

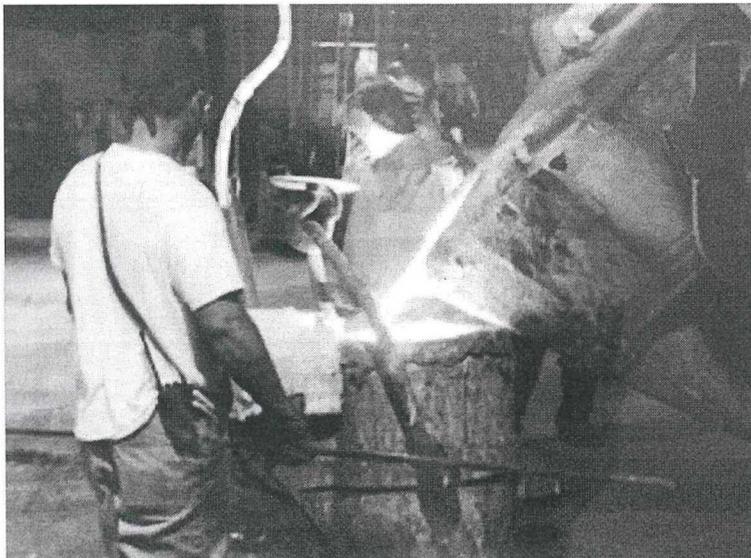
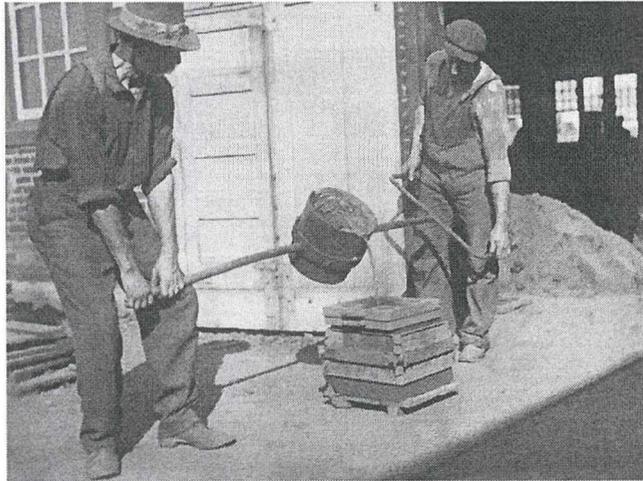
V-Belt, Synchronous, and Variable Speed Drives; Speed Variators; Bushings and Pulleys

 **TB Wood's[®]**
Incorporated

An Altra Industrial Motion Company



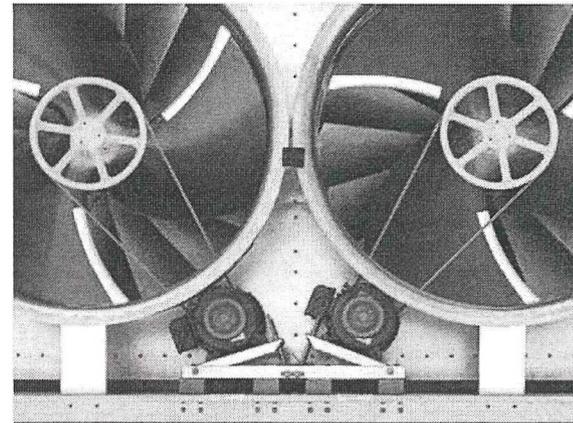
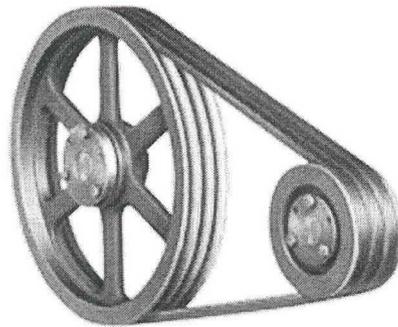
TB Wood's - History



ALTRA INDUSTRIAL MOTION

- 1857** T. B. Wood and Peter Housum purchased Franklin Foundry & Machine Shop
- 1862** Lt. Col. Peter Housum was killed in battle during the Civil War
- 1884** Company name changed to TB Wood & Sons
- 1986** The Wood Family sold company to private investor
- 1996** TB Wood's became a public company
- 2007** TB Wood's sold to Altra Industrial Motion

Belted Drive systems transmit power from driver to driven equipment.



An example is an electric motor to a pump or a fan.

In these applications, power is transmitted from the rotating shaft of the motor to a parallel shaft on the driven equipment (ex. Pump or a fan)

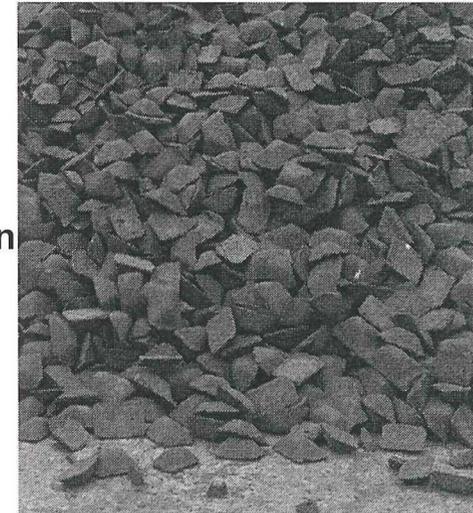
Belted drives that use V-Belts, require sheaves (pulleys with grooves)

Synchronous drives use a toothed belt and sprockets.

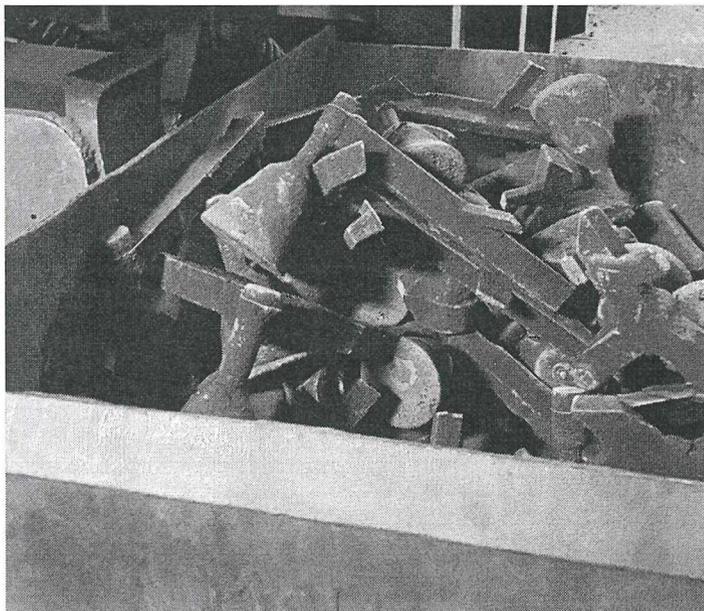
Description of the Manufacturing Process

Material Composition for Gray & Ductile Iron

- Scrap Steel (Recycled Rail Steel)
- Pig Iron
- Recycled Material (Gates, Risers, & Scrap Castings)



Pig Iron

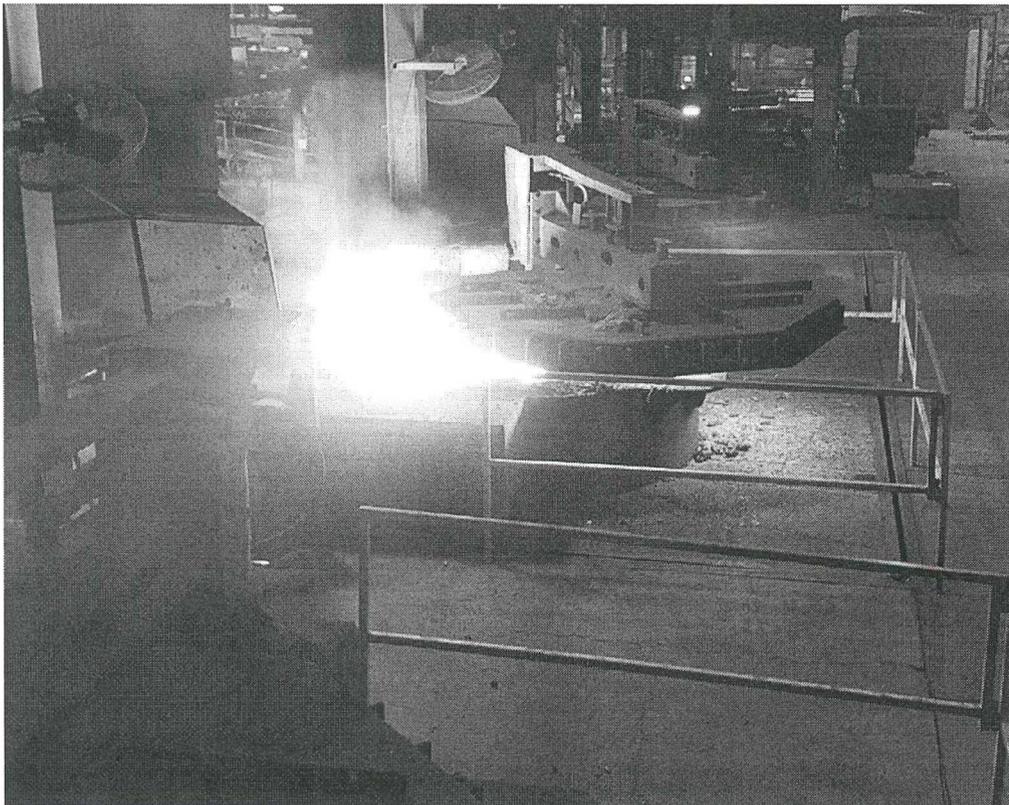


Gates & Risers



**Scrap
Steel**

Melt Process



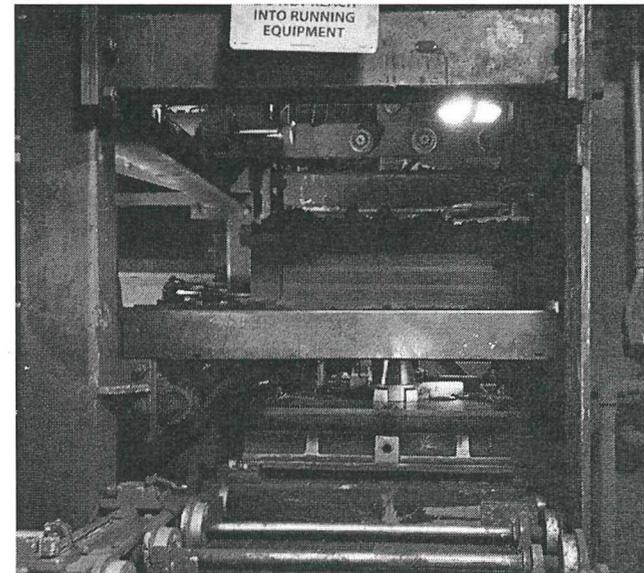
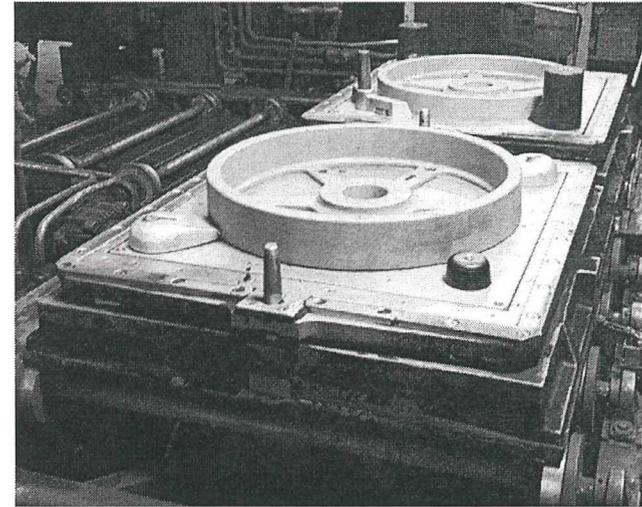
Melt

- A recipe is developed every day for each iron type and each furnace to be charged.
- Each material type is weighed and processed through a preheater to evaporate any moisture on the charge material.
- Each batch charge consists of approximately 4,000 lbs. of charge material.
- Charges are added until the furnace is full.
- Furnaces are then skimmed to remove slag.
- Furnaces chemistries are then taken.
- When it has been determined that the molten iron meets chemistry requirements, the furnace is then ready to be tapped for pouring iron into sand molds.

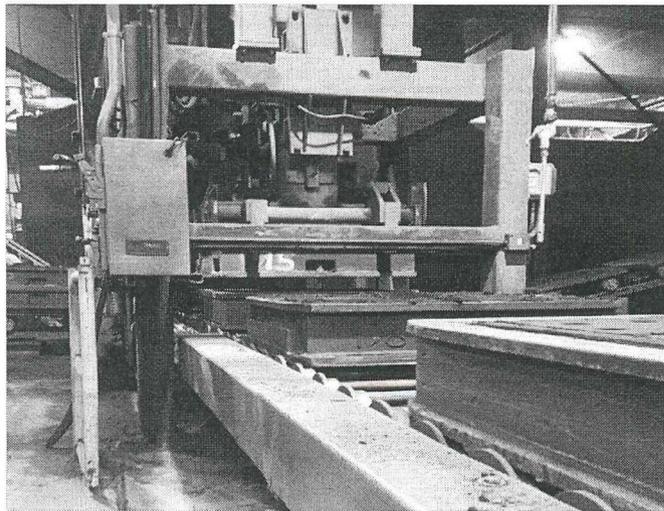
Molding Process



- To make a casting, a pattern is first made which conforms to the desired contours and dimensions of the casting.
- The pattern is then mounted on a metal or wood plate.
- The mold is made by placing the mounted pattern in a flask (as shown on the right) and then sand is added until the box is full.
- With the pattern plate still in the flask that is filled with sand, the sand is squeezed around the pattern to make a hard sand mold.
- The pattern is then removed from the flask leaving an impression from the pattern in the sand mold.

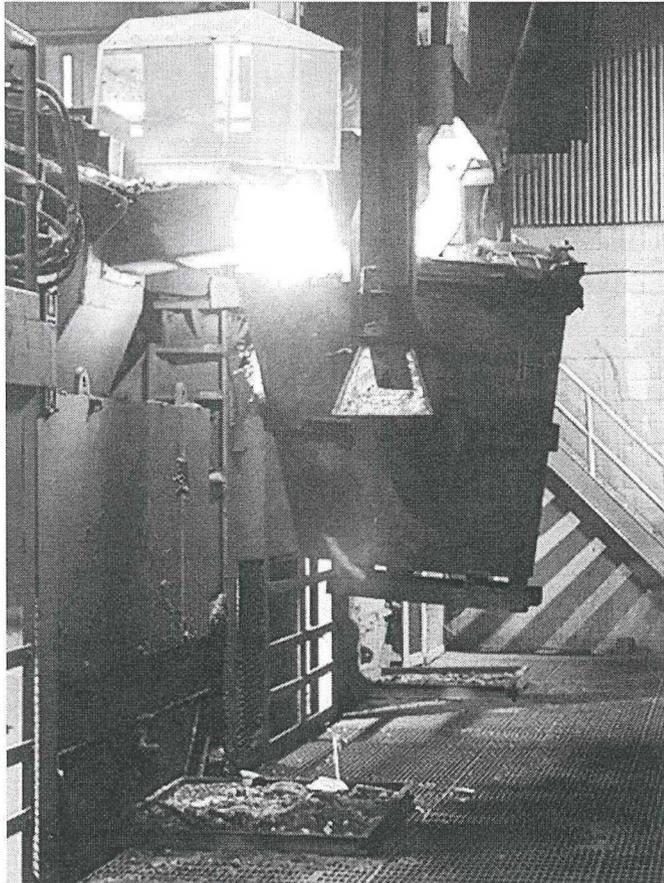


Mold Closing



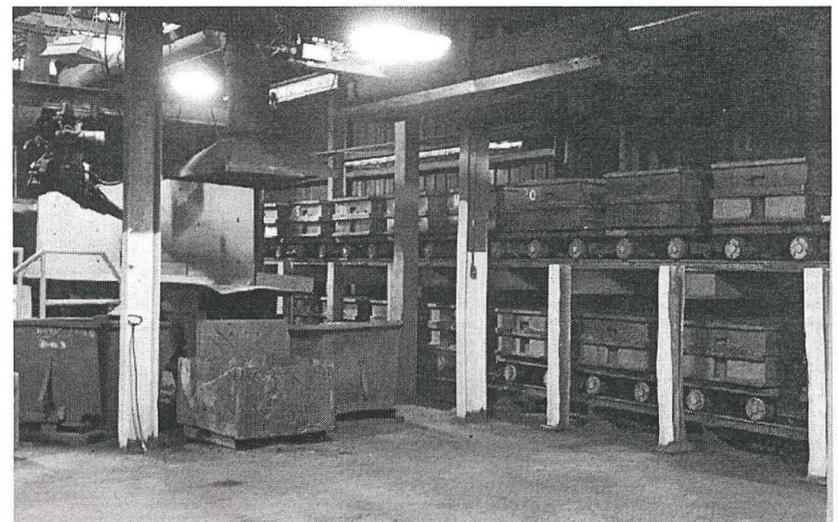
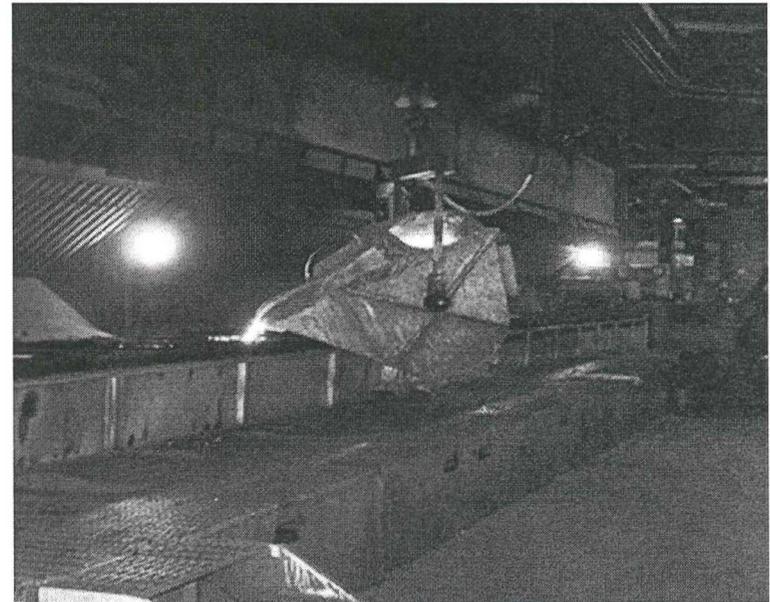
- A mold consists of two parts, the “drag” (the lower portion of the mold) and the “cope” (the upper portion of the mold).
- The picture on the top left shows the “drag” portion of the mold ready to move down the conveyor line so that the “cope” portion of the mold can be placed on top of the “drag”.
- The picture on the lower left shows the “cope” being placed on top of the “drag”.
- The mold is now ready to receive molten iron.

Iron Pouring

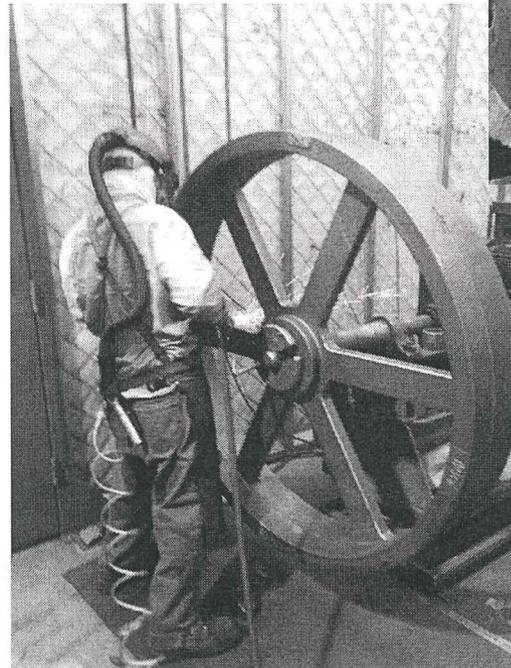
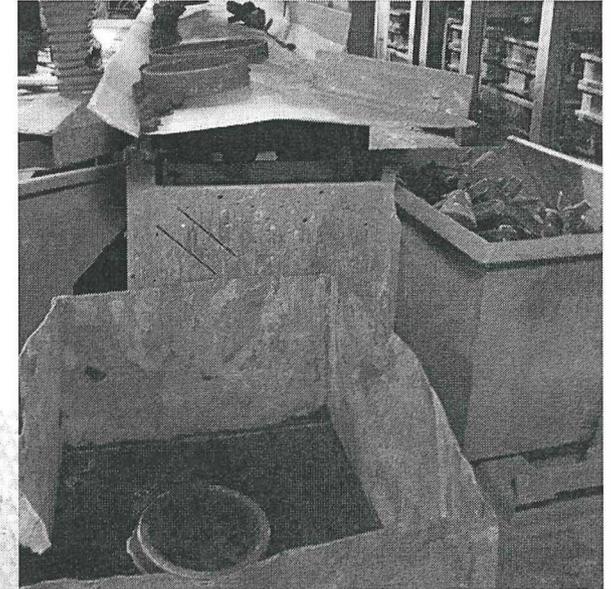


- The pour off operator requests an iron type and quantity of iron from the furnace operator.
- Molten iron is poured from the melt furnace to a “Carrier Ladle”.
- The “Carrier Ladle” then moves to the appropriate molding line and transfers the iron to a “pouring ladle.”

- The pouring operator then skims the ladle to remove any slag that has formed and takes an iron temperature to ensure the proper iron temperature is reached before pouring the iron into the sand mold.
- The molds that have received the molten iron now move to a cooling line which allows the iron casting to cool before moving to a shakeout process that removes the casting from the sand mold.



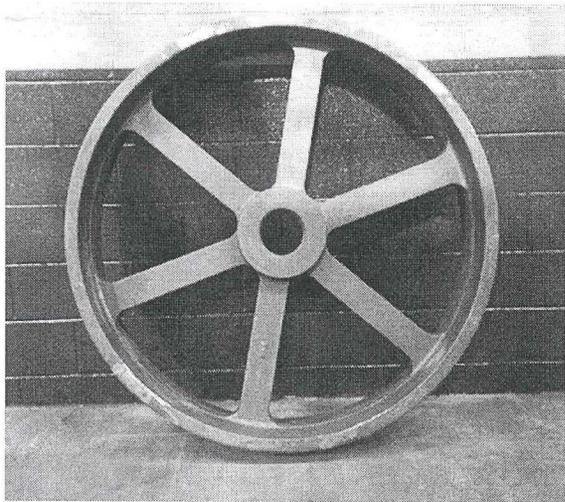
- After the casting has been removed from the sand mold, **the sand, iron risers and iron gates are recycled.**
- The casting then moves to a cleaning process that includes shot blasting and grinding.
- The shot blasting removes loose sand.
- The grinding operation removes “flashing”, “gate connections”, and “riser connections”.
- Once these operations are completed, the casting is ready to move to the machining process.



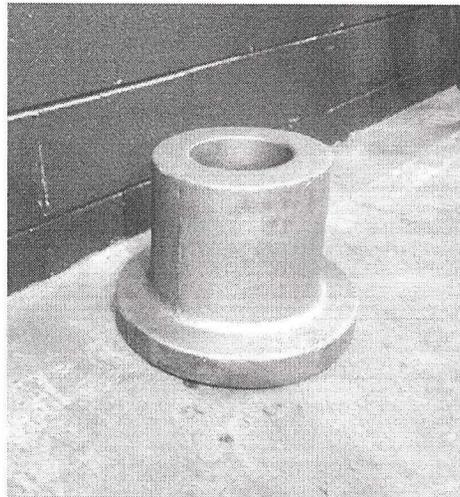
Raw Castings



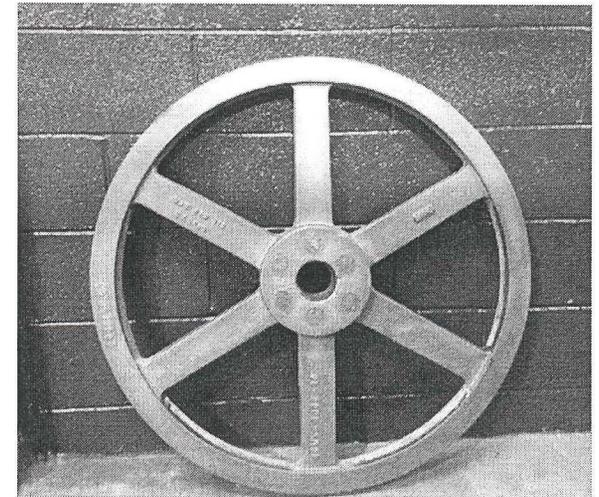
V-Belt Sheave Casting



QD Bushing Casting



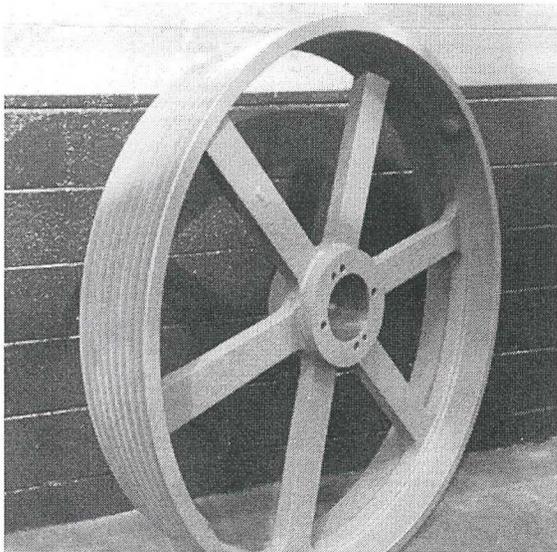
Synchronous Sheave Casting



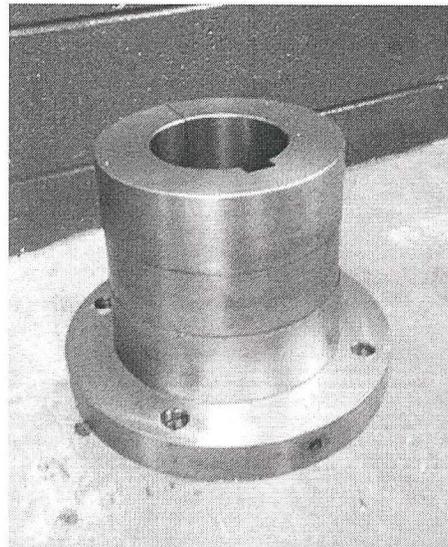
Finished Product



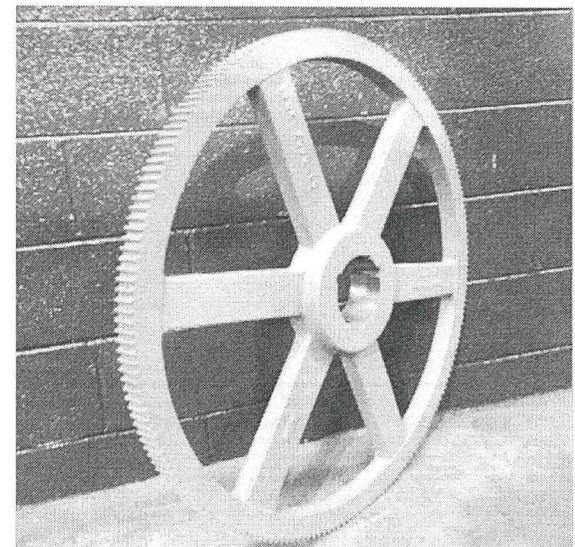
Finished V-Belt Sheave



Finished QD Bushing



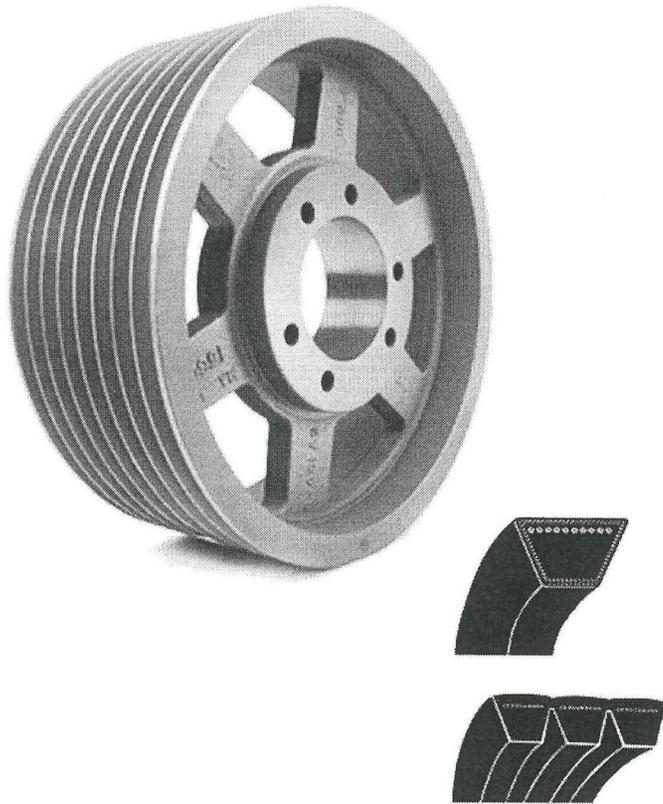
Finished Synchronous Sheave



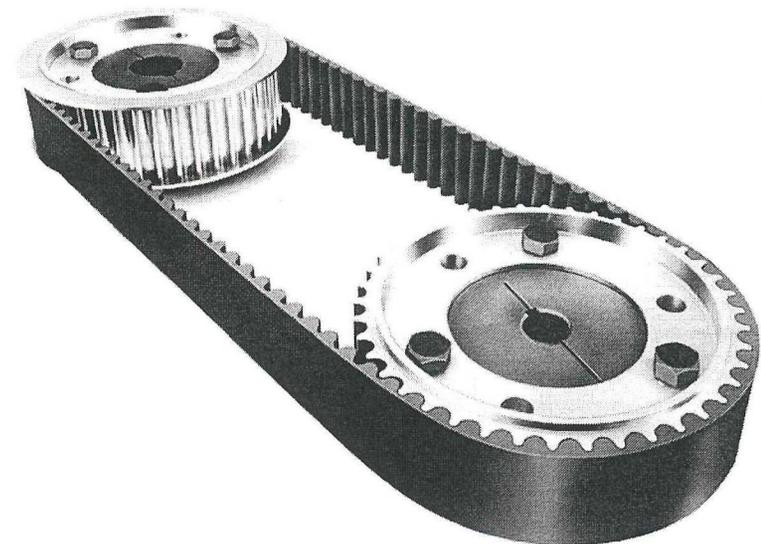
Characteristics of in-scope
IMTDCs



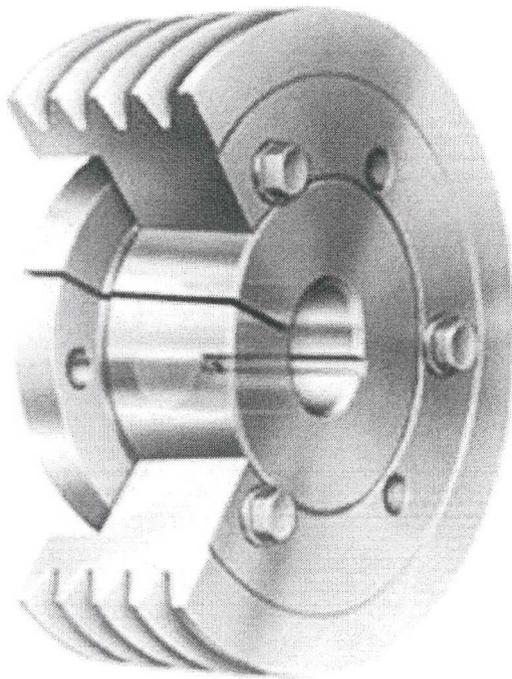
V-Belt Sheave



Synchronous Sheave



QD Bushing



A bushing is used to mount a sheave or synchronous sheave to the shaft in a belted drive application.

