INGECO

The Complete Drive Technology

INGECO SHAFT MOUNTED SPEED REDUCER

COMPANY PROFILE

INGECO GEARS PVT LIMITED is an ISO: 9001:2000 certified company and is a well accepted leading manufacturer and Exporter of Premium Quality Power Transmission Products. We are into manufacturing various types of Gear Boxes / Geared Motors / Couplings etc for Crushing Plants & Conveyor Manufacturers in India & Abroad Since last 35 years.

'INGECO' was incorporated in the year 1976 with sole aim of providing quality products in Transmission Sector. Initially, the standard sprocket & gears were the main products and supplying largely to the major Power Plants & O.E.M's in India and abroad.

Further, with our continuous development and technical know how, "INGECO" has designed and developed various types of Reduction Gear Boxes (Speed Reducers). Our success story is led by our robust infrastructure with an advanced manufacturing unit which is equipped with the latest and sophisticated machinery. The plant is laid out in a way that enhances efficiency and productivity of the total manufacturing process. The company is a pioneer and has been a market leader both in terms of new product development and market reach. INGECO has regularly introduced state-of-the-art latest products both for domestic and international markets.

Today the company continues to grow as an aggressive manufacturer of different types of Gearboxes used in various industries like conveying equipment for the aggregate, mining, quarry plants, plastic and rubber machinery, textile machines, mineral industries, cement industries, paper and pulp industries, chemical industries etc. The manufacturing plants are based in Ahmedabad with modern machines for manufacturing world class gear boxes.

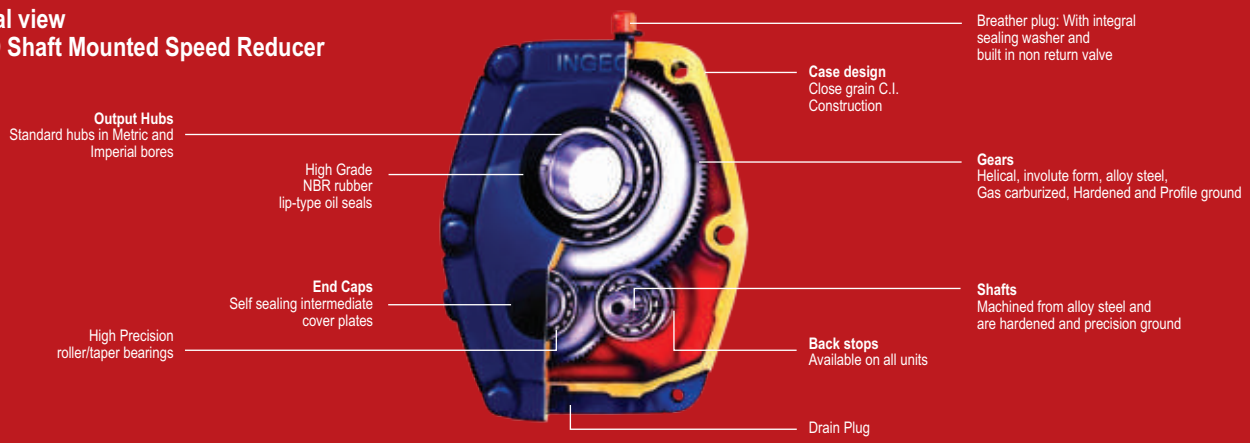
THE NEW PLANT

INGECO's new modern plant is situated in Changodar industrial area of Gujarat's business city Ahmedabad in India. The plant is on a sprawling land of 1,00,000 sq ft with factory area of 65,000 sq ft and office building of 4,500 sq ft. The company has ample space in the premises for expansion and new product development. The Factory building is constructed so as to cater the manufacturing of complex and heavy Gearbox with all the latest gear machinery.

MACHINERY

INGECO has all the latest Gear and transmission related machineries.
Gear Grinding Machines like Hoefler - Germany, Niles - Germany, Csepel- Hungary Hobbers like the Batliboi, Pfauter, WMW, TOS, CNC turning centers DOOSAN- Korea, Machining Centers from DOOSAN - Korea, Gear Testers of MAAG - Zurich, Cylindrical Grinder from HiLIFE, fall under the important machines that the company incorporates.

Sectional view
INGECO Shaft Mounted Speed Reducer



'INGECO' Shaft Mounted Speed Reducers are High Quality Products Submitted To Intense Quality Control and Manufactured with Highest Precision. 'INGECO' SMSR are compact, totally enclosed and are designed for direct mounting to ensure positive drive and permanent alignment Minimizing Space Requirement and layout Problems.

Salient Features And Benefits Of INGECO Shaft Mounts Are

- All Gears are of high grade alloy steel for higher efficiency
- Hardened and Ground Helical Gear train
- Each unit supplied with corrosion resistant torque arm and double lip oil seals
- Torque arm and hub covers supplied as standard accessories
- Severe Duty Grease Purged Oil Seals On High Speed Shaft Prevent Leakage And Subsequent Drive Failure.
- Long Gear And Bearing Lifetime Due To Heavier Design derived from software
- All Mounting Positions Possible
- Easy To Mount
- Space Saving
- Low Noise Level less than 65 Db

Specifications

- **Ratios:** Available in five ratios of 5:1,13:1,15:1,20:1 & 25:1(in few models)
- **Power:** Higher Power Ratings For Maximum Torque from 0.25 Kw TO 100 Kw
- **Models:** Available in 10 different Gear Case sizes from size 'AE' to size 'KE'
- **Bore Sizes:** 20mm Through To 150mm, Imperial Options also available
- **Mounts:** Vertical, Horizontal, And Direct Drive Mounting Configurations
- **Lubrication:** Oil Splash Lubrication,
- **Housing:** Cast Iron Case Construction.

Service Factors

Types of Driven Machine	Operational Hours Per Day		
	10 and under	10 to 16	16 and over
Uniform Agitators and Mixers – liquid or semi-liquid Blowers – Centrifugal, Bottling Machines Conveyors and Elevators Uniformly Loaded Cookers Laundry Washing Machines – Non- reversing Line Shafts, Pumps – centrifugal and gear Wire Drawing machines	1.0	1.12	1.25
Moderate Shock Agitators and Mixers – Variable density Conveyors – Non-Uniformly Loaded Cranes, travel motion ad hoisting Draw bench, Feeders – Pulsating load Hoists Kilns, Laundry Tumblers,Lifts Piston Pumps – with 3 or more cylinders Pulp and Paper Making Machinery Rubber Mixers and Calenders Rotary Screens, Textile Machinery	1.25	1.4	1.6
Heavy Shocks Brick Presses, Briquetting Machines Conveyors – reciprocating and shaker Crushers Feeders – reciprocating Hammer Mills, Piston Pumps – 1 or 2 cylinders Rubber Masticators, Vibrating Machines	1.6	1.8	2.0

Unit Selection for 'INGECO' Models

A **Service Factor:** From the above table select the service factor applicable to the drive.

B **Design Power:** Multiply the absorbed power (or motor power if absorbed power not known) by the service factor chose in step (A)Note: Ensure that design power exceeds motor rated power.

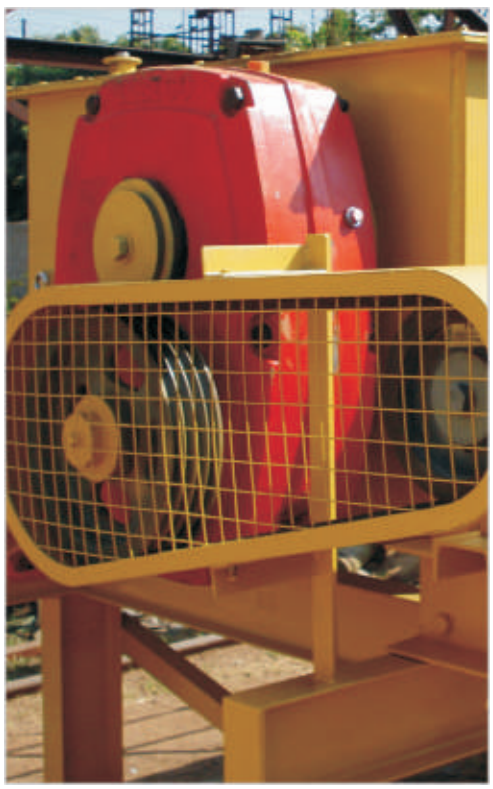
C **Unit Selection:** Using the value from Step (B) refer to the following power rating table and select the correct size of unit. The selection of single and double reduction gearbox will be determined by the output speed required. The normal operating speeds for each of the gearbox models are shown in power rating tables. For other speeds Consult INGECO.

Power Ratings (kW) 5:1 units (Single reduction)

Output Rev/min	AE	BE	CE	DE	EE	FE	GE	HE	JE	KE
100	1.3	1.84	3.7	5.79	9.09	12.48	21.6	30.98	47.63	64.8
110	1.38	1.96	3.87	6.06	9.51	13.07	22.61	32.48	49.88	67.8
120	1.47	2.07	4.04	6.33	9.94	13.65	23.61	33.9	52.13	70.88
130	1.55	2.18	4.22	6.6	10.4	14.23	24.62	35.33	54.3	73.88
140	1.63	2.30	4.39	6.87	10.8	14.81	25.63	36.83	56.55	76.88
150	1.71	2.41	4.56	7.14	11.2	15.4	26.64	38.25	58.8	79.88
160	1.80	2.53	4.74	7.42	11.6	15.98	27.65	39.68	60.98	82.95
170	1.88	2.64	4.9	7.68	12.1	16.56	28.65	41.18	63.23	85.95
180	1.96	2.76	5.08	7.95	12.5	17.15	29.66	42.6	65.48	88.95
190	2.04	2.88	5.26	8.22	12.9	17.72	30.67	44.03	67.65	92.03
200	2.12	2.99	5.42	8.5	13.3	18.31	31.68	45.45	69.9	95.03
210	2.20	3.11	5.6	8.76	13.8	18.89	32.69	46.95	72.15	98.03
220	2.28	3.23	5.77	9.03	14.2	19.47	33.69	48.38	74.33	101.1
230	2.36	3.35	5.94	9.3	14.6	20.06	34.7	49.8	76.58	104.1
240	2.44	3.46	6.11	9.58	15	20.64	35.71	51.3	78.75	107.1
250	2.52	3.58	6.29	9.85	15.4	21.22	36.71	52.73	81	110.2
260	2.61	3.70	6.46	10.1	15.9	21.8	37.73	54.15	83.25	113.2
270	2.69	3.82	6.63	10.4	16.3	22.39	38.73	55.58	85.43	116.2
280	2.77	3.93	6.81	10.7	16.7	22.97	39.74	57.08	86.93	119.3
290	2.86	4.05	6.98	10.9	17.1	23.55	40.75	58.5		120.2
300	2.94	4.17	7.15	11.2	17.6	24.14	41.75	59.93		
310	3.03	4.28	7.32	11.5	18	24.71	42.77	61.43		
320	3.11	4.40	7.5	11.7	18.4	25.3	43.77	62.85		
330	3.20	4.51	7.67	12	18.8	25.88	44.78			
340	3.29	4.63	7.84	12.3	19.3	26.47	45.79			
350	3.37	4.74	8.02	12.5	19.7	27.05	46.79			
360	3.47	4.85	8.18	12.8	20.1	27.63	47.81			
370	3.56	4.97	8.36	13.1	20.5	28.22	48.81	Consult INGECO		
380	3.65	5.08	8.53	13.4	21	30.71				
390	3.74	5.19	8.7	13.6	21.4	31.34				
400	3.84	5.30	8.88	13.9	21.8	31.96				
Torque at 100 rpm (Nm)	**182**	**256**	**442**	**691**	**1085**	**1589**	**2750**	**3949**	**6068**	**8250**

Power Ratings (kW) 13:1,15:1 and 20:1 units (Double Reduction)

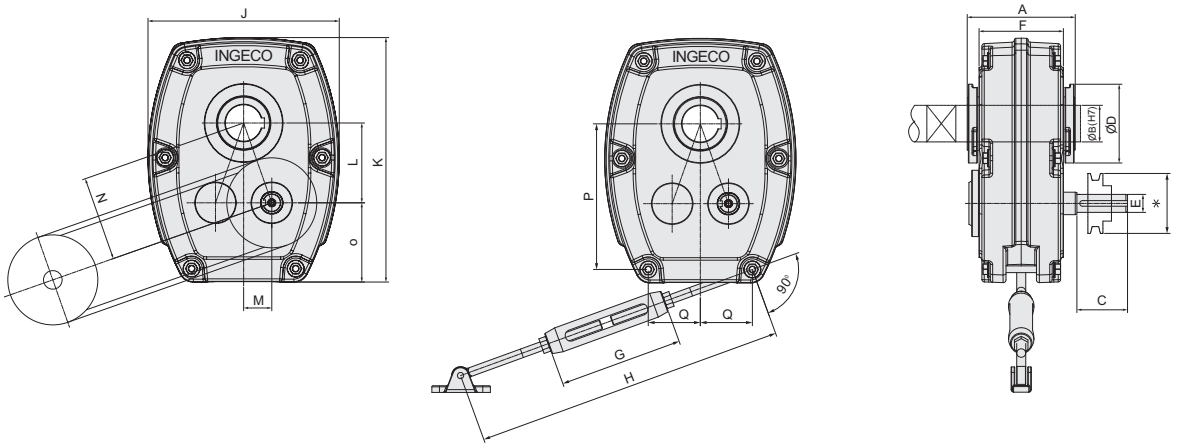
Output Rev/min	AE	BE	CE	DE	EE	FE	GE	HE	JE	KE
10	0.16	0.28	0.5	0.79	1.25	1.82	3.15	4.52	6.98	17.7
12	0.19	0.34	0.62	0.97	1.53	2.23	3.87	5.55	8.56	20.9
14	0.22	0.4	0.73	1.15	1.8	2.64	4.58	6.58	10.1	24.1
16	0.26	0.45	0.85	1.33	2.08	3.06	5.29	7.6	11.7	27.2
18	0.29	0.5	0.97	1.51	2.37	3.47	6.01	8.62	13.2	30.3
20	0.32	0.56	1.08	1.69	2.65	3.89	6.71	9.64	14.8	33.4
22	0.35	0.6	1.19	1.87	2.93	4.3	7.43	10.7	16.4	36.5
24	0.38	0.66	1.31	2.05	3.22	4.71	8.15	11.7	17.9	39.3
26	0.42	0.71	1.42	2.22	3.5	5.12	8.86	12.7	19.5	42.4
28	0.45	0.77	1.53	2.41	3.78	5.53	9.57	13.7	21.1	45.3
30	0.48	0.82	1.66	2.59	4.05	5.94	10.3	14.8	22.7	48.1
32	0.51	0.87	1.77	2.76	4.34	6.36	11	15.8	24.3	51.1
34	0.54	0.93	1.88	2.95	4.62	6.77	11.7	16.8	25.9	53.8
38	0.60	1.05	2	3.12	4.9	7.18	12.4	17.8	27.4	59.2
40	0.63	1.1	2.11	3.3	5.18	7.6	13.1	18.9	29	61.9
42	0.66	1.14	2.22	3.48	5.47	8.01	13.9	19.9	30.6	64.4
46	0.71	1.24	2.33	3.66	5.75	8.42	14.6	20.9	32.2	69.1
50	0.77	1.35	2.46	3.84	6.03	8.84	15.3	21.9	33.8	73.5
52	0.80	1.4	2.57	4.02	6.31	9.24	16	23	35.2	75.8
54	0.83	1.44	2.68	4.2	6.59	9.65	16.7	24	36.8	77.9
58	0.88	1.56	2.8	4.38	6.87	10.1	17.4	25	38.4	82.3
62	0.94	1.67	2.91	4.56	7.15	10.5	18.1	26	40	86.5
66	1.00	1.77	3.02	4.73	7.43	10.9	18.9	27.1	41.6	90.7
70	1.06	1.86	3.14	4.92	7.72	11.3	19.6	28.1	43.2	94.9
74	1.11	1.96	3.26	5.1	8	11.7	20.3	29.1	44.7	96.8
78	1.17	2.04	3.46	5.42	8.51	12.5	21.6	31	47.6	103
80	1.20	2.12	3.67	5.75	9.02	13.2	22.9	32.8	50.5	105
85	1.27	2.22	3.88	6.08	9.54	14	24.2	34.7	53.4	
90	1.34	2.36	4.09	6.41	10.1	14.7	25.5	36.6	56.3	
95	1.42	2.48	4.3	6.73	10.6	15.5	26.8	38.5	59.1	
100	1.49	2.59	4.3	6.73	10.6	15.5	26.8	38.5		
Torque at 10 rpm (Nm)	**210**	**298**	**513**	**819**	**1300**	**2100**	**3277**	**4915**	**6925**	**12800**



Exact Gear Ratios

Nominal Ratio	BE	CE	DE	EE	FE	GE	HE	JE	KE
5	5.142	5.066	5.125	5	5.052	5.052	5.185	5.03	5.15
13	12.66	13.289	13.437	13.09	13.037	13.228	13.125	13.21	13.16
15	15.28	15.527	15.695	15.46	15.526	15.25	15.529	15	15.22
20	19.833	20.382	19.884	20.312	20.21	20.507	20.055	20	21
25	-	-	-	-	25.117	24.252	25.126	-	-

Dimensions - Shaft Mounting for Sizes - AE - KE [10 SIZE'S]



SIZE	A	B	C	D	E	INPT SHAFT KEYWAY	F	G	H		J	K	L	M	N	O	P	Q	Approximate Mass (kg)	
									MAX.	MIN.									05 Ratio	13-20 Ratio
AE	115	30	50	63	14j6	5x3x48	96	200	600	750	160	210	66	24	70	-	-	-	10	12
BE	135	30	60	80	16h7	5x3x50	105	200	600	750	185	225	74	28	79	75	135	55	11	13
CE	145	40	68	90	22h7	6x3.5x65	110	200	600	750	225	280	90	31	95	87	160	60	19	22
DE	154	50	72	96	25h7	8x4x65	118	216	700	850	260	335	110	37	11	105	200	73	30	33
EE	166	55	85	120	28h7	8x4x70	130	216	700	850	295	380	125	43	133	123	224	93	41	49
FE	192	65	90	130	32h7	10X5X85	150	216	700	850	340	435	142	50	150	140	258	95	60	66
GE	216	75	105	145	42h7	12X5X95	172	216	750	900	380	490	157	56	167	160	286	116	89	98
HE	250	85	116	170	48h7	14x5.5x110	198	222	750	900	450	585	191	62	200	185	351	143	135	160
JE	268	100	135	200	55h7	18x6x125	212	222	750	900	560	700	256	75	267	220	-	-	197	246
KE	325	125	180	220	60h7	18x7x170	265	222	750	900	645	840	282	100	300	280	-	-	345	414

Standard and Alternate Hub Bores

INGECO offers various options in alternate Hub Bore sizes as per below table.
The metric Hubs are bored to F7 Tolerance limits and a shaft tolerance of grade h7 is recommended.
INGECO SMSR has an option of Alternate Hub Bore in metric as well as in Imperial system as shown below

Reducer Size	Standard Hub Bore B	Standard Hub Bush Bores	Upper Alternative Hub Bore	Lower Alternative Hub Bore	Alternative Hub Bore in Inches	Taper Grip Standard Bores	Alternative Taper Grip Bores
BE	30	20 and 25	40	25	1"	=	=
CE	40	30 and 35	50	30	1 ¼"	40	=
DE	50	38,40 and 45	55	40	1 ½" and 2"	50	2"
EE	55	45 and 50	65	50	2" and 2.5"	55	50 and 2"
FE	65	50,55 and 60	75	55	2" 2.5" and 3"	65	55,2.5"
GE	75	60,65 and 70	85	65	2.5" and 3"	75	65
HE	85	70,75 and 80	95	75	2.5",3",3.5"	85	65,75,3",80
JE	100	90 and 95	120	85	4",4.5"	100	85,90,95
KE	125	90,100 and 110	150	100	4" , 5"	125	100

Standard Hub Keyways

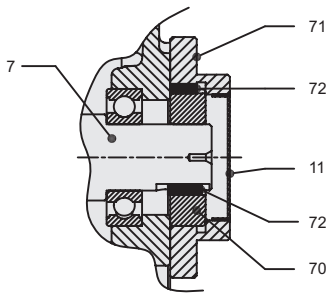
The Hollow output Hub keyways are machined accurately in accordance with
BS 4235 /IS2048 for metric and BS 46 for inch shafts.
The machine shaft keyway should be machined to suit the standard key size shown below

Standard Hub Bore B	Hub Keyway	Key Size	Hub Diameter in Inches	Key Size
30	10 x 4.0	8 x 7	1"	¼" x ¼"
40	12 x 3.5	12 x 8	1.5"	3/8" x ¼"
50	14 x 4.0	14 x 9	2"	½" x 5/16"
55	16 x 4.0	16 x 10	2.5"	5/8" x 7/16"
65	18 x 4.6	18 x 11	3"	7/8" x 5/8"
75	20 x 4.9	20 x 12		
85	22 x 6.2	22 x 14		
100	28 x 6.0	28 x 16		
125	32 x 7.4	32 x 18		

Optional Extras

Backstops

Backstops are designed and incorporated to prevent reversal of rotation or backrun without backlash in applications such as conveyors, bucket Elevators, fans, rotary pumps and kilns. Backstops are not approved for use on systems that are designed for handling of people such as elevators, man lifts, ski tows and ski lifts. DO NOT use a backstop as a substitute for a brake.
The Installation and dismantling of Backstop has to be done as per the steps in Installation Manual.
The Backstop does not need any lubrication as it gets oil from the gearbox.



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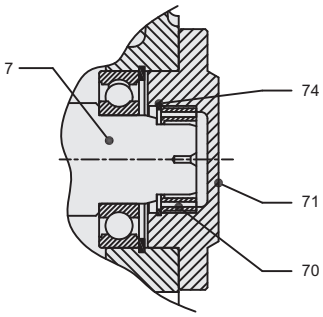
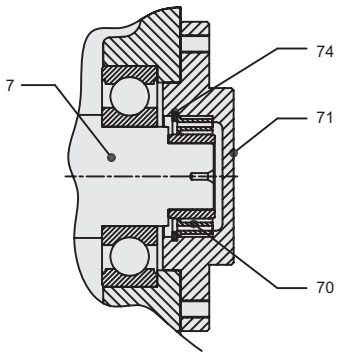


SIZE CE, EE, FE

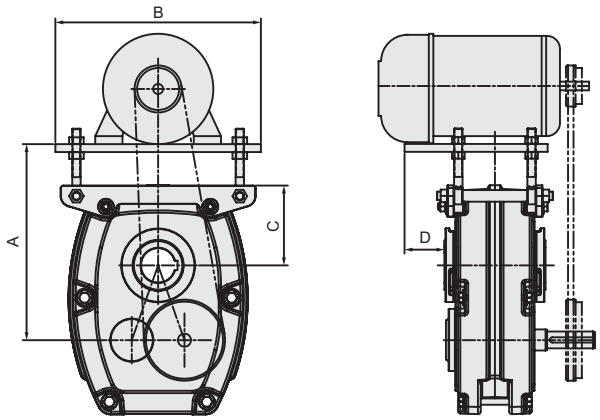


SIZE GE, HE, JE, KE

Description	No
Shaft	7
Holdback Assembly	70
Holdback Cover	71
Key	72
End Cap	11
Circlip	74
Inner Sleeve	75

Motor Mounts

A motor mount is available which is designed to fit directly onto either the long edge or the short edge of the Shaft Mounted speed reducer. The drive unit can then be located in any position around the shaft to permit easy belt tensioning. The INGECO shaft mounting Assembly provides a robust base plate which is designed to accommodate a wide range of motor frame sizes. Each size of motor mount has sufficient adjustment available to ensure that a standard belt can be fitted and retensioned as required throughout its working life.



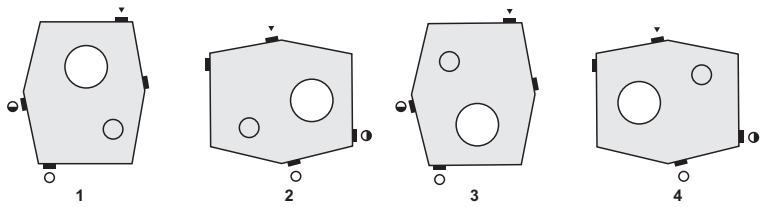
SIZE	A		B	C	D	Accommodates Metric Motor Frame Size
	Min	Max				
BE	-	-	-	-	-	63, 71, 80a, 80b, 90S, 90L
CE	240	380	280	113	100	63, 71, 80L, 90S, 90L, 100L
DE	270	400	320	125	115	71, 80, 90S, 90L, 100La, 100Lb, 112M
EE	300	465	380	134	130	80, 90S, 90L, 100L, 112M
FE	320	500	390	160	145	80, 90S, 100La, 100Lb, 112M, 132S, 132M
GE	360	520	420	175	200	90S, 90L, 100L, 112M, 132S, 132M, 160M, 160L
HE	500	620	510	200	205	90L, 100L, 112M, 132S, 132M, 160M, 160L, 180M, 180L
JE	640	780	570	270	230	100L, 112M, 132S, 132M, 160M, 160L, 180M, 200L

Screw Conveyors

For the use of INGECO Shaft Mounts on inclined screw conveyors a Screw conveyor Flange is provided.

Lubrication

Shaft Mounted Speed Reducers are dispatched without oil. Before running they should be filled with an appropriate amount of the correct lubricant depending on the mounting position as shown in the tables in the installation manual.



Units are fitted with Filler and
Drain Plugs generally in the position shown

- ▼ Filler / Breather
- ◒ Level Plug
- ○ Drain Plug

Oil Quantities (Litres)

Unit Size	Approximate Capacity-Liters Mounting Position							
	25:1, 20 : 1, 15:1 & 13 : 1				5 : 1			
	1	2	3	4	1	2	3	4
BE	0.3	0.5	0.4	0.5	0.4	0.4	0.4	0.5
CE	0.7	0.7	0.6	0.7	0.6	0.7	0.6	0.8
DE	1.2	1.5	1.2	1.3	1.0	1.4	1.2	1.5
EE	2.0	2.0	1.8	1.6	1.9	2.0	1.8	1.9
FE	2.5	2.5	2.5	2.5	2.6	2.5	2.5	2.6
GE	3.25	4.3	3.4	3.9	3.3	4.1	3.3	4.6
HE	4.5	7.8	4.5	7.5	4.5	8.1	4.8	7.5
JE	8.0	16	13	15	-	-	-	-
KE	15	19	27	19	-	-	-	-

(Capacities shown are approximate)

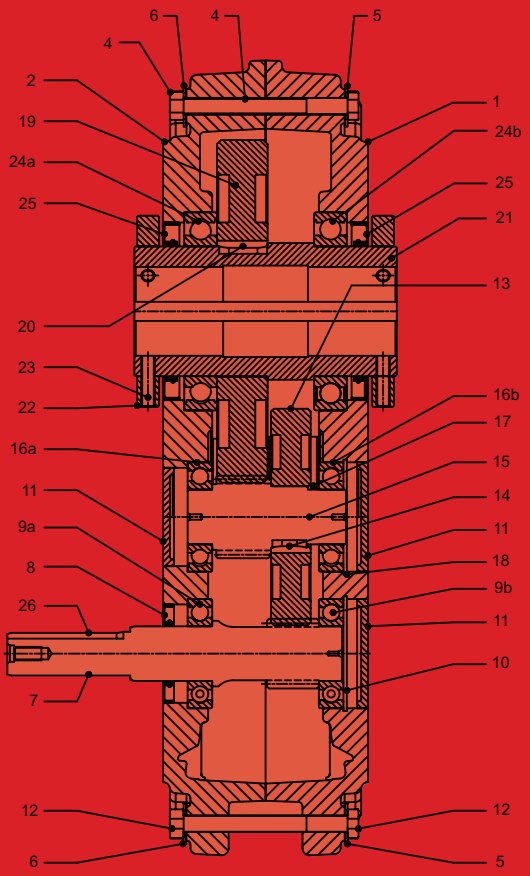
Normal operating position are shown on fig. Note that the reducer is supplied with four plugs. After the reducer has been mounted on its running position the plugs must be located as shown in fig. for the approprite mounting position.

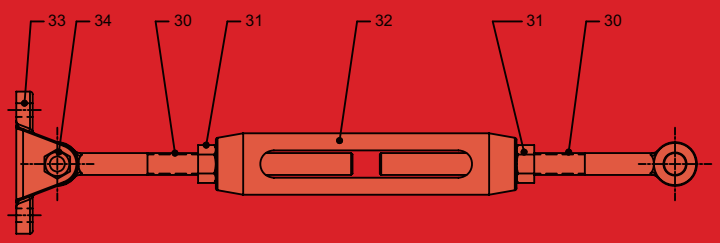
If the reducer is not within 20º of not of the position shown, the oil level plug cannot be safely used to check the oil level. This can be overcome by disconnecting the torque-arm and swinging the reducer around to one of the positions shown.

Recommended Lubricants

		13 : 1, 15:1 & 20 : 1 Ratio Gearboxes				5 : 1 Ratio Gearbox		
	Ambient Temp C°	0-20 Rev/Min	21-50 Rev/Min	51-120 Rev/Min	0-51/51-80 Rev/Min	0-100 Rev/Min	101-200 Rev/Min	201-400 Rev/Min
		BE-JE	BE-JE	BE-JE	KE	BE-KE	BE-KE	BE-KE
HP (Parthan)	-10 to+5	EP 220	EP 220	EP 150	EP 320	EP 150	EP 150	EP 150
	6 to 25	EP 320	EP 320	EP 220	EP 320	EP 150	EP 150	EP 150
	26 to 40	EP 460	EP 460	EP 320	EP 460	EP 150	EP 150	EP 150
INDIAN OIL (Servomesh)	-10 to +5	SP 68	SP 68	SP 68	SP 320	SP 100	SP 100	SP 68
	6 to 25	SP 220	SP 220	SP 220	SP 460	SP 320	SP 320	SP 220
	26 to 40	SP 460	SP 320	SP 320	SP 800	SP 680	SP 680	SP 460
SHELL (Omala)	10 to +5	69	69	41	Clavus 29	41	41	33
	6 to 25	81	81	77	Vitrea 69	77	75	71
	26 to 40	85	85	85	Vitrea 71	85	81	77

Parts Identification





Individual Replacement Parts List

Part No.	Description	Nos. of Quantity Required
1	Case RH	1
2	Case LH	1
3	Hollow Dowel Pin (Not shown in Drg.)	2
4	Case Bolt & Nut	4
5	Case Plain Washer	6
6	Case Lock Washer	6
7	Input Shaft Pinion(5:1) (13 :1) (15:1) (20:1), (25:1)	1
8	Input Shaft Oil Seal (5:1) (13 :1) (15:1) (20:1), (25:1)	1
9a	Input Shaft Bearing Front End	1
9b	Input Shaft Bearing Rear End	1
10	Input Shaft Bearing Circlip	1
11	End Cap	3
12	Torque Arm Bolt & Nut	2
13	Intermediate gear (13 :1) (15:1) (20:1), (25:1)	1
14	Intermediate gear Key	1
15	Intermediate Pinion (13 :1) (15:1) (20:1), (25:1)	1
16a	Intermediate Bearing Front End	1
16b	Intermediate Bearing Rear End	1
17	Intermediate Pinion Collar	1
18	Intermediate Bearing Circlip	1
19	Output Gear (5 :1) (13 :1) (15:1) (20:1), (25:1)	1
20	Output Gear Key	1
21	Output Hub (Standard)	1
22	Output Hub Collar	2
23	Collar Screw	6
24a	Output Hub Bearing Front End	1
24b	Output Hub Bearing Rear End	1
25	Output Hub Oil Seal	2
26	Input Shaft Key (Standard)	1
27	Level Plug (Not shown in Drg.)	1
28	Breather Plug(Not shown in Drg.)	1
29	Drain Plug(Not shown in Drg.)	1
30	Torque Arm (RH & LH)	2
31	Rod End Lock Nut	2
32	Turn Buckle	1
33	Flucrum	1
34	Flucrum Bolt & Nut & Lock Washer	1
71	Holdback Cover (For units with Holdback)	1

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