

IMPORTANT HEALTH & SAFETY INSTALLATION LEAFLETS

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

LUBRICATION

Sizes 890 to 893 will be supplied with a quantity of EP mineral oil (Shell Omala 320) for mounting position B3. Other mounting must be specified on order. However if, as requested, the unit is supplied without lubricant then the oil quantity is obtained from Tables 1 & 2. Sizes 894 to 898 are supplied without oil. Before running they should be filled with an appropriate amount of the correct lubricant shown in the tables 1 & 2, dependent on the mounting position, see below.

WARNING Do not overfill as excess lubricant may cause overheating and leakage.

LUBRICANT TYPE TEMPERATURE RANGE

ISO Viscosity	Ambient Temperature °C			
	-5°C to 20°C	-30°C to 20°C	0°C to 35°C	20°C to 50°C
EP Mineral Oil	220	-	320	460
Synthetic Oil 1	-	220	220	320
Synthetic Oil 2	-	220	320	460

Synthetic Oil 1 = Polyalphaolein based.

Synthetic Oil 2 = Polyglycol based

OIL CHANGES

Sizes 890, 891 and 892 are lubricated for life except when the units are required to work in an explosive atmosphere (94/9/EC Atex 100a Group II category 2 zones 1 & 21 & category 3 zones 2 & 22) See separate leaflet for recommendations.

All other sizes will require an oil change depending on the unit operating temperature. Initial fill of oil should be changed in a new gear unit after 1000 hours operation or one year or half the life in the table opposite whichever is the soonest.

PERIODIC INSPECTION

Check oil level every 3000 hours or 6 months whichever is sooner on sizes 893 to 898 and if necessary top up with the recommended grade of lubricant.

TABLE 1. LUBRICANT QUANTITY (LITRES) TRIPLE REDUCTION

RECOMMENDED OIL GRADES

Supplier	Mineral Oils Containing EP Additives	Synthetic Lubricants Polyglycol Based	Synthetic Lubricants Polyalphaolefin based
BP	Energol GR-XP or XF	Energol SG-XP	Energol EPX
Castrol	Alpha Max or SP	Alphasyn PG	Alphasyn EP or T
Esso	Spartan EP	Glycolube	Spartan Synthetic EP
Fuchs	Renogear V or WE	Renolin PG	Renogear SG
Mobil	Mobilgear 600	Glygoyle	Mobilgear SHC
Shell	Omala or Omala F	Tivela or Tivela S	Omala HD
Texaco	Meropa or Meropa WM	Synlube CLP	Pinnacle EP
Total	Carter EP	Carter SY	Carter EP/HT
Rocol	Sapphire Hi-Torque	-	-

OIL RENEWAL TABLE

Unit Operating Temp C	Renewal Period (Hours)	
	Mineral Oil	Synthetic Oil
75 or less	17000 or 3 Yrs	26000 or 3 Yrs
80	12000 or 3 Yrs	26000 or 3 Yrs
85	8500 or 3 Yrs	21000 or 3 Yrs
90	6000 or 2 Yrs	15000 or 3 Yrs
95	4200 or 17 Mths	10500 or 3 Yrs
100	3000 or 12 Mths	7500 or 2.5 Yrs
105	2100 or 8 Mths	6200 or 2 Yrs
110	1500 or 6 Mths	2100 or 18 Mths

TABLE 1. LUBRICANT QUANTITY (LITRES) TRIPLE REDUCTION

890, 891 & 892 - fill with the correct quantity of lubricant.

893 to 898 - fill gearbox until oil escapes from level plug

Unit Size	Mounting Position					
	B3	B6	B7	B8	V5	V6
890	0.8	1.0	1.7	1.3	1.0	1.0
891	1.0	1.3	2.2	1.7	1.3	1.3
892	1.5	1.9	3.1	2.4	1.85	1.9
893	1.7	2.9	4.2	3.3	2.8	2.8
894	3.5	5.8	8.7	6.8	5.8	5.8
895	4.5	9.1	10.5	9.1	8.0	8.0
896	8.8	16.3	21	17.5	15	15
897	14	25.5	33	28.6	24	2
898	22.0	36	49	41	36	36.0

All Quantities are approximate.

TABLE 2. LUBRICANT QUANTITY (LITRES) QUINTUPLE REDUCTION

Unit Size	Mounting Position											
	B3		V5		V6		B8		B7		B6	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
890	0.7	0.8	0.7	1.0	0.7	1.0	0.7	1.3	1.0	1.7	1.1	1.0
891	0.7	1.0	0.7	1.3	0.7	1.3	0.7	1.7	1.0	2.1	1.1	1.3
892	0.8	1.5	0.8	1.85	0.8	1.85	0.8	2.4	1.4	3.1	1.5	1.9
893	0.8	1.7	0.8	2.8	0.8	2.8	0.8	3.3	1.4	4.2	1.5	2.9
894	0.8	3.5	0.8	5.8	0.8	5.8	0.8	9.1	1.4	10.4	1.5	9.1
895	1.6	4.5	1.6	9.3	1.6	6.2	1.6	9.1	1.9	10.4	2.5	9.1
896	1.6	8.8	1.6	15.0	1.6	15.0	1.6	17.5	1.9	20.9	2.5	16.3
897	2.8	14.0	2.8	24.0	2.8	24.0	2.8	28.6	3.2	33.0	4.9	25.6
898	2.8	22.0	2.8	36.0	2.8	36.0	2.8	41.0	3.2	49.0	4.9	35.9

Primary units are filled with Shell Omala 320 and are suitable for all ambient temperatures between 0 and 35 C.

BREATHERS/MOUNTING POSITIONS

Sizes 890,891 & 892 are supplied for operation without breathers.

Size 893 is supplied for operation with a breather but to prevent leakage during transit this unit is fitted with blanking plugs. 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.

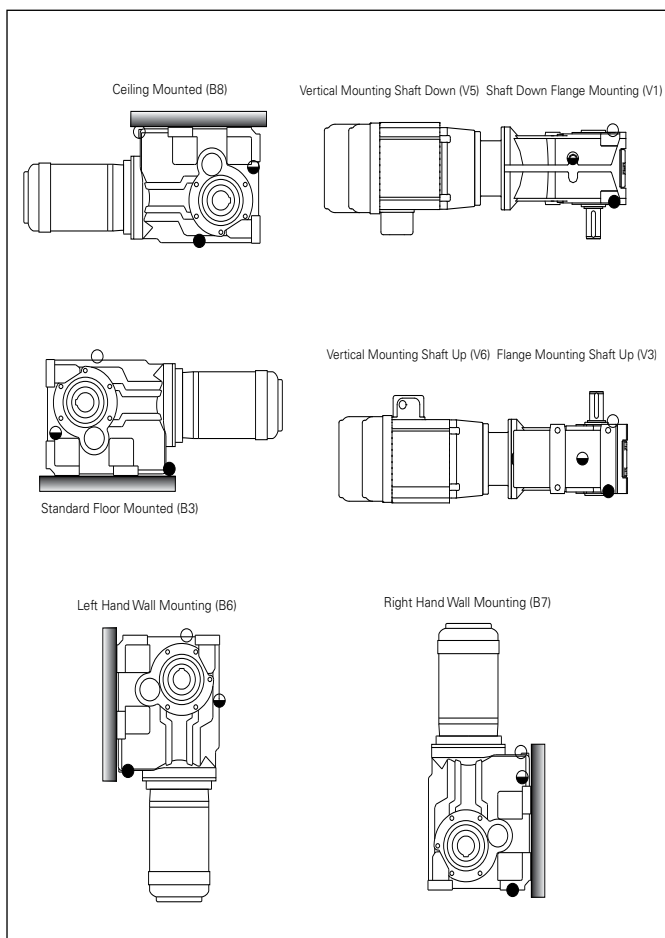
Sizes 894 to 898 are supplied for operation with a breather but are despatched without oil.

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.

1. Ensure Ventilator is fitted (size 893 and above)
2. Check Oil level (893 and above) top up if necessary
3. Ensure all safety devices are in place (i.e. guards fitted)
4. Remove any safety devices fitted to prevent machine rotation

Starting up should be performed or supervised by suitably qualified personnel.

MOUNTING POSITIONS



Plug positions apply for sizes 893 and larger.

○ Ventilator/Filling Position ◐ Level Position ● Drain Position

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.**

FOOT OR FLANGE MOUNTING

The Fenner series K is designed primarily as a shaft mounted gearbox, however if a customer wishes to use the unit in the foot mounted position all sizes have pre-cast feet built in to the gearcase for mounting in the B3 position. Series K can also be used as a flange mounted unit, standard output flanges area available as accessories. Consult you local Authorised Distributor for details. Use the tightening torques listed below for holding down bolts.

Clean shaft extensions and ventilator where fitted

The shafts of the unit and driven equipment should be in as perfect alignment as possible. Fenaflex® couplings should be used when shaft alignment cannot be assured and also when protection from peak and vibrating torques are desirable. Ensure the base foundation/ flange mounting surface is flat*, vibration and torsionally rigid.

The drive should be mounted on a rigid support and bolted down firmly using set screws to ISO grade 8.8 minimum. Ensure that machined mounting points are supported over their full area. If packing is to be used, place either side of the mounting bolt. During the final bolting down ensure the unit and/or baseplate are not distorted to maximise unit performance.

For units mounted on bedplates, dowel two diagonally opposite feet in to position.

Fit all guards required to comply with the factory acts, check the motor wiring for correct direction of rotation and check oil levels.

*Maximum permissible flatness error for mounting surface is 0.12mm.

Set Screw Size	Foot & Output Flange Bolts Torque (Nm)	Motors to Gearhead
M6	10	10
M8	25	18
M10	50	37
M12	85	64
M16	200	150
M20	350	260
M24	610	-
M30	1220	-
M36	2150	-

MOTOR CONNECTIONS TO MAINS

Connection of the electric motor to the mains supply should be made by a qualified person. The current rating of the motor will be identified on the motor plate and correct sizing of the cables to electrical regulations is essential.

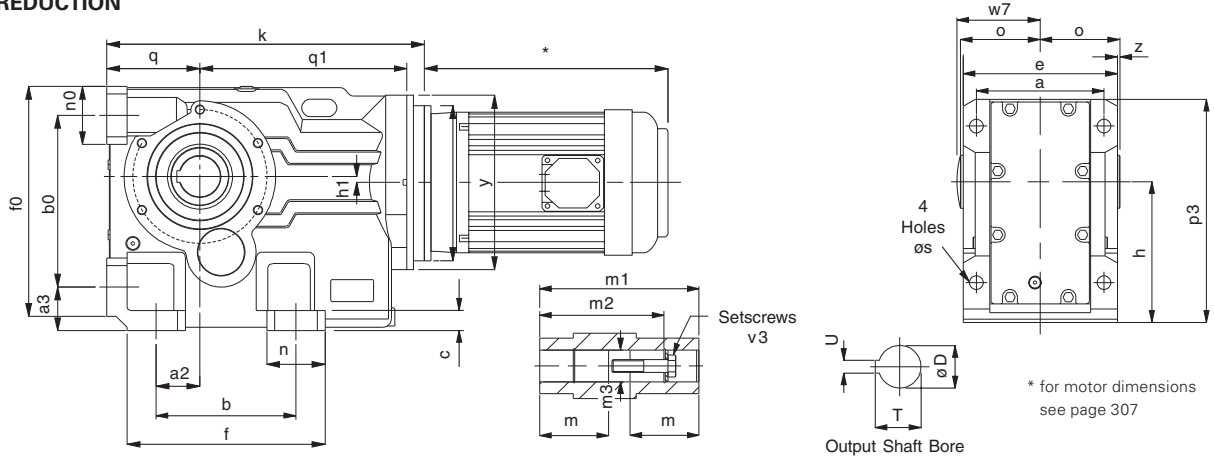
STARTING UP

Prior to starting up the following procedure should be followed

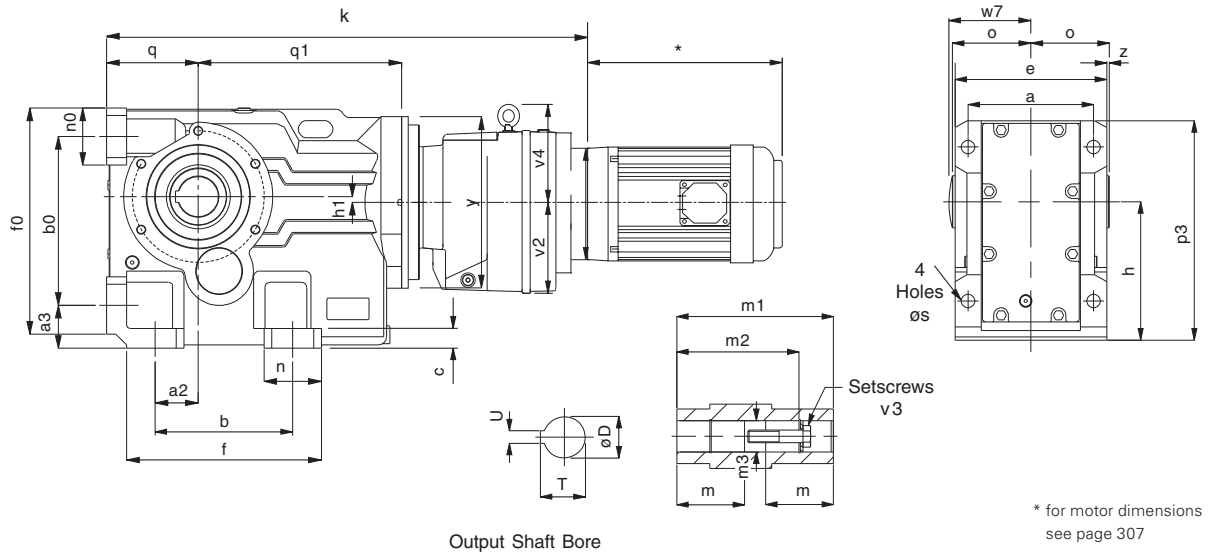
1. Ensure Ventilator is fitted (size 893 and above)
2. Check Oil level (893 and above) top up if necessary
3. Ensure all safety devices are in place (i.e. guards fitted)
4. Remove any safety devices fitted to prevent machine rotation

Starting up should be performed or supervised by suitably qualified personnel.

TRIPLE REDUCTION



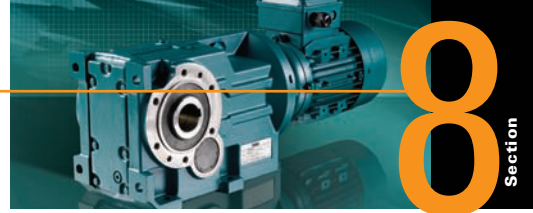
QUINTUPLE REDUCTION



SIZE	a	a2	a3	b	b0	c	e	f	f0	h	h1	k	n	n0	o
890	100	28	32	110	115	11	120	143	152	100	16	For k dimensions see facing page	38	38	60
891	120	35	37	130	130	16	145	168	171	112	13		38	40	75
892	130	30	45	130	150	15	157	170	192	132	5		40	40	83
893	140	30	45	120	160	20	170	176	208	140	13		55	48	90
894	165	40	55	150	200	27	200	210	263	180	25		60	55	105
895	180	55	70	180	233	30	230	256	309	212	15		76	76	120
896	240	75	75	240	295	35	290	340	395	265	10		100	100	150
897	270	95	95	280	360	40	340	390	455	315	41		110	115	175
898	330	115	110	350	420	45	400	470	540	375	65		120	120	205

SIZE	p3	q	q1	s	v2	v4	w7	y	z	D	m	m1	m2	m3	T	U	v3
890	167	63	159	11	76	-	63	140	0.0	30	52.5	120	105	30.3	33.5	8	M10X50L
891	187	71	179	11	76	-	78	140	2.5	35	66.0	150	132	35.3	38.5	10	M12X55L
892	217	80	219	14	91	-	87	180	4.5	40	73.0	166	142	40.3	43.5	12	M16X70L
893	233	90	229	14	91	-	94	180	5.0	40	80.0	180	156	40.3	43.5	12	M16X70L
894	288	112	265	18	91	-	109	212	5.0	50	92.5	210	183	50.5	54.0	14	M16X70L
895	341	132	330	23	115	-	124	250	5.0	60	105.0	240	210	60.5	64.5	18	M20X80L
896	420	160	355	27	115	-	154	300	5.0	70	132.5	300	270	70.5	75.0	20	M20X80L
897	513	200	423	34	140	155	180	360	5.0	80	155.0	350	313	80.5	85.5	22	M20X80L
898	590	225	476	39	140	155	210	400	5.0	100	180.0	410	373	100.5	106.5	28	M24X110L

Dimensions Motorised

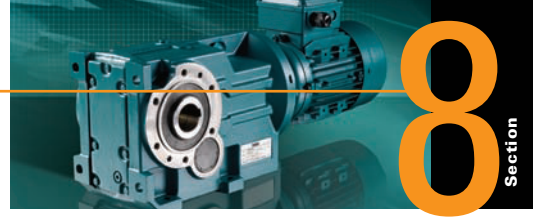


TRIPLE REDUCTION DIMENSIONS

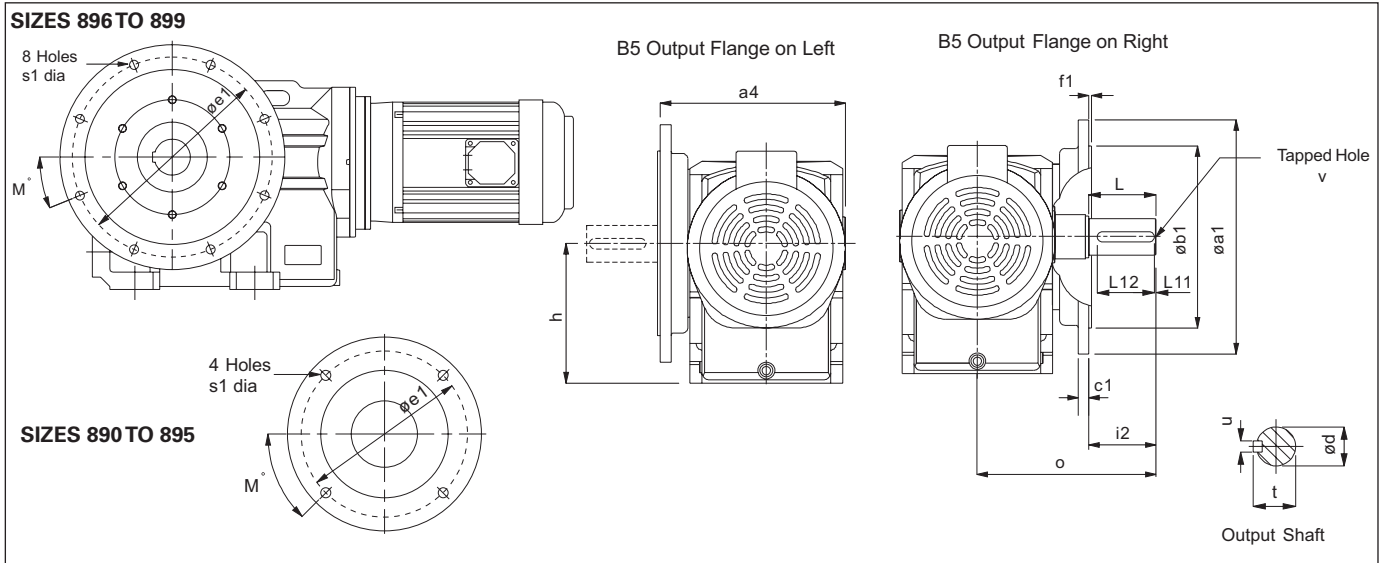
Motor Frame Size	Dimension k								
	890	891	892	893	894	895	896	897	898
63	256	284	311	331					
71	260	288	317	337					
80	273	301	335	355	414	506	570		
90	283	311	345	365	424	509	573		
100	246	300	372	392	435	515	579	670	796
112	231	300	372	392	435	515	579	670	796
132			372	391	458	515	579	670	796
160					466	545	614	705	789
180							614	705	789
200							614	705	789
225							641	732	816
250									988
280									988

QUINTUPLE REDUCTION DIMENSIONS

Motor Frame Size	Dimension k								
	890	891	892	893	894	895	896	897	898
63	442	470	535	555	614	728	789		
71	446	474	539	559	618	731	795		
80A	459	487	552	572	631	749	813	952	1078
90S	469	497	562	582	641	759	823	962	1088
100L	458	486	551	571	630	786	850	973	1099
112M	458	486	551	571	630	786	850	973	1099
132SA						785	849	996	1122
160M								1004	1130



B5 FLANGE DIMENSIONS



B5 FLANGE DIMENSIONS

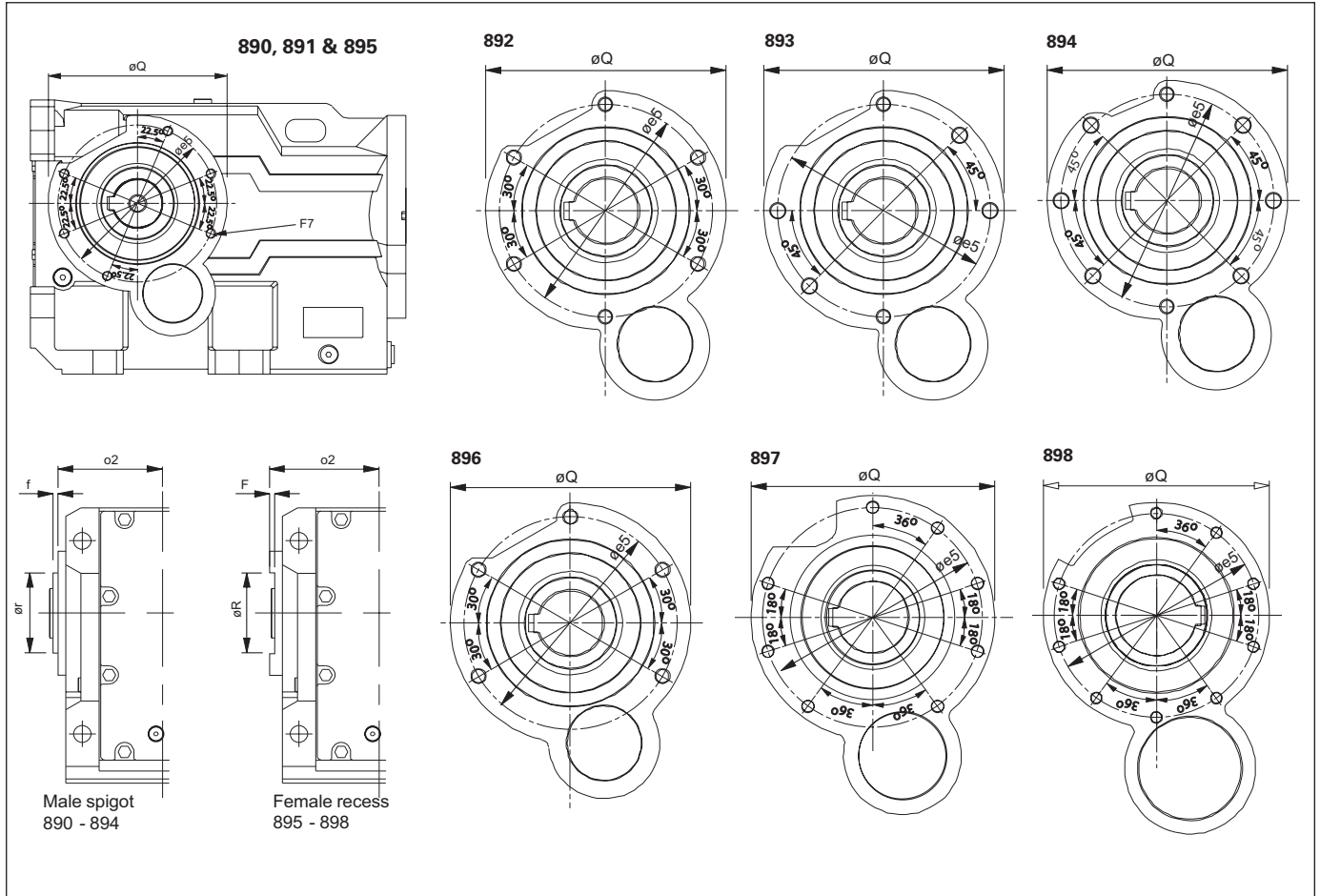
SIZE	Øa1	a4	Øb1	c1	Øe1	f1	h	M	Øs1
890	160	144.0	110 j6	10	130	3.5	100	45°	9
891	200	190.0	130 j6	12	165	3.5	112	45°	11
892	250	189.0	180 j6	16	215	4.0	132	45°	14
893	250	220.0	180 j6	18	215	4.0	140	45°	14
894	300	247.0	230 j6	18	265	4.0	180	45°	14
895	350	285.0	250 h6	18	300	5.0	212	45°	18
896	450	351.0	350 h6	20	400	5.0	265	22.5°	18
897	450	410.5	350 h6	22	400	5.0	315	22.5°	18
898	450	470.5	350 h6	22	400	5.0	375	22.5°	18

EXTENDED OUTPUT SHAFT DIMENSIONS

SIZE	Extended Output Shaft *								
	Ø d	i2	L	L11	L12	o	t	u	v
890	25.015 / 25.002	50	50	3	40	134.0	28.0	8	M10 x 1.5, 22 Deep
891	30.015 / 30.002	60	60	3	50	175.0	33.0	8	M12 x 1.75, 28 Deep
892	35.018 / 35.002	70	70	3	60	176.0	38.0	10	M16 x 2, 36 Deep
893	40.018 / 40.002	80	80	3	70	210.0	43.0	12	M16 x 2, 36 Deep
894	50.018 / 50.002	100	100	3	80	242.0	53.5	14	M16 x 2, 36 Deep
895	60.030 / 60.011	120	120	3	100	285.0	64.0	18	M20 x 2.5, 42 Deep
896	70.030 / 70.011	140	140	3	110	341.0	74.5	20	M20 x 2.5, 42 Deep
897	90.035 / 90.013	170	170	5	140	405.5	95.0	25	M20 x 2.5, 42 Deep
898	110.035 / 110.013	210	210	5	180	475.5	116.0	28	M24 x 3, 55 Deep

* It is recommended that when using a B5 output flange and output shaft, the extended version is used

B14 FLANGE DIMENSIONS



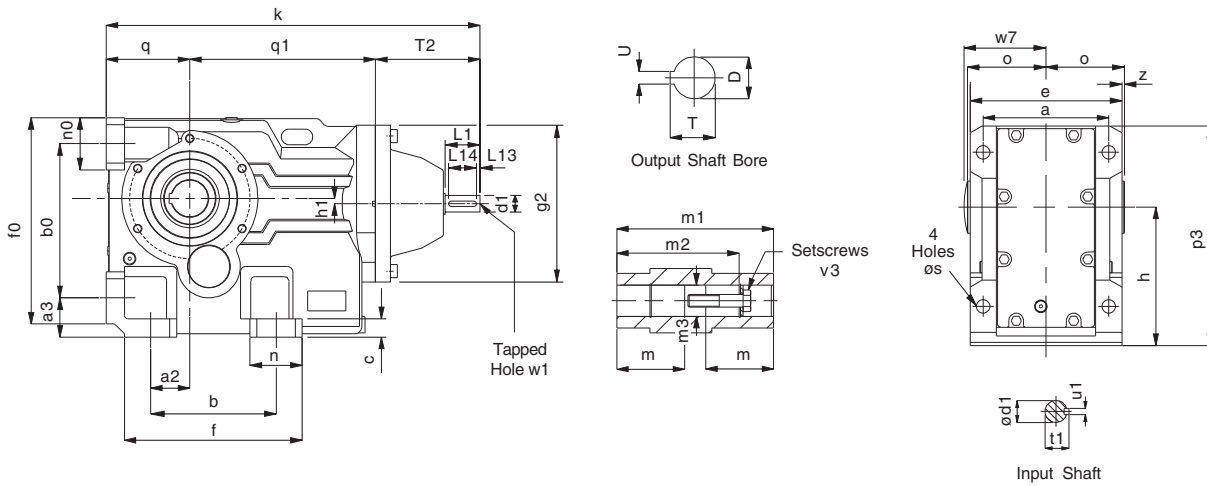
Size	Øe5	F7	ø2	Q	Ør h7 SPIGOT Ø	ØR H7	Spigot f	Recess F
890	107 PCD	6 HOLES M8 X 1.25, 12 DEEP	55	122	85	-	2.5	-
891	130 PCD	6 HOLES M8 X 1.25, 12 DEEP	70	146	105	-	2.5	-
892	125 PCD	6 HOLES M10 X 1.5, 17 DEEP	75	150	105	-	3.0	-
893	150 PCD	6 HOLES M10 X 1.5, 17 DEEP	83	180	130	-	3.5	-
894	150 PCD	8 HOLES M10 X 1.5, 17 DEEP	95	180	130	-	6.0	-
895	195 PCD	6 HOLES M12 X 1.75, 20 DEEP	115	220	-	150	-	5
896	230 PCD	5 HOLES M16 X 2.0, 27 DEEP	145	260	-	180	-	6
897	280 PCD	8 HOLES M16 X 2.0, 27 DEEP	170	310	-	210	-	7
898	280 PCD	9 HOLES M16 X 2.0, 27 DEEP	200	310	-	210	-	7

ACCESSORY PRODUCT CODES

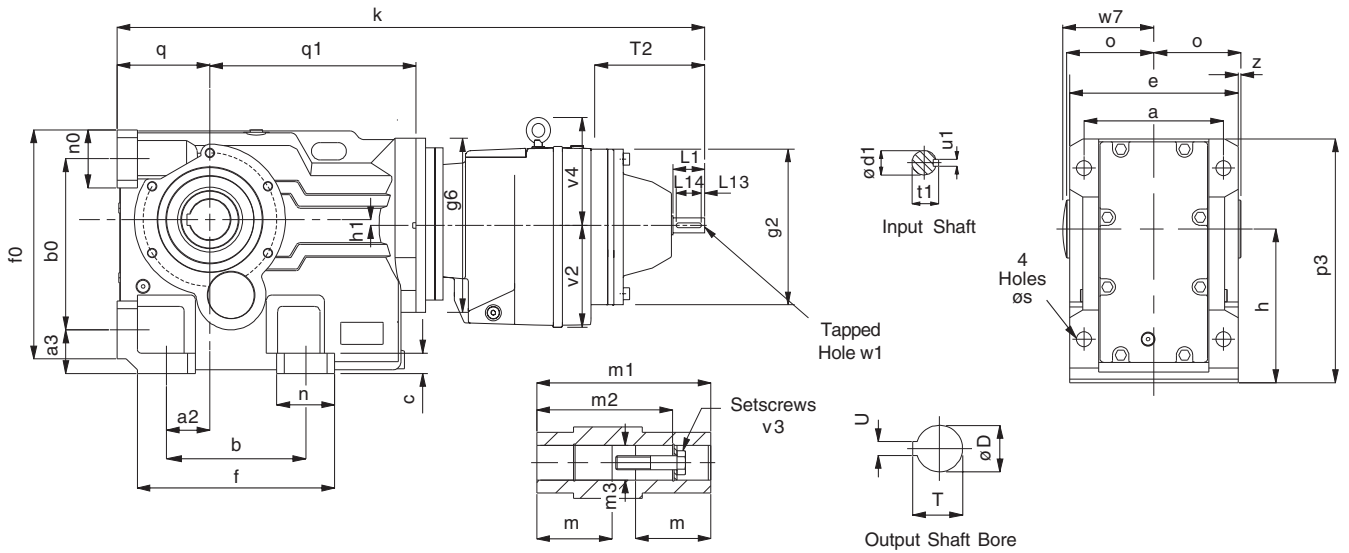
Unit Size	Single Extension Output Shaft	Double Extension Output Shaft	Single Extension * Extended Output Shaft	B5 Output Flange	Torque Arm
890	890A9700	890A9800	890A9900	871A9900	890A9600
891	891A9700	891A9800	891A9900	872A9900	891A9600
892	892A9700	892A9800	892A9900	892A9300	892A9600
893	893A9700	893A9800	893A9900	893A9300	893A9600
894	894A9700	894A9800	894A9900	894A9300	894A9600
895	883A9700	895A9800	895A9900	875A9900	895A9600
896	884A9700	896A9800	896A9900	876A9900	896A9600
897	885A9700	897A9800	897A9900	877A9900	897A9600
898	898A9700	898A9800	898A9900	877A9900	898A9600

* For use with B5 Output flange

TRIPLE REDUCTION



QUINTUPLE REDUCTION



SIZE	a	a2	a3	b	b0	c	e	f	f0	g2*	h	h1	k*	n	n0	o	p3	q	q1	T2*	s	w7	z
890	100	28	32	110	115	11	120	143	152	140	100	16	333	38	38	60	167	63	159	111	11	63	0.0
891	120	35	37	130	130	16	145	168	171	140	112	13	361	38	40	75	187	71	179	111	11	78	2.5
892	130	30	45	130	150	15	157	170	192	180	132	5	410	40	40	83	217	80	219	111	14	87	4.5
893	140	30	45	120	160	20	170	176	208	180	140	13	430	55	48	90	233	90	229	111	14	94	5.0
894	165	40	55	150	200	27	200	210	263	212	180	25	492	60	55	105	288	112	265	115	18	109	5.0
895	180	55	70	180	233	30	230	256	309	250	212	15	622	76	76	120	341	132	330	160	23	124	5.0
896	240	75	75	240	295	35	290	340	395	300	265	10	710	100	100	150	420	160	355	195	27	154	5.0
897	270	95	95	280	360	40	340	390	455	360	315	41	856	110	115	175	513	200	423	233	34	180	5.0
898	330	115	110	350	420	45	400	470	540	400	375	65	987	120	120	205	590	225	476	286	39	210	5.0

*Dimensions relate to triple reduction, see quintuple reduction table on facing page for quintuple reduction dimensions

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.**

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 890 to 893 will be supplied with a quantity of EP mineral oil (Shell Omala 320) for mounting position B3. Other mountings must be specified on order. However if, as requested, the unit is supplied without lubricant then the oil quantity is obtained from Tables 1 & 2. Sizes 894 to 898 are supplied without oil. Before running they should be filled with an appropriate amount

of the correct lubricant shown in tables 1 & 2, dependent on the mounting position, see below.

WARNING Do not overfill as excess lubricant may cause overheating and leakage.

Oil Changes

Sizes 890, 891 and 892 are lubricated for life except when the units are required to work in an explosive atmosphere. (94/9/EC Atex 100a Group II category 2 zones 1 & 21 & category 3 zones 2 & 22). See separate leaflet for recommendations. All other sizes will require an oil change depending on the unit operating temperature. Initial fill of oil should be changed in a new gear unit after 1000 hours operation or one year or half the life in the table below whichever is the soonest.

Unit Op Temp °C	Renewal Period (Hours)	
	Mineral Oil	Synthetic Oil
75 or less	17000 or 3 yrs	26000 or 3 yrs
80	12000 or 3 yrs	26000 or 3 yrs
85	8500 or 3 yrs	21000 or 3 yrs
90	6000 or 2 yrs	15000 or 3 yrs
95	4200 or 17 mths	10500 or 3 yrs
100	3000 or 12 mths	7500 or 2.5 yrs
105	2100 or 8 mths	6200 or 2 yrs
110	1500 or 6 mths	2100 or 18 mths

Temperature Limitations

The standard lubricant is suitable for operation in ambient temperatures of 0 to 35°C, outside of this consult your local Authorised Distributor.

BREATHERS/MOUNTING POSITIONS

Sizes 890, 891 & 892 are supplied for operation without breathers.

Size 893 is supplied for operation with a breather but to prevent leakage during transit this unit is fitted with blanking plugs. 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.

Sizes 894 to 898 are supplied for operation with a 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.

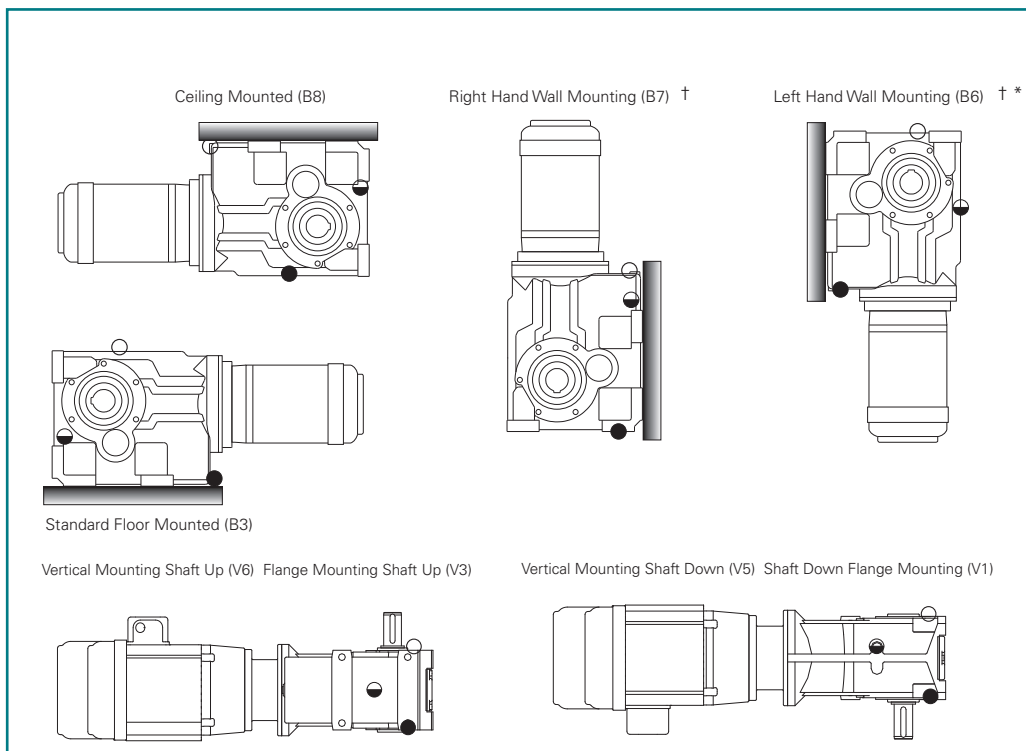
STARTING UP

Prior to starting up the following procedure should be followed

1. Ensure Ventilator is fitted (size 893 and above)
2. Check Oil level (893 and above) top up if necessary
3. Ensure all safety devices are in place (i.e. guards fitted)
4. Remove any safety devices fitted to prevent machine rotation

Starting up should be performed or supervised by suitably qualified personnel.

MOUNTING POSITIONS



Plug positions apply for sizes 893 and larger. ○ Ventilator/Filling Position ● Level Position ● Drain Position

† Gear units for use in mounting positions B6 and B7 should only be selected with overall ratios greater than or equal to those shown in the table below.

* Mounting positions B6 are not recommended for geared motors. Please consult your local authorised distributor.

Unit Size	Input Speed (rpm)			
	1000	1500	1800	>1800
890-895	All	All	All	Consult you local distributor
896	All	11:1	14:1	
897	11:1	20:1	25:1	
898	16:1	32:1	36:1	

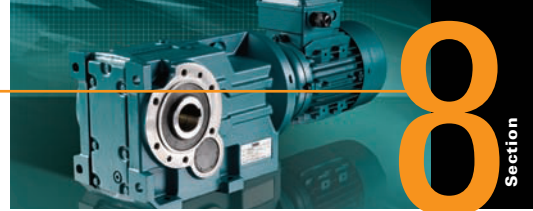


TABLE 1 LUBRICATION QUANTITY (LITRES) TRIPLE REDUCTION

890, 891 & 892 if supplied without lubricant, fill with the correct amount as indicated in the table below. 893 - 898 - fill gearbox until oil escapes from level plug.

Unit Size	Mounting Position					
	B3	V6/V3	V5/V1	B8	B7	B6
890	0.5	0.8	0.7	1.0	1.2	0.9
891	0.7	1.1	0.9	1.3	1.7	1.2
892	1.1	1.7	1.5	1.9	2.5	2.0
893	1.5	2.8	1.8	2.7	3.6	2.6
894	2.7	4.0	3.6	4.5	5.7	4.5
895	4.4	7.6	3.7	7.5	9.6	7.6
896	9.3	18.0	8.3	17.0	21.0	16.0
897	15.0	28.0	15.0	30.0	34.0	24.0
898	23.0	33.0	27.0	39.0	50.0	35.0

TABLE 2 LUBRICATION QUANTITY (LITRES) QUINTUPLE REDUCTION

Unit Size	Mounting Position											
	B3		V5/V1		V6/V3		B8		B7		B6	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
890	0.5	0.5	0.6	0.7	0.8	0.8	0.8	1.0	0.7	1.2	1.0	0.9
891	0.5	0.7	0.6	0.9	0.8	1.1	0.8	1.3	0.7	1.7	1.0	1.2
892	0.8	1.1	0.7	1.5	1.2	1.7	1.2	1.9	1.1	2.5	1.4	2.0
893	0.8	1.5	0.7	1.8	1.2	2.8	1.2	2.7	1.1	3.6	1.4	2.6
894	0.8	2.7	0.7	3.6	1.2	4.0	1.2	4.5	1.1	5.7	1.4	4.5
895	1.5	4.4	1.6	3.7	1.8	7.6	1.8	7.5	2.0	9.6	2.6	7.6
896	1.5	9.3	1.6	8.3	1.8	18.0	1.8	17.0	2.0	21.0	2.6	16.0
897	2.6	15.0	2.7	15.0	2.9	28.0	3.0	30.0	3.2	34.0	4.7	24.0
898	2.6	23.0	2.7	27.0	2.9	33.0	3.0	39.0	3.2	50.0	4.7	35.0

LUBRICANT TYPE TEMPERATURE RANGE

ISO Viscosity	Ambient Temperature °C			
	-5°C to 20°C	-30°C to 20°C	0°C to 35°C	20°C to 50°C
EP Mineral Oil	220	-	320	460
Synthetic Oil 1	-	220	220	320
Synthetic Oil 2	-	220	320	460

Synthetic Oil 1 = Polyalphaolefin based.

Synthetic Oil 2 = Polyglycol based

RECOMMENDED OIL GRADES

Supplier	Mineral Oils Containing EP Additives	Synthetic Lubricants Polyglycol Based	Synthetic Lubricants Polyalphaolefin based
BP	Energol GR-XP or XF	Enersyn SG-XP	Enersyn EPX
Castrol	Alpha Max or SP	Alphasyn PG	Alphasyn EP or T
Esso	Spartan EP	Glycolube	Spartan Synthetic EP
Fuchs	Renogear V or WE	Renolin PG	Renogear SG
Mobil	Mobilgear 600	Glygoyle	Mobilgear SHC
Shell	Omala or Omala F	Tivela or Tivela S	Omala HD
Texaco	Meropa or Meropa WM	Synlube CLP	Pinnacle EP
Total	Carter EP	Carter SY	Carter EP/HT
Rocol	Sapphire Hi-Torque	-	-

IMPORTANT HEALTH & SAFETY INSTALLATION LEAFLETS

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

LUBRICATION

Sizes 890 to 893 will be supplied with a quantity of EP mineral oil (Shell Omala 320) for mounting position B3. Other mounting must be specified on order. However if, as requested, the unit is supplied without lubricant then the oil quantity is obtained from Tables 1 & 2. Sizes 894 to 898 are supplied without oil. Before running they should be filled with an appropriate amount of the correct lubricant shown in the tables 1 & 2, dependent on the mounting position, see below.

WARNING Do not overfill as excess lubricant may cause overheating and leakage.

LUBRICANT TYPE TEMPERATURE RANGE

ISO Viscosity	Ambient Temperature °C			
	-5°C to 20°C	-30°C to 20°C	0°C to 35°C	20°C to 50°C
EP Mineral Oil	220	-	320	460
Synthetic Oil 1	-	220	220	320
Synthetic Oil 2	-	220	320	460

Synthetic Oil 1 = Polyalphaolein based.

Synthetic Oil 2 = Polyglycol based

OIL CHANGES

Sizes 890, 891 and 892 are lubricated for life except when the units are required to work in an explosive atmosphere (94/9/EC Atex 100a Group II category 2 zones 1 & 21 & category 3 zones 2 & 22) See separate leaflet for recommendations.

All other sizes will require an oil change depending on the unit operating temperature. Initial fill of oil should be changed in a new gear unit after 1000 hours operation or one year or half the life in the table opposite whichever is the soonest.

PERIODIC INSPECTION

Check oil level every 3000 hours or 6 months whichever is sooner on sizes 893 to 898 and if necessary top up with the recommended grade of lubricant.

TABLE 2. LUBRICANT QUANTITY (LITRES) QUINTUPLE REDUCTION

Unit Size	Mounting Position											
	B3		V6		V5		B8		B7		B6	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
890	0.5	0.5	0.5	0.7	0.5	0.8	0.5	1.0	0.7	1.2	1.0	0.9
891	0.5	0.7	0.5	0.9	0.5	1.1	0.5	1.3	0.7	1.7	1.0	1.2
892	0.8	1.1	0.8	1.5	0.8	1.7	0.8	1.9	1.1	2.5	1.4	2.0
893	0.8	1.5	0.8	1.8	0.8	2.8	0.8	2.7	1.1	3.6	1.4	2.6
894	0.8	2.7	0.8	3.6	0.8	4.0	0.8	4.5	1.1	5.7	1.4	4.5
895	1.5	4.4	1.5	3.7	1.5	7.6	1.5	7.5	2.0	9.6	2.6	7.6
896	1.5	9.3	1.5	8.3	1.5	18.0	1.5	17.0	2.0	21.0	2.6	16.0
897	2.6	15.0	2.6	15.0	2.6	28.0	2.6	30.0	3.2	34.0	4.7	25.0
898	2.6	23.0	2.6	27.0	2.6	33.0	2.6	39.0	3.2	50.0	4.7	35.0

Primary units are filled with Shell Omala 320 and are suitable for all ambient temperatures between 0 and 35 C.

RECOMMENDED OIL GRADES

Supplier	Mineral Oils Containing EP Additives	Synthetic Lubricants Polyglycol Based	Synthetic Lubricants Polyalphaolefin based
BP	Energol GR-XP or XF	Enersyn SG-XP	Enersyn EPX
Castrol	Alpha Max or SP	Alphasyn PG	Alphasyn EP or T
Esso	Spartan EP	Glycolube	Spartan Synthetic EP
Fuchs	Renogear V or WE	Renolin PG	Renogear SG
Mobil	Mobilgear 600	Glygoyle	Mobilgear SHC
Shell	Omala or Omala F	Tivela or Tivela S	Omala HD
Texaco	Meropa or Meropa WM	Synlube CLP	Pinnacle EP
Total	Carter EP	Carter SY	Carter EP/HT
Rocol	Sapphire Hi-Torque	-	-

OIL RENEWAL TABLE

Unit Operating Temp C	Renewal Period (Hours)	
	Mineral Oil	Synthetic Oil
75 or less	17000 or 3 Yrs	26000 or 3 Yrs
80	12000 or 3 Yrs	26000 or 3 Yrs
85	8500 or 3 Yrs	21000 or 3 Yrs
90	6000 or 2 Yrs	15000 or 3 Yrs
95	4200 or 17 Mths	10500 or 3 Yrs
100	3000 or 12 Mths	7500 or 2.5 Yrs
105	2100 or 8 Mths	6200 or 2 Yrs
110	1500 or 6 Mths	2100 or 18 Mths

TABLE 1. LUBRICANT QUANTITY (LITRES) TRIPLE REDUCTION

890, 891 & 892 - fill with the correct quantity of lubricant.

893 to 898 - fill gearbox until oil escapes from level plug

Unit Size	Mounting Position					
	B3	V6	V5	B8	B7	B6
890	0.5	0.7	0.8	1.0	1.2	0.9
891	0.7	0.9	1.1	1.3	1.7	1.2
892	1.1	1.5	1.7	1.9	2.5	2.0
893	1.5	1.8	2.8	2.7	3.6	2.6
894	2.7	3.6	4.0	4.5	5.7	4.5
895	4.4	3.7	7.6	7.5	9.6	7.6
896	9.3	8.3	18.0	17.0	21.0	16.0
897	15.0	15.0	28.0	30.0	34.0	25.0
898	23.0	27.0	33.0	39.0	50.0	35.0

All Quantities are approximate.