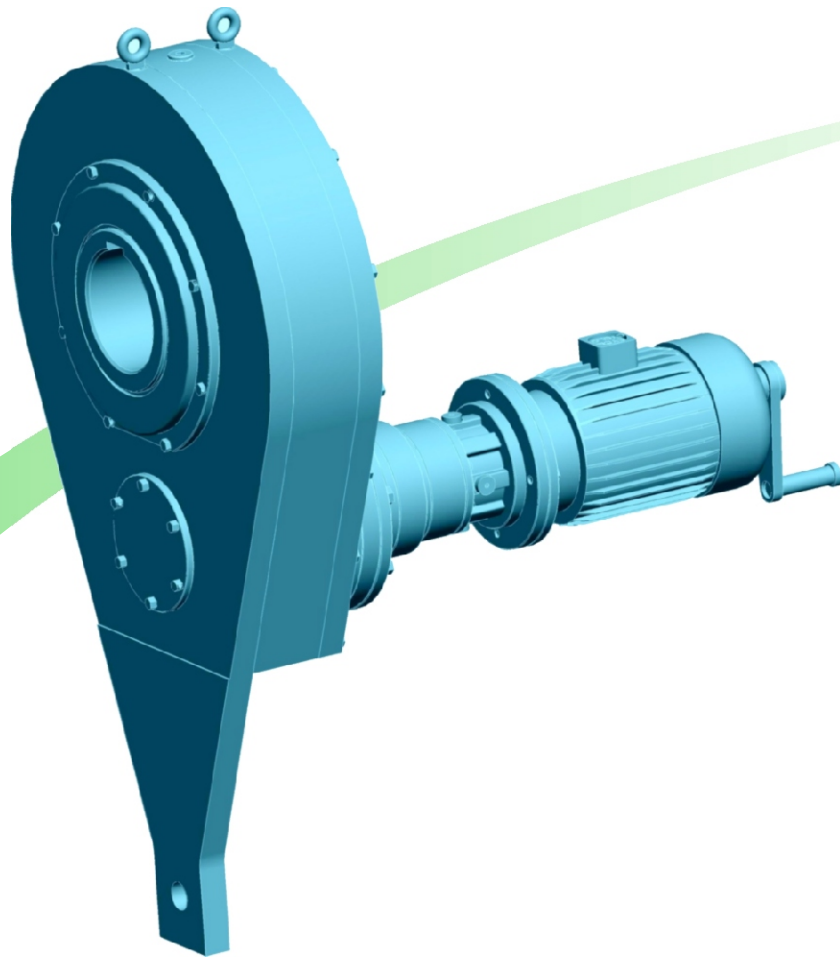


**Energy Saving Compact  
Sugar Drives**



**CYCLO TRANSMISSIONS LTD.**



## Cyclo Transmissions Ltd.

## The Power Transmission People

Cyclo Transmissions Ltd has proven to be leaders in Power Transmission Products for last 25 years. Quality and trouble free performance of our products has been proved with their wide acceptance in the industries like Aluminum, Chemical, Cable Cars, Port Trusts, Steel Plants, Textile Machinery, Heavy Engineering, Power Plants, Sugar Plants, Flour Mills, etc.

Sensing the Market requirements CYCLO has always responded with a rigid product and created a simply unmatched range of speed reducers. Our Product Range includes Cycloidal Drives, Planetary Drives, Torque Limiters, Shaft Mounted Drives, Winches, Track Drives, Slew Drives, Pump Drives, Drum Motors and Custom Built Drives to the specific requirement of the customer. The entire Product range is produced indigenously with zero import contents.

The power transmission products are designed and manufactured with our own technology and practical experience of highly qualified technocrats. Products are manufactured with strict adherence to highest quality standards. This made us easy to be the part of world market. We have exported more than 6000 gearboxes in last 10 years to developed countries

We offer the best possible solution to the customer for his power transmission requirement through our Research and Development. In short, "We convert your Power Transmission Ideas into Applications"

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 application in a short time.

With the customer orientation, in a very short span the small scale company grew to Public Limited Company with a capital outlay of Rs. 35 Million and having well equipped plant at Patkhal, (Dist. Satara, Maharashtra) and its Marketing offices in all metro cities of India.

We received ISO-9001 quality certificate from DNV in April 2001 and maintained till date.

Cyclo regularly participates in national as well as International Trade Fairs. We are a regular participant of Hannover Trade Fair – Hannover - GERMANY

CYCLO has been honored with several awards and prizes for this achievement. But the single most important award we are proud of is the smiling face of our satisfied Customer. Customer satisfaction is our motivation and strength. So truly we are **The Power Transmission People.**





# “Save Nation’s Precious Energy”

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## CYCLO Crystalliser Drive

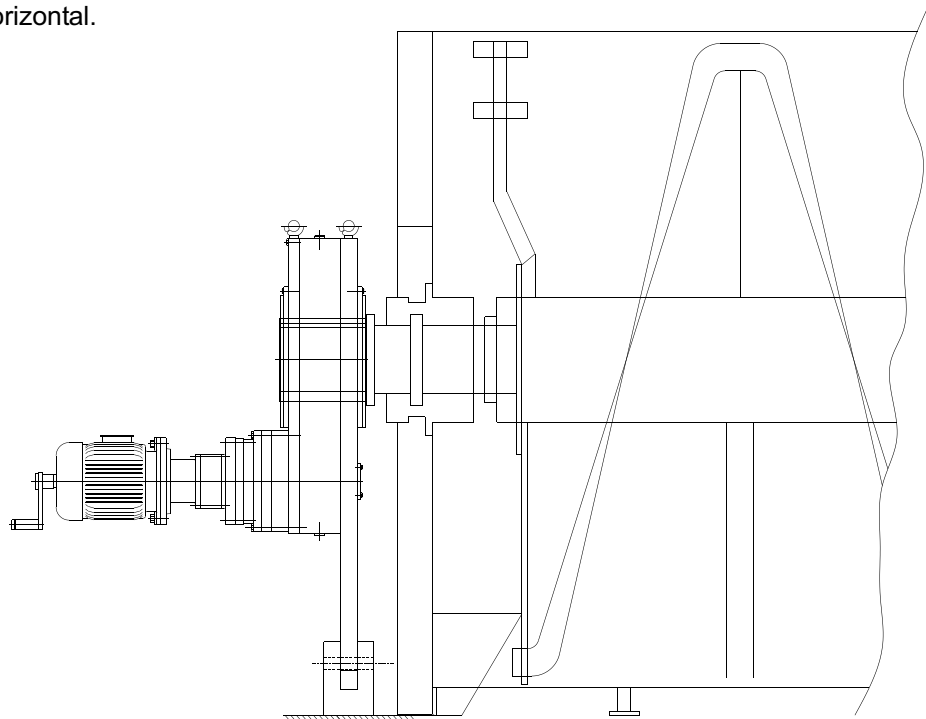
Cyclo Transmission Ltd. conducted a study in several sugar plants across India for Crystalliser Drives based on speed and capacity of crystalliser, the Power consumption, size, maintenance frequency, and construction of the drives.

It was observed that the power consumption for this application was two to three times the actual requirement at the crystalliser shaft. the existing drive unit was highly inefficient due to double worm reduction arrangement. The maintenance costs of these units was also high due to open gearing and hence dust ingress at the point of contact in the gearing.

As a solution to the above problems, Cyclo Transmissions Ltd. introduced planetary gearboxes for crystalliser in Sugar Mills. Cyclo planetary gearboxes have helped in reducing the power consumption to almost one third compared to conventional double-worm reduction drives. The drives are fully enclosed to provide sealing against dust and other foreign particles, and hence longer gearbox life. All gears and bearings are splash lubricated which also facilitates heat dissipation. The gearbox has a handle for manual operation in case of power failure.

### Typical arrangement for Keyed Crystalliser Drive:

CYCLO Crystalliser Keyed Series speed reducers are available in five models with wide variety of reduction ratios and various choices of mounting options (Frame sizes). These units are available in hollow shaft mounted with torque arm. The units are arranged with output shaft horizontal.



This drive builds with four stages planetary (input side) and one stage spur (output side) hence offer the advantages of compact design, smaller size, required reduction ratios and high efficiency than conventional Crystallizer drives. The product range is power rating 0.75 HP to 7.5 HP, torque rating 13000 N-m to 95000 N-m. And for crystalliser capacities from 15 tons to 400 tons.

Planetary gears, Spur gears and shafts are of hardened alloy steel. Gears are manufactured to ensure smooth, quiet running with maximum life and efficiency.

Ball bearings are used to carry adequate radial and thrust loads and support the shafts.



## Drive Benefits

### Difference between Conventional Crystalliser Drive and CYCLO Crystalliser Drives

Points	CYCLO Crystalliser Drive	Conventional Crystalliser Drive
<b>Power Consumption</b>	Input rating for the Cyclo crystalliser drive is from 3 to 7.5 hp.	Input rating used for the open type worm and worm wheel will be from 10 to 30 hp.
<b>Efficiency</b>	Efficiency is very high about 90% because of high efficiency planetary gearing.	Inefficient due to improper teeth contact and poor lubrication due to open gearing system efficiency goes down to 40 %.
<b>Alignment</b>	Whole gearbox unit is mounted on the crystalliser shaft and whole unit having less weight than the only worm wheel, hence there is no problem about misalignment between input and output shafts.	Wear in bush bearing and worm teeth due to improper meshing and Plummer block arrangement, the worm wheel bend down wards and press on the worm shaft. This will increase in additional load and result in misalignment in output shaft with crystalliser shaft and input shaft with motor shaft.
<b>Power Failure</b>	Very easy to rotate by hand and one person can rotate the system easily without any difficulty.	Not possible to rotate the system by hand when power supply is not available.
<b>Cleanliness</b>	Due to closed gearing system there is no need of person always for lubrication purpose.  Surrounding is always clean because of closed system and proper lubrication system.	Due to open gearing system one person is always be there for the lubrication purpose.  Due to open system, oil overflowing and improper lubrication system surrounding area is very unclean.
<b>Maintenance</b>	Low maintenance cost because no annual maintenance is required, only changing the oil once in a season.	High maintenance cost because bearings are changed after one season. And high worm and worm wheel wear.
<b>Size and Weight</b>	Size and weight of the gearbox system is less than half of the conventional crystalliser drive because of compact unit of planetary gearing.	Size and weight of gearbox unit is more than double of Cyclo crystalliser drive because of large size of worm wheel.
<b>Life of gearbox</b>	Unit is having long life than worm drive because closed system, proper lubrication, less frictional losses, and less wear and tear.	Life of unit is very less because of dirty atmosphere, improper lubrication, improper gear meshing and high frictional losses.

## Technical Information

Gear Motors and Gear Units are employed for slow running machine applications. They are used where conventional motors cannot obtain the required output speeds economically.

During the design of the fully new gearbox system we have taken into account the wishes of our customers for more service safety and economic efficiency.

The gearing geometry has been totally redesigned with the help of most modern calculation techniques and on the basis of actual research studies. This not only led to other constructive and productive technical measures, but also the following:

- A considerable torque increase of up to 90 within the same frame size.
- Environmentally more tolerable due to reduction of the noise level.
- Modern housing design, which is optimized by means of 3D-CAD.
- No cost for the customers for redesign due to the retention of the present connection measurements for each frame size.
- Cost advantages due to the extensions of the ratio ranges.
- Increased service safety due to minimizing of the sealing faces, use of most modern sealing materials and a totally new output shaft-sealing arrangement.
- The standard unit is available for use in all mounting positions.

## Material Construction

**Casing /Housing :** The sturdy gearbox housing, manufactured of high-grade steel are more stable, dampen vibration and are designed for continuous operation. Housing for spur gearing stages are steel fabricated and for planetary stages are steel forging.

**Spur Gears :** The gear of spur stage is hobbled, toughened. Gear teeth are profile corrected and crowned for optimum performance. Spur pinion is hobbled and case hardened.

**Helical Gears :** The gears of helical stages are hobbled and case hardened. Gear teeth are profile corrected and crowned for optimum performance.

**Planetary Gears :** Planetary gearing consists sun gear, planets and ring gear. All gears are spur gears and are hobbled, case hardened. Gear teeth are profile corrected and crowned for optimum performance. Planetary gearing provides large ratio in small space, optimal silent operation and higher torque rating in small space.

**Output / Input Shaft :** Out put and input shafts are manufactured from high alloy steel and treated to achieve maximum strength to transmit power and absorb high impact loads. Unit manufactured with hollow shaft suit to crystallizer shaft with shrink disc.

**Broughtout parts :** All standard Broughtout parts such as bearings, oil seals and other hardware parts are procured directly from reputed manufacturers for genuiness and cost effectiveness.

**Sealing :** Radial shaft seals with dust and protective lips effectively prevent lubricant loss and entry of dust and water.





## Model Identification

<b>Model</b>	: CRY 280 CRY 350 CRY 430 CRY 470 CRY 525	<b>Example</b> :CRY 280-1.00-090-B140
<b>Output RPM</b>	: 1.50 1.00 0.5 0.32	<b>CRY 280</b> :- Model <b>1.00</b> :- Output RPM 1 <b>090</b> :- Frame Size 90 <b>B140</b> :- Shaft Bore 140mm
<b>Frame Size</b>	: 090 - 90 F.S. . . 132 - 132 F.S.	
<b>Shaft Bore</b>	: B140 - 140 mm Bore . . B210 - 210 mm Bore	
<b>Special</b>	: X - Non Standard Model.	

## Comparison between Cyclo and other Gearboxes

Cyclo Keyed Series	Local Manufacturer
Compact than others even with similar construction because of integral torque arm with casing.	As the construction is exactly opposite, the unit is not compact at all.
No thrust loads on output shaft due to Spur Gear at output at output	Radial & Thrust loads on output shaft due to helical gears
Cheaper than others due to compact casing design	Cheaper due to helical gears at output.
Easy mounting with Fixing pin.	Bulky & complicated mounting arrangement.
Lighter than local manufacturers	Heavy
Organised and definite production procedure and High-tech Manufacturing Facility	No consistency in quality and process
Confirm to ISO and European standards	Doubtful
Manufactured with standard QAP	Doubtful

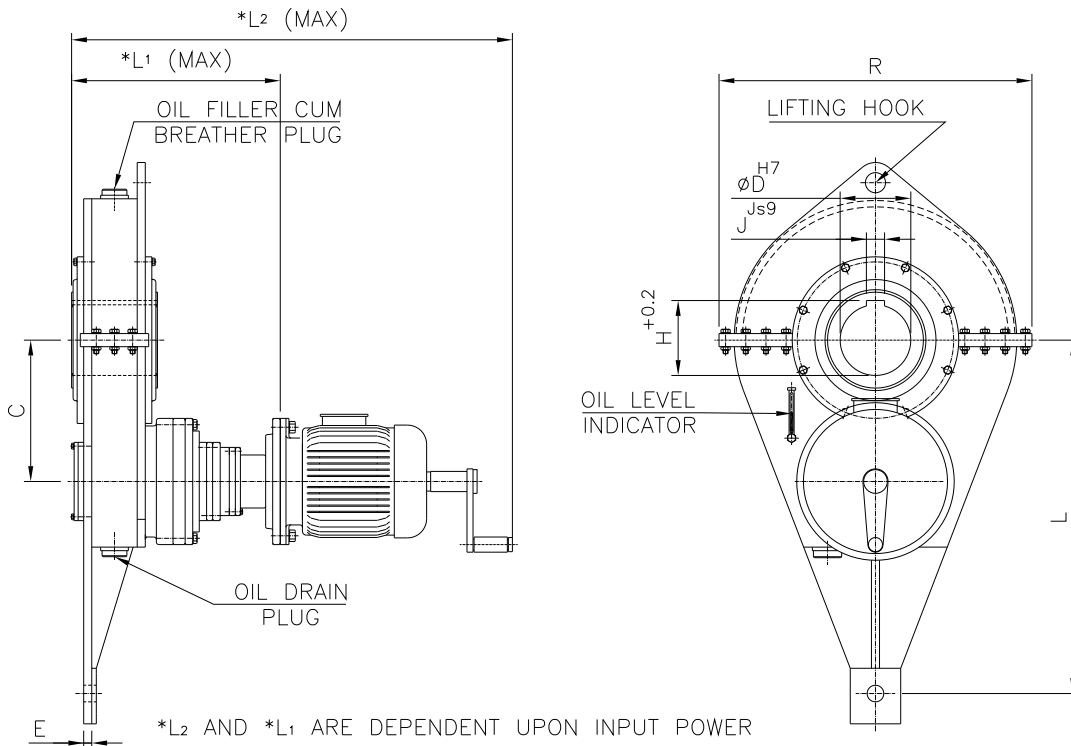
## General Selection Guidelines

Following are the general guidelines for Crystalliser Drive Model selection.

Sr. No.	Load	Model
1	20-25 Ton	CRY 280
2	30-45 Ton	CRY 350
3	50-85 Ton	CRY 430
4	90-300 Ton	CRY 470
5	350 Ton	CRY 525



## Technical Specifications and Dimensional Details



Model	Input Power kW	Out out		C mm	W	L <sub>1</sub>	L <sub>2</sub>	R	L	D	H	J	E	Lubricant (Approx.) Ltrs			
		Torque Nm	Speed rpm														
CRY 280	1.5	10686	1	280	200	481	899	560	700	140	148.4	36	32	9			
	1.1	7836	1														
	0.75	5343	1														
	0.75	10686	0.5														
	0.55	12244	0.32														
CRY 350	2.2	15672	1	350	250	590	1050	700	900	140	148.4	36	32	20			
	1.5	21371	0.5												to	to	to
	1.1	15672	0.5												185	195.4	45
CRY 430	3.7	26358	1	430	250	628	1088	820	1100	185	195.4	45	32	34			
	2.2	31345	0.5												to	to	to
	1.5	33393	0.32							210	221.1	50					
	1.1	24488	0.32														
CRY 470	5.5	39181	1	470	320	762	1292	880	1200	185	195.4	45	50	49			
	3.7	52716	0.5												to	to	to
	2.2	48976	0.32												210	221.1	50
CRY 525	5.5	78361	0.5	525	320	765	1292	980	1300	210	221.1	50	50	58			



## Mounting and Dismounting Procedure

Cystalliser drive should be mounted in the following steps.

### Mounting procedure :

- 1) Check surface finish & tolerance of crystalliser shaft.
- 2) Lift the Crystalliser drive using eye bolts only.
- 3) Rotate the handle to align key & keyway.
- 4) Secure the shaft upto available length.
- 5) Then align the fixing pin with the torque arm hole, aligning must be easier without disturbing the alignment of shafts.
- 6) Fix the torque arm rigidly.
- 7) Fill the lubricant upto level plug before starting the drive.

Cystalliser drive should be dismantled in the following steps.

### Dismounting Procedure :

- 1) Drain the lubricant oil through Drain plug.
- 2) Remove the fixing pin and free the torque arm from its mounting structure / bracket.
- 3) Remove the Cystalliser drive by pulling it off the Cystalliser shaft.
- 4) During the procedure, keep the drive held using eye bolts.

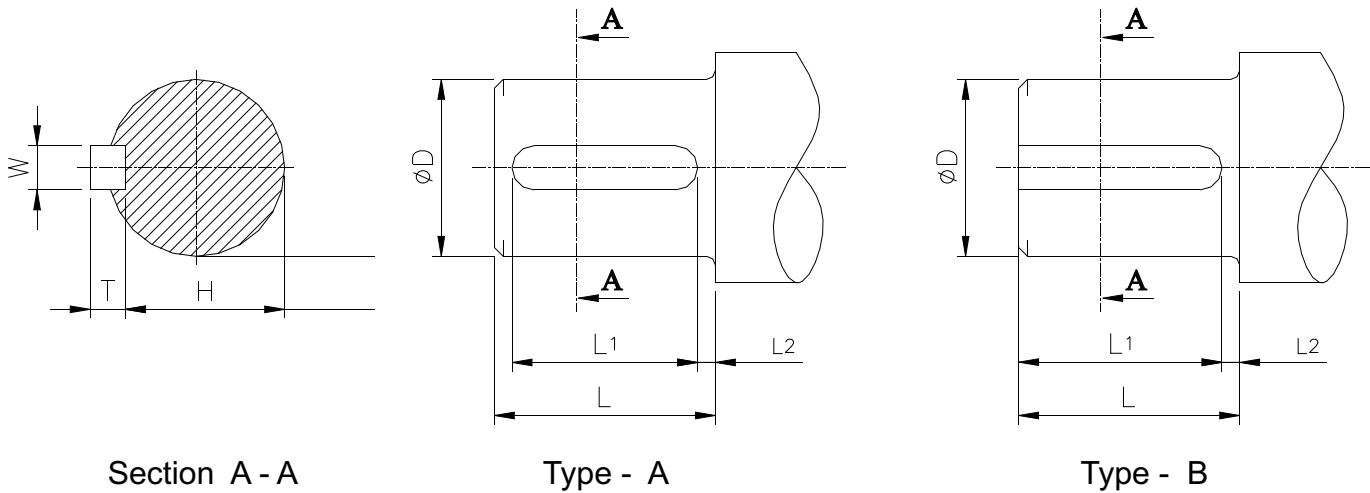
## Replacing the existing Worm Drive

If you want to replace the existing Worm drive arrangement, just give the following details we will suggest you the power saving Cyclo crystalliser arrangement.

### Enquiry - Technical Requirements

Details	1	2	3	4	5
Type of Crystalliser (H-Horizontal/V-Vertical)					
Capacity of Crystalliser in Tonnes					
Motor KW					
Motor RPM					
Crystalliser shaft diameter.					
Crystalliser shaft Speed in RPM					

### Replacement Dimensional Details



Sr.	Crystalliser Description	Keyway Type A or B	Shaft Dia D	Shaft Length L	Key Width W	Key Thickness	Keyway Depth H	Keyway Length L1	Distance L2	Key Type Taper / Parallel
1										
2										
3										
4										
5										

Note : Shaft diameter and key dimensions are to be given with tolerance.



## Prestigious Customers

Party / Industry	Quantity	Year of Supply
1 Walchandnagar Industries [ Gem Sugar]	12	2002
2 Bajaj Hindusthan Ltd.	42	2003
3 Spectrum Dyes	12	2003
4 Bajaj Hindusthan Ltd.	35	2004
5 L.H.Sugar Factories	23	2004
6 National Heavy Engg. [Export]	12	2004
7 Fives Cail - Kcp Limited [Export]	15	2004
8 Shrijee Engineering [Export]	09	2004
9 S.S.Engineers. [ Bajaj Hindusthan]	33	2004
10 S.S.Engineers. [ Bajaj Hindusthan]	27	2005
11 Shrijee Engineering	14	2005
12 L.H.Sugar Factories	13	2005
13 Shivani Multi-Utility	10	2005
14 The Simbhaoli Sugar	10	2005
15 Vishwanath Sugars Ltd.	10	2005
16 Revansiddeshwar Sales [ Sagar Sugar]	05	2005
17 Shrijee Engineering [Export]	40	2006
18 S.S.Engineers.	08	2006
19 GSR Sugars	05	2006



## Other Sugar Drives

- Vertical Crystalliser Drive
- Cane Carrier Drive
- Pug Mill Drive
- Magma Pump Drive
- Drum Motor for Belt Conveyor
- Mill Drive for Mini Sugar
- Mechanical Circulators
- Fiberizer
- Fiberizer Pusher





**Elevator Drives**



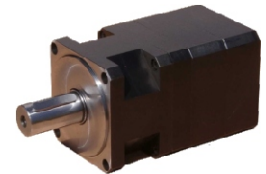
**Cycliodal Drives**



**SMP Drives**



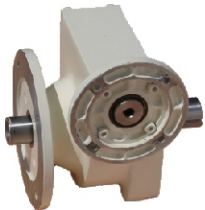
**DrumMotors**



**Low Backlash Drives**



**Winch Drive**



**Differential Drives**



**Worm Planetary**



**Torque Limiters**



**Planetary Drives**



**Track Drives**



**CYCLO TRANSMISSIONS LTD.**

**Registerd Office**

19-20 Renukanagari,  
Pune Satara Road, Dhankwadi  
Pune 411 043  
Phone : 020 243101732  
Fax : 020 243101732  
Emali : pune@cyplagear.com

**Factory**

At Post Patkhal  
Tal/Dist. Satara - 415 011  
Maharashtra  
Phone : 02162 232219 / 231939  
Fax:02162 230185 / 245060  
Email : satara@cyplagear.com

