

# INVOLUTE TOOLING CORPORATION

Manufacturers of Drives and Transmissions

## Parallel Shaft Mounted Speed Reducer

The parallel shaft mounted speed reducer is a highly efficient gearbox, which offers direct electric or hydraulic motor input.

The gears are helical, hardened and ground of suitable alloys steels. The gearbox is suitable for forward or reverse motion.

The gearbox has a built in torque lug for support and to prevent spinning about the shaft.

This modular gearbox is offered in **4 sizes** in two or three stages. The ranges of ratios offered are:

**Two Stages:** 8 to 25  
**Three Stages:** 30 to 110  
**Output Torque:** Upto 15,000 Nm

**Input:** Keyed or Splined Solid Shaft  
 Keyed or Splined Hollow Shaft

**Output:** Keyed or Splined Solid Shaft  
 Keyed or Taper Clamp Hollow Shaft

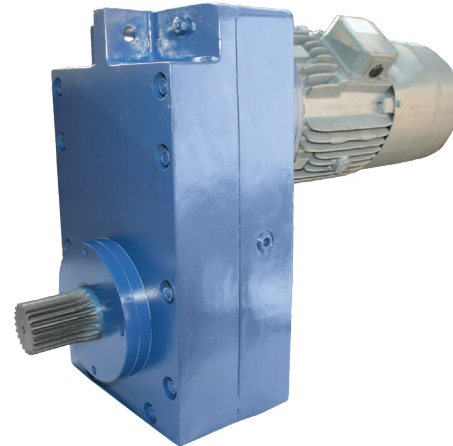
**Taper clamp speed reducers** meet the need to have a keyless application at the output end. The supporting bushes are manufactured in stainless steel to prevent fretting corrosion and provide easy removal. Various sizes of bores available for providing easy method of mounting on different shaft sizes

The gearbox is also available with hollow outputs with imperial bores and keyways.

**Customization:** Modifications to specific customer specifications, ratios, mounting configurations and width of gearbox. The gearbox can be supplied with a motor.

**Current Development:** More sizes are being developed with higher ratios and higher output torques.

**Applications:** An ideal gearbox for conveyors, screw conveyors, baggage handling, shredders, extruders, food processing, hoists, sewage treatment and elevators.



### Benefits:

- Compact cast iron casing
- Shaft or flange mounting options
- Highly efficient with reduced energy consumption
- Removes the need of a pulley & saves space!
- Hardened & ground helical gears
- Heavy duty bearings on all stages
- Available with electric or hydraulic motor flanges

### Accessories:

**Input Flanges:** IEC or Hydraulic Motor Flanges as per customer requirement.

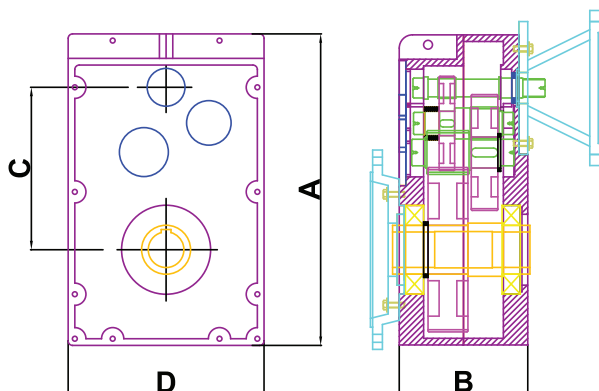
**Output Flanges:** Standard IEC Mounting Flanges.

**Roll Back Adapters / Backstops:** A simple accessory that prevents reversal of the reducer and is ideal for conveyors.

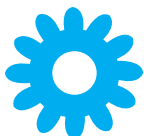
**Output Hubs in Stainless Steel:** Offered to achieve positive drive with keyway and to prevent fretting corrosion.

**Reducing Bushes:** Available for various bore sizes in steel and stainless steel for hollow output units.

**Labyrinths:** To prevent ingestion of dust in abrasive environment.



Dimensional Details (mm)	Size			
	125	180	200	225
A	560	575	630	770
B	170	235	270	290
C	270	300	330	365
D	263	360	404	440



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## Selection Procedure

1. Determine Required Output Speed
2. Determine Power Absorbed by the Drive  

$$\text{Absorbed Power (kW)} = \frac{\text{Absorbed Torque (Nm)} \times \text{Machine Speed (RPM)}}{9550}$$
3. Determine Service Factor from Table
4. Multiply the Absorbed Power by the Service Factor
5. Using the Table for Power Rating select the smallest gear unit that is suitable for transmitting this power at the Output Speed.

### For Example:

A torque of 7500 Nm is required to be transmitted on the brick press at 50 RPM

The brick press is under heavy load and operates for 17 hours per day

Absorbed Power =  $(7500 \times 50) / 9550 = 39.2$  kW

Service Factor from Table = 2.0

Selection Power =  $39.2 \times 2.0 = 78.4$  kW

From Power Rating chart at 50 RPM size "225" triple reduction speed reducer at 83 kW is the smallest for this application

Driven Machine Types Service Factors	Daily Operating Hours		
	Below 10 Hours	Between 10-16 Hours	Above 16 Hours
<b>UNIFORM LOAD</b> Liquid and Semi Liquid Mixer Centrifugal Discharged Equipments Bottling Machines Fixed Load Carrier Ovens Washing Machines Centrifugal & Gear Pumps Wire Drawing Machines	1.0	1.12	1.25
<b>MODERATE SHOCK</b> Variable Density Mixer Variable Load Conveyors Cranes, Movable Carriers, & Lifters Rolling Machines Heavy Load Elevators Drying Stoves Drying Machines Lifting Machines Piston Pumps with 3 or more Cylinders Pulp Machines Homing Cylinders Wet Pressing Machines Small Mixers Rotary Screens Textile Machines	1.25	1.4	1.6
<b>HEAVY SHOCK</b> Brick Press Briquette Manufacturing Machine Conveyor Band Moving Forward/Backward & Shaking Breaking Machines Hammer Mill Piston Pumps with 1 or 2 Cylinders Extruders Vibrators Forging Mills	1.6	1.8	2.0

### Power & Torque Rating – Triple Reduction

Model			125	180	200	225
Torque (Nm)			2700	7900	10500	15000
Nominal Ratio	Input Speed (RPM)	Output Speed (RPM)	Power Rating (kW)			
28	1500	53	14.2	44	58	83
	960	35.7	9.5	29	39	56
31.5	1500	47.5	13.4	39	52	74
	960	30.4	8.5	25	33.3	47
40	1500	37.5	10.9	31	41	59
	960	24	6.9	19.8	26.2	37.6
50	1500	30	8.5	25	33	47
	960	19.2	5.3	15.8	21	30
63	1500	23.6	6.6	19	26	37
	960	15.2	4.2	12.2	16.7	23.8
71	1500	21.2	6	15	23	33
	960	13.5	3.8	9.5	14.6	21
80	1500	19	5.4	14	20	30
	960	12	3.4	8.8	12.6	18.9
90	1500	17	4.8	12	18	26
	960	10.6	3	7.5	11.2	16.2
100	1500	15	4.0	10	16	23
	960	9.6	2.5	6.4	10.2	14.7
110	1500	13.5	3.6	9	14	21
	960	8.7	2.3	5.8	9	13.5

\*The ratios are indicative of the kW rating and can be modified as per customer requirements

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