SMR DRIVE

CYCLO

0401/SR01/2003

Company Profile

In a span of twenty-two years we have grown to be the leader in POWER TRANSMISSION PRODUCTS of various types in India. We have supplied more than 55,000 gearboxes of cycloidal type and over 35,000 of planetary type alongwith shaft-mounted gearbox. We also exported more than 5000 gear boxes in last six years. We also manufacture torque limiters, winches, track drives, slew gear boxes, pump drives and custom built gear boxes to the specific requirement. Products are manufactured with strict adherence to highest quality standards, our product range guarantees precise, and trouble free performance for years together. A true testimony to the top quality of our products has been their wide acceptance.

Our manufacturing unit is situated at Satara, 250 Kms. southeast of Mumbai and is equipped with hi-tech, state-of-the-art machines and qualified well-trained manpower.

Design, Research and Development is our strength. Continuous research is on, to incorporate innovative design features, so as to offer a best possible solution to customer's power transmission requirements.

We manufacture and supply power transmission products for last twenty-two years, and are used successfully in a wide range of industries all over the India and exported to developed countries. The power transmission products are designed and manufactured with own technology and practical experience of highly qualified technocrats.

The high quality components manufactured with the help of sophisticated machinery are indispensable both for trouble free operation and splitting of power transmission through multiple meshing. The multiple meshing allows power transmission through several paths and ultimately compact design. Our design experiences combined with extensive computer facility enable us to offer optimum solutions to any required drive problem in short time.

We export to:

- **Canada**
- **Germany**
- **Italy**
- **France**
- **Norway**
- **Middle East**
- **England**
- **United States**
- **Australia**
- **Newzeland**
- **Nether land**
- **Sweden**

We received quality certificate of ISO-9001 from DNV on 6th April 2001 and valid till date.

DNV
Accredited by the RvA
ISO-9001 REGISTERED FIRM
DNV Certification B.V., THE NETHERLANDS

Customer satisfaction is our motivation and strength.

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Shaft Mounted Reducer (SMR)

Cyclo Shaft Mounted Speed Reducers are the most convenient method of reducing speed. SMR can be directly mounted on the drive shaft of the equipment to be driven. The direct mounting principle assures correct alignment and reduces foundation, couplings, etc. A torque-arm anchors the reducers and provides quick, easy adjustment of the wedge belts by means of its turnbuckle. SMR is manufactured in twelve different sizes, and the Model No. is specified with respect to its rated torque capacity in Kg-m. The reduction ratios available are 5:1, 13:1 & 20:1. A very wide choice of output speeds can be determined by the use of an appropriate input belt drive.

Material Construction - The SMR have distinct design and manufacturing featuring giving long-life performance.

Gears : The helical gears are manufactured from high alloy steel and heat treated for case carburising or nitriding to achieve the optimum strength and wear resistance. Exacting quality standards throughout the manufacturing ensures the maximum working life.

Input /Output Shafts : Shafts are manufactured from high alloy steel and heat treated to achieve maximum strength to transmit power and absorb high impact load. Hollow Output Shafts having through keyway are manufactured and confirms to Indian Standards and Input shaft is integral part of pinion gear

Casings/Housing: Casing made from close grain cast iron accurately machined to ensure interchangeability and. proper alignment of the gears and shaft.

Torque-Arm Mounting : Two positions are provided as per direction of rotation of Output Shaft for the mounting of torque-arm to have an advantage of universal mounting.

Bought out parts: All standard parts such as bearings, seals hardware are procured directly from reputed manufacturers for genuineness and cost effectiveness.

Thread Locking System

Shaft mounted speed reducer can now be secured to the driven shaft by a unique bush locking system which overcomes the difficulties which can be experienced with other methods of mounting, particularly in corrosive environments. The principle of using locked tapers to secure power transmission components has been established for many years. The Thread Lock system is based on the well known locking capabilities of conventional taper bushes with one very significant difference. The thread lock bush has a series of short taper surfaces in the form of continuous helix.

Assembly

After the bush is screwed into the hub the reducer can be conveniently positioned on the driven shaft. Locking is effected by sequentially tightening the screws which draws the bush axially against the opposing tapers in the hub thus generating the clamping force along the whole length of the bush in contact with the shaft.

Removal

The Thread Lock system offers significant advantages when removing the reducer from the shaft. There is a tendency for shaft mounted reducer, subject to atmospheric or fretting corrosion, to seize solidly onto the shaft, making removal difficult and time consuming. The Thread Lock system eliminates this problem, the bush is manufactured from spheroidal graphite iron, which not only has similar mechanical properties to steel but also has a natural resistance to corrosion and degree of self-lubricity.This combination of dissimilar materials in contact alleviates fretting corrosion and when the bush screws are loosened and the tapers released there is sufficient clearance within the assembly to permit easy removalAs the bush is screwed into the hub it is inherently safe even if locking screws are completely removed it cannot inadvertently fall out during reducer handling.

Momentary Overload

The maximum momentary or starting load applied to a reducer must not exceed 200 % of rated load (100% overload). Rated load is defined as the reducer rating at a service factor of 1.0 . Applications with high torque and for intermittent operations refer to the factory. Also applications where extreme repetitive shock occurs or when high-energy loads are required to be absorbed, require special considerations and should be refer to the factory.

Check the breaking torque When drives are equipped with brakes on the input and the torque rating of the brake exceeds the rating of the motors, the rating of the brake dictates the selection of the reducer

Thermal Capacity

It is the maximum kW that can be transmitted without overheating at maximum oil temperature of 90°C when reducer is operated continuously under standard oil bath lubrication.

Load Connections

Mount sprocket, pulley and sheave as close as possible to the gear case in order to reduce the cantilever effect of overhang loads on the shaft bearings. Adjust belts or chains to manufacturer specification to prevent over tightening. Install motor and wedge belt drive with the belt pull at approximately 90° to the centerline between driven and input shafts.Install torque-arm fulcrum on a rigid support. Make sure there is sufficient take up in the turnbuckle for belt tension adjustment.

Lubrication

Shaft Mounted Reducers are dispatched without oil. Before running, they should be filled with an appropriate amount of the lubricant. Determine minimum and maximum ambient temperatures the unit is to operate in. From the Ambient Temperature Table below, determine the proper AGMA or ISO grade lubricant for those temperature conditions and select appropriate oil. Use only SAE recommended grade as gear lubricants. Automotive oils are not recommended. All reducer are splash lubricated by gear rotation with even distribution to all gear meshes and bearings.

Ambient Temp.	Viscosity	AGMA Grade	ISO Grade
-10° C to 15° C (15° F to 60° F)	90 – 110	3	100
10° C to 50° C (50° F to 125° F)	135 – 165	4	150

If the speed reducer operates under extreme conditions or exposed to large temperature fluctuations, the use of synthetic oil is recommended.

Note: The synthetic lubrication should conform to the requirements of ANSI / AGMA 9005-D94.

Symbols used in various equations

f_s = Service factor

n_1 = Input speed (rpm)

n_2 = Output speed (rpm)

h = Gearbox efficiency

Mt_{con} = Continuous Torque (Nm)

Mt_{peak} = Peak Torque (Nm)

i = Actual Reduction ratio of gearbox

HP = Horsepower

To = Required output Torque (Nm)

Teq = Equivalent Torque (Nm)

P = Required Mechanical Power Rating (kW)

Gearbox Coding

*	**	***	****
SMR	**50**	**– 13**	**- 0**

* - indicates the product code (Shaft mounted speed reducer)

** - indicates the size of the unit (Sizes available are 30, 50, 80, 125, 200, 325, 500, 800, 1250, 2000, 3000, 4000)

*** - indicates the reduction ratio of the gearbox (Reduction ratio available 5,13 and 20)

**** - indicates the output shaft details (0 Standard Metric bore 1 Alternative Metric bore 2 Thread Lock Hub) (0B Standard Metric bore 1B Alternative Metric bore 2B Thread Lock Hub) with backstop at input shaft

Technical Definitions

Service Factor (f_s)

This is the factor depending on the application type. It takes into consideration load variation, which the gearbox may undergo for the specific type of duty. It also takes into consideration the selected type of drive unit e.g. electric, hydraulic motor and so on.

Speed

Input speed (n_1)
It represents the actual input speed of the gearbox

Output speed (n_2)
It represents the actual out speed of the gearbox

Reduction Ratio (i)
It is the ratio of Actual input speed to actual output speed of gearbox

i = n1/n2

Efficiency
It represents the ratio of output power to input power of gearbox the efficiency for

single stage reduction gearbox = 0.99
double stage reduction gearbox = 0.987

Torque

Continuous torque (Mt_{con})
This is the transmittable torque of the gearbox with continuous operation.

Peak torque (Mt_{peak})
This is the maximum torque that the gearbox can transmit for short periods of time.

Mechanical Power Rating (P)
This is the actual mechanical power that the gear box is to be transfer for various applications.

Thermal Power (Pt)
Maximum mechanical power transmitted by the gearbox while operating continuously, with splash lubrication, without exceeding the thermal limit of gear box (50°C above the ambient temperature). Greater powers can be transmitted by using an appropriate cooling system. The value refers to a continuous operation with input speed of 1440 rpm at ambient temperature 30 °C.

Selection Procedure

Information required for selection of the reduction unit

a - The application
b - Working hours per day
c - Input power (kW)
d - Desired output speed.

Selection of reducer is based solely on the required output torque capacity of the application. The Service factor method is used to apply specific industry application standards based on the hours per day of operation. These application standards are given in **table-2** and have been developed based on practical application experience.

Determine Service Factor (f_s)

Selection of the Service factor is done as follows

- Depending upon driven machine or application decide the load classification (i.e. Uniform/ Moderate/Heavy shock) from **table 2**.

- Decide the prime mover and number of working hours per day

By knowing above factors we can select service factor from **table 1**

Calculate the Design Power

Multiply the absorbed power (or motor power if absorbed power is unknown) by the service factor selected in above step

Selection of reducer

Using the value of design power from above step refer to the power rating tables. Locate the reducer which has ouput speed closer to the required output speed and select the size of reducer which satisfy following conditions.i. e. Design power (kW) must be less than or equal to the rated power (kW) of the gearbox

Check the breaking torque - When drives are equipped with brakes on the input and torque rating of the brake exceeds the rating of the motors, the rating of the brake dictates the selection of the reducer

To reduce overhung load

1. Increase the pitch diameter of gear, Pulley or sprocket.

2. Locate the sprocket or belt closer to the Seal cage.

3. Go to the next larger reducer series.

Check dimensions - Reducers Dimension sheets are given on page no 12, 13 for free input and various output shafts versions (standard hub or Thread lock hub). For your specific requirement contact factory.

Ordering reducers - Specify the model size, Reduction ratio, Output shaft details and Specific requirements if any.

Selection Examples

A Shaft Mounted Speed Reducer is required for a uniformly loaded elevator, which absorbs 3.6 kW at 50 rev/min. The prime mover is a 4 kW 1440 rev/min direct online start electric motor. A belt drive is required between the motor and gearbox at approximately 700 mm centers running for up to 24 hours/day

Select service factor.

From table2 as the application is uniformly loaded conveyor hence load classification leads to **Uniform Load**

Now from table 1 as the prime mover is Electric motor and duration of working is 24 hours per day hence service factor (fs) 1.25 is selected

Using the elevator absorbed power of 3.6 kW
Design power = 1.25*3.6 = 4.5 kW

Required output speed of the reducer =50 rev/min

Unit selection

Using 4.5 kW as a basis for selection reference to the power rating table indicates that SMR 125 having ratio 13 or 20 gear unit will be transmit 6.99 kW at 50 rev/min

Table 1

Power Source	Duration of working inHours per day	Load Classification Uniform	Moderate	Heavy
Electric motor,	Under –3	0.80	1.00	1.50
steam turbine	3 to 10	1.00	1.25	1.75
or hydraulic motor	Over – 10	1.25	1.50	2.00
Multi-cylinder internal	Under –3	1.00	1.25	1.75
combustion engine	3 to 10	1.25	1.50	2.00
	Over – 10	1.50	1.75	2.25
Single cylinder internal	Under –3	1.25	1.50	2.00
combustion engine3 to 10	1.50	1.75	2.25	
	Over – 10	1.75	2.00	2.50

Table 2

Load Classification

U = Uniform load

Driven Machine	Load Type
Agitators	
Pure liquids	U
Liquids & solids	M
Liquids-variable density	M
Blowers	
Centrifugal	U
Lobe	M
Vane	U
Brewing and distilling	
Bottling Machinery	U
Brew kettles cont. duly	U
Cookers cont. duty	U
Mash tubs cont. duty	U
Scale hopper-fre. starts	M
Can filling M/C	U
Cane knifes	M
Car dumpers	H
Car pulleys	M
Clarifiers	U
Classifiers	M
Clay working machinery	
Brick press	H
Briquette machine	H
Clay working machinery	M
Pug mill	M
Compressors	
Centrifugal	U
Lobe	M
Reciprocating - Multi-cyl.	M
Single cyl.	H
Conveyor - uniformly loaded	
Apron	U
Assembly	U
Belt	U
Bucket	U
Chain	U
Flight	U
Oven	U
Screw	U
Conveyor - heavy duty	
Apron	M
Assembly	M
Belt	M
Bucket	M
Chain	M
Flight	M
Live roll	H
Oven	M
Reciprocating	H
Screw	M
Shaker	H
Cranes	
Main hoists	U
Bridge travel	H
Trolley travel	H
Crusher	
Ore	H
Stone	H
Sugar	H
Dredges	
Cable reels	M
Conveyors	M
Cutter head drives	H
Jig drives	H
Manoeuvring Winches	M
Pumps	M
Screen drive	H
Stackers	M
Utility winches	M

H = Heavy shock load

Driven Machine	Load Type
Dry dock cranes	
main hoist	T
auxiliary hoist	T
boom, luffing	T
rotating swing or slew	T
tracking ,drive wheels	T
Elevators	
bucket-uniform load	U
bucket-heavy load	M
bucket-continuous	U
centrifugal discharge	U
escalators	U
freight	M
gravity discharge	U
man lifts	T
passenger	T
Fans	
centrifugal	U
cooling towers	
induced draft	T
forced draft	T
induced draft	M
large, mine, etc.	M
large, industrial	M
light, small diameter	U
Feeders	
apron	M
belt	M
disc	U
reciprocating	H
screw	M
Food industry	
beef slicer	M
cereal cooker	U
dough mixer	M
meat grinders	M
Generators-not welding	U
Hammer mills	H
Hoists	
heavy duty	H
medium duty	M
skip hoist	M
Laundry machines	
Laundry washers reverse	M
Laundry tumblers	M
Line shafts	
processing equipment	M
light applications	U
other line shafts	U
Lumber industry	
barkers- Hydraulic	M
barkers- mechanical	M
burner conveyor	M
chain saw and drag saw	H
chain transfer	H
craneway transfer	H
de-barking drum	H
edger feeder	M
gang feeder	M
green chain	M
live rolls	H
log deck	H
log haul-incline	H
log haul-well type	H
log turning device	H
main log conveyor	H
off bearing rolls	M
planer feed chains	M
planer floor chains	M
planer tilting hoist	M

M = Moderate shock load

Driven Machine	Load Type
Merry-go-round conveyor	M
roll cases	H
slab conveyor	H
small waste conveyor-belt	U
small waste conveyor-chain	M
sorting table	M
tipple hoist conveyor	M
tipple hoist drive	M
transfer conveyor	M
transfer rolls	M
tray drive	M
trimmer feed	M
waste conveyor	M
Machine tools	
bending roll	M
punch press-gear driven	H
notching press-belt driven	T
plate planers	H
tapping machine	H
Other machine tools	
Main drives	M
Auxiliary drives	U
Metal mills	
Draw bench carriage	M
Main drive	M
pinch, dryer and scrubber	
rolls-reversing	T
slitters	M
Table conveyors -	
non-reversing	
group drives	M
individual drives	H
Reversing -	
wire drawing	M
flattening machine	M
wire winging machine	M
Mill-rotary type ball	H
cement kilns	H
dryers and coolers	H
kilns, other than - cement	H
pebble	H
rod plain	H
wedge bar	H
tumbling barrels	H
Mixers	
concrete mixers - cont.	M
concrete mixers -int.	M
constant density	U
variable density	M
Oil industry	
chillers	M
oil well pumping	T
paraffin filter press	M
rotary kilns	M
Paper mills	
agitators, (Mixers)	M
barker-auxiliaries hydraulic	M
barker-mechanical	H
barking drum	H
beater and pulper	M
bleacher	U
calenders	M
calenders-super	H
Converting machine,	
except cutters, platers	M
conveyors	U
couch	M
cutters-plates	H
cylinders	M
dyers	M
felt stretcher	M

T = Refer to Cyclo

Driven Machine	
felt whipper	H
jordans	M
log haul	H
presses	M
pulp machine reel	M
suction roll	M
washers & thickeners	M
winders	M
Printing presses	
Pullers	T
barge haul	H
Pumps centrifugal	U
proportioning	M
reciprocating single acting	
3 or more cylinders	M
reciprocating double acting	
2 or more cylinders	M
single acting 1or 2 cylinders	T
double acting; single cylinder	T
rotary - gear type	U
rotary - lobe, vane	U
Rubber and plastics industries	
crackers	H
laboratory, equipment	M
mixed minds	H
refiners	M
rubber calenders	M
rubber mill-2 on line	M
rubber mill-3 on line	M
sheeter	M
tire building machines	T
tire and tube press openers	T
tubers and strainers	M
warming mills	M
Sand multer	M
Sewage disposal equipment	
bar screens	U
chemical feeders	U
collectors	U
de watering screws	M
scum breakers	M
slow or rapid mixers	M
thickeners	M
vacuum filters	M
Screens	
air washingU	
rotary-stone or gravel	M
travelling water intake	U
Slab pushers	M
Steering gear Stokers	U
Sugar industry	
cane knives	M
crushers	M
mills	M
Textile industry	
batchers	M
calenders	M
cards	M
dry cans	M
dryers	M
dyeing machinery	M
knitting machines looms	M
mangles	M
nappers	M
pads	M
range drives slashers	M
soapers	M
spinners	M
tenter frames	M
washers	M
winders	M

Technical data table
Rating in kW for the ratio 5

O/P Speed	SMR 30	SMR 50	SMR 80	SMR 125	SMR 200	SMR 325	SMR 500	SMR 800	SMR 1250
100	3.43	5.20	9.32	13.40	19.21	27.95	44.45	79.97	96.45
110	3.75	5.69	10.18	14.64	20.98	30.52	48.50	87.19	105.14
120	4.07	6.17	11.04	15.87	22.74	33.06	52.52	94.33	113.72
130	4.39	6.65	11.89	17.09	24.48	35.58	56.49	101.39	122.21
140	4.71	7.12	12.74	18.30	26.20	38.08	60.43	108.36	130.60
150	5.02	7.59	13.58	19.50	27.91	40.55	64.32	115.27	138.90
160	5.33	8.06	14.41	20.69	29.61	43.01	68.19	122.11	147.12
170	5.64	8.53	15.23	21.87	31.29	45.44	72.02	*128.89*	*155.27*
180	5.95	8.99	16.05	23.04	32.96	47.85	75.81	*135.60*	*163.33*
190	6.26	9.45	16.87	24.20	34.62	50.25	79.58	*142.26*	*171.33*
200	6.56	9.91	17.68	25.36	36.27	52.63	83.32	*148.86*	*179.26*
210	6.86	10.36	18.48	26.51	37.90	54.99	*87.03*	*155.41*	*187.12*
220	7.17	10.81	19.28	27.65	39.53	57.34	*90.72*	*161.90*	*194.92*
230	7.47	11.26	20.08	28.79	41.14	59.67	*94.38*	*168.35*	*202.67*
240	7.76	11.71	20.87	29.91	42.75	61.99	*98.02*	*174.75*	*210.35*
250	8.06	12.16	21.66	31.04	44.35	*64.29*	*101.63*	*181.11*	*217.98*
260	8.36	12.60	22.44	32.15	45.93	*66.58*	*105.22*	*187.42*	*225.55*
270	8.65	13.04	23.22	33.26	47.51	*68.86*	*108.78*	*193.69*	*233.08*
280	8.94	13.48	23.99	34.37	49.08	*71.12*	*112.33*	*199.92*	*240.55*
290	9.24	13.91	24.76	35.46	*50.64*	*73.37*	*115.85*	*206.11*	*247.97*
300	9.53	14.35	25.53	36.56	*52.20*	*75.61*	*119.36*	*212.26*	*255.35*
310	9.82	14.78	26.29	37.64	*53.74*	*77.84*	*122.85*	*218.37*	*262.68*
320	10.10	15.21	27.05	38.73	*55.28*	*80.06*	*126.31*	*224.45*	*269.97*
330	10.39	15.64	27.81	*39.80*	*56.81*	*82.26*	*129.76*	*230.49*	*277.22*
340	10.68	16.07	28.56	*40.87*	*58.33*	*84.45*	*133.19*	*236.49*	*284.42*
350	10.96	16.49	29.31	*41.94*	*59.85*	*86.64*	*136.60*	*242.47*	*291.59*
360	11.24	16.92	30.06	*43.00*	*61.35*	*88.81*	*140.00*	*248.41*	*298.71*
370	11.53	17.34	30.80	*44.06*	*62.86*	*90.97*	*143.38*	*254.32*	*305.80*
380	11.81	17.76	*31.54*	*45.11*	*64.35*	*93.12*	*146.74*	*260.20*	*312.84*
390	12.09	18.18	*32.28*	*46.16*	*65.84*	*95.27*	*150.08*	*266.05*	*319.86*
400	12.37	18.60	*33.01*	*47.21*	*67.32*	*97.40*	*153.41*	*271.87*	*326.83*

Torque at 100 rev/min (Nm)

SMR 30	SMR 50	SMR 80	SMR 125	SMR 200	SMR 325	SMR 500	SMR 800	SMR 1250
328	497	890	1280	1835	2669	4245	7637	9211

For these power rating the gearbox should be provided with proper cooling arrangement

Note : Rating of 5:1 with back stop contact Factory

Technical data table

Rating in kW for the ratio 13 and 20

O/P Speed	SMR 30	SMR 50	SMR 80	SMR 125	SMR 200	SMR 325	SMR 500	SMR 800	SMR 1250	SMR 2000	SMR 3000	SMR 4000
10	0.37	0.57	1.03	1.48	2.14	3.13	5.02	7.78	11.09	14.78	23.28	41.30
12	0.44	0.68	1.23	1.77	2.55	3.73	5.99	9.28	13.22	17.62	27.72	49.17
14	0.52	0.79	1.42	2.06	2.96	4.33	6.95	10.76	15.33	20.42	32.13	56.96
16	0.59	0.90	1.62	2.34	3.37	4.93	7.90	12.23	17.42	23.20	36.49	64.66
18	0.66	1.01	1.82	2.63	3.78	5.52	8.85	13.69	19.49	25.96	40.81	72.30
20	0.73	1.12	2.01	2.91	4.18	6.11	9.79	15.14	21.55	28.70	45.10	79.87
22	0.80	1.22	2.21	3.19	4.58	6.70	10.72	16.57	23.60	31.42	49.36	87.38
24	0.87	1.33	2.40	3.47	4.98	7.28	11.65	18.00	25.63	34.12	53.58	94.83
26	0.94	1.44	2.59	3.74	5.38	7.86	12.58	19.42	27.64	36.80	57.78	102.23
28	1.01	1.54	2.78	4.02	5.78	8.44	13.50	20.83	29.65	39.47	61.95	109.58
30	1.09	1.65	2.97	4.29	6.17	9.01	14.41	22.24	31.64	42.12	66.09	116.88
32	1.15	1.76	3.16	4.57	6.57	9.58	15.32	23.63	33.62	44.75	70.21	124.13
34	1.22	1.86	3.35	4.84	6.96	10.15	16.23	25.02	35.60	47.37	74.30	131.33
38	1.36	2.07	3.73	5.38	7.74	11.29	18.03	27.77	39.51	52.57	82.42	145.62
40	1.43	2.18	3.92	5.65	8.12	11.85	18.93	29.14	41.45	55.15	86.45	152.71
42	1.50	2.28	4.11	5.92	8.51	12.41	19.82	30.50	43.39	57.72	90.46	159.76
46	1.64	2.49	4.48	6.46	9.27	13.52	21.59	33.21	47.23	62.82	98.41	173.75
50	1.77	2.70	4.85	6.99	10.04	14.63	23.35	35.89	51.03	67.88	106.30	187.60
52	1.84	2.80	5.03	7.25	10.41	15.18	24.22	37.22	52.93	70.39	110.21	194.48
54	1.91	2.90	5.21	7.52	10.79	15.73	25.10	38.55	54.81	72.90	114.11	201.32
58	2.05	3.11	5.58	8.04	11.54	16.83	26.83	41.19	58.56	77.87	121.86	214.93
62	2.18	3.31	5.94	8.56	12.29	17.91	28.55	43.82	62.28	82.81	129.55	228.42
66	2.31	3.51	6.31	9.08	13.04	18.99	30.27	46.42	65.97	87.71	137.17	241.80
70	2.45	3.71	6.67	9.60	13.78	20.07	31.97	49.01	69.64	92.58	144.75	*255.08*
74	2.58	3.91	7.02	10.12	14.51	21.13	33.66	51.58	73.29	97.42	152.27	*268.25*
78	2.71	4.11	7.38	10.63	15.24	22.20	35.34	54.13	76.91	102.22	159.73	*281.34*
80	2.78	4.21	7.56	10.88	15.61	22.73	36.18	55.40	78.71	104.61	163.45	*287.85*
85	2.94	4.46	8.00	11.52	16.52	24.04	38.27	58.56	83.19	110.56	172.68	*304.02*
90	3.11	4.71	8.44	12.15	17.42	25.35	40.34	61.70	87.64	116.46	181.85	*320.06*
95	3.27	4.96	8.88	12.78	18.32	26.66	42.40	64.82	92.06	122.32	190.94	*335.98*
100	3.43	5.20	9.32	13.40	19.21	27.95	44.45	67.92	96.45	128.14	199.97	*351.77*

Torque at 10 rev/min (Nm)

SMR 30	SMR 50	SMR 80	SMR 125	SMR 200	SMR 325	SMR 500	SMR 800	SMR 1250	SMR 2000	SMR 3000	SMR 4000
355	542	980	1417	2041	2986	4791	7435	10593	14116	22228	39441

For these power rating the gearbox should be provided with proper cooling arrangement

Output Standard Hub Dimensions

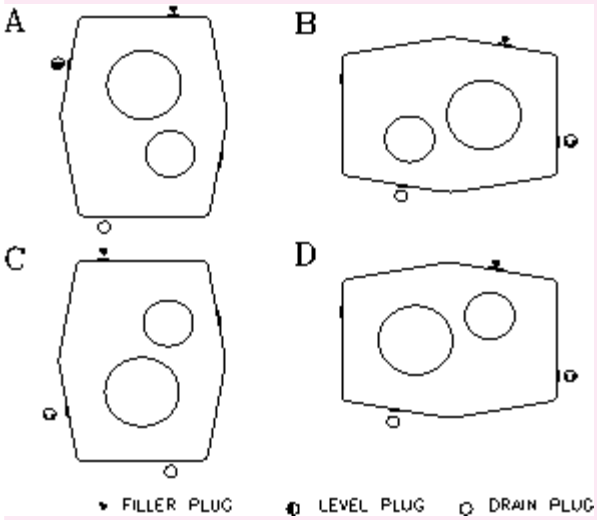
Model Lock	Hub Bore	Hub Bush Bore	Thread Hub Bore
SMR 30	30	25	30
		20	
SMR 50	40	35	40
		32	
		30	
SMR 80	50	45	50
		42	
		40	
		38	
SMR 125	55	50	55
		45	
		42	
SMR 200	65	60	65
		55	
		50	
SMR 325	75	70	75
		65	
		60	
SMR 500	85	80	85
		75	
		70	
SMR 800	100	95	100
		90	
SMR 1250	120	110	120
		100	
		90	
SMR 2000	125	110	125
		100	
		90	
SMR 3000	150	130	150
		125	
		100	
SMR 4000	190		190

Standard hub bores :
Metric hubs are bored to F7 limits.
A shaft tolerance grade h7 is recommended

* Maximum Hub bore size SMR 4000 reducer is 190 mm, smaller bores, Consult Factory

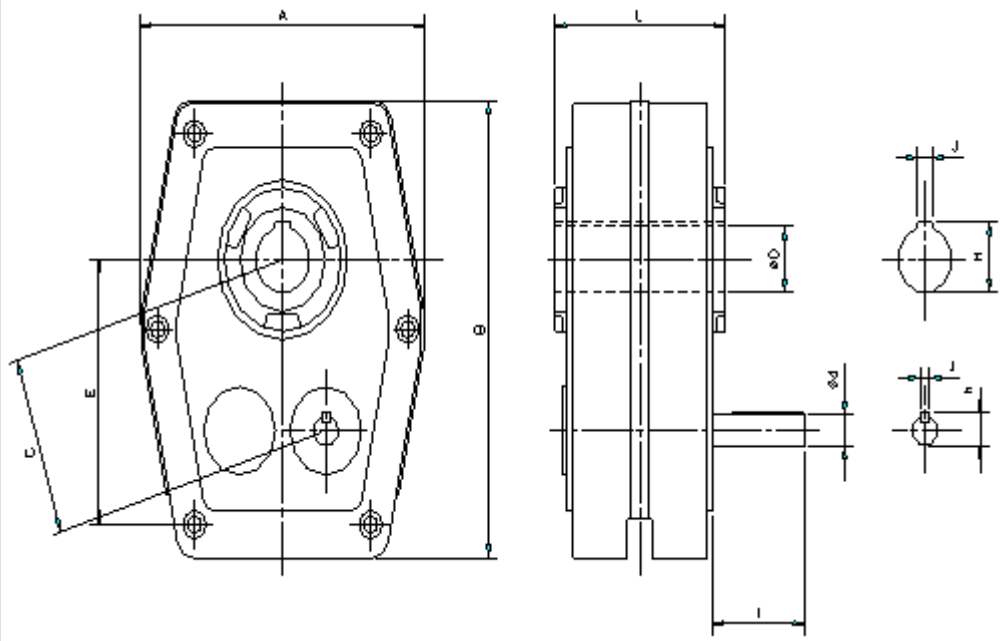
Taper-grip hub bores :
Shaft with tolerances up to h11 can be accommodated

Oil quatities in liters



Model	Mounting Position A	B	C	D
SMR 20	0.3	0.35	0.3	0.4
SMR 30	0.35	0.45	0.4	0.5
SMR 50	0.55	0.65	0.6	0.75
SMR 80	0.9	1.4	1.2	1.4
SMR 125	1.8	2.0	1.8	1.9
SMR 200	2.5	2.5	2.5	2.5
SMR 325	3.5	4.0	3.5	4.5
SMR 500	4.5	7.0	5.0	6.8
SMR 800	9.0	16.0	12.0	16.0
SMR 1250	14.0	20.0	24.0	19.0
SMR 2000	13.0	14.0	24.0	13.0
SMR 3000	50.0	55.0	50.0	55.0
SMR 4000	60.0	79.0	60.0	65.0

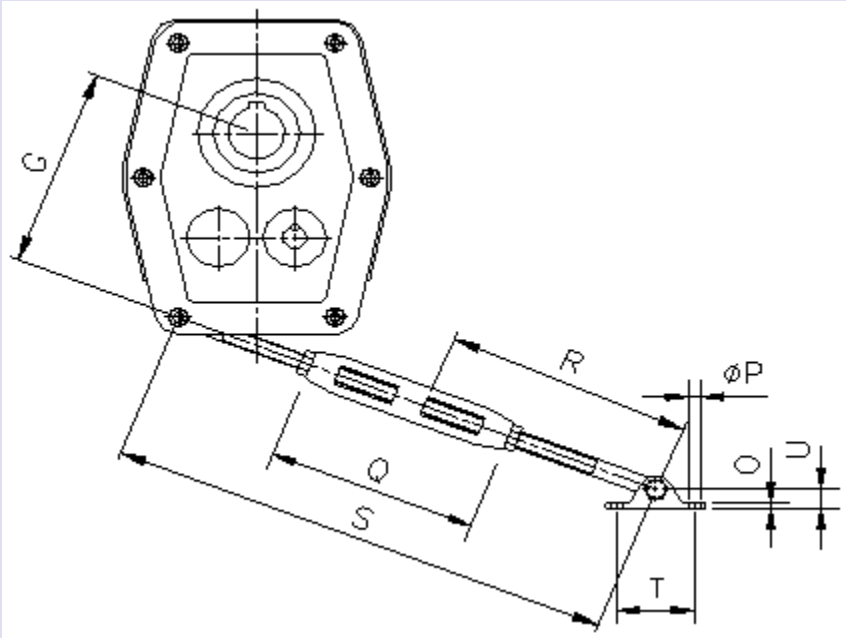
Dimensional Details



Model	Output					Input				Overall			App. Wt in Kg		
	D F7	**J** s9	H	L	**d** J6	**J** P9	**h**	**l**	**A**	**B**	**C**	**E**	5:1	13:1	20:1
SMR 30	30	8	33.3	134	19	6	21.5	61	186	226	79	132	16	17	17
SMR 50	40	12	43.3	142	22	6	24.8	70	218	270	95	160	21	23	23
SMR 80	50	14	52.8	152	25	8	28.3	75	258	328	116	192	30	33	33
SMR 125	55	16	59.3	170	28	8	31.3	83	278	377	133	228	42	47	47
SMR 200	65	18	69.4	189	32	10	35	90	320	415	150	242	55	60	60
SMR 325	75	20	79.9	212	42	12	45	103	365	468	166	282	90	100	100
SMR 500	85	22	90.5	242	48	14	51.5	114	434	550	200	325	140	150	150
SMR 800	100	28	106	257	55	16	59	133	542	700	266	424	200	210	210
SMR 1250	120	32	127	282	60	18	64	168	568	790	282	491	285	305	305
SMR 2000	125	32	132	310	60	18	64	184	643	841	297	513		400	400
SMR 3000	150	36	158	356	65	18	64	216	770	1000	345	595		600	600
SMR 4000	190	45	200	406	85	22	90.5	236	880	1140	396	677		750	750

Note : For other output shaft bore sizes refer page no 11

Installation Dimensions



Model	S		R	G	Q	O	T	P	U
	Min	Max							
SMR 30	600	750	300	143	200	6	65	10	25
SMR 50	600	750	300	173	200	6	65	10	25
SMR 80	700	850	350	208	216	6	75	12	30
SMR 125	700	850	350	245	216	8	75	12	30
SMR 200	750	900	375	260	216	10	100	16	35
SMR 325	750	900	375	308	216	10	100	16	35
SMR 500	750	900	375	353	222	20	120	16	35
SMR 800	750	900	375	436	222	20	120	16	35
SMR 1250	750	900	375	500	222	20	121	16	35
SMR 2000	750	900	375	541	222	20	120	16	35
SMR 3000	775	925	400	652	265	28	180	24	76
SMR 4000	800	950	400	725	265	28	180	24	76

If the speed reducer operates in an environment where the temperature fluctuations are predictable, choose an oil viscosity that is recommended for that given temperature (i.e. for cold weather operation, use an oil that will circulate freely at all times.) The pour point of the oil should be 9° F (-5° C) or less than the minimum external temperature during reducer operation. During hot weather use higher viscosity oil that will not thin outs and loses its lubricating qualities.Special measure should be taken to protect drives operating in direct sunlight at ambient temperature over 100° F (38^0 C). This protection can consist of a canopy over the drive or reflective paint on the drive. If neither is possible, a heat exchanger or other cooling device may be required to prevent the reducer sump temperature from exceeding the allowable maximum oil temperature of 90° C or 80° C. Shaft mounted Speed Reducers can be operated within oil temperatures from 20° C to 80° C.

Lubrication Change

Oil change must be carried out initially after first 100/ 200 hours of operation, and subsequently after every 2500 hours or at least every 12 months of operation. If operating under abnormal conditions such as high temperature, sever duty, moisture or particle contamination, oil may need to be changed more frequently. Do not mix the oil of different types even of the same make. Never mix mineral and synthetic oils.

Note : Oil samples should be taken from the oil level hole, not the drain hole.

Storage

Preparation for Storage.

If reducer is to be stored or is likely to inactive after installation, drain oil from housing and spray all internal parts with rust preventive oil that is soluble in lubricating oil. Seal the reducer completely, and replace the vent plug with a solid pipe plug to keep rust inhibiting atmosphere inside. Periodically inspect stored or inactive reducers and add rust inhibitor every six months or more often if necessary. Dry indoor storage is recommended rotate shafts every three months to prevent bearings from becoming lacquered.

Preparation for Start-Up

Fill reducer to proper oil level with the recommended lubricant. Remember reducers are supplied from the factory without oil. Rotate shaft until the bearings move freely. Now the unit is ready to start-up.

Product Range

- Planetary Drive
- Track Drive
- Worm Planetary Drive
- Low Backlash Drive
- Drum Motor
- Cycloidal Drive
- Slew Drive
- Torque Limiter
- Centrifuge Drive
- Creep Drive
- SMP / SMR Drive
- Hydraulic Winches
- Elevator Drive
- Conveyor Drive
- Special Drives

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