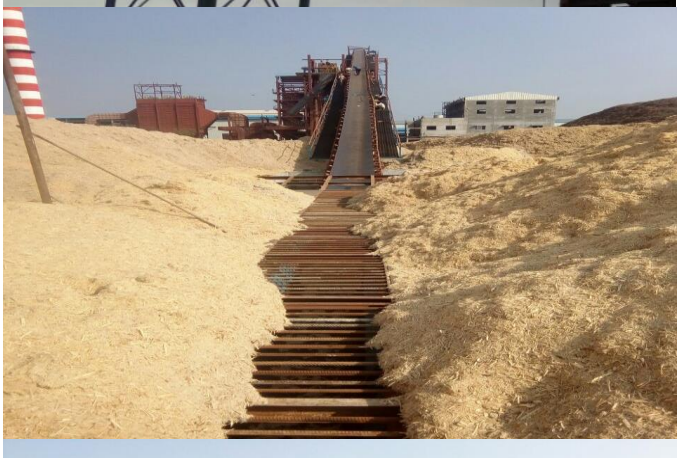
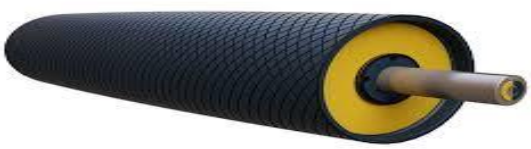
Simplicity®

PULLEY CATALOGUE





Introduction :

In the past three decades, few industries have changed more rapidly than the material handling industry in India. Technological advances and growing complexity of client needs, coupled with customer awareness have created a requirement for a new kind of organization, with a much broader range of largely sophisticated and specialized skills and capabilities than was normally found in the traditional companies.

Cotton duck belts were replaced by synthetics, and then by steel cords. Capacities have catapulted from 200-tph plant to 10,000 tph or more. New theoretical concepts have replaced old ones, and a new era of computer programs has been initiated.

To comply with this trend, SIMPLICITY has moved into vertical integration of all types to come up with the latest and most dependable designs and technical know-how.

Conveyor pulleys been recognized as a critical component of conveyor, failure of which could lead to extensive damage and down time. Hence special attention has been given to design an develop the most dependable pulleys.

The range of belt conveyor pulleys manufactured today in SIMPLICITY comes in three basic categories, i.e.,

- Standard construction pulleys
- Heavy-duty construction pulleys
- Extra heavy-duty construction pulleys.

Design

A special computer program has been evolved to optimize on design and obviates any calculation errors. Pulleys are designed to cater to overload forces of short duration.

Quality

To ensure the best quality and dependability, a rigid form of stage inspection is enforced, starting with raw materials to component checking and final assembly.

Pulley diameters and face widths

Pulley diameters and face width dimensions are adopted as per IS: 8531. However, the same can be supplied to comply with customer requirements.

Crowning on pulley face

For long conveyors, where the belt tensions are high, the crowning pulley is injurious to the belt and subsequently reduces belt life. In view of synthetic belts used now, and with deep trough conveyor idlers, crowning on pulley is a redundant feature and hence it is not recommended. However, if required by customer, crowning can be provided on pulleys as per IS: 8531.

Lagged pulley

SIMPLICITYcan supply pulleys with hot vulcanized rubber lagging, plain or grooved, as required by client. Different patterns of grooving such as herringbone or diamond can be provided to increase tractive friction under dirty or wet conditions. Diamond grooves have the advantage of being installed in any orientation, regardless of belt direction.

Pulley shells

Pulley shells are accurately rolled from weldable quality steel. Tolerances are maintained strictly within limits specified in IS: 8531.

Pulley shafts

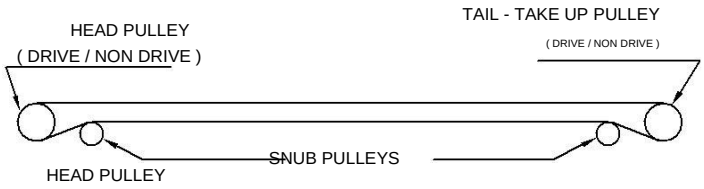
Special CNC machines ensure accuracy and consistency for machine shafts. In case, locking elements are used, sophisticated machines are available in shop, to achieve a high degree of surface finish and minimize ovality to ensure positive stress distribution. All shafts are ground to close tolerance where the bearing sits.

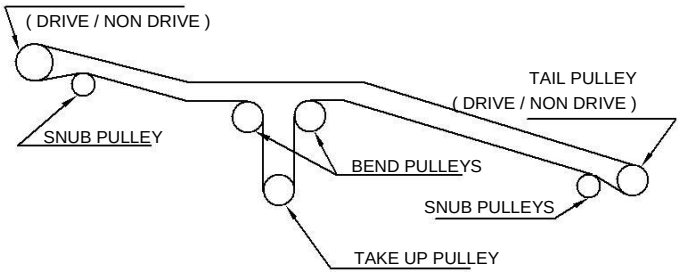
Bearing blocks

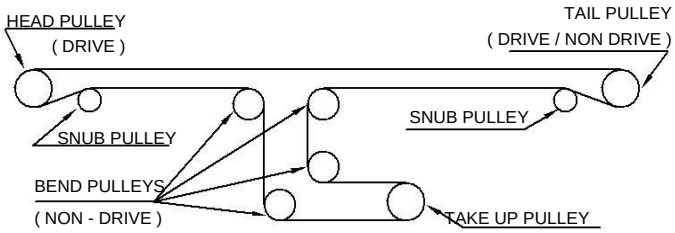
Bearing with bearing blocks can be supplied along with pulleys, with 2 or 4 mounting holes. Variety of seals can be provided depending on degree of protection required and duty involved.

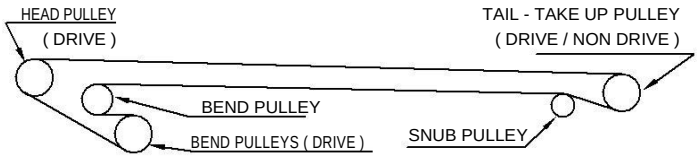
Non-magnetic pulleys

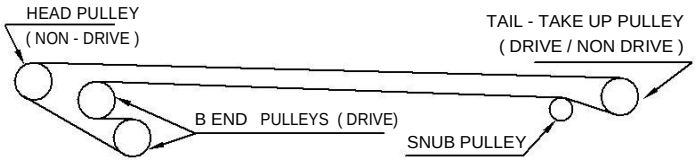
Special non-magnetic pulleys with stainless steel shell and diaphragm plates are also manufactured for special requirements.

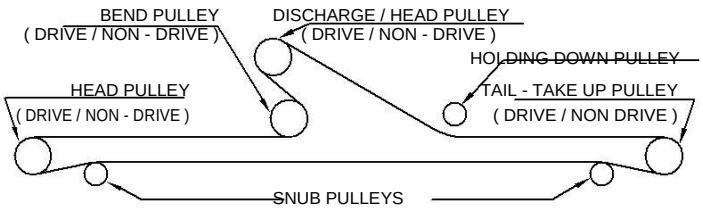


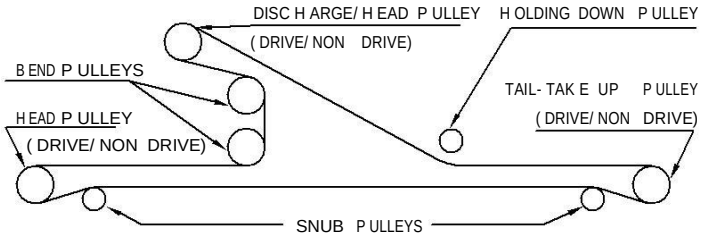












Classification of Conveyor Pulley according to its Location & Function

DRIVE PULLEY

Pulleys connected to run Conveyor Belt is called Drive Pulley. It has shaft extension on one/both sides.

TAKE-UP PULLEY

Pulley, which can be moved to keep belt tight, is called take-up Pulley.

SNUB PULLEY

Pulley, which is provided to increase/decrease, warp/contact angle of belt on nearby pulley, is called Snub Pulley.

BEND PULLEY

Pulley, which is used to change direction of belt, is called Bend Pulley.

DEFLECTOR PULLEY

Pulley, which is provided to deflect belt Slightly (generally less than 30^{o}) and to make belt pass through the required path, is called Deflector Pulley.

SHAFT CONNECTION TO SHELL

In case of Drive Pulley, connection of shaft to shell is rigid through key fittings or locking elements, where as, for Non-Drive Pulley, it may be rigid connection through shrink fittings, key fittings, locking elements or bearings i.e. Inboard Bearing Construction.

Pulleys with rigid connection are mounted on Plummer Blocks with Bearings where as Pulley with in board bearings are on brackets / Supporting Blocks / Take-up Blocks.

Drive Pulleys are always mounted on Plummer Blocks with Bearings.

PULLEY CONNECTION WITH GEAR

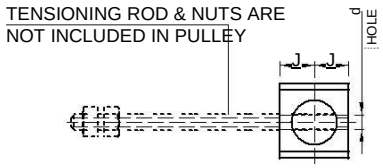
Drive pulleys are generally connected to driving gear unit through flexible couplings. Some time, complete drive unit with hollow shaft gear is mounted on shaft extension of drive pulleys. But, now a days, complete drive unit is mounted on the shaft through solid coupling also.

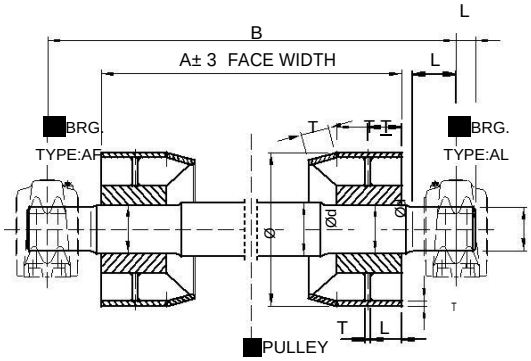
The range of belt conveyor pulleys manufacture today in SIMPLICITY under three basic categories

(1) Standard construction pulleys

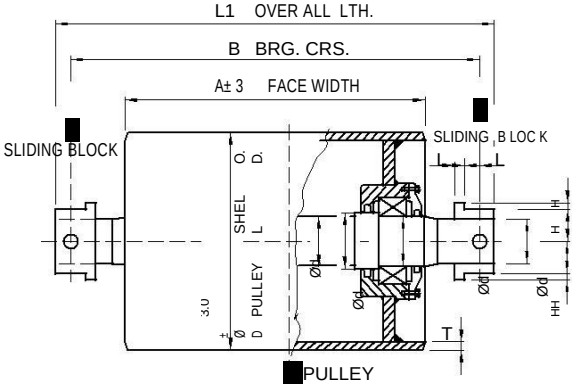
SIMPLICITY standard construction pulleys incorporate hubs machined from weldable quality cast, forged or rolled steel. The hubs connect the shaft with the shell by end diaphragm steel plates, which are welded with the hubs and shell.

Shaft to hub connection for drive pulleys would be keyed, while it would be shrink fitted for non-drive pulleys. However, the non-drive pulleys can be supplied with Keyed construction on Requirement.

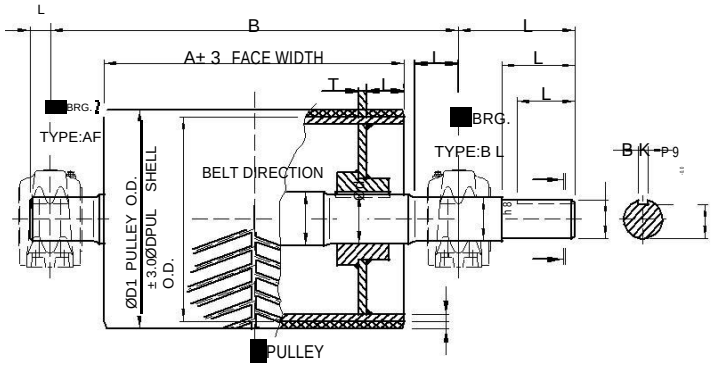




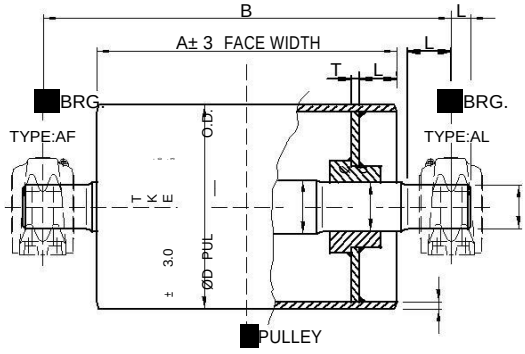
HOLDING DOWN PULLEY



NON - DRIVE PULLEY (WITH INBOARD BEARING)
WITH TAKE - UP BLOCK



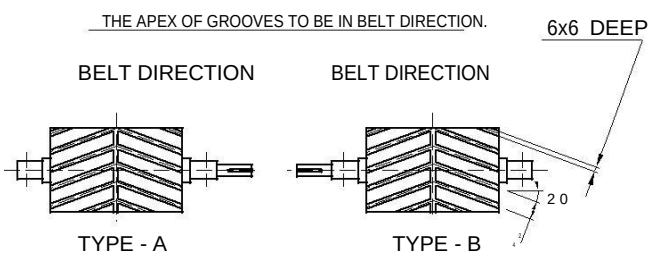
DRIVE PULLEY (WITH KEY - FILLED HUB)



NON - DRIVE PULLEY (WITH SHRINK - FILLED HUB)

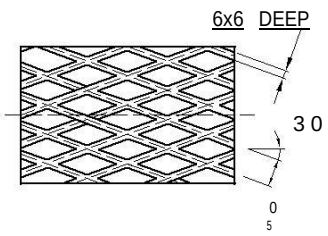
TYP . HERRINGBONE PATTERN GROOVES

THE APEX OF GROOVES TO BE IN BELT DIRECTION.

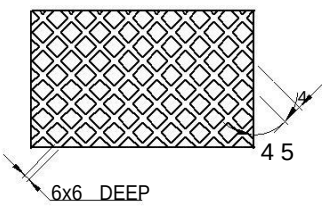


TYPE - A TYPE - B

RECT. DIAMOD PATTERN GROOVES



SQ. DIAMOND PATTERN GROOVES



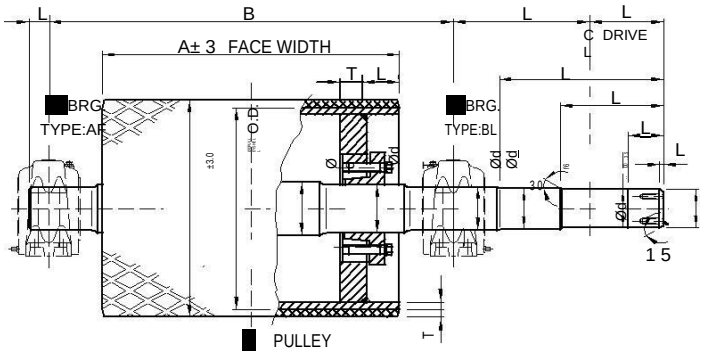
* * INDICATE HANDING TYPE A or B, IF HERRINGBONE

PITCH DIMENSIONS & INCLINATION CAN BE KEPT AS PER CLIENT'S REQUIREMENTS DIFFERENT GROOVE PATTERNS OF RUBBER LAGGING.

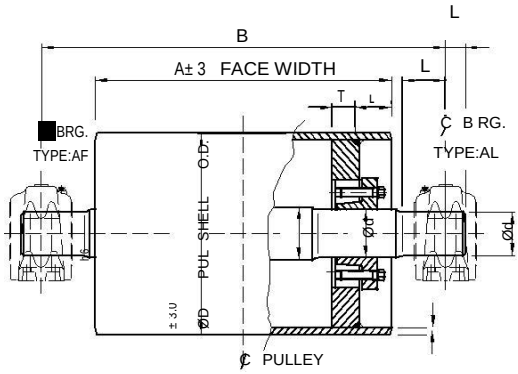
(2) Heavy-duty construction pulleys

SIMPLICITY heavy-duty construction pulley are provided with steel diaphragms (end discs), welded with the shell and incorporate friction based retractable locking elements. These types of end discs make it possible to eliminate the weld in the high stress zone. Where pulley O.D. is more, locking elements along with hub & diaphragm construction is provided as per design requirement. These locking elements are self-centering, and self-locking, as well as simultaneously, transmitting more torque than the equivalent solid shaft with key-way and also transmit axial thrusts without keys.

This type of locking assembly also proves invaluable, when shaft or shells require maintenance, as they facilitate easy removal and installation of shaft.

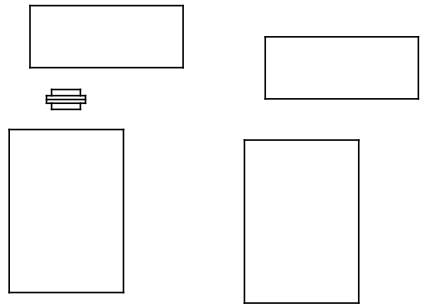


DRIVE PULLEY (WITH LOCKING ASSLY.)



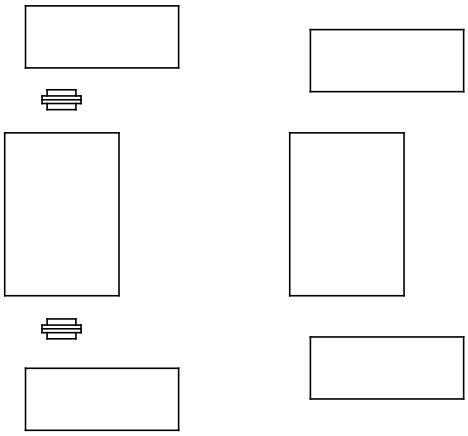
NON - DRIVE PULLEY (WITH LOCKING ASSLY.)

SKETCH SHOWING No. OF DRIVES ON PULLEY



Single End Drive with Coupling

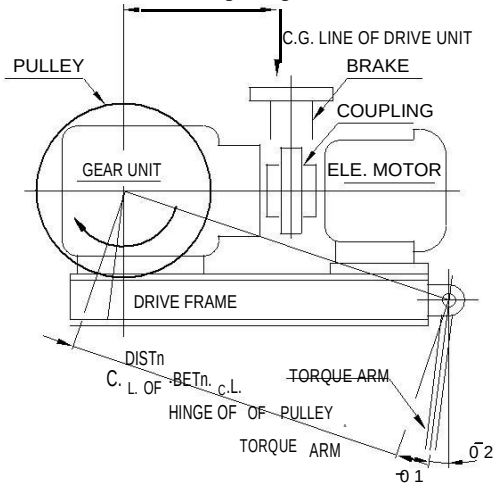
Single End Drive with Shaft mounted gear box

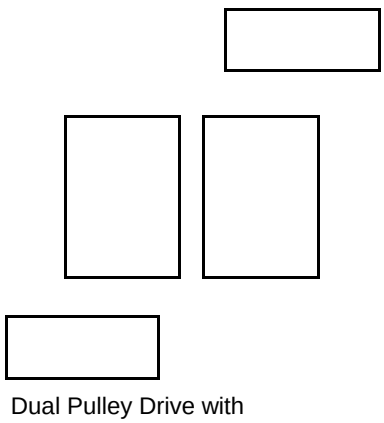


Double End Drive with Coupling

Double End Drive with Shaft mounted gear box

Distance Between C.L. Of Pulley & C.G. Line of overhung weight in side view





Dual Pulley Drive with Shaft mounted gear box

(3) Extra heavy-duty construction pulleys

SIMPLICITY also manufactures a range of custom-built extra heavy-duty pulleys suitable for any known application and to perform in arduous duties with extended fatigue life. This range of pulleys is designed with turbo-diaphragms of weldable quality cast steel, which are profiled to obtain even stress distribution. A Characteristic of this type of diaphragm is in the welding of the diaphragm to the shell, where the alter mating fatigue stresses are far lower.

For driving pulleys, the shaft to hub connection is by means of heavy-duty locking elements, which have the other characteristics and advantages similar to the locking elements used for heavy-duty construction pulleys.

For non-driving pulleys, the pulley body consisting of shell and turbo-diaphragms rotate on the fixed axle, with bearings mounted inside the pulley body.

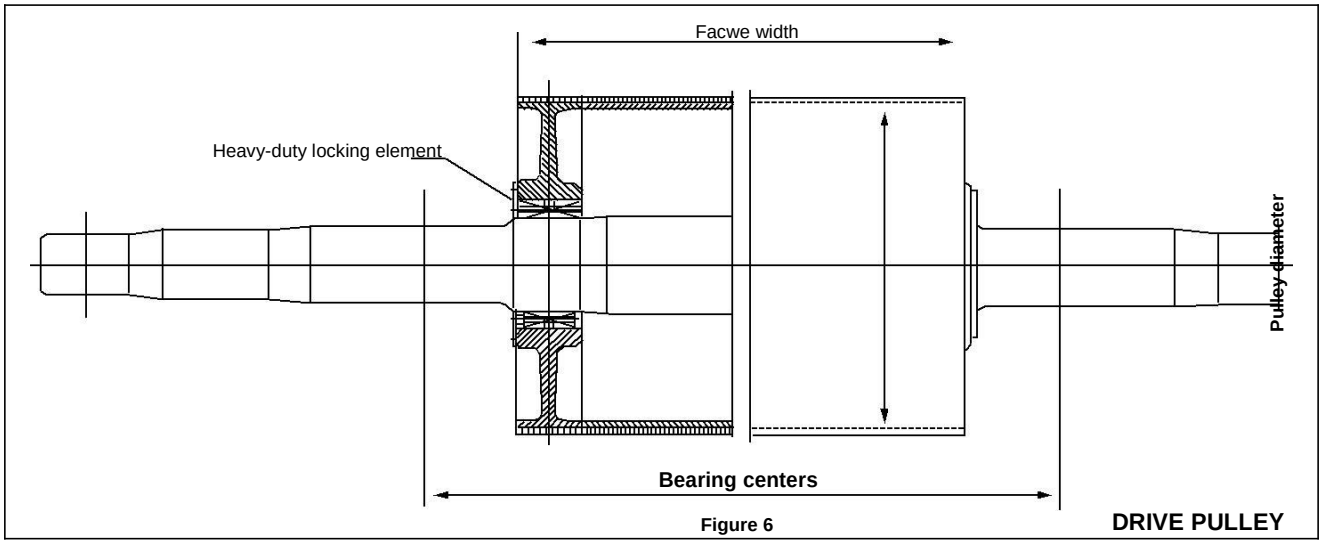


Figure 6

DRIVE PULLEY

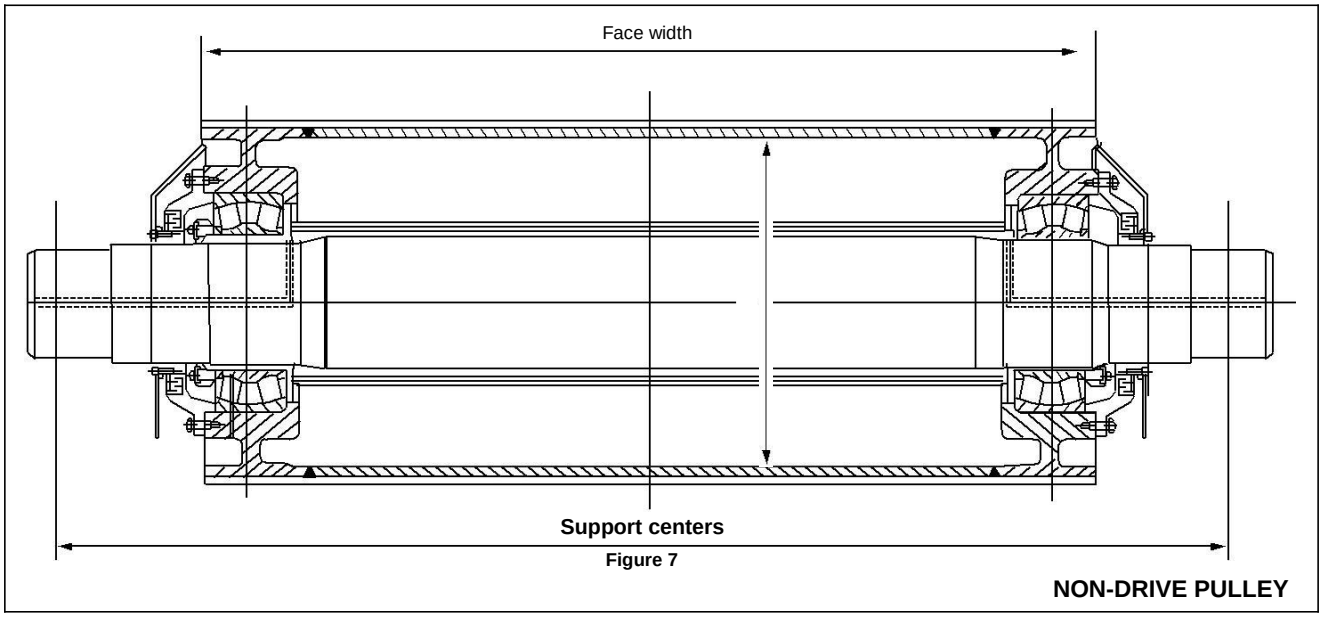


Figure 7

NON-DRIVE PULLEY

DATA REQUIRED FOR PULLEY DESIGN

Sr. No.	Description	Unit	Data
1	Conveyor No.	-	
2	Pulley Diameter	mm	
3	Belt Width (Face Width of Pulley)	mm	
4	Bearing Centers	mm	
5	Incoming Belt Tension T1		
	Normal Operating/Starting	kg	
	Standstill/Braking	kg	
	Outgoing Belt Tension T2		
	Normal Operating/Starting	kg	
	Standstill/Braking	kg	
6	Inclination (Degree with Horizontal) of Incoming & Outgoing Belt	-	Furnish Sketch *
7	No. of drives on pulley	No.	
	Motor KW per drive	Kw	
8	Belt Speed	m/s	
9	BELT DETAILS:		
	Type		
	Carcass Thickness	mm	
	RMBT (Recommended Max. Belt Tension)	kg/cm	
10	Type of coupling between Motor & Reducer	-	
11	Type of coupling between Reducer & Pulley	-	

Sr. No.	Description	Unit	Sample Data
12	RUBBER LAGGING:		
	Thickness	mm	
	Groove Pattern		diamond
	Type of Rubber/Hardness		Neoprene/ 60-70° Shore A
13	Brg. Life (If Pulleys are to be supplied with Brg.)	Hrs.	
14	Shaft Extension Required from Brg. Center	-	***
15	Total Overhung weight in Kg acting at Drive end for Shaft Mounted gear box including Motor, Brake, H.S. Coupling, Drive frame, Torque arm etc.	-	***
16	Distance Between C.L. of Pulley & C.G. line of above Overhung weight (in Elevation & side view)	-	***
17	Sketch showing Torque Arm Position	-	***
18	If any specific details/ Construction required which You feel to be considered While pulley designing like - Centering on Shaft ends - Material of Shaft/Key - Sealing, Make etc.	-	

> Above details are required only when pulley design is in SIMPLICITY scope. In case, old/existing pulley is to Be replaced by similar new pulley. Values of dimensions / details indicated in the sketches on page no. 3, 4 or 5 are to be furnished.
> Values given in the above table are just for reference only.
> Client/user must furnish actual/calculated details for each pulley separately.
> if any data from above is not furnished, it will be presumed that we are free to consider missing details as per SIMPLICITY Standard.
> To reduce verities, one can make pulleys common with near by higher rating pulleys, and it will be over all beneficial, considering spares etc. If required, client has to indicate the same in the enquiry / order details.

* Furnish sketch (Refer Sketch on Sheet No.2)
** Furnish sketch if specific details are required (Refer sketch on Sheet No.3)
*** Furnish sketch (Refer Sketch on Sheet No.4)

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M/s SIMPLICITY PROJECTS PVT. LTD.

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