effective duty
- synthetic : after about 700 hours of effective duty

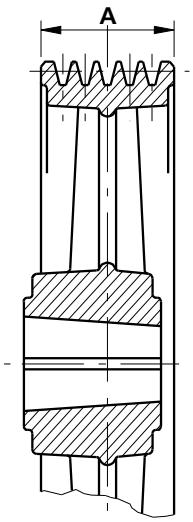
subsequent changes
- mineral : every 12 to 18 months
- synthetic : every 24 to 36 months, according to intensity of duty

CAUTION : NEVER MIX MINERAL AND SYNTHETIC OILS

Note : Before starting a new lift gear package for the first time, always lubricate and then turn the pulley manually one complete turn, using the control flywheel with the brake disengaged.
For the quantity of lubricant for the reduction gearbox, comply with indications given in the pertinent table for each type of winch to be found in the catalogue.
With the machine at a standstill, this quantity corresponds to a level that is the same or slightly higher than the red line of the indicator usually located on the lower front part of the lift gear.

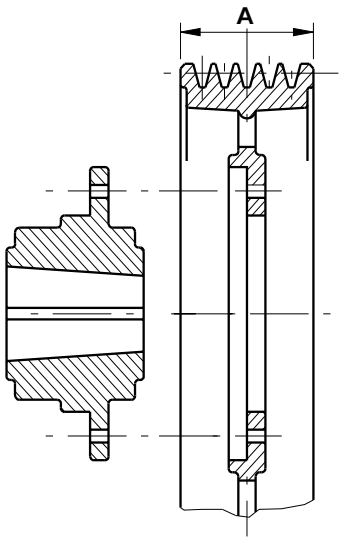
Driving Sheave Forms and Groove Profiles

Complete Sheave



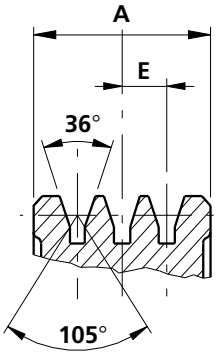
Constructional Form
STANDARD

Split Sheave

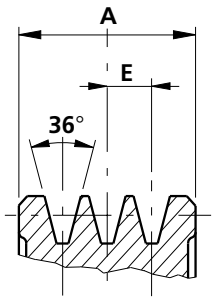


Constructional Form
SPECIAL on request

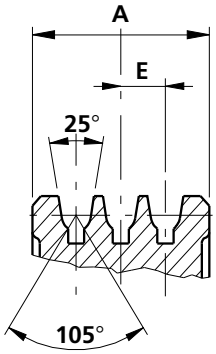
T.R.A. Profile
standard



CONICAL Profile
standard



SEMICIRC. Profile
special on request



CONICAL PROFILE : STANDARD 36°
T.R.A. PROFILE : STANDARD 36° / 105°

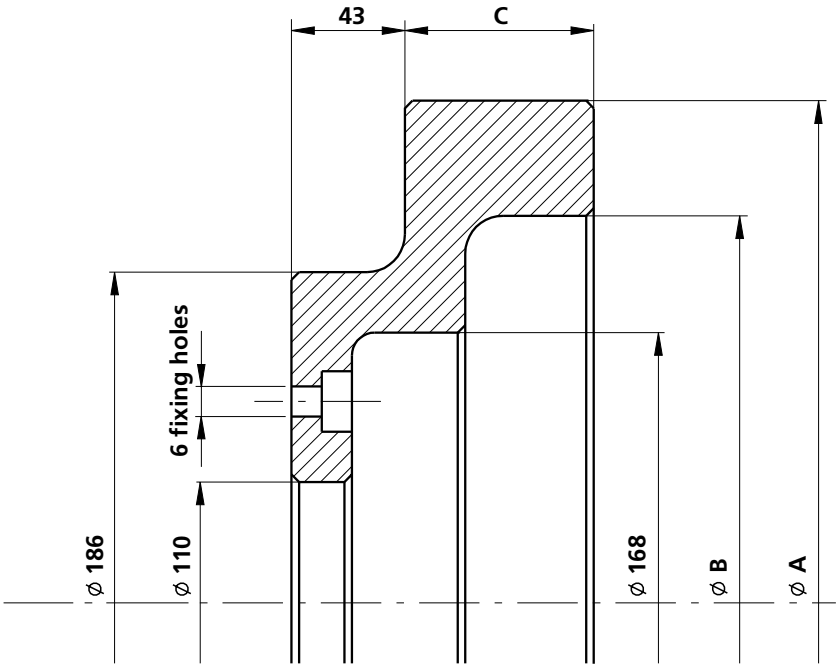
The SEMI-CIRCULAR profile in general and the CONICAL and T.R.A. profiles with angles other than those given above, are fabricated specially on request only.
All the standard and special race profile types may be supplied on request with treated races - Hardness = 50 HRC

Profiles : CONICAL - SEMICIRCULAR - T.R.A.

∅ Rope	Pitch E	No. Races	Band width A	Application limit on lift gear
8	17	3	61	FF 330 - 630
		4	78	
		5	98	FF 340 - FF 360 *
9		6	112	
		7	134	**FF 610 - 620 - 650
10		8	160	
		9	175	FF 800 - 825 - 850
11		10	185	
		11	200	FF 1150
		12	215	F 1500
12	20	3	78	
		4	98	FF 340 - FF 360 *
		5	112	
13		6	134	**FF 610 - 620 - 650
		7	160	
		8	175	FF 800 - 825 - 850
		9	200	FF 1150
		10	215	
		11	235	
		12	255	F 1500
14	24	5	134	
		6	160	
15		7	185	FF 1150
		8	215	
16		9	235	
		10	255	F 1500

* for FF 360 see page 19.3 for handwheel assembly combinations
** for FF 610 with band width > 112mm see motor dimensions

Handwheel for Lift Gear - FF340 - FF 360



Possibility of mounting on lift gear

Sheave Pitch Ø mm	Band width mm	Flywheel position 50	60	76	78	79	81
440	61						
	78						
	98						
	112						
480	61						
	78						
	98						
	112						
520	61						
	78						
	98						
	112						⊖
550	61						
	78						▽
	98					⊖	⊖
	112					⊖	⊖
580	61						⊖
	78					⊖	⊖
	98				▽	⊖	⊖
	112				⊖	⊖	⊖

Pos.	Dimensions ∅ A	∅ B	C	Finished weight kg	GD^2 $kg \times m^2$	Note
50	290	228	47	14	**0.76**	also applicable on FF 330
60	310	240	51	16	**1.07**	
76	310	230	66	21.5	**1.43**	
78	320	223	67	25	**1.73**	
79	350	255	54	24	**1.94**	
81	360	265	57	25	**2.29**	

Caption:

⊖ impossible combination

▽ reduced gap (20 - 22 mm)

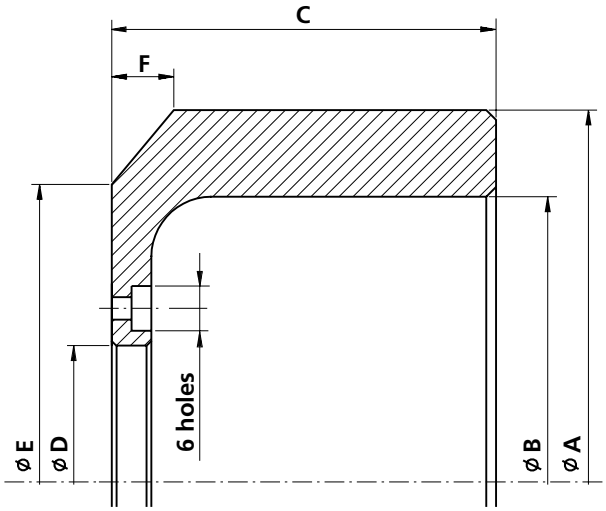
possible combination
A minimun gap of 23-25 mm is ensured between handwheel and sheave, according to T.R.A. standard.

Note: For details of TW Series handwheels - consult Renold.

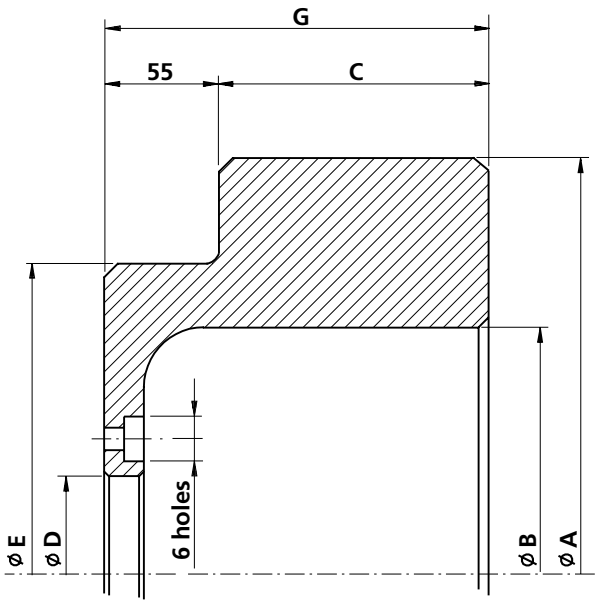
Handwheel for Lift Gears FF330 - V450 - FF630

Handwheels with reduced overall dimensions

Fabrication 1



Fabrication 2



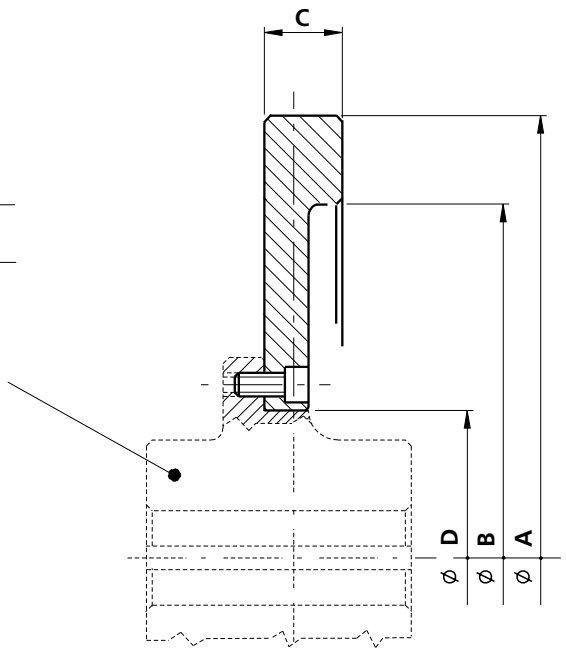
Pos.	Version	Dimensions							Finished weight	GD^2	Application
		ØA	ØB	C	ØD	ØE	F	G	(kg)	(kgxm^2)	
87	2	280	160	50	110	180	–	105	18.8	0.90	V 450
89	2	280	160	65	110	180	–	120	24	1.16	V 450
90	2	280	160	80	110	180	–	135	27.8	1.39	FF 630
92	1	300	230	95	110	240	25	–	21.2	1.43	FF 330
94	1	300	230	115	110	240	25	–	25.5	1.73	FF 330

Note: For details of TW Series handwheels - consult Renold.

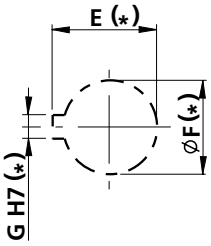
Modular Handwheels for Lift Gears - FF610, 620, 630, 650, 800, 825, 850, 1150 & 1500

To suit motor types B9 - B3

Hub		
Type	∅D	Hole ∅F
A	110	28 ÷ 55
B	160	60 ÷ 75



(*) Note: E F G value to be specified (according to the motor shaft)

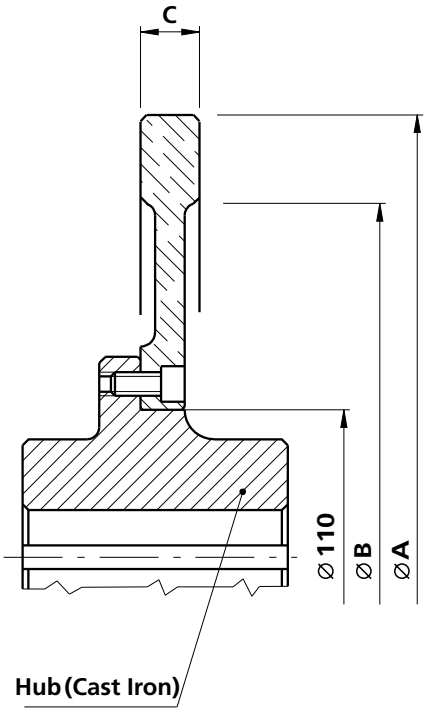


Pos.	Dimensions ∅A mm	∅B mm	C mm	No. fixing holes	Finished weight (Only flywheel part) kg	GD² kg×m²
2	330	285	30	3	12	0.77
3	330	270	40	3	14	1.02
4	375	334	40	3	16	1.43
5	400	348	40	3	16.5	1.84
6	425	362	40	6	20	2.44
7	450	382	40	6	22	3.06
8	475	420	42	6	23	3.57
9	500	450	42	6	24	4.08
10	525	475	44	6	26	5.00
11	525	455	45	6	30	5.81
12	550	475	42	6	32	6.78
13	550	475	48.5	6	34	7.55
14	550	430	52	6	46	9.99
15	550	420	55	6	53	11.32
16	550	400	69	6	71	14.99

Note: For details of TW Series handwheels - consult Renold

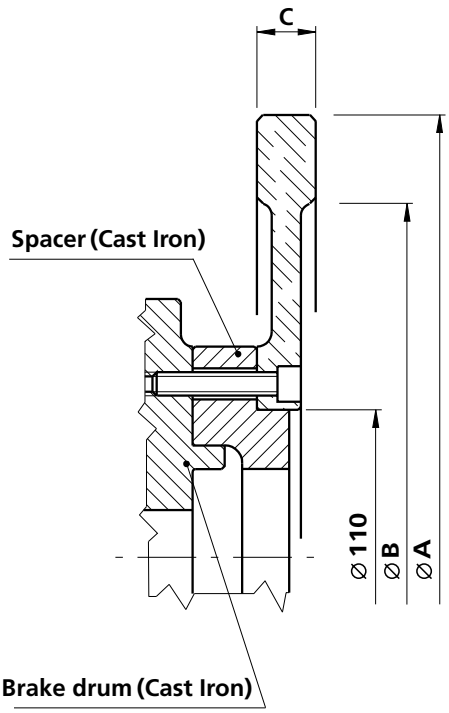
Aluminium Handwheels

A28
A30
A45



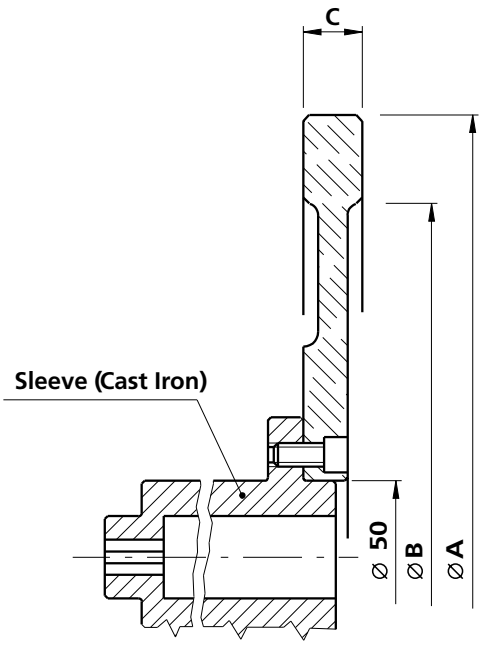
Application on cast-iron hub

A30



Application on brake drum

A30M



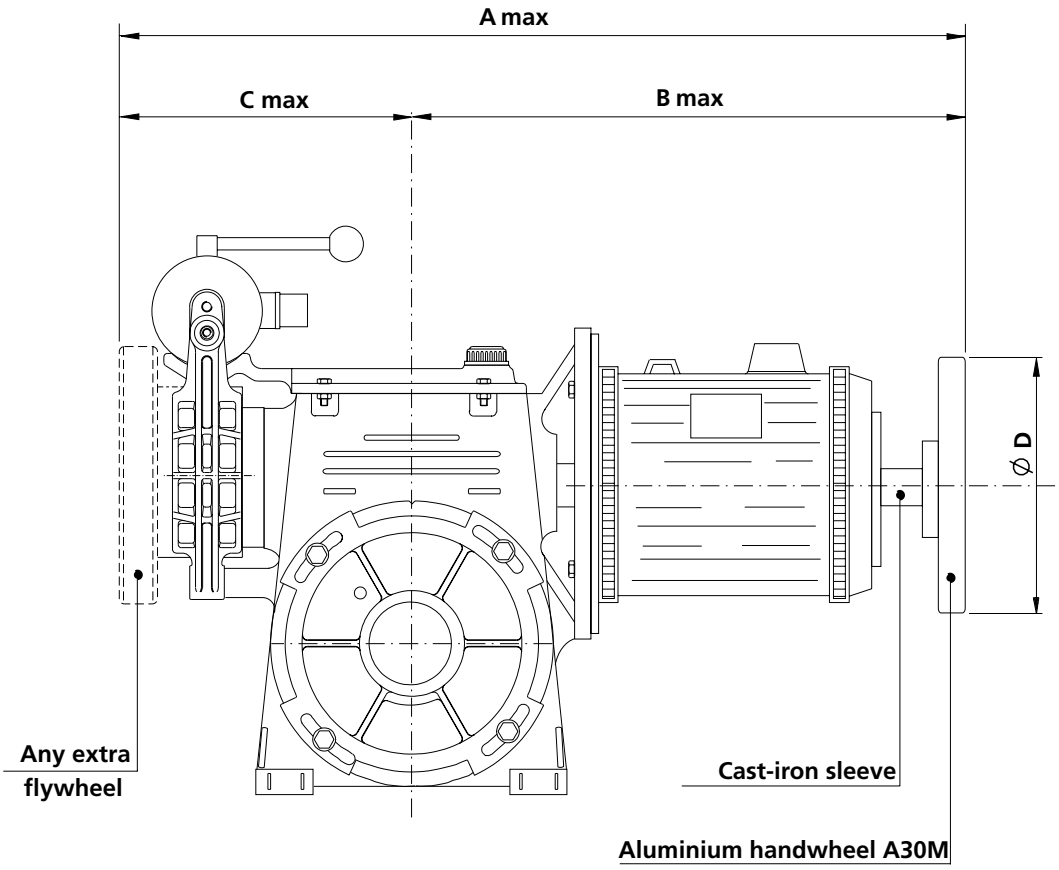
Application on A4 form motor
See table 2.1.T.062 (pag. 88)
for overall dimensions

Application	Flywheel type initial	Dimensions ØA	Dimensions ØB mm	Dimensions C	Finished weight kg	GD^2 kgxm^2
On special brake drum + spacer (winch FF 630)	**A28**	265	256	20	1.06	**0.021**
On standard hub	**A30**	300	256	20	1.89	**0.084**
On brake drum + spacer (winches FF 330 - FF 360)	**A45**	450	400	25	5.20	**0.448**
On sleeve (rear motor A4 size) (winches FF 330 - FF 360)	**A30M**	300	260	20	1.78	**0.089**

Note: For details of TW Series handwheels - consult Renold.

Dimensions with Handwheel for A4 Motors

FF 330 - FF 340 - FF 360

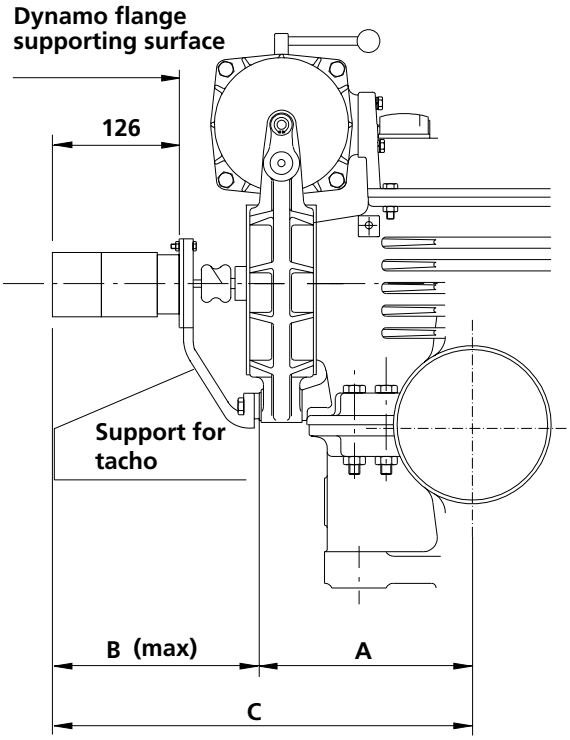


Pos.	A mm	B mm	C mm	∅D mm
1	903	555	348	300
2	938	590	348	300

For this special application the A4 form motor should have a Ø 50 mm hole on the rear cover.
Motors with coaxial electric fan cannot therefore be used.

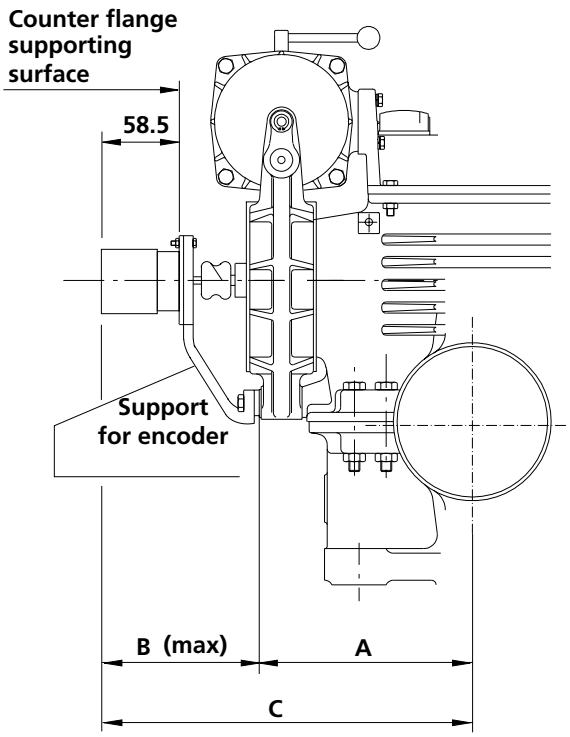
Note: For details of TW Series handwheels - contact Renold.

Dimensions of Tacho/Encoder



Application diagram of tacho

Lift gear type	Dimensions A	B	C (max)	Tacho type
FF 330 FF 340 FF 360	214	253	467	CGE REO 444M
FF 610 FF 620 FF 650	228	253	481	CGE REO 444M
FF 800 FF 825 FF 850	254	246	500	CGE REO 444M
FF 1150	298	278	576	CGE REO 444M



Application diagram of encoder

Lift gear type	Dimensions A	B	C (max)	Encoder type
FF 330 FF 340 FF 360	214	187	401	Hengstler RI 58
FF 630	228	187	415	Hengstler RI 58
FF 610 FF 620 FF 650	228	174	402	Hengstler RI 58
FF 800 FF 825 FF 850	254	179	433	Hengstler RI 58
FF 1150	298	213	511	Hengstler RI 58

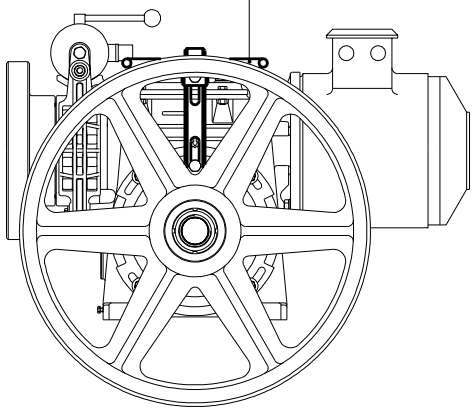
For encoder application on V450 see page 6.0

NB: The standard types of tacho and encoder are given in the table.
For other types to be found generally on sale, see overall dimensions according to the relative catalogues.

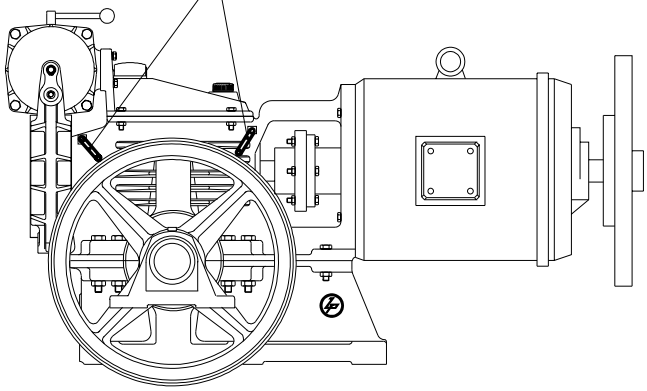
Note: For details of TW Series Tacho/Encoders - consult Renold.

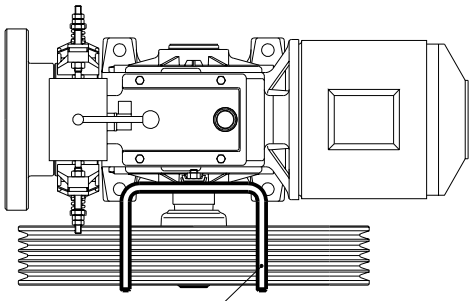
Rope Guide Application Overhead

Rope guide assembly at top

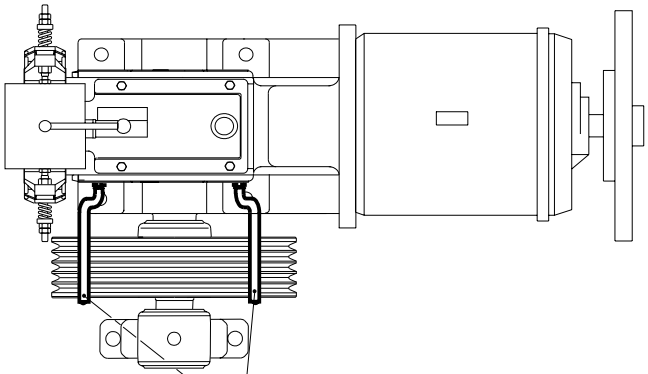


Rope guide assembly at top





Rope guide assembly at top



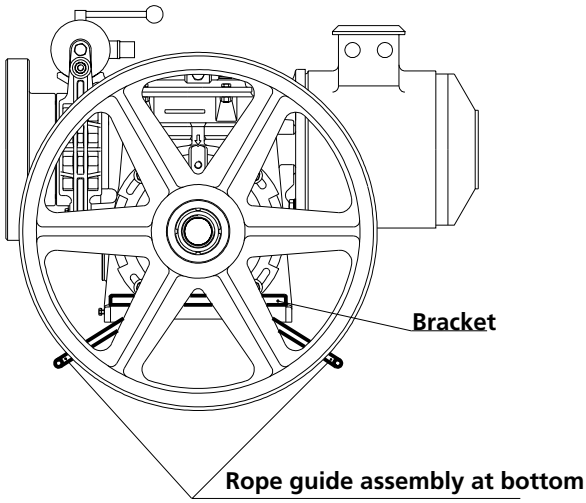
Rope guide assembly at top

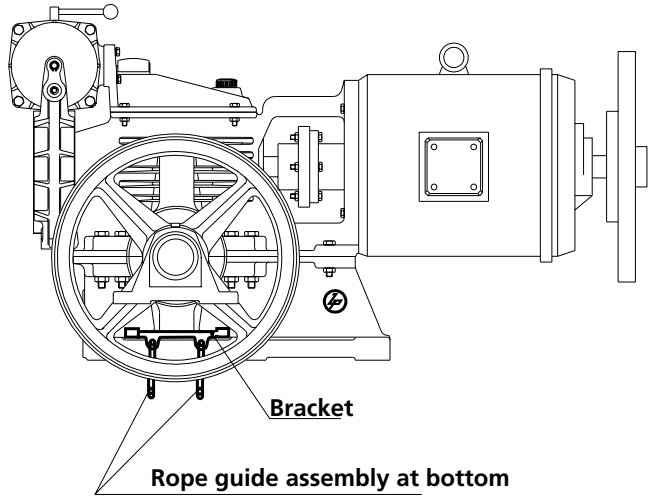
Lift gear type	Sheave diameter	Values ⌀ Pin	Values Development
FF 330	480	14	385
FF 340 **FF 360**	400 to 580	14	570
FF 610	440 to 630	14	570
FF 620	440 to 630	14	655
FF 630	630	14	376

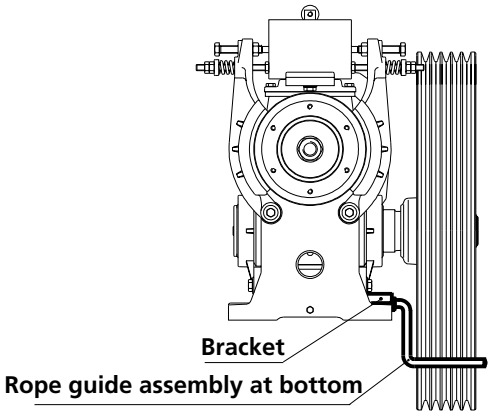
Lift gear type	Sheave diameter	Values ⌀ Pin	Values Development
FF 650	480 to 650	14	570
FF 800	480 to 630	16	385
FF 825 **FF 850**	670		445
FF 1150	520 to 700	16	435
	770		465
F 1500	520 to 650	16	435

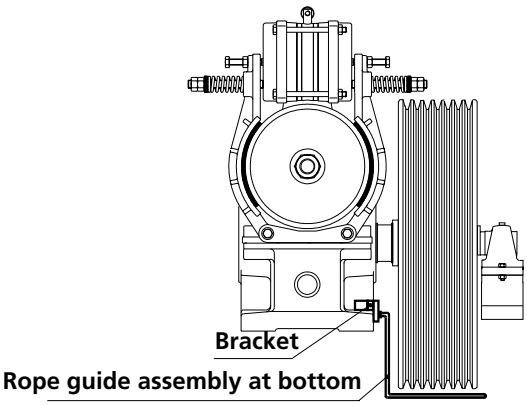
Note: For details of TW Series Rope Guide Applications - consult Renold.

Rope Guide Application - Basement







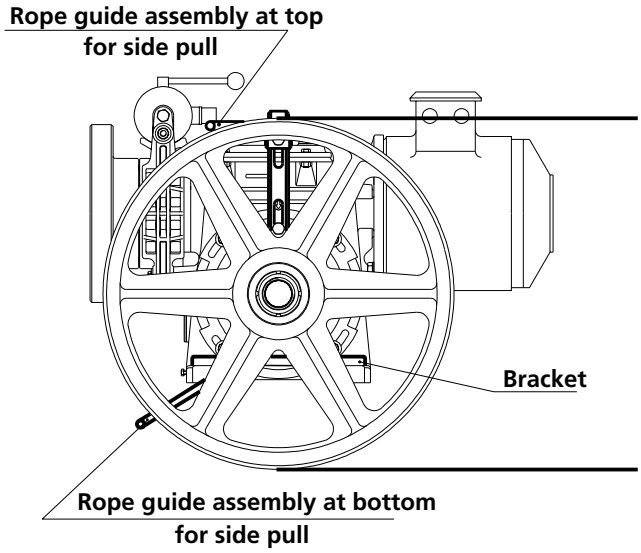


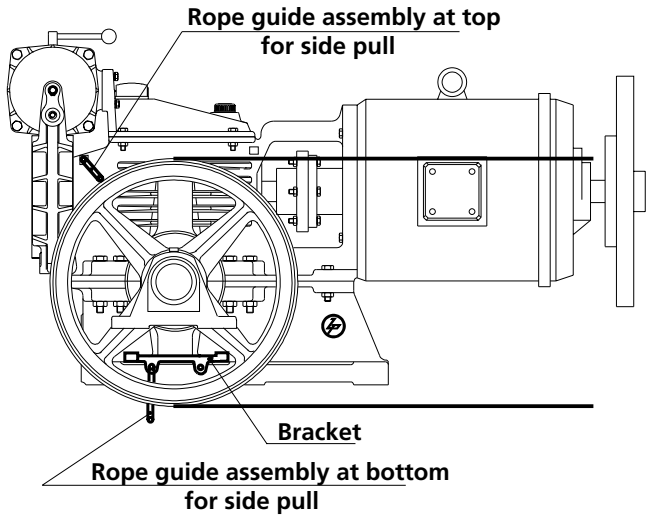
Lift gear type	Sheave diameter	Values Ø Pin	Development
FF 340 FF 360	400	12	280
	440 to 480		320
	520 to 580		375
FF 610	440 to 550	16	340
	600 to 630		390
FF 620	440 to 600	16	415
	630		445

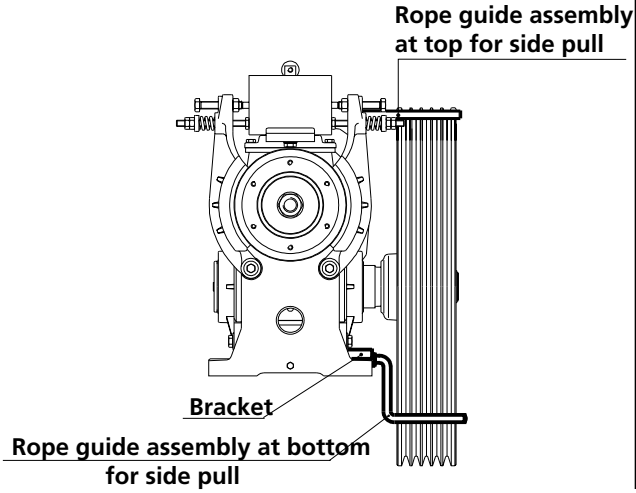
Lift gear type	Sheave diameter	Values Ø Pin	Development
FF 650	480 to 550	16	340
	600 to 650		390
FF 800 FF 825 FF 850	480 to 630	16	415
	670		465
FF 1150	520 to 770	16	455

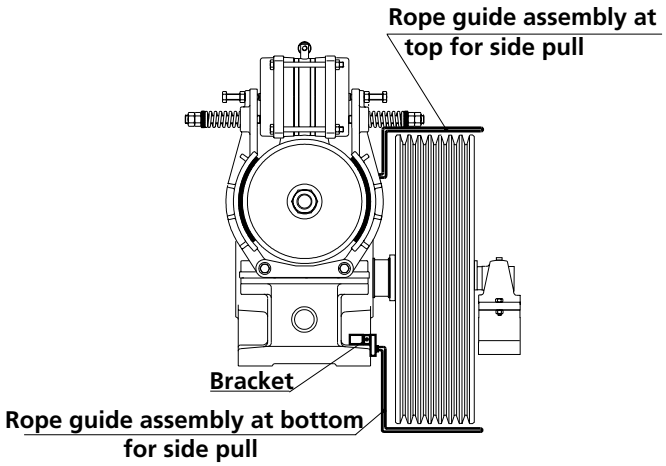
Note: For details of TW Series Rope Guide Applications - consult Renold.

Rope Guide Application - Side Mounting









Lift gear type	Sheave diameter	Pin ∅	Development	Pin ∅	Development
FF 340 FF 360	400 440 to 480 520 to 580	12	250 260 330	12	280 320 375
FF 610	440 to 550 600 to 630	16	385	16	340 390
FF 620	440 to 600 630	16	385	16	415 445
FF 650	480 to 550 600 to 650	16	385	16	340 390
FF 800 FF 825 FF 850	480 to 630 670	16	385 445	16	415 465
FF 1150	520 to 700 770	16	435 465	16	455

Note: For details of TW Series - Rope Guide Applications - consult Renold.

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