

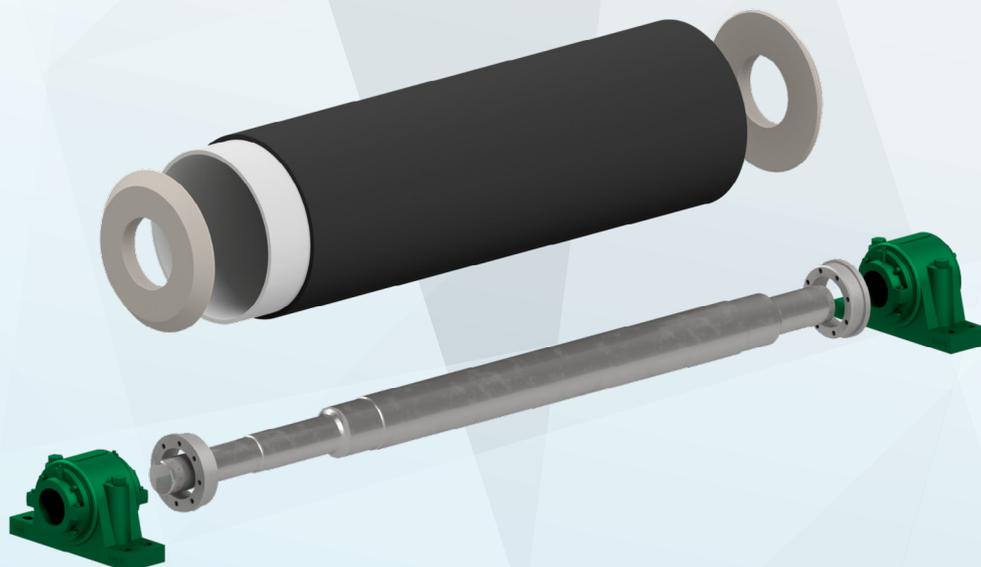
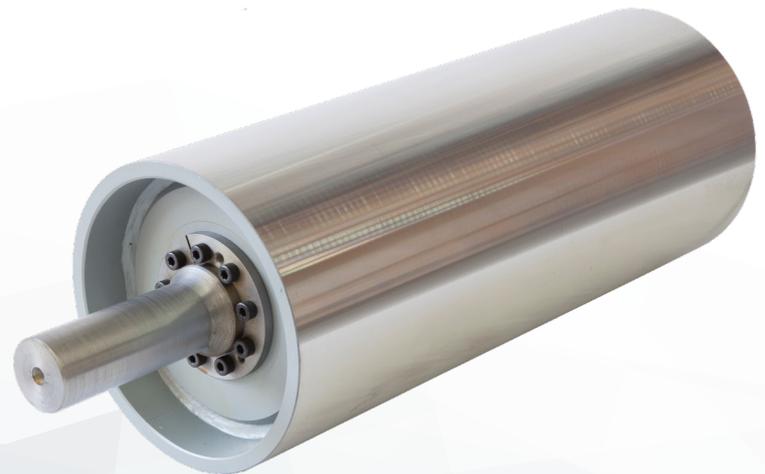
CONVEYOR DRUMS

Equipped with features and performance desired by the world's top miners these Conveyor Pulleys provide the lowest total cost of ownership compared to others.

A Head Drum also known as a Head Pulley or Drive Pulley are driven by mechanical means to provide movement of the conveyor belt.

A Tail Drum also known as a Tail Pulley is located at the opposite end of the conveyor belt to the head drum. They provide a direction of rotation for the conveyor belt and can also be used as a tension device in some conveyor designs.

These products find their applications in various industrial sectors involving the use of a conveyor belt, especially in Quarrying and Mining. HMA Flow & Industrial can provide these pulleys as per client's specifications, with a variety of surface finishes from plain steel to different forms of lagging including Rubber, Ceramic or FRAS.



DESIGN

Pulleys are made from a cylindrical shell with extra strong wall and end discs are fully welded to AS 1554 Part1-SP. The shell is attached to a continuous shaft using locking elements and the completed assembly is mounted in external bearing housings (if ordered).

The locking element used for disc to shaft attachment provides a demountable shrink fit ideal for maintenance purposes. Due to accurate control of the fit, coupled with the absence of any notch effect, the resulting stress concentration produced by the locking element is very low.

The pulley shell and shaft assembly are designed as an integral unit, where the stresses imposed in each component because of the belt tension, angle of wrap, pulley rotation and overall pulley dimensions (diameter, face length and bearing centres) are all assessed. The permissible stress levels are restricted within the pulley, to provide a satisfactory fatigue life based on design and manufacturing techniques.

To avoid stress raisers at the hub connections, each end disc is fabricated from a single plate, such that the thickness of the disc is at least equal to the width of the locking element.



The outer edge of the disc is bevelled as a weld preparation at approximately 40 degrees from either on or both sides, depending upon the plate thickness.

Shafts are designed for an infinite life in accordance with standard design procedure, taking into account, bending and torsion as applicable. All shaft calculations neglect any strengthening effect from the pulley end discs

Where there is a change in section on the pulley shaft between the locking element and the bearing seats, the shaft diameter at the bearing will not be less than 60% of that at the locking element and a large swept radius of approximately 3 times the half difference in shaft diameters will be employed to avoid stress concentration.

The angular shaft deflection at the locking element is limited to a maximum of 0.00145 radians under normal operating conditions. The drive side locking element is sized to transmit the appropriate motor torque at start-up according to the drive configuration.





GENERAL CONSTRUCTION DATA

Our pulleys have been developed using a high degree of security in the dimensioning of the flanges, in the sizing and penetration of the welding and in the assembly between the shell, and pulley end disc. The conveyor pulley shells are one-piece rolled with a single seam weld.

The fabrication is accurate in concentricity. All of the shells are static balanced and can be dynamic balanced if required. All conveyor pulley shells are seam welded by MIG process. Continuous wire feeds are employed during the welding process, utilizing an inert gas atmosphere, which guarantees the maximum uniformity and resistance of weld.

Well-equipped workshops with advanced machining facilities ensure high quality finishing of all conveyor pulley components. Pulleys may be cylindrical, or machine crowned to aid belt tracking. If required all components can be normalized after machining or welding, for internal stresses to be eliminated and to facilitate assembly and in turn disassembly, and also to eliminate reasons for cracking or deforming under load.



Shafts are normally manufactured from high strength steel bar K1045 or 4140.

Other options are:

- C1018 Carbon Steel
- C1045 Carbon Steel
- ANSI 4140 Alloy Steel
- 304 Stainless Steel
- 316 Stainless Steel



The major cause of pulley failure is excessive shaft deflection, contact us for selection and recommendation. We can perform Stress Analysis and finite Element Analysis to maximise your Pulley Performance.

ADVANTAGES

HMA Flow & Industrial supply regular, mine duty or engineered Belt Conveyor Pulleys, Self-Cleaning Pulleys, Wing Pulleys, Trough Rollers and complete Conveyor Systems.

The manufacturing process provides the end user with some significant advantages:

- The thick pulley shell absorbs more stress.
- The large crown angle provides superior belt tracking capabilities.
- True concentric machining provides:

1. maximum contact with the belt
2. consistent belt content discharge
3. less deflection of shaft
4. less stress on the bearings

In addition to the structural drum pulley advantages we provide all these value-added services with every pulley order:

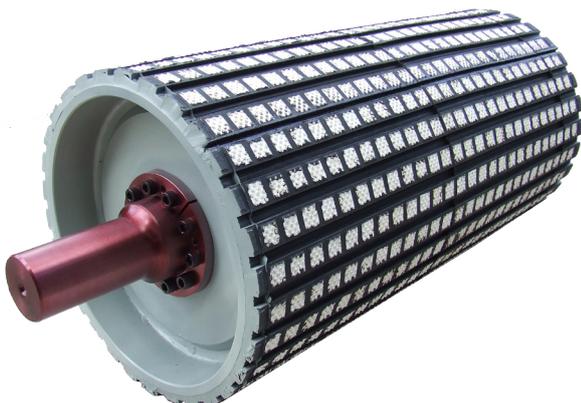
We can engineer and custom build pulleys to your requirements utilizing software tools such as Finite Element Analysis.

The strength of our pulleys has provided us with experience in many industries.



Self Cleaning

There are a variety of design of Self Cleaning Pulleys available, contact us about your specific requirements.



Lagging

Plain rubber lagging, Chevron, Herringbone and Diamond grooves are all available in Oil Resistant, Heat Resistant, FRAS and Food Grade.