Fenner Series C Overhung Load Capacities

Units are fitted with output bearings of ample proportions to cater for the radial and thrust loads imposed by the worm gear, leaving sufficient capacity for taking overhung loads.

The calculated overhung load should be compared with the value in the selection tables.

These values may be exceeded at lower input speeds or if limited bearing lives are acceptable. In cases where higher overhang load capacities are necessary consult your Authorised Distributor, quoting details of power, speed, direction of gearbox rotation, angle of application of load, distance of load application from gearbox and acceptable bearing life.

Series C	
Unit Size	A mm
870	17.5
871	23.0
872	30.0
873	31.5
874	38.0
875	60.0
876	67.5
877	85.0

To determine the overhung load when a sprocket, gear or 'V' pulley is fitted to the output shaft, one or the following formulae may be used in the absence of accurate information.

(1) Calculation on a basis of Torque

$$\text{Overhung load (N)} = \frac{T \times 1000 \times K}{r}$$

(2) Calculation on a basis of Power

$$\text{Overhung load (N)} = \frac{kW \times 9550 \times 1000 \times K}{n \times r}$$

Where:

T = Absorbed torque at worm gear output shaft in Nm.

kW = Absorbed power at worm gear output shaft (kW).

r = Pitch radius of sprocket, gear or 'V' pulley in mm.

n = Rev/min of worm gear output shaft.

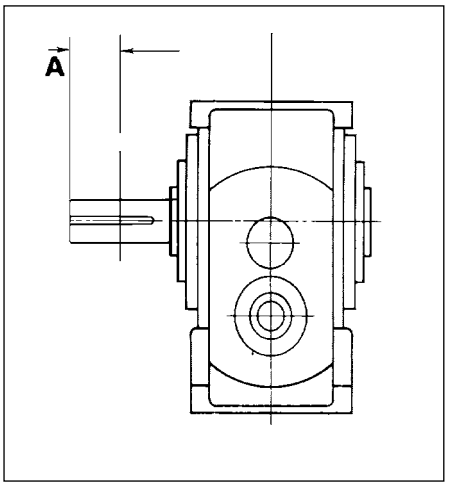
K = Application factor -
1.00 for a sprocket
1.25 for a gear or timing pulley
1.50 for a 'V' pulley

Overhung loads may be reduced by one of the following methods:

(1) Increase the diameter of the sprocket, gear or pulley within reasonable limits.

(2) Mount the sprocket, gear or pulley on a separate shaft, supported on its own bearings and couple to the worm gear output shaft by means of a Fenner shaft coupling.

(3) Use a special extended output shaft and support the free end with an outrigger bearing.



ORDERING INSTRUCTIONS

All Series C motorised worm gear units fitted with a standard electric motor are identified by an eight digit code taken from the selection tables.

If an alternative motor type is required a ninth digit is added to the standard code.

FIRST TWO DIGITS: Product prefix–constant for Series C **87**

THIRD DIGIT: unit size **0–7**

FOURTH DIGIT:

MOUNTING TYPE

A: shaft mounting

D: input reducer assembly

G: shaft mounted unmotorised

FIFTH AND SIXTH DIGIT: Gear Ratio Code. Exact ratios can be found above.

SEVENTH/EIGHTH DIGIT: Type of drive code

1. Motorised units - use complete code from selection tables with if applicable, additional ninth digit for motor type.
2. Input Reducer assembly - use **00**.
3. Unmotorised - units ready for motor fitting by third party use the first two digits of the motor frame size to be fitted, i.e. frame 71 use **71** for 132 frame use **13**.

NINTH DIGIT: Type of motor variant

Use eight digit code obtained from selection tables for required motor power and speed and then add the relevant letter code from table opposite of the motor variant required.

ELECTRIC MOTOR VARIANTS

All variants of standard IEC motors can be fitted to Fenner Gearmotors, Series C is also capable of accepting NEMA motor variants as well. Examples of some of the variants and their ninth digit code letter are in the table opposite.

Standard clutch brake modules with IEC flanges can be fitted between motor and gearhead.

Variable speed packages are available, either belt variators or mechanical disc variators.

Backstop modules are available for motor frame sizes 100 to 200.

For any of these combinations please contact your local Authorised Distributor.

CODE	MOTOR TYPE
A	Anti-condensation heaters fitted
B	Backstop Fitted
C	Cast Iron motor
D	Brook Motor Fitted
E	Fitted with Encoder
F	Flameproof motor
G	Fitted with Oil seal
H	Class H Insulation
I	IP65 enclosure
J	Inverter-motor
K	Fitted with Tacho-generator
L	Clutch/Brake unit Fitted
M	Brake motor
N	Brake motor with Hand Release
P	Premium Efficiency Motor Fitted (EFF1)
Q	Refer to Original Quote - Special
R	Fitted with Brook ARGUS Cast Iron motor
S	Single Phase motor
T	Fitted with Thermistors
V	Special Voltage
W	WIMES Spec motor (Water Industry)
X	Fitted with Variator
Z	Fitted with Force Vent unit
5	ExN Non-Sparking motor
8	Two-speed motor
9	Special Feature

Satisfactory performance depends on proper installation, lubrication and maintenance. All instructions given in the installation leaflet must be followed carefully.

Shaft Mounting

Ensure that the shaft on to which the gear unit is to be mounted and the gear unit bore are clean and free from burrs.

Liberally smear the shaft and bore with lubricants to aid assembly and prevent fretting corrosion. Slide the unit on to the driven shaft, fit side fitting key. **DO NOT USE TAPER OR TOP FITTING KEY**.

OIL GRADES

	Ambient Temperature °C	Input Speed rev/min	
		0–750	750–2000
ISO Viscosity grade	–30 to 10	320	320*
	–10 to 30	320	320
	20 to 50	680	680**

* for ratios between 8–18:1 use grade 220

** for ratios between 8–18:1 use grade 460

Foot Mounting

Mount the unit securely to a rigid structure. Fit the output extension shaft as required. Use flexible couplings such as Fenaflex for shaft to shaft connections and ensure that shaft misalignment is within the coupling's capacity. When a pulley or sprocket is fitted to either shaft, mount it as close as possible to the gearcase.

When fitting or removing drive components do not hammer on shaft as this will damage the bearings, Fenner Taper Lock bushes permit easy fixing and dismantling without undue force.

LUBRICATION

Sizes 870 to 873 are pre-filled for mounting position B3 with synthetic lubricant. Other mounting positions **must be specified** on order. Sizes 874 to 877 are supplied **without oil**. Before running they should be filled with an appropriate amount of the correct lubricant shown in the table, dependent on the mounting position, see below. Oil capacities are only approximate and units could be filled until oil escapes from the level plug hole.

RECOMMENDED LUBRICANTS

Supplier	Lubricant	
	POLYGLYCOL BASED SYNTHETIC	**POLYALPHAOLESIN BASED SYNTHETIC**
BP	ENERSYN SG-XP	ENERSYN EPX
CASTROL	ALPHASYN PG	ALPHASYN-EP
ESSO	GLYCOLUBE	SPARTAN SYNT EP
MOBIL	GLYGOYLE	SHC 600 SERIES
SHELL	TIVELA	OMALA HD
TEXACO	SYNLUBE CLP	PINNACLE EP

Use the ISO viscosty grades shown in the table above.

Oil Changes

Sizes 870 and 871 are lubricated for life. All other sizes require regular oil changes at a frequency taking into account the following:

1. Oil temperature when under load
2. Type of oil
3. Environment - humidity, dust, etc.
4. Operating conditions - shock loading etc.

At elevated temperatures the effective life of the oil is significantly reduced particularly if the oil contains fatty or EP additives.

When changing the lubricant, ensure it is all of the same type.

BREATHERS/MOUNTING POSITIONS

Sizes 870 to 873 are supplied for operation without breathers.

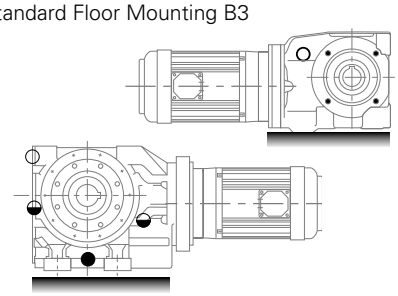
Sizes 874 to 877 are supplied for operation with breather but are despatched without oil. It is essential that when the unit is in its operating position the relevant blanking plug is removed and replaced by the breather plug (supplied) in the position indicated on the installation leaflet.

LUBRICANT CAPACITY (LITRES)

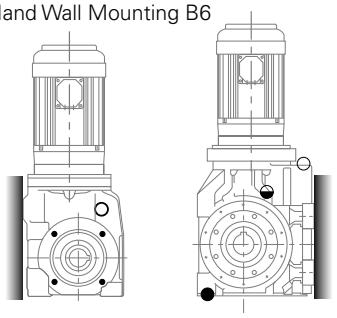
Unit Size	Double Reduction								Triple Reduction							
	B3		B8		V5 V6	B6	B7		B3		B8		V5 V6	B6	B7	
	Level 1	Level 2	Level 1	Level 2			M	R	Level 1	Level 2	Level 1	Level 2			M	R
870	0.3	-	0.7	-	0.5	0.6	0.65	-	0.4	-	1.2	-	0.8	1.0	1.15	-
871	0.4	-	1.0	-	0.7	0.9	1.0	-	0.5	-	1.5	-	0.9	1.3	1.5	-
872	0.7	-	1.4	-	1.0	1.4	1.4	-	0.9	-	2.1	-	1.2/1.4	2.0	1.9	-
873	1.5	-	3.1	-	2.3	3.0	3.2	-	2.1	-	4.0	-	2.5	4.6	4.0	-
874	4.5	3.4	5.5	3.2	3.7	6.1	5.2	5.6	4.8	3.8	5.9	3.6	3.7	6.6	5.6	6.0
875	7.4	6.5	10.3	5.8	6.0	9.6	9.4	9.8	-	-	-	-	-	-	-	-
876	14.4	8.5	17.1	7.5	11.1	16.6	17.0	17.4	-	-	-	-	-	-	-	-
877	21.6	12.2	31.3	17.3	19.0	31.5	29.0	29.2	-	-	-	-	-	-	-	-

MOUNTING POSITIONS

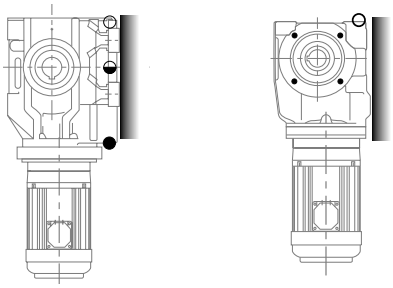
Standard Floor Mounting B3



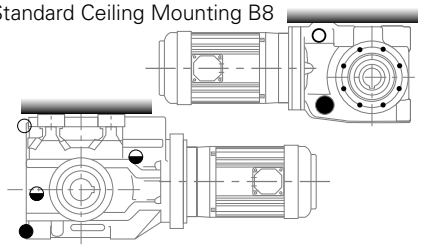
Left Hand Wall Mounting B6



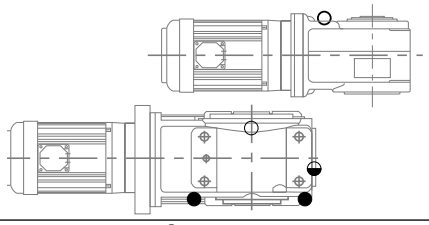
Right Hand Wall Mounting B7



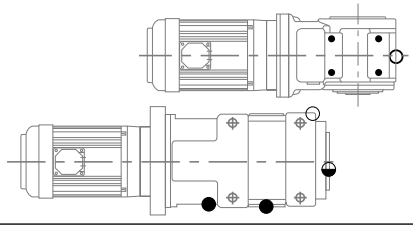
Standard Ceiling Mounting B8



Wall Mounting Shaft Down (V5)



Wall Mounting Shaft Up (V6)



Plug positions apply for sizes 862 and larger. ○ Ventilator/Filling Position ◒ Level Position ● Drain Position

Standard Motor Specification

Conforming in performance to BS5000 and IEC34-1 in dimensions to BS4999 and IEC72-1 and 2.

Range mounting, squirrel cage, totally enclosed fan cooled design (TEFC).

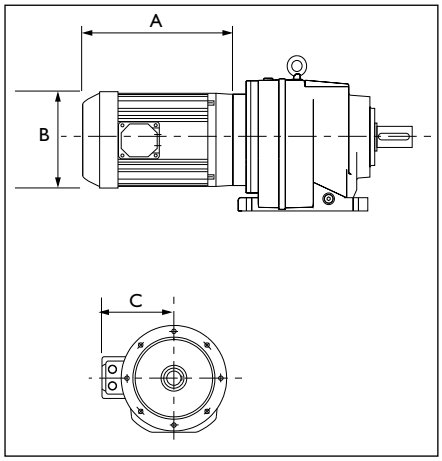
Protection

IP55, dust and hose proof.

Insulation

Class F.

ELECTRIC MOTORS (BS AND IEC SPECIFICATION)



ELECTRIC MOTOR VARIANTS

All variants of standard IEC frame motors can be fitted to the Fenner gearmotor range.They are also capable of accepting NEMA motor variants as well.Examples of some of the variants and their ninth digit code letter are:-

Code	Motor Type
A	Anti-condensation heaters fitted
B	Backstop Fitted
C	Cast Iron motor
D	Brook Motor Fitted
E	Fitted with Encoder
F	Flameproof motor
G	Fitted with Oil seal
H	Class H Insulation
I	IP65 enclosure
J	Inverter-motor
K	Fitted with Tacho-generator
L	Clutch/Brake unit Fitted
M	Brake motor
N	Brake motor with Hand Release
P	Premium Efficiency Motor Fitted (EFF1)
Q	Refer To Original Quote - Special
R	Fitted with Brook ARGUS Cast Iron motor
S	Single Phase motor
T	Fitted with Thermistors
V	Special Voltage
W	WIMES Spec motor (Water Industry)
X	Fitted with Variator
Z	Fitted with Force Vent unit
5	ExN Non-Sparking motor
8	Two-speed motor
9	Special Feature

Standard clutch brake modules with IEC flanges can be fitted between motor and gearhead. Variable speed packages are available, either belt variators or mechanical disc variators.For any of these combinations please contact your local Authorised Distributor.

2 POLE - 3000 REV/MIN

Motor Code *	Frame Size	Output kW	Output h.p.	Speed rev/min	Dimensions (mm) A	B	C	Mass kg
01	63	**0.18**	0.25	2755	193	124	113	7
03	63	**0.25**	0.33	2790	193	124	113	7
09	71	**0.37**	0.50	2825	218	139	121	8
10	71	**0.55**	0.75	2820	218	139	121	9
19	80	**0.75**	1.00	2810	236	157	130	12
20	80	**1.10**	1.50	2825	236	157	130	13
26	90S/L	**1.50**	2.00	2880	280	177	150	20
29	90S/L	**2.20**	3.00	2850	280	177	150	22
39	100L	**3.00**	4.00	2890	316	198	160	26
44	112M	**4.00**	5.50	2900	333	235	180	39
52	132S	**5.50**	7.50	2940	410	274	207	54
58	132S	**7.50**	10.00	2930	410	274	207	59
63	160MA	**11.00**	15.00	2920	545	330	250	134
64	160MB	**15.00**	20.00	2930	545	330	250	134
69	160LA	**18.50**	25.00	2930	545	330	250	152
77	180MA	**22.00**	30.00	2955	600	380	275	174

4 POLE - 1500 REV/MIN

Motor Code *	Frame Size	Output kW	Output h.p.	Speed rev/min	Dimensions (mm) A	B	C	Mass kg
02	63	**0.18**	0.25	1410	193	124	113	8
06	71	**0.25**	0.33	1420	218	139	121	9
08	71	**0.37**	0.50	1405	218	139	121	9
81	71	**0.55**	0.75	1410	250	159	111	10
16	80	**0.55**	0.75	1440	236	157	130	12
82	71	**0.75**	1.00	1410	250	159	111	10
18	80	**0.75**	1.00	1430	236	157	130	13
24	90S/L	**1.10**	1.50	1445	280	177	150	20
28	90S/L	**1.50**	2.00	1430	280	177	150	23
36	100L	**2.20**	3.00	1430	316	198	160	25
38	100L	**3.00**	4.00	1420	316	198	160	29
46	112M	**4.00**	5.50	1440	333	235	180	44
54	132S	**5.50**	7.50	1470	410	274	207	58
56	132M	**7.50**	10.00	1470	410	274	207	60
66	160MA	**11.00**	15.00	1450	520	330	250	134
68	160LA	**15.00**	20.00	1455	565	330	250	152
76	180MA	**18.50**	25.00	1465	590	380	275	174
78	180LA	**22.00**	30.00	1465	630	380	275	184
88	200L	**30.00**	40.00	1470	670	415	320	286
94	225S	**37.00**	50.00	1480	725	460	345	338
95	225M	**45.00**	60.00	1480	725	460	345	358
96	250MA	**55.00**	75.00	1475	805	512	375	535

6 POLE - 1000 REV/MIN

Motor Code *	Frame Size	Output kW	Output h/p	Speed rev/min	Dimensions (mm) A	B	C	Mass kg
05	71	**0.18**	0.25	910	218	139	121	9
07	71	**0.25**	0.33	905	218	139	121	10
12	80	**0.37**	0.50	935	236	157	130	12
17	80	**0.55**	0.75	935	236	157	130	13
23	90S/L	**0.75**	1.00	930	280	177	150	21
27	90S/L	**1.10**	1.50	935	280	177	150	23
37	100L	**1.50**	2.00	950	316	198	160	24
45	112M	**2.20**	3.00	950	333	235	180	34
53	132S	**3.00**	4.00	965	410	274	207	47
55	132M	**4.00**	5.50	965	410	274	207	56
57	132M	**5.50**	7.50	965	410	274	207	64
65	160M	**7.50**	10.00	965	520	330	250	134
67	160L	**11.00**	15.00	965	565	330	250	152
74	180L	**15.00**	20.00	970	630	380	275	184
75	200LA	**18.50**	25.00	980	670	415	320	286
84	200LB	**22.00**	30.00	975	670	415	320	286
91	225M	**30.00**	40.00	985	725	460	345	358
92	250M	**37.00**	50.00	980	805	512	375	535
93	280S	**45.00**	60.00	985	830	570	410	563
97	280MA	**55.00**	75.00	985	880	570	410	720

Dimensions A, B and C are based on the standard motor normally supplied, for details when another type of motor is required consult your local Authorised Distributor.

Starting torque,starting current and current at various voltages vary depending on the type of unit. Consult your local Authorised Distributor.

* Last two digits of the complete eight digit ordering code from the selection tables.