

■ SMR
SMR Metric Series

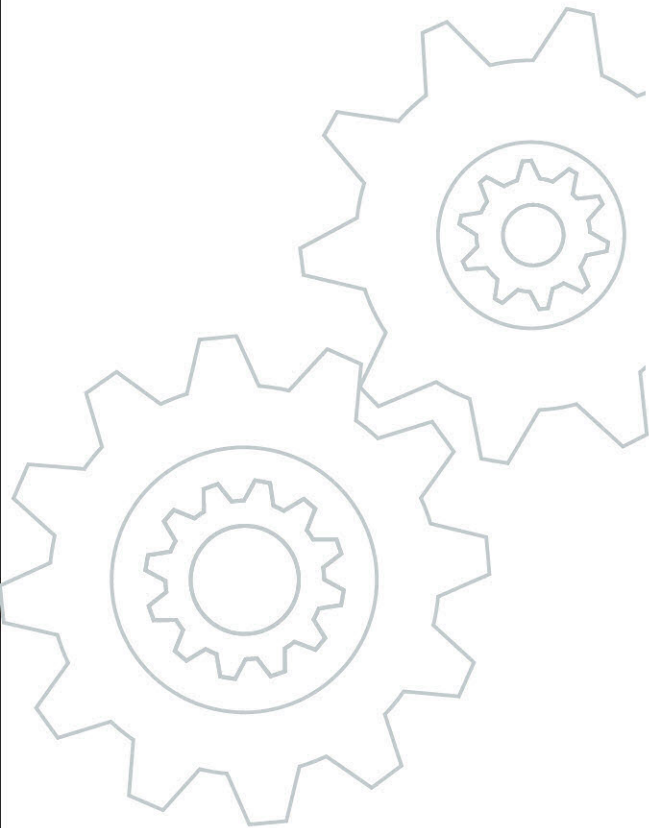


■ SMRY
SMRY Inch Series



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BROWN EUROPE

B V • • • MECHANICAL VARIABLE SPEED



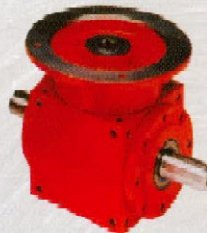
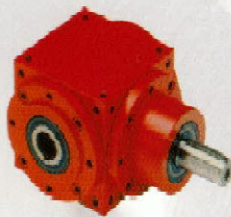
G

BRAKE MOTORS



H

B G • • • SPIRAL BEVEL GEAR REDUCERS



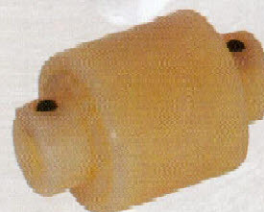
J

FL • • • TORSIONALLY FLEXIBLE COUPLING



K

SO • • • GEAR TOOTH COUPLING



L



SMR Reducer Specification



1. Output Hub

Standard or alternative hubs with metric bores are available to suit international standard shaft diameters.

2. Precision High Quality Gearing

Computer Designed Helical Gears, Strong Alloy Materials for High Load Capacity, Case Carburized for long life, Ground Profile (some intermediate pinions are shaved), Crown tooth Profile, In Conformance with ISO 1328-1997, 98% Efficiency for Per Stage, Smooth Quiet Operation with Several Teeth in Mesh.

3. Maximum Capacity Housing Design

Close Grain Cast Iron Construction, Excellent Vibration Dampening & Shock Resistance Features, Precision Bored and Dowelled to Ensure Accurate In-Line Assembly.

4. Strong Alloy Steel Shafts

Strong Alloy Steel, Hardened, Ground on Journals, Gear Seatings and Extensions, for Maximum Load and Maximum Torsional Loads. Generous Size Shaft Keys for Shock Loading and Conform to ISO Standards.

5. Additional Case Lugs (Except H and J Gear Case)

Eliminates the Need for Critical Tightening of Torque Arm Bolts. Controls Position of Standard Torque Arm Mounting within Recommended limits.

6. BackStops

Alternative Parts, Anti-run Back Device, Are Available on all 13:1 and 20:1 Ratio Units and do not recommend for 5:1 Units.

7. Bearings and Oilseals

Bearings are Adequately Proportioned and Conform to ISO Dimension Plan, Readily Available World-Wide. Oilseals are Double Lipped Garter Spring Type, Ensuring Effective Oil Sealing.

8. Rubberised End Caps

Self Sealing Intermediate Cover Plates, to Standard ISO Housing Dimensions.

9. Torque Arm Assembly

For Easy Adjustment of the Belt.



Gearbox Selection

Metric Shaft Mount Reducer are metric in design throughout and have power ratings to AGMA standard. Shaft Mount Reducers provide a very convenient method of reducing speed, since it is mounted directly on the driven shaft instead of requiring foundations of its own. It eliminates the use of one, and sometimes two, flexible couplings and external belt take-up arrangements. A torque-arm anchors the reducer and provides quick, easy adjustment of the Wedge Belts by means of its turnbuckle.

Shaft Mount Reducers are manufactured in eight gear case sizes, nominal gear ratios are 5:1, 13:1 and 20:1. A very wide choice of final driven speeds can be determined by the use of an appropriate input Wedge Belt Drive. The units will normally be oil lubricated, but they are equally suitable for long life synthetic lubricants.

Service Factor

Select the service factor application to the drive.

Service Factor

Types of Driven Machine	Operational Hours Per Day		
	Under 10	10 to 16	Over 16
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-not uniformly loaded Cranes, travel motion and hoisting Drawbench 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	1.40	1.60
Heavy Shock 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



Gearbox Selection

■ Design Power and Output Speed

Determine the output speed of the gear units, multiply the absorbed power (or Motor power if absorbed power not known) by the service factor chosen in step 1.

Note: Gear units are momentarily capable of transmitting twice ($2\times$) the rated capacity on start or during operation.

■ Unit Selection

According to the output speed and design power value from step 2 refer to the power rating tables on page 7 to 8 and select the correct size of unit.

The choice of single or double reduction gearbox will be determined by the output speed required. The normal operating speeds for each of the gearboxes may be observed in the power rating (page 7 to 8) and belt drive tables (page 13 to 16). For other speeds please consult

Note: When use 5:1 Gear Units, the Back Stop do not recommended.

■ Belt drive selection

Selection of associated belt drive for 1440 rpm electric motors

1、 Output Speed

Refer to the Drive Selection Tables (Pages 13 to 16) and under the appropriate gear size and ratio read down the column headed 'Output Speed' until an Output Speed equal or near to that required is found.

The suggested gearbox ratio is given in the first column.

2、 Pulley Diameters

Read across from the chosen output speed to obtain both driving and driven pulley pitch diameters, groove section and the appropriate number of belts.

Note: In many instances one belt is recommended, being adequate for power transmission purposes; where customer preference is for multi-belt drives consult

3、 Center Distance

Belt length and center distance can be found by referring to the appropriate pages of the 'Wedge Belt Drives' catalogue.

NOTE: Wedge belt drives shown on pages 13 to 16 have given the most economical total drive package for the speed required. If it is necessary to design a special drive, please consult. Torque arm should preferably be in tension when unit is in operation.



Gearbox Selection

Selection of associated belt drive for driving speeds other than 1440 rpm

1、 Gearbox Input Shaft Speed

Multiply the gearbox output speed by the EXACT GEAR RATIO (found in the table on page 10) to obtain the gearbox input shaft speed.

2、 Selection of 'V' Drive

The correct belt drive can now be selected by referring to the 'Wedge Belt Drives' catalogue.

A shaft Mounted Speed Reducer is required for a uniformly loaded elevator which absorbs 3.6kW at 50 rpm. The prime mover is a 4kW 1440 rpm direct on line start electric motor. A belt drive is required between the motor and gearbox at approximately 700mm centers running for up to 24 hours/Day.

Gear Unit Selection

1、 Service factor

From table 1 the service factor is 1.25.

2、 Design Power

Using the elevator absorbed power of 3.6kW, Design Power= 1.25×3.6
=4.5kW

3、 Unit Selection

Using 4.5kW as the basis for selection reference to the power rating tables (page 8) indicates that E13 or E20 gear unit will transmit 5.81kW at 50 rpm.

Selection of associated belt drive

1、 Output Speed

A more economic belt drive will be obtained if the 20:1 ratio gearbox is selected, any by reference to page 14 in the gearbox drive tables 50 rpm is obtainable.

2、 Pulley Diameters

On the line giving the output speed of 50 rpm, read across and note the driving and driven pulley pitch diameters together with the numbers of belts required, which for this case is 100 mm and 140 mm, using 2 SPA Wedge Belts.

3、 Belt Selection

By reference to the 'Wedge Belt Drives' catalogue, it can be seen that SPA 1800 belts give 711mm centers.



Power Rating

Power Rating(kW) Table For Single Reduction 5:1 Units

Output(rpm)	(SMR Size)							
	B5	C5	D5	E5	F5	G5	H5	J5
100	2.68	4.20	6.62	10.29	15.12	25.2	36.2	62.2
110	2.87	4.62	7.08	11.03	16.07	27.6	38.9	67.2
120	3.13	5.04	7.46	11.76	17.01	29.9	41.4	72.5
130	3.36	5.31	7.77	12.34	17.85	31.5	43.4	76.7
140	3.56	5.54	8.11	12.71	18.59	32.6	45.2	79.2
150	3.62	5.78	8.30	13.13	19.22	33.6	47.3	81.9
160	3.73	5.88	8.51	13.55	19.95	34.7	48.3	85.1
170	3.83	5.90	8.72	13.76	20.37	35.1	49.9	88.2
180	3.94	6.09	8.93	14.18	21.00	35.7	51.5	90.3
190	4.04	6.30	9.14	14.49	21.53	36.8	52.5	93.5
200	4.20	6.49	9.45	14.91	22.05	37.8	53.6	96.6
210	4.31	6.53	9.66	15.23	22.47	38.5	54.6	98.7
220	4.41	6.72	9.87	15.75	23.10	39.3	56.2	101.9
230	4.53	6.87	10.06	16.07	23.63	40.0	57.3	104.0
240	4.66	7.04	10.29	16.49	24.26	41.1	58.8	107.1
250	4.78	7.14	10.71	16.80	25.04	42.1	60.4	109.2
260	4.89	7.35	10.92	17.01	25.41	43.1	61.3	111.3
270	5.04	7.46	11.13	17.85	26.25	44.1	63.0	113.4
280	5.20	7.56	11.55	18.38	26.78	45.2	64.1	115.5
290	5.36	7.77	11.76	18.90	27.41	46.2	65.1	116.6
300	5.46	7.98	12.08	19.43	27.83	47.4	66.2	118.7
310	5.62	8.17	12.34	19.95	28.67	48.6	67.7	122.9
320	5.78	8.30	12.60	20.27	29.61	49.4	69.4	123.9
330	5.88	8.51	13.02	20.90	30.35	50.9	70.9	125.0
340	6.09	8.72	13.44	21.11	31.08	52.3	71.6	125.5
350	6.30	8.82	13.76	21.84	31.71	53.3	73.5	126.0
360	6.41	9.03	14.18	22.26	32.60	54.6	74.6	128.1
370	6.62	9.24	14.44	22.79	33.60	55.7	75.6	129.2
380	6.72	9.45	14.70	23.10	34.49	56.7	77.7	130.2
390	6.93	9.56	15.23	23.52	35.07	58.8	79.8	131.3
400	7.14	9.66	15.65	24.57	35.91	59.9	81.9	134.2
Nm(Torque at100rpm)	256	401	632	983	1444	2407	3457	5940

Note: Backstops do not recommended for 5:1 Units.



Power Rating

Power Rating(kW) Table For Double Reduction 13:1 and 20:1 Units

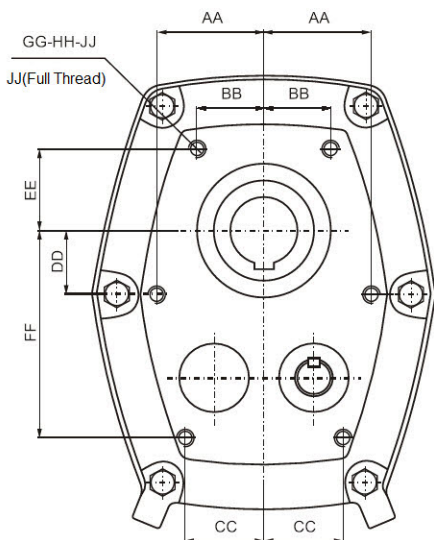
Output(rpm)	(SMR Size)							
	B13/B20	C13/C20	D13/D20	E13/E20	F13/F20	G13/G20	H13/H20	J13/J20
10	0.29	0.49	0.82	1.25	1.97	3.11	4.9	7.8
12	0.36	0.58	0.96	1.48	2.45	3.71	5.9	9.2
14	0.42	0.67	1.11	1.73	2.71	4.30	6.8	10.7
16	0.47	0.77	1.27	1.97	3.09	4.89	7.7	12.1
18	0.53	0.86	1.41	2.20	3.44	5.48	8.7	13.6
20	0.59	0.96	1.58	2.43	3.82	6.08	9.5	15.1
22	0.63	1.04	1.73	2.67	4.18	6.63	10.4	16.4
24	0.69	1.13	1.86	2.89	4.55	7.22	11.3	17.9
26	0.75	1.22	2.02	3.13	4.91	7.79	12.1	19.3
28	0.81	1.32	2.18	3.36	5.27	8.35	13.1	20.6
30	0.86	1.41	2.32	3.58	5.63	8.92	13.9	22.5
32	0.92	1.50	2.47	3.81	4.98	9.49	14.8	23.6
34	0.98	1.60	2.63	4.04	6.34	10.04	15.7	25.1
38	1.10	1.79	2.91	4.48	7.05	11.12	17.4	27.6
40	1.16	1.87	3.07	4.71	7.41	11.87	18.2	29.0
42	1.20	1.96	3.19	4.92	7.75	12.39	19.3	30.1
46	1.30	2.13	3.48	5.37	8.28	13.65	21.1	32.6
50	1.42	2.30	3.78	5.81	9.07	14.60	22.8	35.0
52	1.47	2.37	4.00	6.03	9.14	15.23	23.4	35.6
54	1.52	2.47	4.14	6.23	9.42	15.86	24.4	36.3
58	1.64	2.61	4.43	6.66	10.02	16.80	25.8	38.0
62	1.76	2.77	4.71	7.23	10.61	17.96	27.5	40.2
66	1.86	2.94	5.01	7.68	11.24	19.01	29.7	42.5
70	1.96	3.07	5.13	8.11	11.76	20.16	30.6	44.7
74	2.06	3.18	5.42	8.54	12.39	21.11	32.0	47.0
78	2.15	3.32	5.70	8.97	12.92	22.26	33.6	49.2
80	2.23	3.39	5.81	9.19	13.23	22.47	34.3	50.2
85	2.34	3.58	6.14	9.71	13.97	23.31	36.2	52.8
90	2.48	3.79	6.49	10.24	14.60	24.57	37.9	55.3
95	2.61	4.00	6.81	10.50	15.44	25.83	39.0	58.0
100	2.73	4.19	7.15	11.03	16.17	27.09	40.7	60.5
105	2.85	4.41	7.48	11.55	17.01			
110	2.98	4.62	7.81					
115	3.11							
Nm(Torque at100rpm)	277	468	783	1194	1881	2970	4680	7449

Note: The line shows the limit of recommended output speed for reducers with 20:1 ratio. For higher speeds use a 13:1 or 5:1 reducer.

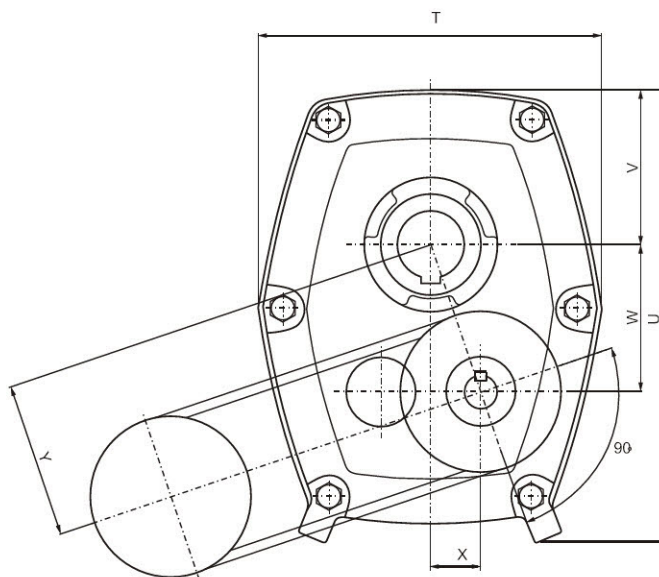


Dimensions

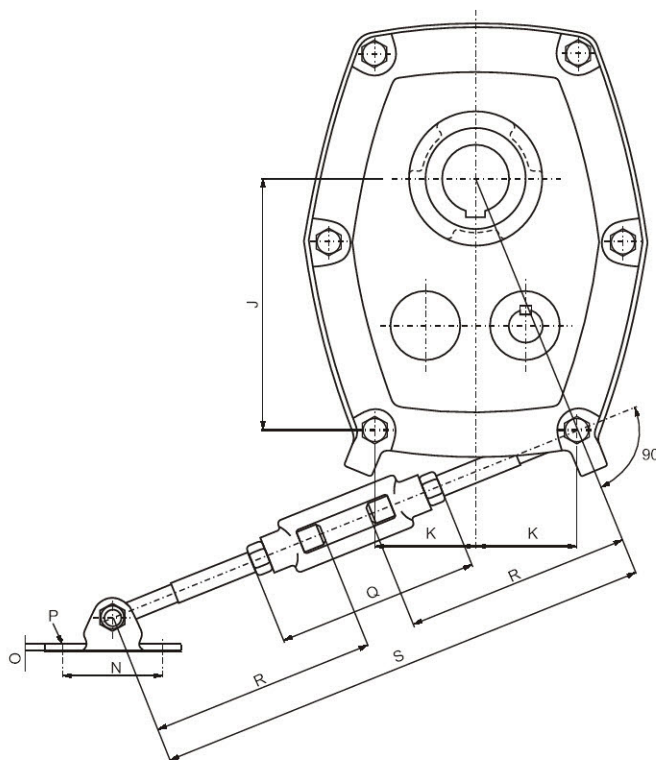
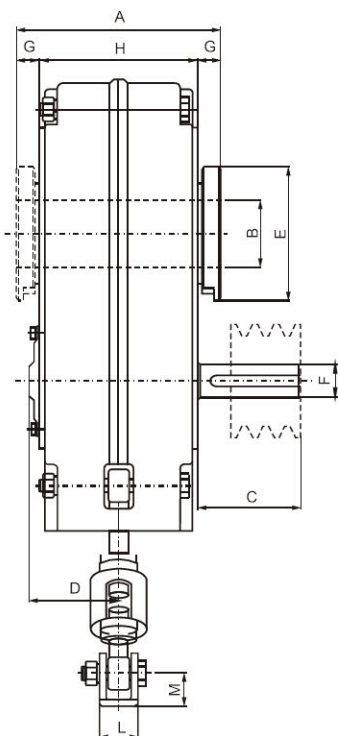
Shaft Mount Reducer Dimensions



(Flange Mounted)



(Shaft Mounted)





Dimensions

Shaft Mount Reducer Dimensions

mm

Dimension mm		(SMR Size)							
		B	C	D	E	F	G	H	J
A		134	142	152	170	189	212	242	257
B	Standard	30	40	50	55	65	75	85	100
	Alternative	40	50	55	65	75	85	100	120
C		63	72	77	85	90	105	116	135
D		59	65	68	76	87	110	115	119
E		80	90	100	115	130	145	170	200
F		19	22	25	28	32	42	48	55
(Input Shaft Keyway)		6 3.5 50	6 3.5 59	8 4 63	8 4 70	10 5 70	12 5 90	14 5.5 100	16 6 100
G		15	17	17	20	20	20	26	30
H		104	108	118	130	149	172	190	197
J		131	156	188	222	242	277	330	424
K		55	59	76	90	98	110	88	102
L		24	24	28	28	34	34	70	70
M		20	20	24	24	30	30	50	50
N		65	65	75	75	100	100	120	120
O		5	5	5	5	6	6	18	18
P		10	10	12	12	16	16	16	16
Q		200	200	216	216	216	216	222	222
R		300	300	350	350	375	375	375	375
S	Min	600	600	700	700	750	750	750	750
	Max	750	750	850	850	900	900	900	900
T		186	218	258	278	317	365	434	542
U		241	282	338	386	419	475	550	700
V		81	96	117	129	143	162	195	254
W		75	90	110	125	141	156	189	255
X		25	31	37	43	50	56	62	75
Y		79	95	116	133	150	166	200	266
AA		53	---	---	90	100	115	150	200
BB		34	40	50	57	67	74	64	74
CC		-	44	59	57	76	86	79	---
DD		33	40	48	61	64	74	81	98
EE		41	52	61	62	76	87	122	164
FF		-	132	155	188	197	224	281	330
GG		4	4	4	6	6	6	6	5
HH		M8	M10	M12	M12	M16	M16	M20	M20
JJ		15	15	17	18	19	24	29	32
Weight(kg)	5:1	15	21	30	41	53	82	133	194
	13:1-20:1	16	22	32	46	58	92	144	208
Normal Ratio	(Exact Gear Ratios)								
	5:1	5.05	5.05	5.047	5.047	5.047	5.047	5.047	5.047
	13:1	13.984	13.596	13.589	13.589	13.589	13.589	13.589	13.589
	20:1	20.997	20.466	20.456	20.456	20.456	20.456	20.456	20.456



Engineering/Technical

■ Standard Hub Bores

Metric hubs are bored to F7 limits, A shaft tolerance grade h7 is recommended. Shaft keyways must be to appropriate standard dimensions.

Smaller bores are available to customer requirements. The Alternative hub bore is the maximum bore available in each unit size.

■ Standard Hub Keyways

Keyways for the standard Output Hubs are machined in accordance with ISO standards, Output hub keys are not supplied.

Shaft keyway should be machined to suit the standard key size shown below.

mm

Shaft Diameter(mm)	20	25	30	32	35	38	40
Key Size(mm)	6 6	8 7	8 7	10 8	10 8	10 8	12 8
Shaft Diameter(mm)	42	45	50	55	60	65	70
Key Size(mm)	12 8	14 9	14 9	16 10	18 11	18 11	20 12
Shaft Diameter(mm)	75	80	85	90	95	100	110
Key Size(mm)	12 8	14 9	14 9	16 10	18 11	18 11	20 12
Shaft Diameter(mm)	120	125	-	-	-	-	-
Key Size(mm)	32 18	32 18					

■ Standard Input Shaft and Keys

Input shafts are ground to h6 limits, the pulley or other bores' tolerance grade H7 is recommended. Shaft keyways are milled in accordance with ISO standards, see the dimensions in the table, the key is supplied.



Ordering Instructions

How to order the SMR gear box

■ Gearbox Coding

Gearbox Coding

First three letters: **SMR**

Fourth Letter, Unit Size: B C D E F G H J

Fifth and Sixth digits, Ratio Code: 05 13 20

Seventh digit, Indicates Assembly: 0 Shaft Mounted Speed Reducer 2 Flange Mount

Eighth Digit: Indicates Output Hub bore required: 1 Standard Metric bore, 2 Alternative Metric bore

Example

Size E Unit 20:1 nominal Gear Ratio, shaft mounted with standard Metric Hub Bore(55mm):**SMR-E2001**.

If Backstop are required, these should be order separately, and must specify the output hub rotation. E.g. :SMR-E2001 complete with Backstop, In the input shaft side, the output hub's rotation is in clockwise.

■ Optional Extras

Backstops

A backstop may be incorporated on applications where it is necessary to prevent reversal of rotation. It is quickly installed within the reducer, by simply removing a cover plate.

Note: For ratio 5:1 gear box, backstop do not recommended.

Flange Mounting

SMR case design is such that the reducer can be bolted direct to supporting framework. This flange mounting use of the reducer may permit designers to omit a bearing or pillow block, but it does, of course, eliminate the easy belt adjustment feature characteristic of shaft mount. See page 9.

Note: Standard SMR Gearbox do not drill mount screws, when customer need these kinds of mount, please specify in the order.



Belt Drives

1440rpm Motors

SMR Metric Shaft Mount Reducer

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts
			Motor	Gearbox	
B20	10	6.67	75	500	1SPZ
	12	5.63	71	400	1SPZ
	14	5.00	63	315	1SPZ
	16	4.20	75	315	1SPZ
	18	3.73	75	280	1SPZ
	20	3.50	90	315	1SPZ
	22	3.13	80	250	1SPZ
	24	2.82	71	200	1SPZ
	26	2.63	95	250	1SPA
	27	2.54	63	160	1SPZ
	30	2.25	71	160	1SPZ
	32	2.13	75	160	1SPZ
	34	2.00	80	160	1SPZ
	36	1.88	80	150	1SPZ
	38	1.80	100	180	1SPZ
	39	1.76	71	125	1SPZ
	41	1.67	75	125	1SPZ
	44	1.56	90	140	1SPZ
	46	1.49	75	112	1SPZ
	49	1.41	71	100	1SPZ
	52	1.33	75	100	1SPZ
	55	1.24	90	112	1SPZ
	57	1.20	75	90	1SPZ
	60	1.14	140	160	1SPZ
64	1.07	140	150	1SPZ	
B13	66	1.56	90	140	1SPZ
	69	1.50	100	150	1SPZ
	70	1.47	85	125	1SPA
	72	1.43	140	200	1SPZ
	74	1.39	90	125	1SPZ
	76	1.36	118	160	1SPA
	77	1.34	112	150	1SPZ
	78	1.32	95	125	1SPA
	80	1.29	140	180	1SPZ
	83	1.24	90	112	1SPZ
	85	1.21	132	160	1SPA
	87	1.18	95	112	1SPA
	90	1.14	140	160	1SPZ
	92	1.12	125	140	1SPZ
97	1.06	132	140	1SPZ	
103	1.00	112	112	1SPZ	
108	0.95	118	112	1SPA	
110	0.94	106	100	1SPA	
114	0.90	125	112	1SPA	
B05	119	2.40	75	180	2SPZ
	127	2.24	125	280	2SPZ
	128	2.23	112	250	2SPZ
	135	2.11	95	200	1SPA
	143	2.00	80	160	2SPZ
	145	1.97	71	140	3SPZ
	151	1.89	95	180	1SPA
	160	1.78	90	160	2SPZ
	163	1.75	80	140	2SPZ
	171	1.67	90	150	2SPA
	180	1.58	95	150	2SPA
	183	1.56	90	140	2SPZ
	186	1.53	118	180	1SPA
	194	1.47	95	140	2SPA
	199	1.43	140	200	1SPZ
	210	1.36	118	160	1SPA
	221	1.29	140	180	1SPZ
	228	1.25	112	140	2SPZ
	238	1.20	125	150	1SPA
	250	1.14	132	150	1SPA
	257	1.11	180	200	1SPA
	269	1.06	132	140	1SPA
	285	1.00	160	160	1SPA
	300	0.95	100	95	2SPA
	307	0.93	150	140	1SPA
	320	0.89	140	125	2SPZ
	324	0.88	160	140	1SPA
	344	0.83	180	150	1SPA
356	0.80	140	112	2SPZ	
366	0.78	180	140	1SPA	
380	0.75	200	150	1SPA	
391	0.73	180	132	1SPA	
407	0.70	200	140	1SPA	

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts
			Motor	Gearbox	
C20	10	7.04	71	500	1SPZ
	12	5.63	71	400	1SPZ
	13	5.33	75	400	1SPZ
	15	4.73	75	355	1SPZ
	16	4.44	71	315	1SPZ
	18	3.94	80	315	1SPZ
	20	3.50	90	315	1SPZ
	22	3.13	80	250	1SPZ
	23	3.11	90	280	1SPZ
	25	2.78	90	250	1SPZ
	29	2.40	75	180	1SPZ
	33	2.13	75	160	1SPZ
	35	2.00	80	160	1SPZ
	37	1.88	85	160	1SPA
	40	1.75	80	140	2SPZ
	43	1.65	85	140	1SPA
	45	1.56	90	140	1SPZ
	47	1.5	100	150	1SPA
	51	1.39	90	125	1SPA
	53	1.33	75	100	2SPZ
	55	1.27	71	90	2SPZ
	59	1.19	80	95	1SPA
	63	1.12	85	95	1SPA
	66	1.07	140	150	2SPZ
C13	68	1.56	80	125	1SPA
	70	1.52	132	200	1SPZ
	72	1.47	95	140	1SPA
	74	1.43	140	200	1SPZ
	78	1.36	132	180	1SPA
	80	1.32	106	140	1SPA
	82	1.29	140	180	1SPZ
	85	1.24	90	112	2SPZ
	88	1.21	132	160	1SPA
	90	1.18	95	112	1SPA
	93	1.14	140	160	1SPZ
95	1.12	118	132	1SPA	
100	1.06	132	140	1SPA	
106	1.00	132	132	1SPA	
111	0.95	100	95	1SPA	
C05	113	2.52	125	315	1SPA
	119	2.39	132	315	1SPA
	127	2.25	140	315	1SPA
	128	2.22	180	400	1SPZ
	136	2.10	150	315	1SPA
	143	2.00	125	250	2SPZ
	145	1.97	160	315	1SPA
	151	1.89	95	180	2SPA
	159	1.79	140	250	1SPA
	163	1.75	180	315	1SPZ
	170	1.68	95	160	2SPA
	177	1.61	112	180	2SPZ
	180	1.58	200	315	1SPZ
	183	1.56	90	140	3SPZ
	189	1.51	106	160	2SPA
	199	1.43	112	160	2SPA
	210	1.36	132	180	2SPA
	221	1.29	140	180	2SPZ
	228	1.25	160	200	1SPA
	242	1.18	95	112	2SPA
	250	1.14	140	160	2SPZ
	257	1.11	180	200	1SPA
	269	1.06	125	132	1SPA
	285	1.00	140	140	2SPZ
	300	0.95	132	125	1SPA
	317	0.90	200	180	1SPA
	320	0.89	132	118	2SPA
	339	0.84	140	118	2SPA
344	0.83	160	132	2SPA	
356	0.80	140	112	2SPA	
361	0.79	150	118	2SPA	
366	0.78	180	140	2SPZ	
375	0.76	132	100	3SPA	
380	0.75	200	150	2SPA	
385	0.74	160	118	2SPA	
396	0.72	250	180	1SPA	
402	0.71	140	100	3SPZ	



Belt Drives

1440rpm Motors

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts	
			Motor	Gearbox		
D20	10	7.04	71	500	1SPZ	
	13	5.63	71	400	1SPZ	
	14	5.00	63	315	1SPZ	
	16	4.44	71	315	1SPZ	
	18	3.97	63	250	2SPZ	
	20	3.52	71	250	2SPZ	
	22	3.13	80	250	1SPZ	
	24	2.94	85	250	1SPA	
	27	2.63	95	250	1SPA	
	28	2.50	100	250	1SPZ	
	30	2.35	85	200	1SPA	
	32	2.22	90	200	2SPZ	
	33	2.11	95	200	1SPA	
	37	1.89	95	180	1SPA	
	39	1.80	100	180	1SPA	
	40	1.75	80	140	2SPZ	
	41	1.70	106	180	1SPA	
	44	1.61	112	180	1SPA	
	47	1.50	100	150	2SPA	
	49	1.44	125	180	1SPZ	
	50	1.42	106	150	2SPA	
	52	1.36	118	160	1SPA	
	53	1.32	106	140	2SPA	
	56	1.25	112	140	2SPA	
	59	1.20	125	150	1SPA	
	60	1.18	85	100	2SPA	
	63	1.12	118	132	2SPA	
	63	1.11	90	100	3SPZ	
	66	1.07	140	150	1SPA	
	D13	67	1.58	200	315	1SPA
		70	1.52	132	200	1SPA
		72	1.47	95	140	2SPA
		74	1.43	140	200	2SPA
78		1.36	132	180	2SPA	
80		1.32	106	140	2SPA	
82		1.29	140	180	1SPA	
85		1.25	160	200	1SPA	
88		1.21	132	160	2SPA	
90		1.18	95	112	2SPA	
93		1.14	140	160	2SPZ	
95		1.11	180	200	1SPA	
99		1.07	150	160	2SPA	
101	1.05	95	100	2SPA		
106	1.00	125	125	2SPZ		
D05	114	2.5	160	400	1SPA	
	119	2.39	132	315	1SPA	
	127	2.25	140	315	2SPZ	
	128	2.23	112	250	2SPA	
	135	2.12	118	250	2SPA	
	143	2.00	125	250	2SPA	
	151	1.89	132	250	2SPA	
	159	1.80	100	180	3SPA	
	159	1.79	140	250	2SPZ	
	163	1.75	180	315	1SPA	
	170	1.68	95	160	3SPA	
	177	1.61	112	180	2SPA	
	181	1.58	200	315	1SPA	
	188	1.52	132	200	2SPA	
	200	1.43	140	200	2SPA	
	204	1.40	100	140	4SPZ	
	210	1.36	132	180	2SPA	
	221	1.29	140	180	2SPA	
	228	1.25	160	200	2SPA	
	238	1.20	150	180	2SPA	
	250	1.14	140	160	2SPA	
	267	1.07	150	160	2SPA	
	285	1.00	140	140	2SPA	
	300	0.95	132	125	3SPA	
	317	0.90	200	180	2SPA	
	324	0.88	160	140	3SPZ	
	344	0.83	180	150	2SPA	
	357	0.80	200	160	2SPA	
366	0.78	180	140	2SPA		
380	0.75	200	150	2SPA		
391	0.73	180	132	3SPA		
396	0.72	250	180	2SPA		

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts	
			Motor	Gearbox		
E20	10	7.04	71	500	1SPZ	
	13	5.63	71	400	2SPZ	
	14	5.00	80	400	1SPZ	
	16	4.44	90	400	1SPZ	
	18	4.00	100	400	1SPZ	
	20	3.50	90	315	2SPZ	
	22	3.15	100	315	1SPZ	
	25	2.82	71	200	2SPZ	
	26	2.67	75	200	2SPZ	
	28	2.50	100	250	2SPZ	
	29	2.40	75	180	3SPZ	
	31	2.25	80	180	3SPZ	
	33	2.11	71	150	3SPZ	
	35	2.00	80	160	3SPZ	
	37	1.88	85	160	2SPA	
	40	1.75	80	140	3SPZ	
	42	1.68	95	160	1SPA	
	44	1.60	125	200	2SPZ	
	46	1.52	132	200	1SPA	
	49	1.44	125	180	2SPZ	
	50	1.40	100	140	2SPA	
	52	1.36	132	180	2SPA	
	55	1.29	140	180	2SPZ	
	56	1.25	100	125	3SPZ	
	59	1.20	150	180	1SPA	
	60	1.18	106	125	2SPA	
	62	1.14	140	160	2SPZ	
	63	1.11	90	100	4SPZ	
	66	1.06	118	125	2SPA	
	E13	70	1.52	132	200	2SPZ
		74	1.44	125	180	2SPA
		76	1.39	180	250	1SPA
		78	1.36	118	160	2SPA
80		1.32	100	132	3SPA	
82		1.29	140	180	2SPA	
85		1.24	90	112	5SPZ	
88		1.21	132	160	2SPA	
90		1.18	95	112	4SPA	
93		1.14	140	160	2SPA	
95		1.12	125	140	3SPZ	
100	1.06	132	140	2SPA		
106	1.00	125	125	3SPZ		
E05	107	2.67	150	400	2SPA	
	114	2.50	160	400	2SPA	
	119	2.39	132	315	2SPA	
	127	2.25	140	315	3SPZ	
	129	2.22	180	400	2SPA	
	136	2.10	150	315	2SPA	
	143	2.00	125	250	3SPA	
	151	1.89	132	250	3SPA	
	154	1.85	170	315	2SPA	
	159	1.79	140	250	3SPA	
	163	1.75	180	315	2SPA	
	168	1.70	132	224	2SPZ	
	173	1.65	170	280	2SPB	
	178	1.60	125	200	3SPA	
	188	1.52	132	200	3SPA	
	200	1.43	140	200	3SPA	
	210	1.36	132	180	3SPA	
	221	1.29	140	180	3SPA	
	228	1.25	200	250	2SPA	
	238	1.20	150	180	2SPB	
	250	1.14	140	160	3SPA	
	257	1.11	180	200	2SPA	
	269	1.06	212	224	2SPB	
	285	1.00	200	200	2SPA	
300	0.95	236	224	2SPB		
304	0.94	160	150	3SPA		
317	0.90	250	224	2SPB		
324	0.88	160	140	2SPA		
344	0.83	180	150	3SPA		
357	0.80	250	200	2SPA		
375	0.76	236	180	2SPB		
380	0.75	200	150	3SPA		
391	0.73	180	132	4SPA		
402	0.71	280	200	2SPB		



Belt Drives

1440rpm Motors

SMR Metric Shaft Mount Reducer

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts
			Motor	Gearbox	
F20	10	7.04	71	500	2SPZ
	13	5.63	71	400	2SPZ
	14	5.00	100	500	1SPA
	17	4.20	75	315	2SPZ
	18	3.94	80	315	2SPZ
	19	3.77	106	400	1SPA
	20	3.57	112	400	1SPA
	22	3.20	125	400	1SPA
	25	2.86	140	400	1SPA
	26	2.67	118	315	2SPZ
	28	2.50	160	400	1SPZ
	30	2.35	85	200	2SPA
	33	2.12	85	180	2SPA
	35	2.00	125	250	2SPZ
	37	1.89	95	180	2SPA
	40	1.75	180	315	1SPA
	42	1.68	95	160	3SPA
	44	1.60	125	200	2SPA
	45	1.58	200	315	1SPA
	49	1.44	125	180	2SPA
	50	1.40	100	140	3SPA
	52	1.36	118	160	2SPA
	55	1.29	140	180	2SPZ
	56	1.25	100	125	4SPZ
	59	1.20	125	150	3SPA
	60	1.18	106	125	3SPA
62	1.14	132	150	2SPA	
63	1.11	106	118	3SPA	
66	1.07	150	160	2SPA	
F13	67	1.58	200	315	2SPZ
	70	1.52	132	200	2SPA
	72	1.48	160	236	2SPB
	74	1.43	140	200	2SPB
	76	1.39	180	250	3SPA
	78	1.36	118	160	3SPA
	80	1.33	150	200	2SPA
	82	1.29	140	180	2SPB
	88	1.20	150	180	2SPB
	88	1.21	132	160	2SPA
	93	1.14	132	150	3SPA
	93	1.14	140	160	3SPA
	95	1.12	125	140	4SPA
	100	1.06	132	140	3SPA
	106	1.00	125	125	4SPA
	F05	112	2.54	140	355
114		2.50	200	500	2SPA
119		2.39	132	315	4SPA
127		2.25	140	315	3SPA
137		2.09	170	355	2SPB
143		2.00	200	400	2SPA
151		1.89	212	400	2SPB
154		1.85	170	315	3SPA
159		1.79	224	400	2SPB
163		1.75	180	315	2SPB
171		1.67	212	355	2SPB
181		1.58	224	355	2SPB
183		1.56	180	280	2SPB
190		1.5	236	355	2SPB
200		1.43	140	200	4SPA
210		1.36	132	180	5SPA
215		1.33	160	212	3SPB
221		1.29	140	180	4SPA
228		1.25	224	280	2SPB
240		1.19	236	280	2SPB
250		1.14	140	160	4SPB
257		1.11	180	200	3SPA
269		1.06	212	224	2SPB
285		1.00	200	200	3SPA
300		0.95	236	224	2SPB
317		0.9	250	224	2SPB
340		0.84	280	236	2SPB
357		0.8	250	200	3SPA
375		0.76	236	180	3SPB
380		0.75	315	236	2SPB
396	0.72	236	170	3SPB	
402	0.71	315	224	2SPB	

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts	
			Motor	Gearbox		
G20	10	7.04	71	500	3SPZ	
	12	5.94	106	630	2SPA	
	14	5.04	125	630	1SPA	
	16	4.44	90	400	3SPZ	
	18	4.00	100	400	2SPA	
	20	3.57	112	400	2SPZ	
	22	3.20	125	400	2SPZ	
	25	2.86	140	400	2SPZ	
	26	2.67	118	315	2SPA	
	28	2.50	160	400	2SPZ	
	30	2.35	85	200	3SPA	
	32	2.23	112	250	3SPZ	
	34	2.10	150	315	2SPA	
	37	1.89	132	250	2SPA	
	40	1.75	180	315	2SPZ	
	42	1.67	150	250	2SPA	
	46	1.53	118	180	3SPA	
	51	1.39	180	250	2SPA	
	55	1.28	125	160	4SPA	
	58	1.21	132	160	4SPA	
	62	1.14	132	150	4SPA	
	66	1.07	150	160	3SPA	
	G13	67	1.58	200	315	2SPA
		70	1.52	132	200	4SPA
		72	1.47	170	250	2SPB
		75	1.41	224	315	2SPB
78		1.36	132	180	5SPA	
81		1.31	180	236	3SPB	
82		1.29	140	180	4SPA	
85		1.25	200	250	2SPB	
88		1.21	132	160	5SPA	
90		1.18	180	212	3SPB	
93		1.14	140	160	5SPA	
95		1.11	180	200	3SPA	
100		1.06	236	250	2SPB	
G05		107	2.67	236	630	2SPB
	113	2.52	250	630	2SPB	
	114	2.50	200	500	3SPA	
	121	2.36	212	500	3SPB	
	127	2.25	280	630	2SPA	
	129	2.22	180	400	4SPA	
	136	2.10	150	315	3SPB	
	143	2.00	250	500	2SPB	
	145	1.97	180	355	4SPB	
	151	1.89	212	400	3SPB	
	154	1.85	170	315	3SPB	
	159	1.79	280	500	2SPB	
	169	1.69	236	400	3SPB	
	171	1.67	212	355	3SPB	
	178	1.60	250	400	2SPB	
	181	1.58	200	315	3SPB	
	190	1.50	236	355	3SPB	
	191	1.49	212	315	3SPB	
	200	1.43	280	400	2SPB	
	202	1.41	224	315	3SPB	
	215	1.33	236	315	3SPB	
	225	1.27	315	400	2SPB	
	228	1.25	224	280	3SPB	
	240	1.19	236	280	3SPB	
	252	1.13	315	355	2SPB	
	255	1.12	224	250	3SPB	
	269	1.06	236	250	3SPB	
	285	1.00	315	315	2SPB	
	304	0.94	250	236	3SPB	
	321	0.89	280	250	3SPB	
321	0.89	355	315	2SPB		
340	0.84	280	236	3SPB		
357	0.80	224	180	4SPB		
361	0.79	315	250	3SPB		
375	0.76	236	180	5SPB		
380	0.75	315	236	3SPB		
396	0.72	236	170	5SPB		
402	0.71	315	224	4SPB		



1440rpm Motors

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts
			Motor	Gearbox	
H20	10	7.00	90	630	3SPZ
	12	5.88	85	500	2SPA
	14	5.04	125	630	2SPZ
	16	4.44	90	400	4SPZ
	18	4.00	100	400	3SPA
	20	3.57	140	500	2SPA
	22	3.20	125	400	3SPA
	25	2.86	140	400	2SPA
	26	2.67	150	400	2SPA
	29	2.39	132	315	3SPA
	34	2.10	150	315	2SPB
	36	1.97	160	315	2SPB
	38	1.85	170	315	2SPB
	39	1.79	140	250	3SPB
	42	1.67	150	250	3SPA
	45	1.58	200	315	2SPA
	46	1.52	132	200	4SPA
	51	1.39	180	250	3SPB
	54	1.31	180	236	3SPB
	60	1.18	200	236	3SPB
62	1.13	160	180	4SPA	
66	1.06	236	250	2SPB	
H13	67	1.58	200	315	3SPA
	68	1.56	180	280	3SPB
	71	1.50	236	355	2SPB
	72	1.47	170	250	4SPB
	75	1.41	224	315	3SPA
	76	1.39	180	250	4SPA
	80	1.33	236	315	3SPB
	83	1.27	280	355	2SPB
	85	1.24	180	224	4SPB
	89	1.19	236	280	3SPB
90	1.18	180	212	4SPB	
95	1.12	250	280	3SPA	
100	1.06	200	212	3SPB	
H05	102	2.81	224	630	3SPB
	107	2.67	236	630	3SPB
	113	2.52	250	630	3SPA
	121	2.36	212	500	3SPB
	127	2.25	280	630	2SPB
	136	2.10	150	315	4SPB
	143	2.00	315	630	2SPB
	149	1.91	236	450	3SPC
	151	1.89	212	400	4SPB
	159	1.79	224	400	3SPC
	163	1.75	180	315	5SPB
	169	1.69	236	400	3SPB
	173	1.65	170	280	5SPB
	178	1.60	250	400	3SPB
	181	1.58	200	315	3SPA
	190	1.50	236	355	4SPB
	191	1.49	212	315	4SPB
	200	1.43	280	400	3SPB
	215	1.33	236	315	4SPB
	216	1.32	212	280	4SPB
	225	1.27	280	355	4SPB
	228	1.25	224	280	4SPB
	242	1.18	212	250	4SPC
	252	1.13	315	355	3SPB
	257	1.11	212	236	5SPB
	272	1.05	224	236	4SPC
	285	1.00	280	280	3SPC
	300	0.95	236	224	4SPC
	317	0.90	250	224	4SPB
	321	0.89	315	280	3SPB
336	0.85	265	224	3SPC	
340	0.84	280	236	4SPB	
357	0.80	280	224	4SPB	
361	0.79	355	280	3SPB	
375	0.76	236	180	5SPB	
380	0.75	315	236	3SPC	
396	0.72	250	180	6SPB	
402	0.71	315	224	4SPB	

Unit	Nominal Output rpm	PulleyRatio	Pulley Pitch Diameters (mm)		Number of Belts
			Motor	Gearbox	
J20	10	7.00	90	630	4SPZ
	12	5.88	85	500	4SPA
	14	5.00	100	500	4SPZ
	16	4.50	140	630	3SPZ
	18	3.94	160	630	2SPA
	20	3.57	140	500	4SPZ
	22	3.20	125	400	4SPZ
	25	2.86	140	400	3SPA
	26	2.67	150	400	3SPA
	29	2.39	132	315	4SPA
	30	2.35	170	400	3SPB
	34	2.10	150	315	4SPA
	37	1.89	212	400	2SPB
	40	1.75	180	315	3SPB
	42	1.67	212	355	2SPC
	47	1.50	236	355	2SPB
	47	1.49	212	315	2SPC
	50	1.41	224	315	3SPB
54	1.31	180	236	3SPB	
60	1.18	200	236	3SPB	
63	1.11	212	236	3SPB	
66	1.06	212	224	3SPC	
J13	67	1.58	200	315	3SPC
	68	1.56	180	280	4SPB
	71	1.49	212	315	3SPC
	72	1.47	170	250	4SPB
	75	1.41	224	315	3SPC
	76	1.39	180	250	5SPB
	80	1.32	170	224	5SPB
	83	1.27	315	400	2SPC
	85	1.25	200	250	3SPC
	89	1.19	236	280	3SPC
90	1.18	212	250	4SPB	
95	1.12	250	280	3SPC	
100	1.06	212	224	4SPC	
J05	107	2.67	236	630	4SPB
	113	2.52	250	630	4SPB
	121	2.36	212	500	5SPB
	128	2.23	224	500	5SPB
	135	2.12	236	500	5SPB
	143	2.00	250	500	4SPC
	149	1.91	236	450	4SPC
	151	1.89	265	500	4SPC
	153	1.87	300	560	3SPC
	159	1.80	250	450	4SPC
	168	1.70	265	450	4SPC
	171	1.67	300	500	3SPC
	177	1.61	280	450	4SPC
	179	1.59	315	500	4SPB
	189	1.51	265	400	3SPC
	191	1.49	212	315	3SPC
	200	1.43	315	450	3SPC
	202	1.41	355	500	4SPB
	213	1.34	265	355	5SPC
	215	1.33	400	530	3SPC
	225	1.27	315	400	3SPC
	230	1.24	450	560	4SPC
	240	1.19	265	315	5SPC
	252	1.13	280	315	5SPC
	255	1.12	236	265	5SPC
	269	1.06	236	250	5SPC
	272	1.05	224	236	5SPC
	285	1.00	355	355	4SPC
	300	0.95	280	265	5SPC
	304	0.94	250	236	5SPC
307	0.93	150	140	5SPB	
321	0.89	450	400	4SPC	
336	0.85	265	224	5SPC	
340	0.84	400	335	3SPC	
357	0.80	280	224	5SPC	
361	0.79	400	315	3SPC	
380	0.75	355	265	5SPC	
402	0.71	500	355	4SPC	



Installation

■ Gearbox Installation

Satisfactory performance depends on proper installation, lubrication and maintenance. Therefore it is important that the instructions in the installation and maintenance leaflet, supplied with each gearbox, are followed carefully. Some of the important aspects of belt and torque-arm installation are listed below.

1. Install pulley on gearbox input shaft as close to the reducer as possible, and mount reducer on driven shaft as close to bearing as practical (See Figure 1) . Failure to do this will cause excess loads in the input shaft bearings and output bearings and could cause their premature failure.
2. Install motor and belt drive with the belt pull at approximately 90° to the center line between driven and input shafts(See Fig.2). This will permit tensioning of the wedge belt drive with the torque arm which should preferably be in tension. If output hub runs anti-clockwise, torque arm should be positioned to the right(See Fig.3).
3. Install torque-arm fulcrum on a rigid support so that the torque-arm will be at approximately right angles to the center line through the driven shaft and the torque arm case bolt(See Fig.5) . Make sure there is sufficient take up in the turnbuckle for belt tension adjustment.

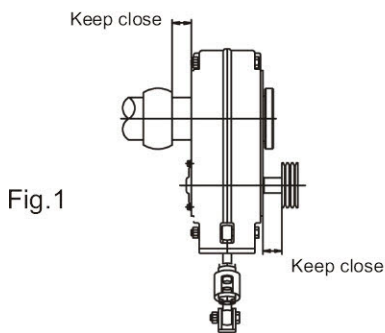


Fig.1

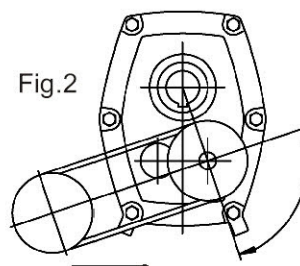


Fig.2

Belt drive may be located in any convenient position. If the Torque arm is to be used to tighten the belts, the drive should be at about right angle to the line between the Input and Output Shafts.

Belt drive may be located to the right if desired.

If output hub rotates clock-wise, position Belt drive and Torque arm in opposite direction to that shown in the illustration.

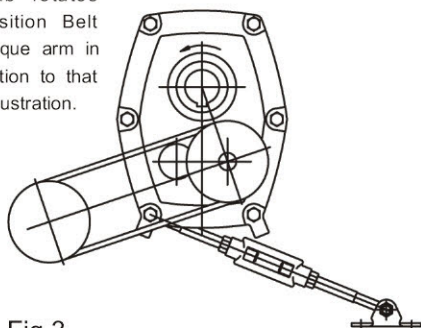


Fig.3

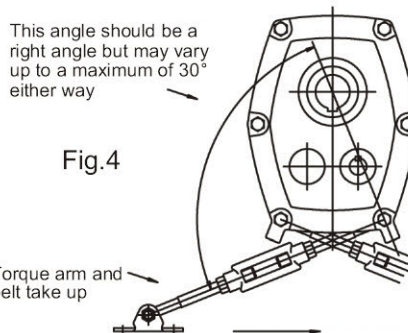


Fig.4

Torque arm and belt take up

Torque arm may be mounted to the right if desired.



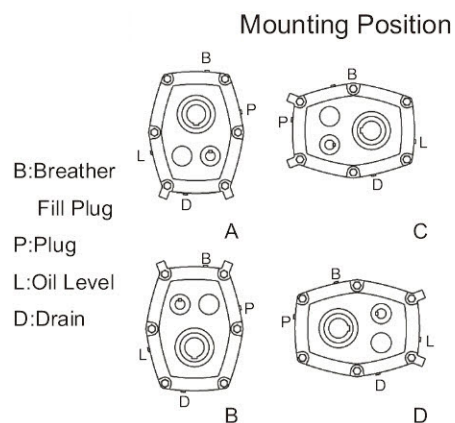
Lubrication and Mounting Positions

LUBRICATION-QUANTITIES & RECOMMENDED GRADES

Shaft Mounted Reducer is dispatched without oil. It is necessary to fill the proper amount of oil before running. Use a high-grade petroleum base rust and oxidation inhibited (R&O) gear oil.

Oil Quantities (liters)

UnitSize	Approximate Capacity-Liters							
	5:1				13:1 & 20:1			
Mounting Position	A	B	C	D	A	B	C	D
B	0.4	0.4	0.4	0.5	0.3	0.4	0.5	0.5
C	0.6	0.6	0.7	0.8	0.5	0.6	0.7	0.7
D	1.0	1.2	1.4	1.5	0.8	1.2	1.5	1.3
E	1.9	1.8	2.0	1.9	1.7	1.8	2.0	1.6
G	2.6	2.5	2.5	2.6	2.3	2.5	2.5	2.5
F	3.3	3.3	4.1	4.6	3.0	3.4	4.3	3.9
H	4.8	5.0	7.1	7.1	4.5	5.0	7.0	6.8
J	9.3	12.0	16.0	16.0	7.5	11.0	14.0	13.0



Note: Below 15 rpm output speed, oil level must be adjusted to reach the highest oil level plug (P).

Mineral Oil

	Environment Temperature	5:1 RATIO GEARBOXES				13:1 AND 20:1 RATIO GEARBOXES				
		0-100 rpm	101-200 rpm	201-400 rpm		0-20 rpm	21-50 rpm		51-120 rpm	
		BCDEFGHJ	BCDEFGHJ	BC	DEFGHJ	BCDEFGHJ	BCD	EFGHJ	BCD	EFGHJ
ISO Viscosity Grade	-10 to +5	100	100	100	68	150	150	150	100	100
	6 to 25	460	320	320	220	680	680	460	460	320
	26 to 40	800	680	680	460	800	800	800	680	460

Manufacturers and Types

B.P. ENERGOL GR-XP	CASTROL ALPHA ZN OR SP	MOBIL MOBILGEAR OIL	SHELL OMALA	TEXACO MEROPA
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Synthetic Oil

DARMEX 9140 NMNND	SUITABLE FOR ALL AMBIENT TEMPERATURES AND ALL INPUT SPEEDS
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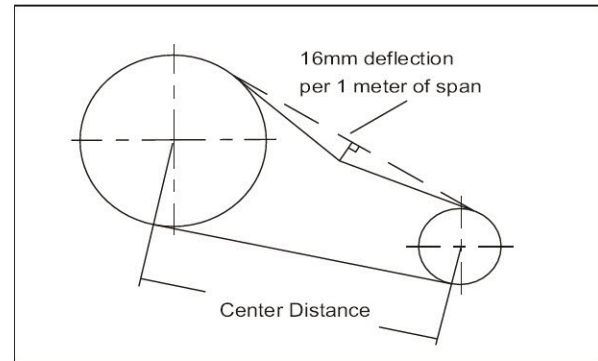
NOTE: Do not use E.P. mineral oils other than those recommended when using a backstop.



Belt Installation and Reducer Application

■ Tensioning Forces

Belt	Force Required to deflect belt 16mm per meter of span	
	Small Pulley Diameter(mm)	Newton(N)
SPZ	56-95	13-20
	100-140	20-25
SPA	80-132	25-35
	140-200	35-45
SPB	112-224	45-65
	236-315	65-85
SPC	224-355	85-115
	375-560	115-150



■ Method of Belt Tensioning

- 1、 Calculate the deflection distance in mm on a basis of 16mm per meter of span. Center distance(m) × 16=Deflection(mm)
- 2、 Use a spring balance and rule measure the force of the belt, if the value falls within the values given, the drive should be satisfactory. Otherwise, use the Torque arm's turnbuckle adjust the tension of the belt.(Note, the Force direction and the belt should be a right angle.)

■ Application

Machine Type	Typical Industries	Application Example
Conveyors	Sand & Gravel Animal Feeds Water Treatment Agriculture Mining Quarrying Baggage Handling Bulk Handling Authorities Post & Parcel Grain Dryers	<ol style="list-style-type: none"> 1、 Head drum drive for screen feeder. 2、 Main drive on an inclined Basalt conveyor. 3、 Ship loading elevator. 4、 Main drive to screw conveyor. 5、 Overland bulk conveyor drives. 6、 Main drive for transporting animal foods. 7、 Airport baggage handling conveyors.
Mixers & Mills	Animal Feeds Food Industry Agriculture Petrochemical Paint Process Industries Agitator Aerators	<ol style="list-style-type: none"> 1、 Biscuit dough mixer. 2、 Main drive to animal feed mill. 3、 Main drive for Asphalt agitator. 4、 Paddle drive on animal feed processing plant.
Other Applications	Cranes & Hoists Winches Tanning & Processing Textile Machinery Laundry Machines Machine tools, shears, etc.	<ol style="list-style-type: none"> 1、 Reversing duty on an industrial washing machine. 2、 Container lifting equipment. 3、 Driven by an air motor on an under water winch system. 4、 Wind turbine drive-used as speed increasing drive to generate electricity.



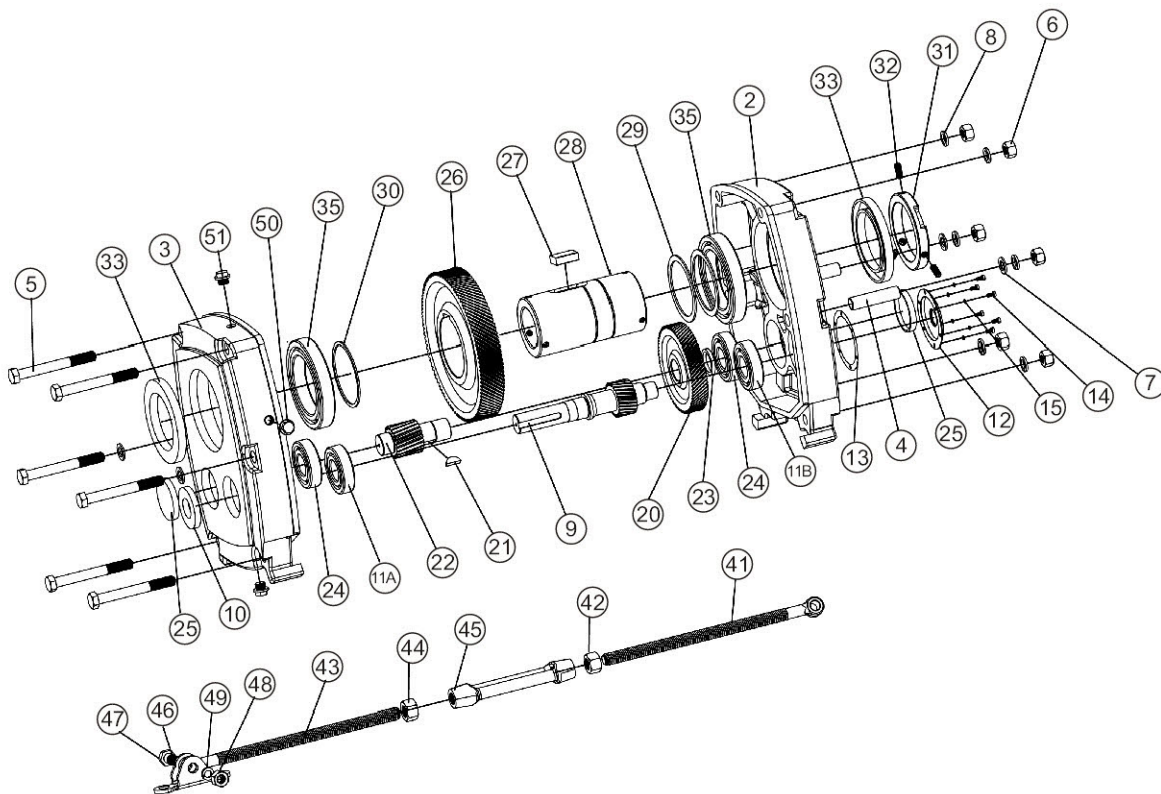
Gearbox Explosion

When ordering parts for reducer, please specify

- 1 Reducer Size Number
- 2 Reducer Ratio
- 3 Reducer Serial Number
- 4 Part Name
- 5 Code Number
- 6 Quantity Required

NO.	Part Name
2	Right hand gear case
3	Left hand gear case
4	Hollow dowel
5	Case bolt
6	Case nut
7	Case plain washer
8	Case lock washer
9	Input shaft & pinion
10	Input shaft oilseal
11A	Input shaft bearing(input side)
11B	Input shaft bearing(output side)
12	Backstop cover
13	Backstop cover gasket
14	Backstop cover screw
15	Backstop cover lock washer
20	1st reduction gear
21	1st reduction gear key
22	Intermediate pinion
23	Intermediate pinion distance piece
24	Intermediate pinion bearing
25	Intermediate pinion cover

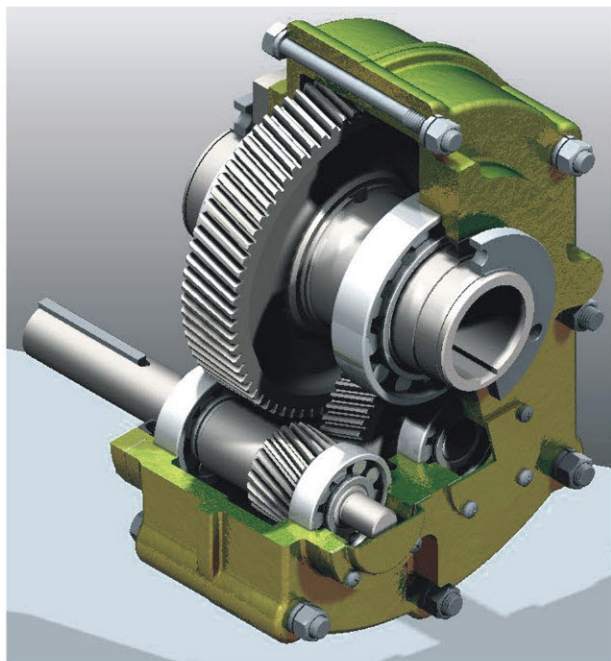
NO.	Part Name
26	2nd reduction gear
27	2nd reduction gear key
28	Output hub
29	Output hub circlip
30	Output hub spacer
31	Output hub collar
32	Collar screw
33	Output hub oilseal
35	Output hub bearing
41	Torque arm rod end
42	Rod end lock nut
43	Torque arm extension
44	Extension lock nut
45	Turn buckle
46	Fulcrum
47	Fulcrum bolt
48	Fulcrum nut
49	Fulcrum lock washer
50	Oil pipe plug
51	Breather plug



Note: Not all the reducer size look like the drawing in this leaflet,Some size reducer may be different,and some spare parts may different.



SMRY Reducer Specification



1. Twin Tapered Output Hub

A tapered bore in both sides of the reducer's output hub snugs up against a matching taper on the outer surface of the bushing. Bushing mounting screws pass through the bushing flange into a mounting collar on the hub. As the screws are tightened, the bushing moves inward, gripping the driven machine's input shaft tightly and evenly around every point on its circumference. It is easy-on, easy-off. All the Output Bushing Bore accord to ANSI standards. Also have ISO standard Straight Output Hub.

2. Precision High Quality Gearing

Computer Designed Helical Gears, Strong Alloy Materials for High Load Capacity, Case Carburized for long life, Ground Profile, Crown tooth Profile, In Conformance with ISO 1328-1997, 98% Efficiency for Per Stage, Smooth Quiet Operation with Several Teeth in Mesh.

3. Maximum Capacity Housing Design

Close Grain Cast Iron Construction, Excellent Vibration Dampening & Shock Resistance Features, Precision Bored and Dowelled to Ensure Accurate In-Line Assembly.

4. Strong Alloy Steel Shafts

Strong Alloy Steel, Hardened, Ground on Journals, Gear Seatings and Extensions, for Maximum Load and Maximum Torsional Loads. Generous Size Shaft Keys for Shock Loading.

5. Use **adapter** for mount the torque arm, increase the strength of the gear case, the torque arm easy-on and easy-off and reliability, controls position of standard torque arm mounting within recommended limits.

6. BackStops

Alternative Parts, anti-run back device, are available on all 15:1 and 25:1 ratio units.

7. Bearings and Oilseals

Bearings are all tapered roll bearings(Except SMRY-2), have long time service time. Oilseals are Double Lipped Garter Spring Type, Ensuring Effective Oil Sealing.

8. Torque Arm Assembly

For Easy Adjustment of the Belt.



Gearbox Selection

The Inch Shaft Mount Reducers are inch in design for America and other Inch dimension countries and have power ratings to ISO standard. Shaft Mount Reducers provide a very convenient method of reducing speed, since it is mounted directly on the driven shaft instead of requiring foundations of its own. It eliminates the use of one, and sometimes two, flexible couplings and external belt take-up arrangements. A torque-arm anchors the reducer and provides quick, easy adjustment of the Wedge Belts by means of its turnbuckle.

The SMRY are manufactured in eight gear case sizes, from size 2 to size 9, maximum power up to 150HP, nominal gear ratios are 15:1 and 25:1. A very wide choice of final driven speeds can be determined by the use of an appropriate input Wedge Belt Drive. The units will normally be oil lubricated, but they are equally suitable for long life synthetic lubricants.

■ When to use Easy Selection

The Easy Selection tables for SMRY Shaft Mount reducers are for electric motor selections up to 150 horsepower with output speeds up to 400 RPM, using AGMA recommended application class numbers. For extreme shock or high energy loads which must be absorbed, as when stalling; for power source other than an electric motor; or for extreme ambient temperatures, or oversized equipment, consult

■ How to Select

Step 1: Determine Class of Service—See table 1 to determine Load Classification for applications under normal conditions. Find the type application and duty cycle that most closely matches your specific application.

Class I Steady load not exceeding Motor HP rating and light shock loads during 10 hours a day. Moderate shock loads are allowable if operation is intermittent.

For Class I applications, the maximum value of starting and momentary peak loads should not exceed $2 \times$ Motor HP rating. If it exceeds this amount it should be divided by 2 and the result used in the selection table instead of the Motor HP rating.



Gearbox Selection

Class II Steady load not exceeding Motor HP rating for over 10 hours a day. Moderate shock loads are allowable during 10 hours a day.

For Class II applications, the maximum value of starting and momentary peak loads should not exceed $2.8 \times$ Motor HP rating. If it exceeds this amount it should be divided by 2.8 and the result used in the selection table instead of the Motor HP rating.

Class III Moderate shock loads for over 10 hours a day. Heavy shock loads are allowable during 10 hours a day.

For Class III applications, the maximum value of starting and momentary peak loads should not exceed $4 \times$ Motor HP rating. If it exceeds this amount it should be divided by 4 and the result used in the selection table instead of the Motor HP rating.

Step 2: Determine Reducer Size— See the Easy Selection Tables, Pages 28 through 30. From Selection Table class I, II or III read the reducer size for the application horsepower and output speed. Note: For applications where fan cooling is unacceptable use the Easy Selection tables with an increased Class number. Where more than one reducer selection is listed, the most economical ratio is generally listed first. See table 8, page 41 for maximum input and output speeds.

Step 3: Compare Hollow Shaft Bore— with the size of the driven shaft. All Taper Bushed Shaft Mount Reducers require bushings. Refer to reducer page 32 table 7 for available bushings. If the driven shaft is larger than the bore of the selected reducer, the shaft must be machined to the proper size, or select a larger reducer. Check driven shaft and key for strength.

Step 4: Check Dimensions— See pages 31 for reducer dimensions, page 41 for reducer weights and actual ratio, ect. See page 43 for reducer mounting positions.

Step 5: Select a Belt Drive Arrangement—From the Belt Drives table, page 33 to 40, select the required sheave ratio for the belt drive. Be careful to select the belt drive so that the sheave mounted on the reducer shaft is not smaller than the minimum sheave diameter shown in Table 11 page 41. Note: Mount the sheave as close as possible to the reducer to minimize the effect of overhung load on the reducer.

Note: Because different bore diameter, bushings must be ordered separately. Backstop also need be ordered separately. Torque arm and adapter are standard part for the reducer, each reducer unit dispatch with them.



Gearbox Selection

■ Example: Easy Selection Method-SMRY Torque-Arm Reducers

A 10 HP 1750 rpm motor is used to drive a uniformly loaded belt conveyor moving sand at 70 rpm, operating 16 hours a day. Head pulley shaft diameter is 2-7/16". And the driven conveyor can not allowed move backwards.

Step 1: Determine Class of Service—From page 26 Table 1, Locate "belt conveyors, uniformly loaded or fed" for over 10 hours per day. This load is classified as a Class II application.

Step 2: Determine Reducer Size—From Table 3-Class II Application, page 29, find the column for 10 HP and read down to 70 rpm. A SMRY425 reducer is the correct selection.

Step 3: Compare Hollow Shaft Bore of SMRY425 with the application driven shaft diameter, page 32, 2-7/16" is the maximum bore available for this size reducer, so it will work in this application. Be sure to check driven shaft and key strength.

Step 4: Check dimensions and Weights-See page 31, for reducer dimensions, page 41 for reducer weights and actual ratio, etc. See page 43 for information on mounting positions.

Step 5: Select a Belt Drive Arrangement—From the Belt Drive table Page 35, read down for 70 rpm, find the V-belt drive ratio is 1.03, sheave diameters of driver is 6.20", the driven is 6.40", belt size is B, belt number is 3. From page 41, the SMRY 425's minimum sheave diameter is 4.60", so the select is correct.

Step 6: The reducer can not move backward, so the backstop assembly must be ordered.

Note: when you need we assembly the backstop on the reducer, please specify the output rotate direction when you order. For example, from the input side, the output hub rotate clockwise.



Application Classification

Table 1 Application Classification and Class Numbers

Application	Class Numbers	
	3 to 10 Hrs per Day	Over 10 Hrs per Day
Agitators(Mixers)		
Pure Liquids	I	II
Liquids and Solids	II	II
Liquids-Variable Density	II	II
Blowers		
Centrifugal	I	II
Lobe	II	II
Vane	II	II
Brewing and Distilling		
Bottling Machinery	I	II
Brew Kettles-Continuous Duty	II	II
Cookers-Continuous Duty	II	II
Mash Tubs-Continuous Duty	II	II
Scale Hopper-Frequent Starts	II	II
Can Filling Machines	I	II
Car Dumpers	III	III
Car Pullers	II	II
Clarifiers	I	II
Classifiers	II	II
Clay Working Machinery		
Brick Press	III	III
Briquette Machine	III	III
Pug Mill	II	II
Compactors	III+	III+
Compressors		
Centrifugal	I	II
Lobe	II	II
Reciprocating, Multi-Cylinder	II	III
Reciprocating, Single-Cylinder	III	III
Bucket, Chain, Flight, Oven and Screw) (Includes Apron, Assembly, Belt,		
Uniformly Loaded or Fed	I	II
Heavy Duty-Not Uniformly Fed	II	II
Severe Duty-Reciprocating or Shaker	III	III
Cranes	III+	III+
Crusher		
Stone or Ore	III	III
Dredges		
Cable Reels	II	II
Conveyors	II	II
Cutter Head Drives	III	III
Pumps	III	III
Screen Drives	III	III

Application	Class Numbers	
	3 to 10 Hrs per Day	Over 10 Hrs per Day
Stackers	II	II
Winches	II	II
Elevators		
Bucket	II	II
Centrifugal Discharge	I	II
Escalators	I	II
Freight	II	II
Gravity Discharge	I	II
Extruders		
General	II	II
Plastics		
Variable Speed Drive	III	III
Fixed Speed Drive	III	III
Rubber		
Continuous Screw Operation	III	III
Intermittent Screw Operation	III	III
Fans		
Centrifugal	I	II
Forced Draft	II	II
Induced Draft	II	II
Industrial & Mine	II	II
Feeders		
Apron	II	II
Belt	II	II
Disc	I	II
Reciprocating	III	III
Screw	II	II
Food Industry		
Cereal Cooker	I	II
Dough Mixer	II	II
Meat Grinders	II	II
Slicers	II	II
Generators and Exciters	II	II
Hammer Mills	II	II
Hoists	III +	III +
Laundry Tumblers	II	II
Laundry Washers	II	II
Lumber Industry		
Bakers		
Spindle Feed	II	II
Main Drive	III	III
Conveyors		

III + Large service factor needed, Please consult Brown Europe Ltd for more information.



Application Classification

Table 1 Application Classification and Class Numbers (continued)

Application	Class Numbers	
	3 to 10 Hrs per Day	Over 10 Hrs per Day
Burner	II	II
Main or Heavy Duty	II	II
Main Log	III	III
Re-saw, Merry-Go-Round	II	II
Slab	III	III
Transfer	II	II
Chains		
Floor	II	II
Green	II	III
Cut-Off Saws		
Chain	II	III
Drag	II	III
Debarking Drums	III	III
Feeds		
Edger	II	II
Gang	III	III
Trimmer	II	II
Log Deck	III	III
Log Hauls-Incline-Well Type	III	III
Log Tuning Devices	III	III
Planer Feed	II	II
Planer Tilting Hoists	II	II
Rolls-Live-off brg.-Roll Cases	III	III
Sorting Table	II	II
Triple Hoist	II	II
Transfers		
Chain	II	III
Craneway	II	III
Tray Drives	II	II
Veneer Lathe Drives	II	II
Metal Mills		
Draw bench Carriage and Main Drive	II	II
Runout Table		
Non-Reversing-Group Drives	II	II
Non-Reversing-Individual Drives	III	III
Reversing Drives	III	III
Slab Pushers	II	II
Shears	III	III
Wire Drawing	II	II
Wire Winding Machine	II	II
Metal Strip Processing Machinery		
Bridles	II	II

Application	Class Numbers	
	3 to 10 Hrs per Day	Over 10 Hrs per Day
Coilers & Uncoilers	I	II
Edge Trimmers	II	II
Flatteners	II	II
Loopers(Accumulators)	I	I
Pinch Rolls	II	II
Scrap Choppers	II	II
Shears	III	III
Slitters	II	II
Mills.Rotary Type		
Ball & Rod		
Spur Ring Gear	III	III
Helical Ring Gear	II	II
Direct Connected	III	III
Cement Kilns	II	II
Dryers & Coolers	II	II
Mixers.Cement	II	II
Paper Mills		
Agitators(Mixers)	II	II
Agitators for Pure Liquors	II	II
Barking Drums	III	III
Barkers-Mechanical	III	III
Beater	II	II
Breaker Stack	II	II
Chipper	III	III
Chip Feeder	II	II
Coating Rolls	II	II
Conveyors		
Chip, Bark, Chemical	II	II
Log(including Slab)	III	III
Couch Rolls	II	II
Cutter	III	III
Cylinder Molds	II	II
Embossor	II	II
Extruder	II	II
Fourdrinier Rolls(includes Lump breaker, dandy roll, wire turning, and return rolls)	II	II
Jordan	II	II
Kiln Drive	II	II
Mt. Hope Roll	II	II
Paper Rolls	II	II
Platter	II	II
Presses-Felt & Suction	II	II

III+ Large service factor needed, Please consult Brown Europe Ltd for more information.



Application Classification

Table 1 Application Classification and Class Numbers (continued)

Application	Class Numbers	
	3 to 10 Hrs per Day	Over 10 Hrs per Day
Pulper	III	III
Pumps-Vacuum	II	II
Reel(Surface Type)	II	II
Screens		
Chip	II	II
Rotary	II	II
Vibrating	III	III
Size Press	II	II
Thickener(AC Motor)	II	II
Thickener(DC Motor)	II	II
Washer(AC Motor)	II	II
Washer(DC Motor)	II	II
Wind and Unwind Stand	I	I
Winders (Surface Type)	II	II
Plastics Industry-Secondary Processing		
Blow Molders	II	II
Coating	II	II
Film	II	II
Pipe	II	II
Pre-Plasticizers	II	II
Rods	II	II
Sheet	II	II
Tubing	II	II
Pullers-Barge Haul	II	II
Pumps		
Centrifugal	I	II
Proportioning	II	II
Reciprocating		
Single Acting, 3 or more cylinders	II	II
Double Acting, 2 or more cylinders	II	II
Rotary		
Gear Type	I	II
Lobe	I	II
Vane	I	II
Rubber and Plastics Industry		
Intensive Internal Mixers		
Batch Mixers	III	III
Continuous Mixers	II	II
Mixing Mill		
2 smooth rolls	II	II
2 corrugated rolls	III	III
Batch Drop Mill-2 smooth rolls	II	II

Application	Class Numbers	
	3 to 10 Hrs per Day	Over 10 Hrs per Day
Cracker Warmer-2 roll, 1 corrugated roll	III	III
Cracker-2 corrugated rolls	III	III
Holding, Feed & Blend Mill-2 rolls	II	II
Refiners-2 rolls	II	II
Calenders	II	II
Sand Muller	II	II
Sewage Disposal Equipment		
Bar Screens	II	II
Chemical Feeders	II	II
Dewatering Screens	II	II
Scum Breakers	II	II
Slow or Rapid Mixers	II	II
Sludge Collectors	II	II
Thickener	II	II
Vacuum Filters	II	II
Screens		
Air Washing	I	II
Rotary-Stone or Gravel	II	II
Traveling Water Intake	I	I
Screw Conveyors		
Uniformly Loaded or Fed	I	II
Heavy Duty	II	II
Sugar Industry		
Beet Slicer	III	III
Cane Knives	II	II
Crushers	II	II
Mills(low speed end)	III	III
Textile Industry		
Batches	II	II
Calenders	II	II
Cards	II	II
Dry Cans	II	II
Dyeing Machinery	II	II
Looms	II	II
Mangles	II	II
Nappers	II	II
Pads	II	II
Stashers	II	II
Soapers	II	II
Spinners	II	II
Tenter Frames	II	II
Washers	II	II
Winders	II	II

III+ Large service factor needed, Please consult Brown Europe Ltd for more information.



Power Ratings

Table 2 Class I Selection Table for SMRY Reducers

(HP)	Output rpm	Reducer selection
1/2	4~6	225
3/4	4~5	325
	6~10	225
1	4~5	425
	6~7	325
	8~15	225
1-1/2	4	525
	5~7	425
	8~12	325
	13~23	225
2	4~6	525
	7~10	425
	11~17	325
	18~32	225 215
3	4~5	625
	6~10	525
	11~15	425
	16~26	325
	27~51	225 215
5	5~6	725
	7~9	625
	10~17	525
	18~26	425 415
	27~46	325 315
	47~70	225 215
7-1/2	71~85	215 225
	86~92	215
	4~6	825
	7~9	725
	10~15	625
	16~26	525
	27~40	425 415
	41~70	325 315
10	71~74	315 325
	75~85	215 225
	86~140	215
	5	926
	6~8	825
	9~12	725
	13~20	625
	21~36	525 515
	37~56	425 415
	57~70	325 315
15	71~85	315 325
	86~103	315
	104~140	215
	7~8	926
	9~13	825
20	14~19	725
	20~32	625 615
	33~56	525 515

(HP)	Output rpm	Reducer selection
15	57~70	425 415
	70~85	415 425
	86~93	415
	94~140	315
20	9~12	926
	13~18	825
	19~26	725 715
	27~45	625 615
	46~70	525 515
	71~78	515 525
	79~85	415 425
	86~115	415
25	116~140	415※
	11~15	926
	16~23	825
	24~33	725 715
	34~59	625 615
	60~70	525※ 515※
	71~80	515※ 525※
	81~101	515※
30	102~140	415※
	14~19	926
	20~28	825 815
	29~41	725 715
	42~70	625 615
	71~75	615 625
	76~125	515※
40	19~25	926 915
	26~38	825 815
	39~57	725 715
	58~70	625 615
	71~81	615※ 625※
	82~114	615※
	115~125	515※
50	23~32	926 915
	33~49	825 815
	50~70	725 715
	71~74	715 725
	75~125	615※
60	28~39	926 915
	40~60	825 815
	61~70	725※ 715※
	71~120	715※
75	35~50	926 915
	51~70	825 815
	71~78	815※
	79~120	715※
100	47~69	926※ 915※
	70~120	815※
125	60~70	915※ 926※
	71~90	915※
	91~123	815※
150	81~120	915

※ Fan cooling required



Power Ratings

Table 3 Class II Selection Table for SMRY Reducers

(HP)	Output rpm	Reducer selection
1/3	4~6	225
1/2	4~5	325
	6~9	225
3/4	4~5	425
	6~8	325
	9~16	225
1	5~7	425
	8~11	325
	12~22	225
1-1/2	5~6	525
	7~11	425
	12~18	325
	19~34	225 215
2	4~5	625
	6~9	525
	10~14	425
	15~24	325 315
	25~47	225 215
3	4~5	725
	6~8	625
	9~14	525
	15~22	425 415
	23~38	325 315
	39~70	225 215
	71~75	215 225
5	4~6	825
	7~8	725
	9~14	625
	15~24	525
	25~37	425 415
	38~69	325 315
	70~85	215 225
	86~136	215
7-1/2	5	926
	6~9	825
	10~13	725
	14~21	625
	22~38	525 515
	39~59	425 415
	60~70	325 315
	71~85	325 315
	86~110	315
111~140	215	
10	6~7	926
	8~12	825
	13~18	725
	19~29	625 615
	30~52	525 515
	53~70	425 415
	71~84	415 425
	85~140	315

(HP)	Output rpm	Reducer selection
15	10~12	926
	13~19	825
	20~27	725
	28~47	625 615
	48~70	525 515
	71~82	515 525
20	83~140	415
	13~17	926
	18~26	825
	27~38	725 715
	39~68	625 615
	69~80	515 525
	81~89	515
25	90~117	515※
	118~125	415※
	16~22	926
	23~33	825 815
	34~49	725 715
	50~80	615 625
30	81~94	615
	95~125	515※
	20~27	926 915
	28~41	825 815
	42~60	725 715
	61~76	625 615
40	77~89	615
	90~125	615※
	26~36	926 915
	37~56	825 815
	57~75	725 715
50	76~88	715
	89~120	615※
	33~46	926 915
	47~70	825 815
	71~72	815 825
60	73~120	715※
	40~56	926 915
	57~70	825 815
	71~75	815 825
	76~89	815
75	90~120	715※
	50~73	926 915
	74~75	815 825
	76~120	815※
100	68~75	915※ 926※
	76~103	915※
	104~120	815※
125	86~120	915※

※ Fan cooling required



Power Ratings

Table 4 ClassIII Selection Table for SMRY Reducers

(HP)	Output rpm	Reducer selection
1 / 4	4~6	225
1 / 3	5~9	225
1 / 2	4~5	425
	6~7	325
	8~15	225
3 / 4	4	525
	5~7	425
	8~12	325
	13~23	225
1	4~6	525
	7~10	425
	11~17	325
	18~32	225
1-1 / 2	4~5	625
	6~10	525
	11~15	425
	16~26	325
	27~51	225 215
2	5~7	625
	8~13	525
	14~21	425
	22~36	325 315
	37~71	225 215
3	4~5	825
	6~7	725
	8~12	625
	13~20	525
	21~32	425 415
	33~57	325 315
	58~70	225 215
	71~85	215 225
86~113	215	
5	5	926
	6~8	825
	9~12	725
	13~20	625
	21~36	525 515
	37~56	425 415
	57~70	325 315
	71~85	315 325
	86~103	315
104~140	215	
7-1 / 2	7~8	926
	9~13	825
	14~19	725
	20~32	625 615
	33~56	525 515

(HP)	Output rpm	Reducer selection
7-1 / 2	57~70	425 415
	71~85	415 425
	86~93	415
	94~140	315
10	9~12	926
	13~18	825
	19~26	725 715
	27~45	625 615
	46~70	525 515
	71~78	515 525
	79~141	415
15	14~19	926
	20~28	825 815
	29~41	725 715
	42~70	625 615
	71~75	615 625
20	76~125	515
	19~25	926 915
	26~38	825 815
	39~57	725 715
	58~70	625 615
	71~114	615
25	115~125	515※
	23~32	926 915
	33~49	825 815
	50~70	725 715
	71~74	715 725
	75~104	615
30	105~125	615※
	28~39	926 915
	40~60	825 815
	61~70	725 715
	71~98	715
40	99~125	615
	38~53	926 915
	54~70	825 815
	71~84	815
	85~89	715
50	90~120	715※
	47~69	926 915
	70~75	815 825
	76~110	815
60	111~120	715※
	57~75	926 915
	76~85	915
75	86~115	815
	73~75	915※ 926※
	76~120	915※

※ Fan cooling required



Dimensions

SMRY Shaft Mount Reducer Dimensions

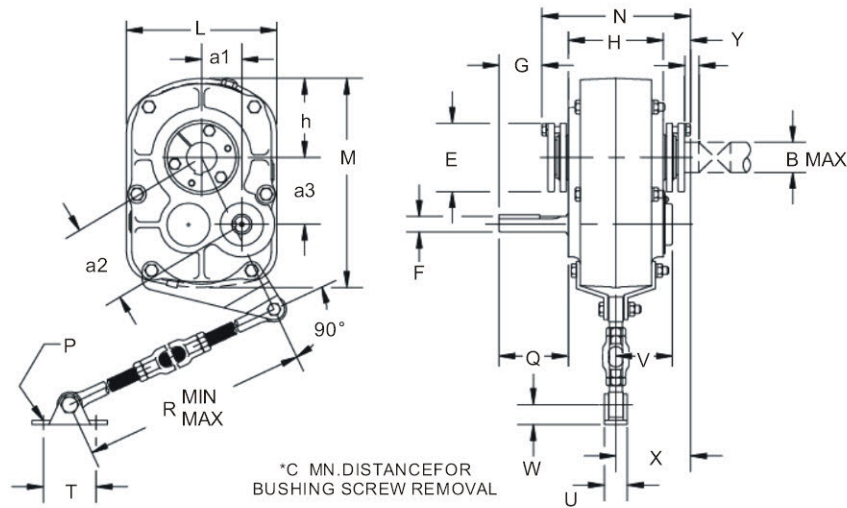


Table 5 SMRY Reducer Dimensions

inch

型号 Size	L	N	F	Bmax	C	E	W	X	Q	H	a1	a3	R _{Min} R _{max}	P
	M		输入轴键槽 Input shaft keyway			G	U	V	Y		a2	h		T
SMRY2	8.38	7.32	1.13	1-15/16"	1.25	4.06	1.06	3.68	3.59	4.56	2.14	3.75	26.94	0.44
	11.41		0.25*0.13*2.50			2.22	1.25	2.89	1.40		4.32	4.09		32.94
SMRY3	9.25	9.22	1.25	2-3/16"	1.5	4.38	1.06	4.52	4.34	5.63	2.33	4.17	26.94	0.44
	12.88		0.25*0.13*2.88			2.34	1.25	3.30	1.59		4.78	4.84		32.94
SMRY4	10.38	9.98	1.44	2-7/16"	1.75	4.81	1.75	4.79	5.57	6.13	2.76	4.79	29.19	0.50
	15.13		0.38*0.19*4.06			3.44	1.44	3.41	1.72		5.53	5.50		35.19
SMRY5	13.13	10.52	1.94	2-15/16"	1.81	5.63	1.75	5.05	5.74	6.31	3.04	5.67	29.19	0.50
	18.31		0.5*0.25*4.50			3.44	1.44	4.45	1.91		6.43	6.56		35.19
SMRY6	15.13	11.53	2.19	3-7/16"	1.81	6.13	2.00	5.73	6.08	6.88	4.09	6.73	29.19	0.63
	21.31		0.5*0.25*4.50			3.73	2.75	4.57	2.30		7.88	7.56		35.19
SMRY7	18.75	12.85	2.44	3-15/16"	2.06	7.25	2.00	6.38	6.35	7.75	5.11	8.30	29.44	0.63
	25.94		0.63*0.31*4.75			3.75	2.75	4.69	2.50		9.74	9.38		35.44
SMRY8	20.25	14.03	2.44	4-7/16"	2.06	7.75	3.13	7.04	7.11	8.37	6.03	9.50	30.00	0.75
	28.25		0.63*0.31*5.38			4.31	4.00	5.85	2.86		11.25	10.13		36.00
SMRY9	22.63	14.12	2.44	4-15/16"	2.44	8.75	3.13	7.04	9.65	8.12	6.59	10.81	30.00	0.75
	31.69		0.63*0.31*7.75			6.63	4.00	5.66	2.98		12.66	11.31		36.00

SMRY Shaft Mount Reducer also can be provided for metric input shaft and output straight bore hub accord to ISO standards.

(Metric input Shaft and Output Straight Bore Hub)

mm

Size	SMRY2	SMRY3	SMRY4	SMRY5	SMRY6	SMRY7	SMRY8	SMRY9
Input Shaft F(h6)	28	30	35	48	55	60	60	60
Output Hub bore B(F7)	45	55	60	75	85	100	110	125



Dimensions

Output Bushing

Note, Taper Bushed Reducers require bushing for all bore sizes.

Table 7 SMRY Reducer Output Bushings

Inch

SIZE	Bore Size	Shaft Keyseat Required	Weight (lb.)	SIZE	Bore Size	Shaft Keyseat Required	Weight (lb.)	
SMRY 215&225	1-1/8 ♂	1/4×1/8×6-11/16	3.8	SMRY 515&525	2 ♂	1/2×1/4×9-3/8	10.2	
	1-3/16 ♂	1/4×1/8×6-11/16	3.6		2-3/16 ♂	1/2×1/4×9-3/8	10	
	1-1/4 ♂	1/4×1/8×6-11/16	3.6		2-1/4 ♂	1/2×1/4×9-3/8	9.2	
	1-5/16 ♂	5/16×5/32×6-11/16	3.6		2-7/16 ♂	5/8×5/16×9-3/8	8.5	
	1-3/8 ♂	5/16×5/32×6-11/16	3.6		2-1/2 ♂	5/8×5/16×9-3/8	8.5	
	1-7/16 ♂	3/8×3/16×6-11/16	4		2-11/16	5/8×5/16×9-3/8	7.9	
	1-1/2 ♂	3/8×3/16×6-11/16	3.8		2-15/16	3/4×3/8×9-3/8	7.8	
	1-5/8 ♂	3/8×3/16×6-11/16	3.2		SMRY 615&625	2-3/16 ♂	1/2×1/4×10-11/16	15.3
	1-11/16	3/8×3/16×6-11/16	3.4			2-1/4 ♂	1/2×1/4×10-11/16	14.9
	1-3/4	3/8×3/16×6-11/16	3.3			2-7/16 ♂	5/8×5/16×10-11/16	14.4
	1-15/16	1/2×1/4×6-11/16	2.9			2-1/2 ♂	5/8×5/16×10-11/16	14
	SMRY 315&325	1-5/16 ♂	5/16×5/32×8-1/16			5.8	2-11/16 ♂	5/8×5/16×10-11/16
1-3/8 ♂		5/16×5/32×8-1/16	5.8	2-7/8 ♂		3/4×3/8×10-11/16	12.2	
1-7/16 ♂		3/8×3/16×8-1/16	5.6	2-15/16 ♂		3/4×3/8×10-11/16	11.6	
1-1/2 ♂		3/8×3/16×8-1/16	5.4	3 ♂		3/4×3/8×10-11/16	11.3	
1-5/8 ♂		3/8×3/16×8-1/16	4.8	3-7/16		7/8×7/16×10-11/16	9	
1-11/16 ♂		3/8×3/16×8-1/16	4.8	SMRY 715&725		2-7/16 ♂	5/8×5/16×11-27/32	24.2
1-3/4 ♂		3/8×3/16×8-1/16	4.8			2-1/2 ♂	5/8×5/16×11-27/32	23.3
1-7/8 ♂		1/2×1/4×8-1/16	4.3			2-11/16 ♂	5/8×5/16×11-27/32	23
1-15/16		1/2×1/4×8-1/16	4.4		2-13/16 ♂	3/4×3/8×11-27/32	22.8	
2		1/2×1/4×8-1/16	4.1		2-7/8 ♂	3/4×3/8×11-27/32	21.5	
2-3/16		1/2×1/4×8-1/16	3.7		2-15/16 ♂	3/4×3/8×11-27/32	21.3	
SMRY 415&425		1-7/16 ♂	3/8×3/16×9-1/32		8.8	3 ♂	3/4×3/8×11-27/32	20.1
	1-1/2 ♂	3/8×3/16×9-1/32	8.3		3-3/16 ♂	3/4×3/8×11-27/32	19.2	
	1-5/8 ♂	3/8×3/16×9-1/32	8.3		3-7/16	7/8×7/16×11-27/32	16.9	
	1-11/16 ♂	3/8×3/16×9-1/32	8.3		3-15/16	1×1/2×11-27/32	13.8	
	1-3/4 ♂	3/8×3/16×9-1/32	8		SMRY 815&825	2-15/16 ♂	3/4×3/8×13-1/16	29
	1-7/8 ♂	1/2×1/4×9-1/32	8			3-3/16 ♂	3/4×3/8×13-1/16	25.8
	1-15/16 ♂	1/2×1/4×9-1/32	7.4	3-7/16 ♂		7/8×7/16×13-1/16	25	
	2 ♂	1/2×1/4×9-1/32	7.1	3-15/16		1×1/2×13-1/16	20	
	2-1/8 ♂	1/2×1/4×9-1/32	7	4-3/16		1×1/2×13-1/16	17	
	2-3/16 ♂	1/2×1/4×9-1/32	6.7	4-7/16		1×1/2×13-1/16	15	
	2-1/4 ♂	1/2×1/4×9-1/32	6.3	SMRY 915&926		3-7/16 ♂	7/8×7/16×12-15/16	36
	2-7/16	5/8×5/16×9-1/32	5.8			3-15/16 ♂	1×1/2×12-15/16	32.4
SMRY 515&525	1-7/8 ♂	1/2×1/4×9-3/8	10.3			4-7/16	1×1/2×12-15/16	27
	1-15/16 ♂	1/2×1/4×9-3/8	10.3			4-15/16	1-1/4×5/8×12-15/16	22

Note: All the above bushing are standard for choice, when order the reducer, please determine the output bushing's bore diameter.

♀ Shaft Key also furnished. ♂ Check the driven shaft and key for strength.

SMRY Inch Shaft Mount Reducer



Engineering/Technical

Table 8 -Maximum Input Speeds, Driven Speeds,Actual Ratio and weight for SMRY Reducers

Size	Nominal Ratio 15:1			Nominal Ratio 25:1			Lbs.
	Actual Ratio	Maximum Input rpm	Maximum Output rpm	Actual Ratio	Maximum Input rpm	Maximum Output rpm	
SMRY-2	14.04	1974	140	23.37	1994	85	58
SMRY-3	14.87	2083	140	24.75	2100	85	98
SMRY-4	15.13	2118	140	24.38	2072	85	139
SMRY-5	15.4	1925	125	25.56	2044	80	207
SMRY-6	15.34	1916	125	25.14	2010	80	285
SMRY-7	15.23	1827	120	24.84	1863	75	462
SMRY-8	15.08	1809	120	24.62	1847	75	633
SMRY-9	15.12	1814	120	25.66	1925	75	760

Table 9-SMRY Reducer's Output Shaft Overhung Load Ratings

Size	Nominal Ratio	Shaft Size	Overhung Load(Lbs.) at Various RPM's										
			10	20	30	50	80	100	120	140	160	180	200
SMRY-2	15, 25	1-7/16	2000	1510	1270	1010	840	820	720	720	710	710	700
		1-15/16	1750	1320	1110	890	730	710	630	630	620	620	610
SMRY-3	15, 25	1-15/16	5400	4250	3680	3050	2620	2440	2310	2210	2110	2040	1980
		2-3/16	5240	4120	3570	2960	2540	2370	2240	2140	2050	1980	1920
SMRY-4	15, 25	2-3/16	6520	5180	4510	3800	3230	3000	2830	2710	2600	2510	2430
		2-7/16	6360	5060	4410	3710	3160	2930	2770	2640	2530	2450	2370
SMRY-5	15, 25	2-7/16	7460	5860	5080	4280	3690	3450	3270	3110	2980	2880	2790
		2-15/16	7060	5540	4800	4040	3490	3260	3090	2940	2820	2720	2640
SMRY-6	15, 25	2-15/16	9100	7100	6100	5000	4100	4050	3700	3550	3400	3300	3200
		3-7/16	8200	6400	5500	4500	3700	3650	3400	3300	3250	3200	3150
SMRY-7	15, 25	3-7/16	11400	9500	7300	5950	4750	5050	4500	4300	4250	4200	4150

Table 10-NEMAMotor Information (1750rpm)

HorsePower	NEMA Motor Frame	Shaft Diameter	Minimum Sheave Diameter
1	143T	7/8	2.2
1-1/2	145T	7/8	2.4
2	145T	7/8	2.4
3	182T	1-1/8	2.4
5	184T	1-1/8	3.0
7-1/2	213T	1-3/8	3.0
10	215T	1-3/8	3.8
15	254T	1-5/8	4.4
20	256T	1-5/8	4.4
25	284T	1-7/8	4.4
30	286T	1-7/8	5.2
40	324T	2-1/8	6.0
50	326T	2-1/8	6.8
60	364T	2-3/8	7.4
75	365T	2-3/8	8.6
100	405T	2-7/8	8.6
125	444T	3-3/8	10.5
150	445T	3-3/8	10.5
200	447T	3-3/8	13.2

Table 11-Minimum Sheave Diameters for SMRY Reducers

Reducer Size	Shaft Diameter	Nominal Ratio	
		15:1	25:1
SMRY-2	1-1/8	3.0	3.0
SMRY-3	1-1/4	4.0	4.0
SMRY-4	1-7/16	4.6	4.6
SMRY-5	1-15/16	5.4	5.4
SMRY-6	2-3/16	6.2	6.2
SMRY-7	2-7/16	6.2	6.2
SMRY-8	2-7/16	6.2	6.2
SMRY-9	2-7/16	8.0	8.0





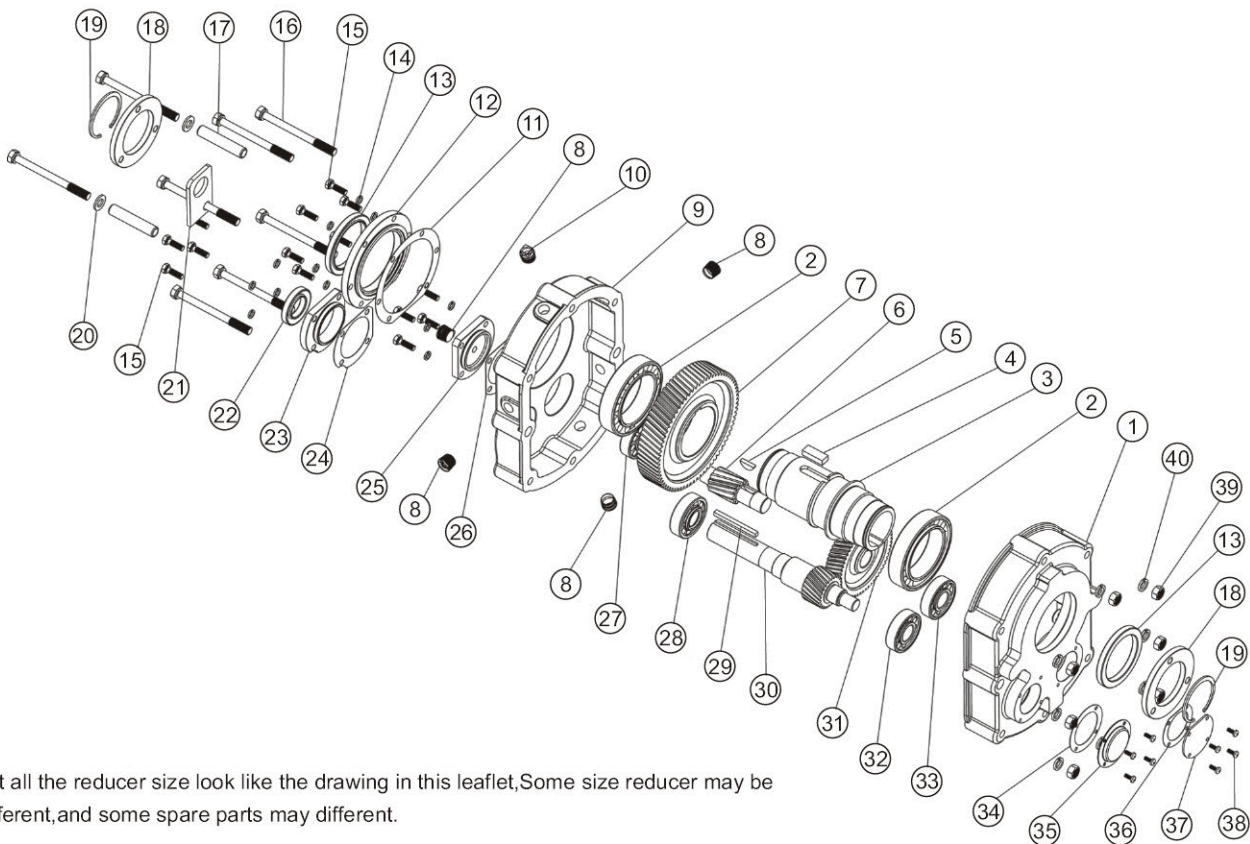
Gearbox Explosion

When ordering parts for reducer, please specify

- 1 Reducer Size Number
- 2 Reducer Ratio
- 3 Reducer Serial Number
- 4 Part Name
- 5 Code Number
- 6 Quantity Required

NO.	Part Name
1	Right hand gear case
2	Output hub bearing
3	Output hub
4	2nd reduction gear key
5	1st reduction gear key
6	Intermediate pinion
7	2nd reduction gear
8	Oil pipe plug
9	Left hand gear case
10	Breather plug
11	Output hub bearing cover gasket
12	Output hub bearing cover
13	Output hub oilseal
14	Cover lock washer
15	Cover bolt
16	Case bolt
17	Hollow dowel
18	Output hub collar
19	Output hub circlip
20	Case plain washer
21	Lifting eye

NO.	Part Name
22	Input shaft oilseal
23	Input shaft bearing cover
24	Bearing cover gasket
25	Intermediate bearing cover
26	Bearing cover gasket
27	Intermediate pinion bearing(input side)
28	Input shaft bearing(input side)
29	Input shaft square key
30	Input shaft & pinion
31	1st reduction gear
32	Input shaft bearing(output side)
33	Intermediate pinion bearing(output side)
34	Backstop cover gasket
35	Backstop cover
36	Intermediate cover gasket
37	Intermediate pinion cover
38	Cross recessed screw
39	Case nut
40	Case lock washer
41	Adaptor for torque arm (Not shown)
42	Torque arm (Not shown)



Note: Not all the reducer size look like the drawing in this leaflet, Some size reducer may be different, and some spare parts may differ.



Installation

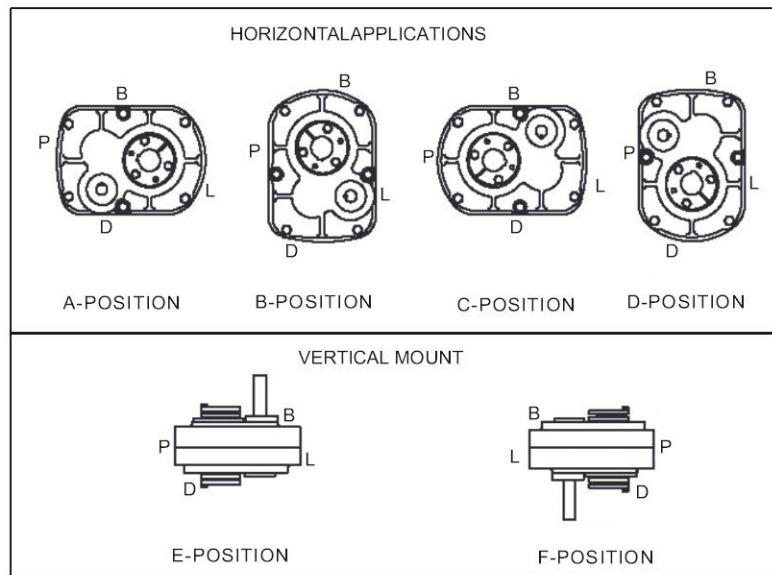
Gearbox Installation

Satisfactory performance depends on proper installation, lubrication and maintenance. Therefore it is important that the instructions in this manual, follow carefully.

1. Use eyebolts or lifting lugs to lift reducer.
2. Determine the running positions of the reducer.(See Fig.7)
Note that the reducer supplied with 4 plugs around the sides. These plugs must be arranged relative to the running positions as follows: the bottom one is drain plug, please replace this plug with a magnetic plug. Throw away the tape that covers the filter plug in shipment and install it in topmost hole. Of 3 remaining plugs on the sides of the reducer, the lowest one is the minimum oil level plug.

The running position of the reducer is not limited to the six positions shown in Fig.1. However, if running position is over 20° in position "B" & "D" or 5° in position "A" or "C" , either way from sketches, the oil level plug cannot be used safely to check the oil level, unless during the checking, the torque arm is disconnected and the reducer is swung to within 20° for position "A" & "C" or 5° for position "B" & "D" of the positions shown in Fig.1. Because of the many possible positions of the reducer, it may be necessary or desirable to make special adaptations using the lubrication filling holes furnished along with other standard pipe fittings, stand pipes and oil level gauges as required.

Fig.1 – Mounting Positions



B-BREATHER D-DRAIN L-LEVEL P-PLUG

Note: Below 15 rpm output speed, oil level must be adjusted to reach the highest oil level plug (P).



Installation

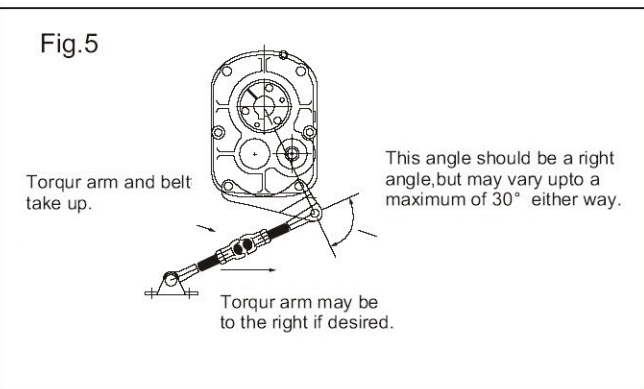
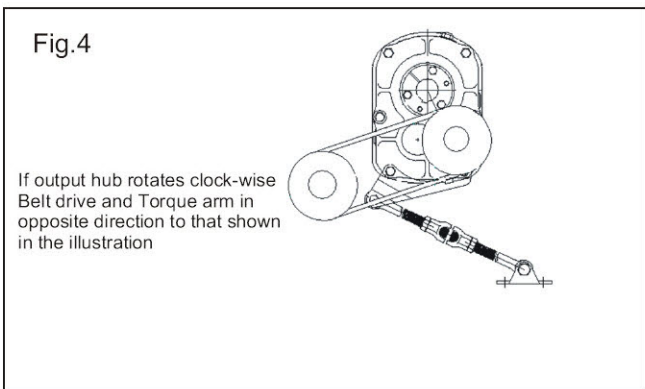
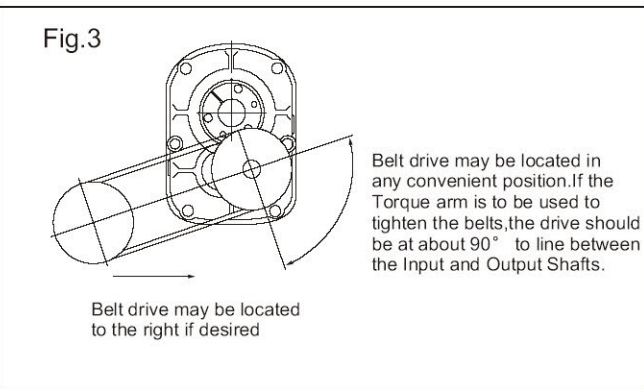
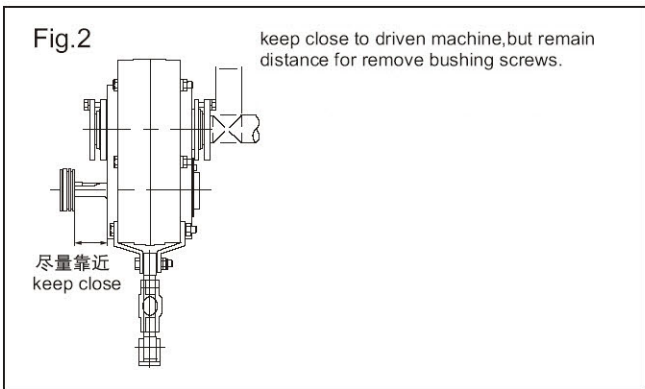
3、 Mount reducer on driven shaft as follows:

To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.

(1)、 Install pulley on gearbox input shaft as close to the reducer as possible, and mount reducer on driven shaft as close to bearing as practical(remain minimum distance for remove bushing screws、 See Fig.2) . Failure to do this will cause excess loads in the input shaft bearings and output bearings and could cause their premature failure.

(2)、 Install motor and wedge belt drive with the belt pull at approximately 90° to the center line between driven and input shafts(See Fig.3) . This will permit tensioning of the wedge belt drive with the torque arm which should preferably be in tension. If output hub runs anti-clockwise, torque arm should be positioned to the right(See Fig.4).

(3)、 Install torque-arm fulcrum on a rigid support so that the torque-arm will be at approximately right angles to the center line through the driven shaft and the torque arm case bolt(See Fig.5). Make sure there is sufficient take up in the tumbuckle for belt tension adjustment.





Lubrication

SMRY LUBRICATION

IMPORTANT: Because Shaft Mounted Reducer is dispatched without oil. It is necessary to fill the proper amount of oil before running. Use a high-grade petroleum base rust and oxidation inhibited (R&O) gear oil. Follow instructions on reducer warning tags, and in the installation manual.

After the first 100 hours running, drain reducer and flush with kerosene, clean the drain plug and refill to proper level with new lubricant. Under average industrial operating conditions, the lubricant should be changed every 2500 hours of operating or every 6 months.

CAUTION: Extreme pressure (EP) lubricants are not recommend for average operating conditions. Failure to observe these precautions could result in bodily injury.

CAUTION: Too much oil will cause overheating and too little will result in gear failure. Check oil level regularly. Failure to observe this precaution could result in bodily injury.

Under extreme operating conditions, such as rapid rise and fall of temperature, dust, dirt, chemical particles, chemical fumes, or oil sump temperatures above 200° F, the oil should be changed every 1 to 3 months, depending on severity of conditions.

CAUTION: Do not use EP oils containing slippery additives such as graphite or molybdenum disulfide in the reducer when backstop is used. These additives will destroy sprag action.

SMRY Inch Shaft Mount Reducer

Table 12-OIL QUANTITIES (Approximate Capacity)

Quarts

Mounting Position	SIZE							
	SMRY-2	SMRY-3	SMRY-4	SMRY-5	SMRY-6	SMRY-7	SMRY-8	SMRY-9
A	0.875	1.5	1.875	3.25	4.25	6.5	8.5	13
B	1	1.5	2.25	4	5	8	11	13
C	0.625	0.75	1.25	3.25	4.25	7.25	10.5	12.5
D	1	2.25	1.75	4	5	9.25	8.5	14.25
E	1.625	2.625	3.375	7	8.625	15.375	19.125	25.375
F	1.75	3	4.25	8.625	9.125	16.375	19.125	25.375

Note: Mounting Position refer to Figure 1 on page 2.

If reducer position is to vary from those show in Figure 1, either more or less oil may be required, consult supplier.

If output is less than 15rpm, the oil level must be adjusted to reach the highest oil level plug (P).

If the mounting position is "B" or "D" and backstop is used, consult supplier for proper oil level.



Lubrication

Table 13-MINERAL OIL(SMRY-2 to SMRY-9)

	Environment Temperature °C	15:1 and 25:1 RATIO GEARBOXES		
		0-20 RPM	21-50RPM	51-120RPM
ISO Viscosity Grade	-10°C to +5°C	150	150	100
	6°C to 25°C	680	460	320
	26°C to 40°C	800	800	460

Table 14-MANUFACTURES AND TYPES

B.P. ENERGOL GR-XP	CASTROL ALPHA ZN OR SP	MOBIL MOBILGEAR OIL	SHELL OMALA	TEXACO MEROPA	DARMEX 9140 NMNND	SUITABLE FOR ALL AMBIENT TEMPERATURES AND ALL INPUT SPEEDS
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NOTE: Do not use E.P. mineral oils other than those recommended when using a backstop



Other Products







	A	B	C	D	E	F		
1								
2								
3								
4								
	G	H	I	J	K	L	M	N
5								
	O	P	Q	R	S	T		
6								
7								
8								



Other Products

Helical gear reducer

Aluminum casing reducer





FR..DT/DV.. 	FR..LS(M).. 	BWD 	BWED 	BLD 	BLED 
--	--	--	---	--	---

Automatic gate opener

FC220 	FCYK 	FC220B 	FC220Z 	FC220P 	FC220DC 
--	---	---	--	---	--

Screw actuator

Flexible coupling

SWL- I 	SWL- II 	FCL 	FL 
--	---	---	--

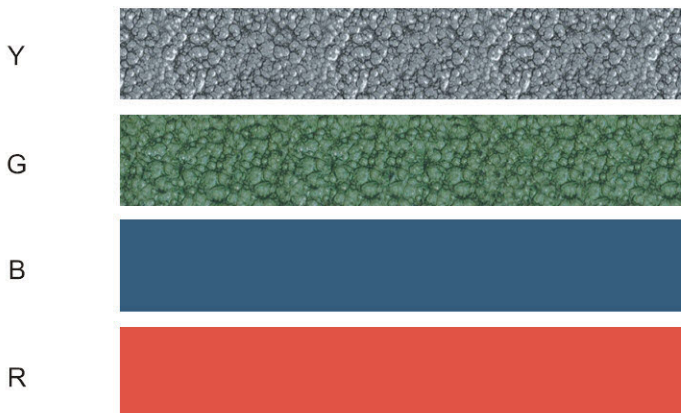
Valve open-shut reducer

EPS Reducer

FCWGO 	FCWG 	EPS 
--	---	--

Standard Color Of Products

color



Due to printing limitation the color do not match the actual products exactly



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