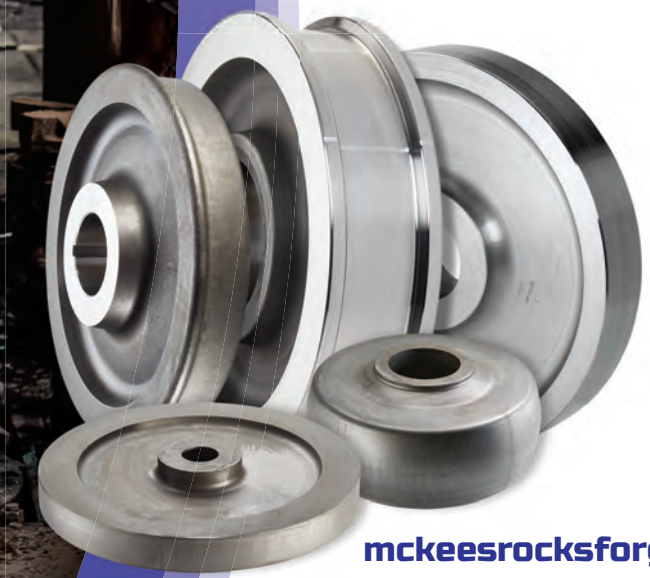
McKEES ROCKS FORGINGS

- Crane Wheels
- Industrial Wheels
- Sheave Wheels
- Gear Blanks
- Custom Forging



mckeesrocksforgings.com

About Us

McKees Rocks Forgings is a division within the Standard Forge Products Plant located in Mckees Rocks, Pennsylvania. The entire plant is staffed by 130 employees and produces forged axles and circular forgings. The circular forgings have been produced for over 100 years under various names but have been continuously produced as Mckees Rocks Forgings since the 1980's. Our products have been utilized in many different applications throughout the world and we continue to modernize and expand our production capabilities to ensure we meet our customer's needs.

Our History

THE EARLY 1900S: SHOEN BRAKE SHOE COMPANY

In 1901, a portion of McKees Rocks Forging's current plant was known as the Shoen Brake Shoe Company. Here, brake shoes and other rail car parts were manufactured for the neighboring railroad car shop, called the McKees Rocks Industrial Enterprise. This was where the first all-steel railroad cars were built. The plant as a whole was eventually renamed the Pressed Car Steel Works and later also become part of our current plant.

In 1902, after years of research and development, the first forged steel rail car wheel was produced here, and the first patent was issued to Hendrik Loss. This patent covered the machine that rolled the wheels from circular ingots.

By 1908, 200,000 forged and rolled steel wheels were in service and the Carnegie Steel Company purchased the Pressed Car Steel Works.

1940: HOWARD AXEL WORKS

Then, in 1940, the Howard Axle Works (part of Carnegie Steel) was relocated to this plant to make room for a huge expansion of the Homestead Steel plant so it could produce steel armor planting needed for World War II.

1966: THE FIRST GFM

The first GFM was installed at McKees Rocks by US Steel for the production of railroad axles in 1966. Competitors quickly followed this technological breakthrough, and today, all axles are produced on GFM's. A continuous heat treat line was also added to the list of upgrades at McKees Rocks, and US Steel also upgraded the wheel manufacturing line. Upon installing all of the upgrades in 1970, this US Steel plant was the most modern axle and wheel manufacturing facility in the world.

1979: CLOSURE OF THE WHEEL LINE

But this plant was not without its down turns. In 1979, US Steel closed the wheel line due to the cast freight car wheel being accepted over the forged wheel as the economical solution. The remaining parts of the plant, axle and circular forging, remained open and profitable through 1981.

1982: THE PLANT CLOSES

In 1982, US Steel incurred huge losses when rail car production dropped from 90,000 cars to 5,000 cars. This drop occurred when the Federal Government closed a tax loophole which had encouraged every doctor, lawyer, and other wealthy investors to own a railroad car for the tax advantages. By 1985, US Steel closed the McKees Rocks facility after four years of heavy losses, both at McKees Rocks and at all of their other plants.

1986: NEW OWNERSHIP

Former plant managers and an investor from Chicago leased the Axle plant from US Steel in 1986 under the new name "Standard Forged Products." McKees Rocks Forgings production of crane wheels then commenced in September with a total workforce of 14 people.

1989: CORPORATE OWNERSHIP

In 1989, after becoming profitable and with interest of reopening of the axle facility, Trinity Industries purchased McKees Rocks Forgings and Standard Forged Products from US Steel. Major investments were made to equipment to modernize and also bring the work force to current wages and benefits.

1990 – TODAY: CONTINUED GROWTH & SUCCESS

Then in 1990, the second GFM was installed. By 1993, McKees Rocks Forgings was producing both alloy and carbon steel forgings. Overtime, production climbed to the point of 100,000+ axles a year and as many as 210 people working at this plant. Then, in 2017, Trinity Industries Inc. decided to spin off several component companies to focus on rail car production and leasing. The axle and wheel division as well as several other business units formed the new corporate entity of Arcosa Inc. As a part of Arcosa, our future is bright and this business will continue to "press on" as shown by our history.

MACHINING

Our machining capabilities include a wide array of machines that allow for an efficient route to produce your products.

After a product has been forged, a layer of oxidized scale is present on the exterior of the part and must be removed. Our high-horsepower carbide and ceramic tooled machining centers allow maximum material removal in the rough-machining phase.

Manual template-controlled machining centers provide the greatest flexibility and cost efficiency for all order sizes. CNC turnings centers then allow for the most accurate details to be precision machined based on your needs.

Our experienced operators ensure accurate placement of bolt circles and tapped features. Our equipment is capable of turning pieces up to 56-inch diameter to handle your biggest jobs.

Additionally, we are able to meet standard tolerances and surface finish requirements. For finish-machining requirements, skilled machinists use high precision tools and the latest equipment to maintain tight tolerances for critical dimensional requirements.

OUR MACHINES

Our inventory of machines includes:

- Horizontal Mazak, which can machine up to 27"Ø parts
- Three G&L's with live spindles, which can machine up to 49"Ø and 34" tall
- Two G&L's without live spindles, which can machine up to 63"Ø and 34" tall
- Three Snyder Mandrel machines with a 57"Ø table size and 22" maximum height
- Two CNC Snyder Roughers with a 57"Ø table size and 22" maximum height
- Four Snyder Chuck machines with a 57" table size and 22" maximum height
- Two Key Cutters, which key up to 2.25" wide keys

FORGING

At McKees Rocks Forgings, we utilize a 10,000-ton, four column hydraulic press to produce forged circular sections including crane wheels, industrial wheels, sheave wheels, gear blanks, rollers, and other products.

OUR PROCESS

The power of our hydraulic press, combined with the closed-die design, allows McKees Rocks Forgings to achieve the dramatic reduction ratios that are critical to high quality forgings. All products are upset forged, meaning the metal flows outward in a radial direction to fill the die during forging.

Once the die cavity is filled, the pressure is intensified to ensure the elimination of any microscopic porosity that may have existed as a result of the ingot's casting process. This provides an extremely uniform and homogeneous grain structure in the forging (opposed to cast wheels which will always have some porosity caused by shrinkage of the steel during solidification). The grain structure and directional orientation of flow lines produces greater yield, tensile strength and other physical properties than a cast wheel.

CUSTOM FORGINGS

We can quickly develop custom forgings with QForm simulation to meet your specific needs. New tooling is fabricated in a modular design to limit the cost (opposed to solid tooling designs). New tooling can be designed and implemented quickly to meet the forging schedule and to facilitate the delivery of a quality finished product.

TO CREATE OUR QUALITY PRODUCTS, WE UTILIZE:

- AN EXTENSIVE INVENTORY OF DIES AND FORMING PLATES TO MATCH THE GEOMETRY OF YOUR PARTS.
  - New tooling can be manufactured in-house to meet your needs.
  - Custom tooling for high volume part runs is very economical.
- PRESSING WITH 10,000 TONS OF FORCE TO FORGE CARBON, ALLOY, AND STAINLESS STEEL ALLOYS.
  - This is typically done in one to two operations.
- ALL PRODUCT MODELS AND FORGINGS ARE DRAWING IN SOLIDWORKS2016 TO VERIFY STOCK ALLOWANCES.
  - Existing tooling models can be interchanged to form new forging sections.
- QFORM SIMULATION WHICH PROVIDES VERIFICATION OF CUSTOM FORGINGS.
  - Aids developing new tooling quickly and efficiently to meet your needs.
  - Validates standard stock allowances.
  - Shows voids and folds.

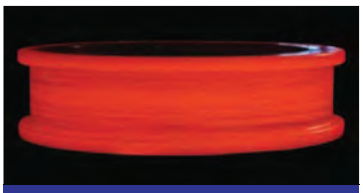
HEAT TREATMENTS

Rim Toughened AISI-1070

- Rim Toughening is the most popular form of heat treating for Crane Wheels, Industrial Car Wheels, and Sheaves.
- The process involves the uniform heating of the entire wheel and then selectively quenching the rim while the wheel is spinning.
- The most common hardness range for the wheels heat treated in this manner is 321-363 BHN, but other ranges can be achieved as well.
- The depth of hardness achieved with this process can reach 1-1/2 inches making it the deepest penetrating of the common wheel heat treating practices.
- The depth of hardness and level of hardness achieved using this process create an extremely tough and durable wheel for moderately loaded wheel applications.
- Rim Toughening is the process that is specified in ASTM A-504 Class C.

RECOMMENDED USAGE:

- Cranes with moderate wheel loads as defined in the "AIST Technical Report #6, Allowable Wheel Loads Guide for Heat Treated (320 BHN Minimum) Crane Wheels".
- Applications with high flange impact loads due to bad rail joints.
- Applications with consistently high flange pressure due to severe end truck or rail misalignment - These flanges will bend rather than break.



Deep Hardened™ AISI-1070

- The "Deep Hardening" heat treating process produces Crane Wheels, Industrial Car Wheels, Sheaves and Rollers with a surface hardness up to 60 Rockwell C-scale (Re).
- The process involves the full normalizing of the forging followed by a selective heating of the rim area and then aggressive quenching in a polymer solution.
- The depth of hardness produced in this process exceeds that which is produced by the traditional carburizing process and meets or exceeds the depth of hardness requirements of the "AIST Technical Report# 6, for Case Hardened Wheels".
- The hardness level and depth of hardness achieved in this process provide the maximum load bearing capability and abrasion resistance of any of the processes that we offer.
- This process yields the best sub-surface hardness depth in the wheel tread of any 'Case Hardened' wheel which gives it the maximum resistance to tread spalling.

RECOMMENDED USAGE:

- Cranes with extremely high wheel loads as defined in the "AIST Technical Report #6, Allowable Wheel Loads Guide for Case Hardened (56-60 Re) Crane Wheels".
- Cranes or Industrial Cars that operate in areas with high levels of abrasive dust or dirt or other abrasive environments.
- Applications with reasonable end truck and rail alignment that can take advantage of the significant depths of hardness in the tread and flange.

Differentially Hardened AISI-1070

- The "Differential Hardening" heat treating process produces Crane Wheels, Industrial Car Wheels, and Sheaves with a tread and inner flange surface hardness up to 60 Rockwell C-scale (Re).
- The process involves the full normalizing of the forging followed by a selective heating of the rim and inside flange area and then aggressive quenching in a polymer solution.
- The depth of hardness produced in this process exceeds that which is produced by the traditional carburizing process and meets or exceeds the depth of hardness requirements of the "AIST Technical Report # 6, for Case Hardened wheels."
- By only heating the inside of the flanges, the core and outside of the flanges remain ductile and resistant to breakage.
- This process yields the best combination of maximum wheel load bearing capability and flange toughness in the industry.

RECOMMENDED USAGE:

- Cranes with extremely high wheel loads as defined in the "AIST Technical Report #6, Allowable Wheel Loads Guide for Case Hardened (56-60 Re) Crane Wheels".
- Cranes that operate in areas with high levels of abrasive dust or dirt or other abrasive environments.
- Applications with questionable end truck and rail alignment that may cause crane skewing resulting in significant flange pressure. Older cranes that have lost the ability to track correctly during normal operation which results in significant contact between the wheel flanges and rail head.

Super Tough AISI-4140

- The AISI-4140 "Super Tough" Crane Wheel is capable of supporting extremely high wheel loads while still maintaining superior flange toughness and ductility.
- The process involves the full normalizing of the forging followed by selective heating of the rim area and aggressive quenching in a polymer solution.
- The alloy steel allows for significantly greater toughness and impact resistance than a similar hardness carbon steel wheel.
- Laboratory testing shows that flanges on AISI-4140 "Super Tough" Wheels have 50% greater flange strength and 50% greater impact strength than carbon steel wheel flanges.
- The increased hardenability of the Alloy Steel allows for deeper hardness penetration and increased spalling resistance.
- The depth of hardness achieved with the "Super Tough" wheel is 50% greater than with a carbon steel wheel (greater than 40 Re at .350 inch).
- Available in a variety of hardness ranges up 56 Re (575 BHN) to meet your most demanding needs.

RECOMMENDED USAGE:

- Older cranes with poorly aligned runways.
- Applications with heavy loads and high flange wear.
- Applications that have experienced flange breakage.

Rim Toughened Wheel Section (Based on a 27" Wheel Sample)

Deep Hardened™ Wheel Section (Based on a 27" Wheel Sample)

Differentially Hardened Wheel Section (Based on a 27" Wheel Sample)

AISI-4140 Super Tough Wheel Section (Based on a 24" Wheel Sample)

STANDARD MATERIAL OPTIONS

- **1060V SHEAVE WHEEL STEEL**
  Our 1060 chemical formulation and forging process ensures that our sheave wheels have a long life expectancy. The chemical formulation improves grain refinement during forging which translates to improved wear life.

- **1070M CRANE WHEEL STEEL**
  Our special 1070 chemical formulation is designed to meet or exceed the requirements of AIST Technical Report No. 6 for hardenability. This ensures that our wheels have the high level of durability you expect.

- **4140 STEEL**
  Our 4140 material can be used interchangeably in our crane and sheave applications. It is an excellent choice when very long life expectancies are required. This material is also used in gear blanks.

- **4340 STEEL**
  Our 4340 chemical formulation has been designed for severe loads and environmental applications. This material has also been used in crane wheel applications due to severe crane way distortion. It is also used in the production of gear blanks.

- **8000 SERIES GEARING STEEL**
  This material is used in most gearing applications where toughness of the body of the gear is combined with the hardening of the teeth. We also produce gearing out of many other materials. Send us your specification for review by our metallurgical team.

- **410 STAINLESS STEEL**
  This martensitic alloy is used in special forgings for its ability to be hardened to some degree and its ability to prevent moderate corrosion and wear.

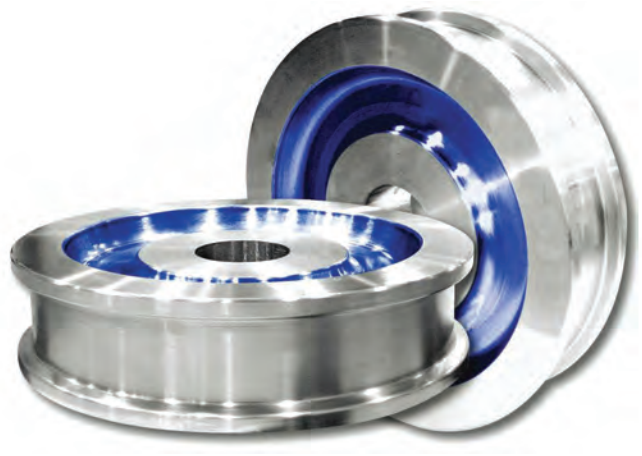
- **17-4 STAINLESS STEEL**
  This martensitic alloy is used in special forgings for higher corrosion resistance. Since age hardening is conducted at low temperatures, parts can be finished machined and age hardened without much distortion.

- **300 SERIES STAINLESS STEEL**
  This austenitic alloy is used in applications where the highest level of corrosion resistance is required. The material is solution treated followed by quenching to provide a high impact, low hardness material with excellent corrosion resistance.

MATERIAL SELECTION

Material selection can be the most important step in the creation of your product. Materials should be carefully chosen to meet the demands of the physical and service environment the product will operate within. We offer several standard grades of carbon and alloy steels, and we can procure specialty materials at your request.

FORGED STEEL CRANE WHEELS



Forged Steel Crane Wheels are available in the wide range of standard sizes shown below. In addition, wheels to meet your special design requirements can be produced in virtually any size, configuration and surface finish condition. We maintain a large inventory of carbon and alloy steels to meet your specific needs.

Forged Wheels are available in any surface hardness up to 62 RC including our standard heat treatments.

- Untreated, Annealed, Normalized
- Rim Toughened (34-40 RC)
- Deep Hardened (Up to 62 RC)
- Differentially Hardened (Up to 62 RC)
- Super Tough AISI-4140

HEAVY DUTY CRANE WHEELS Dimensional Data

Standard Double Flanged Crane Wheels for Three Special Crane Rail Sizes

Wheel Section Number*	Crane Rail Section (#/yd) APPLICATION Bridge	Crane Rail Section (#/yd) APPLICATION Trolley	Nominal Wgt. Lbs. (Finished Machined)	DIMENSIONS - Inches Wheel Dia. D	Rim Width L	Hub Length P	Tread Width E	Hub Dia. O	Flange Height A
WC-151		105	280	15	5.5	6	3.25	9.5	1
WC-181		105	380	18	5.5	6	3.25	10.5	1
WC-182	105	135	455	18	6.5	7	4	10.5	1
WC-201		105	425	20	5.5	6	3.25	10.5	1
WC-202	105	135	500	20	6.5	7	4	10.5	1
WC-211		105	445	21	5.5	6	3.25	11	1
WC-212	105	135	550	21	6.5	7	4	11	1
WC-213	135	175 / 171	655	21	7.5	8	4.875	12	1
WC-241		105	560	24	5.5	6	3.25	11.5	1
WC-242	105	135	690	24	6.5	7	4	11.5	1
WC-243	135	175 / 171	830	24	7.5	8	4.875	13.5	1
WC-244	175 / 171		1005	24	8.0	8.5	5.5	15	1
WC-271		105	675	27	5.5	6	3.25	11.5	1
WC-272	105	135	840	27	6.5	7	4	13.5	1
WC-273	135	175 / 171	1000	27	7.5	8	4.875	13.5	1
WC-274	175 / 171		1135	27	8.0	8.5	5.5	15	1
WC-301	105	135	975	30	6.5	7	4	13.5	1
WC-302	135	175 / 171	1170	30	7.5	8	4.875	13.5	1
WC-303	175 / 171		1315	30	8.0	8.5	5.5	15	1
WC-331	105	135	1225	33	6.5	7	4	13.5	1
WC-361	105	135	1430	36	6.5	7	4	13.5	1
WC-362	135	175 / 171	1645	36	7.5	8	4.875	13.5	1
WC-363	175 / 171		1860	36	8.0	8.5	5.5	15	1

*When specifying wheel section number indicate type of tread required, straight or tapered

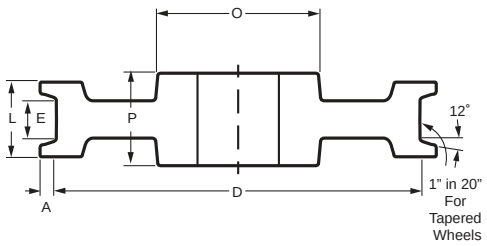
LIGHT DUTY CRANE WHEELS Dimensional Data

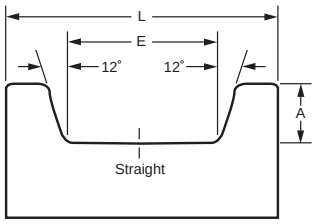
Standard Double Flanged Crane Wheels for Rail Lighter than the Three Special Crane Rail Sizes

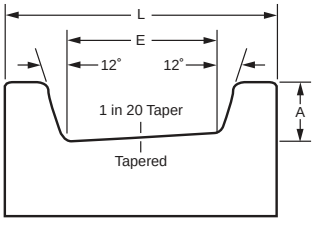
Wheel Section Number*	Crane Rail Section (#/yd) APPLICATION Bridge	Crane Rail Section (#/yd) APPLICATION Trolley	Nominal Wgt. Lbs. (Finished Machined)	DIMENSIONS - Inches Wheel Dia. D	Rim Width L	Hub Length P	Tread Width E	Hub Dia. O	Flange Height A
WCL-121		25 / 30	125	12	4	5	2.25	6	0.75
WCL-122	20 / 25	30 / 40	145	12	4.5	5.5	2.5	6	1
WCL-123	30 / 40	60 / 105	170	12	5	6	3	7	1
WCL-151		25 / 30	200	15	4	5	2.25	8	1
WCL-152	20 / 25	30 / 40	225	15	4.5	5.5	2.5	8	1
WCL-153	30 / 40	60 / 105	245	15	5	6	3	8	1
WCL-181	20 / 25	30 / 40	305	18	4.5	5.5	2.5	9	1
WCL-182	30 / 40	60 / 105	340	18	5	6	3	9	1
WCL-211	30 / 40	60 / 105	430	21	5	6	3	10	1
WCL-241	30 / 40	60 / 105	545	24	5	6	3	10	1

*Light duty wheels are normally provided with straight treads. Tapered treads are available upon inquiry.

Tread and Flange Contour







The above tread and flange contours are illustrated to define the measurement of the tread width.

Legend:

D - Wheel Diameter **P** - Hub Length **O** - Hub Diameter
L - Rim Width **E** - Tread Width **A** - Flange Height

FORGED STEEL SHEAVE WHEELS

Forged Steel Sheave Wheels are available in the wide range of standard sizes shown below. In addition, wheels to meet your special design requirements can be produced in virtually any size, configuration and surface finish condition. We maintain a large inventory of carbon and alloy steels to meet your specific needs.

Forged Wheels are available in any surface hardness up to 62 RC including our standard heat treatments.

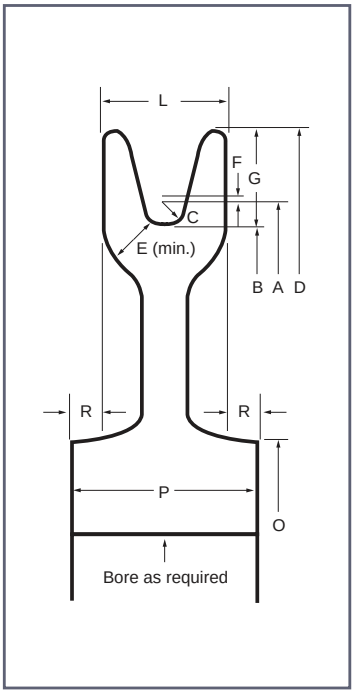
- Untreated, Annealed, Normalized
- Rim Toughened (34-40 RC)
- Deep Hardened (Up to 62 RC)
- Super Tough AISI-4140

SHEAVE WHEELS Dimensional Data

Wheel Section Number	Nominal Weight lbs.	Rope Dia.	Outside Dia. D	Pitch Dia. A	Root Dia. B	Rim Width L	Groove Radius C	Rope Wall (Min.) E	Clearance Offset F	Groove Depth G	Hub Dia. O	Hub Length P	Hub Projection R	Standard Rough Bore (Min.)
WSW-162	100	1/2	16	15	14-1/2	1-3/4	9/32	1/2	1/32	3/4	8	3-1/2	7/8	3
WSW-202	150	5/8	20	18-3/4	18-1/8	2	11/32	5/8	1/32	15/16	9-1/2	3-1/2	3/4	4
WSW-222	170	5/8	21-3/4	20-1/2	19-7/8	2	11/32	5/8	1/32	15/16	9-1/2	3-1/2	3/4	4
WSW-242	235	3/4	24	22-1/2	21-3/4	2-1/4	13/32	3/4	1/32	1-1/8	11	3-1/2	5/8	4
WSW-262	255	3/4	26	24-1/2	23-3/4	2-1/4	13/32	3/4	1/32	1-1/8	11	3-1/2	5/8	4
WSW-282	315	7/8	28	26-1/4	25-3/8	2-1/2	31/64	7/8	3/64	1-5/16	12	3-3/4	5/8	5-1/4
WSW-302	355	7/8	30	28-1/4	27-3/8	2-1/2	31/64	7/8	3/64	1-5/16	12	3-3/4	5/8	5-1/4
WSW-322	420	1	32	30	29	2-3/4	35/64	1	3/64	1-1/2	12-1/2	3-3/4	1/2	5-1/4
WSW-342	430	1	34	32	31	2-3/4	35/64	1	3/64	1-1/2	12-1/2	3-3/4	1/2	5-1/4
WSW-362	560	1-1/8	36	33-3/4	32-5/8	3	39/64	1-1/8	3/64	1-11/16	14	4	1/2	5-1/4
WSW-382	675	1-1/8	38-1/4	36	34-7/8	3	39/64	1-1/8	3/64	1-11/16	14	4	1/2	5-1/4
WSW-402	795	1-1/4	40	37-1/2	36-1/4	3-1/4	11/16	1-1/4	1/16	1-7/8	14	4-1/4	1/2	5-1/4
WSW-422	860	1-1/4	42-1/2	40	38-3/4	3-1/4	11/16	1-1/4	1/16	1-7/8	14	4-1/4	1/2	5-1/4
WSW-442	975	1-3/8	44	41-1/4	39-7/8	3-1/2	3/4	1-3/8	1/16	2-1/16	14	4-1/2	1/2	5-1/4
WSW-482	1100	1-1/2	48	45	43-1/2	3-3/4	13/16	1-1/2	1/16	2-1/4	15	4-3/4	1/2	5-1/4

STANDARD WHEEL Tolerances* (Inches)

Dimension	CRANE TRACK WHEELS				INDUSTRIAL WHEELS		SHEAVE WHEELS	
	Rough Machined		Finished Machined		Standard Finish Rough Bore		Standard Finish Rough Bore	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Wheel Dia.****	+1/8	-1/8	+1/64	-1/64	+3/16	-1/16	N/A	N/A
Wheel Cir.**	N/A	N/A	N/A	N/A	+4 Tapes***	-1 Tapes***	N/A	N/A
Rim Outside Dia.	N/A	N/A	N/A	N/A	N/A	N/A	+1/16	-1/8
Root Dia.	N/A	N/A	N/A	N/A	N/A	N/A	+3/16	-0
Flange Height	+1/16	-1/16	+1/16	-1/16	+1/16	-1/16	N/A	N/A
Flange Thickness	+3/16	-1/16	+1/32	-1/32	+1/16	-1/16	N/A	N/A
Rim Thickness	N/A	N/A	N/A	N/A	+3/8	-3/16	N/A	N/A
Rim Width	+3/16	-1/16	+1/16	-1/16	+1/8	-1/8	+1/8	-1/8
Hub Length	+1/8	-1/8	+1/16	-1/16	+3/8	+1/8	+3/8	+1/8
Hub Dia.	+1	-1/4	+1	-1/4	+1	-1/4	+3/4	-1/4
Hub Proj. or Depr.	N/A	N/A	N/A	N/A	+1/8	-1/8	+3/16	-1/16
Bore	Rough bore shall be 1/4" +/- 1/8 less in diameter than finished bore size. Rough bore eccentricity in relation to tread: -3/32" max. Finish bore and hub length tolerance to customer's specifications.							
Minimum Hub Wall Thickness	Bores 7" diameter and under, hub wall 1" minimum. Bores over 7" diameter, hub wall 1-1/4" minimum							



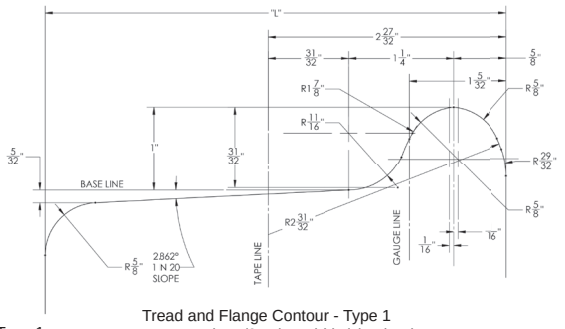
Values listed on tables are in inches, and are McKees Rocks Forgings standards. McKees Rocks Forgings can produce wheels to most customers specification. **Wheels are mated in pairs within one tape. ***As measured by standard tapes. ****For Deep Hardened Crane Wheels standard tread diameter tolerance is -/+.010 and will be supplied with an as heat treated surface. Tighter tolerances require finish machining after heat treatment.

FORGED STEEL INDUSTRIAL WHEELS

Forged Steel Industrial Wheels are available in the wide range of standard sizes show below. In addition, wheels to meet your special design requirements can be produced in virtually any size, configuration and surface finish condition. We maintain a large inventory of carbon and alloy steels to meet your specific needs.

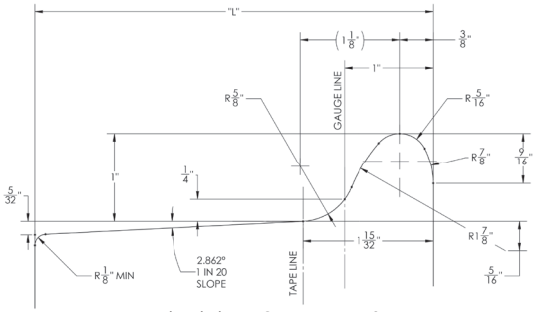
Forged Wheels are available in any surface hardness up to 62 RC including our standard heat treatments.

- Untreated, Annealed, Normalized
- Rim Toughened (34-40 RC)
- Deep Hardened (Up to 62 RC)
- Differentially Hardened (Up to 62 RC)
- Super Tough AISI-4140



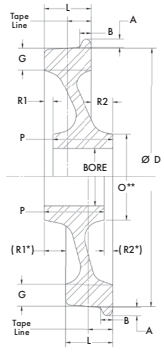
Type 1

Tread and Flange Contour - Type 1
For 5" and 5-1/2" Rim Width (L) Wheels



Type 2

Tread and Flange Contour - Type 2
For 4" and 4-1/2" Rim Width (L) Wheels

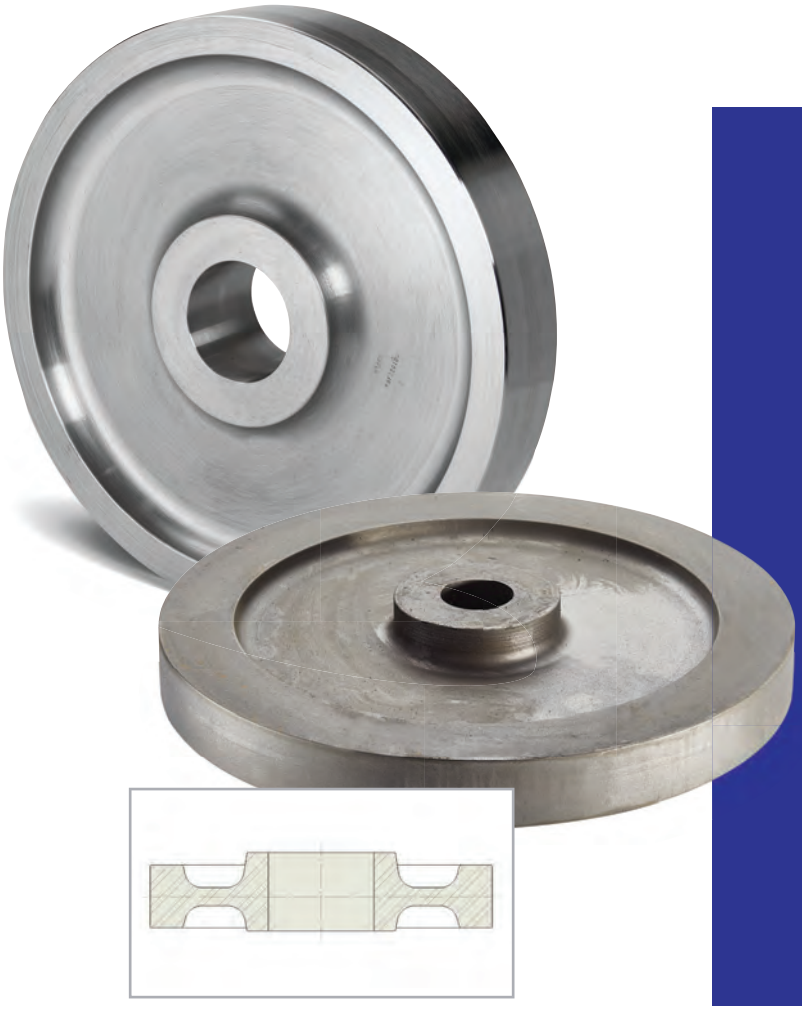


STANDARD INDUSTRIAL WHEELS Dimensional (Inches)

Wheel Section Number*	Nominal Weight lbs.	Tread Dia. D	Flange Height A	Flange Thickness B	Rim Width L	Rim Thickness G	Hub Diameter O	Hub Length P	HUB PROJECTION Back R_2	HUB PROJECTION Front R_1
WIW-122	130	12	1	1	4-1/2	1	5-1/2	6-1/2	1	1
WIW-141	145	14	1	1	4	1	5-1/2	6	1	1
WIW-143	235	14	1	1-5/32	5-1/2	1-1/4	7	7-1/2	1	1
WIW-152	235	15	1	1-5/32	5	1-1/2	7-1/2	7	1	1
WIW-161	175	16	1	1	4	1-1/4	6	6	1	1
WIW-164	305	16	1	1-5/32	5-1/2	1-1/2	9	7-1/2	1	1
WIW-181	230	18	1	1	4	1-1/2	7	6	1	1
WIW-185	360	18	1	1-5/32	5	2	9	8	2	1
WIW-186	385	18	1	1-5/32	5-1/2	2	9	8-1/2	2	1
WIW-202	340	20	1	1-5/32	5	1-1/2	8	7	1	1
WIW-204	525	20	1	1-5/32	5-1/2	1-3/4	12	8	2-1/2	0
WIW-224	440	22	1	1-5/32	5-1/2	1-1/2	9-1/2	7	2-7/16	15/16*
WIW-225	500	22	1	1-5/32	5-1/2	1-1/2	12	7	2-7/16	15/16*
WIW-226	420	22	1	1-5/32	5-1/2	1-1/2	10-1/4 - 10**	5-1/2	0	0
WIW-227	545	22	1	1-5/32	5-1/2	1-1/2	14	6-3/28	1-9/16	11/16*
WIW-243	485	24	1	1-5/32	5	2	9-1/2	6-1/2	2-7/16	15/16*
WIW-244	575	24	1	1-5/32	5-1/2	2-1/2	10	7	2-7/16	15/16*
WIW-245	590	24	1	1-5/32	5-1/2	2-1/2	11	7-1/2	3-3/16	1-3/16*
WIW-246	615	24	1	1-5/32	5-1/2	2-1/2	12	7-1/2	3-3/16	1-3/16*
WIW-247	635	24	1	1-5/32	5-1/2	2-1/2	13	7-1/2	2-3/16	3/16*
WIW-262	510	26	1	1-5/32	5-1/2	1-3/4	8-1/2	5-3/4	1/4	0
WIW-263	630	26	1	1-5/32	5-1/2	2-1/2	10	7	2-7/16	15/16*
WIW-265	635	26	1	1-5/32	5-1/2	1-1/2	14	6-3/8	1-9/16	11/16*
WIW-283	800	28	1	1-5/32	5-1/2	2-1/2	13-1/2	7-1/2	3-3/16	1-3/16*
WIW-302	840	30	1	1-5/32	5-1/2	2-1/2	13-1/2	7-1/2	3-3/16	1-3/16*
WIW-332	1000	33	1	1-5/32	5-1/2	2-1/2	13-1/2	7-1/2	3-3/16	1-3/16*
WIW-362	1150	36	1	1-5/32	5-1/2	2-1/2	13-1/2	7-1/2	3-3/16	1-3/16*

*Denotes front hub depression **Larger dimension is front diameter, smaller dimension is back diameter

GEAR BLANKS & MINING COMPONENTS

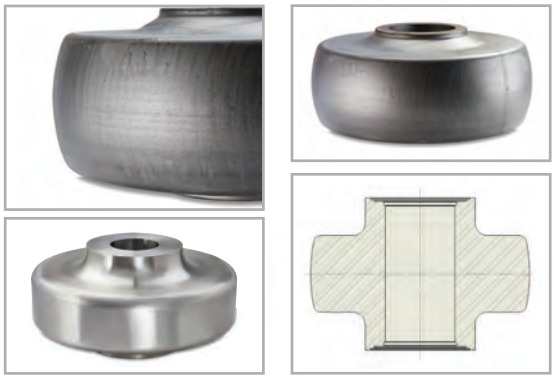


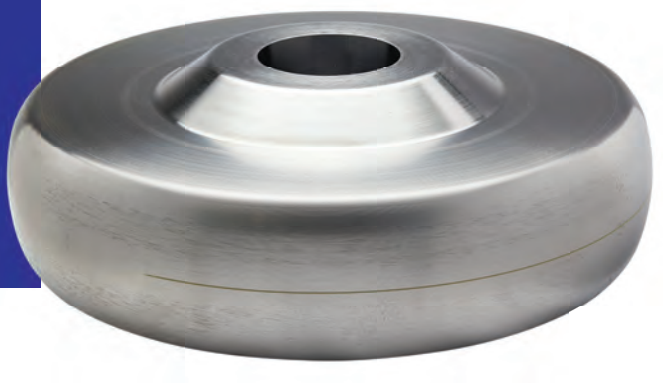
GEAR BLANKS

Our 10,000 ton forging press provides the power necessary to achieve the dramatic reduction ratios and material flow which are essential in high quality gears. This closed-die design provides excellent strength-to-weight ratios necessary for your most critical applications. Gear blanks that we manufacture are used in a wide range of heavy duty applications including locomotive traction drives, wind turbines, speed reducers, and mining machinery. Gear blanks are available in sizes up to 48 inch diameter rough machined or hob ready. Multiple heat treatment options exist to reach the desired mechanical properties required. Typical stock allotted is 1/8" all over, however bores and other details can be machined into the part as requested.

MINING COMPONENTS

The extreme demands of mining applications require the strength, toughness, and longevity. The McKee's Rocks tailored alloys, forging, and heat treating process provide the durability that is needed in these environments. There are multiple choices of alloys and heat treatments that be employed to reach a desired strength, hardness, or wear resistance required.





TRANSIT TIRES & CUSTOM FORGING

TRANSIT TIRES

Transit Tires can be made to meet your special design requirements in virtually any size, configuration and surface finish condition. We maintain a large inventory of carbon and alloy steels to meet your specific needs. Tires include a wide variety of single flanged rail wheels which are used in many applications. Some application include: trolley car, transit, and subway systems. Transit wheels can be furnished complete to your supplied print or in a rough state ready for you to finish and customize as pictured above.
Forged Industrial Wheels are available in any surface hardness from a normalized state to 60 Rc including.

CUSTOM FORGING

Custom forgings can be produced to meet you design needs. Our engineers will simulate the intended forging prior to physical tooling design to rapidly speed up the prototyping process and begin production. We can forge must any desired material and hit the hardness ranges within the material chosen to suit your needs.
Contact us today to assist you with your specialized needs.

INDUSTRIES SERVED

MCKEES ROCKS FORGINGS PRODUCES A WIDE RANGE OF HIGH-QUALITY FORGED CIRCULAR PRODUCTS FOR USE IN INDUSTRIAL MARKETS INCLUDING CRANE WHEELS, CRANE TROLLEY WHEELS, INDUSTRIAL WHEELS, SHEAVE WHEELS, GEAR BLANKS, FORGED STEEL WHEELS, FORGED ROLLERS, AND VARIOUS OTHER CIRCULAR FORGINGS. WE MAKE FORGINGS FROM 10 TO 52 INCHES IN DIAMETER AND IN WEIGHTS UP TO 5,000 POUNDS IN ALMOST ANY STEEL GRADE.

CRANES

For many years McKees Rocks Forgings has supplied quality crane components to OEM and repair companies alike. We strive to provide components that will exceeds our customers expectations and outlast the competition. Our components meet the requirements of both the CMAA and the AIST #6 Crane Specifications. Most of our sheaves are used in lifting apparatus for heavy duty overhead cranes.

GEARING

McKee's Rocks Gear Blanks provide the quality and durability required for demanding applications such as: Wind Energy, Locomotive Drives, Naval Transmission, and Fracking Transmission. Our gear blanks can be provided in the rough machine or hob ready condition.

MINING

McKee's Rocks can produce forgings of low, medium, and high alloy material to meet the most demanding environments. All of our alloys are tailored for high durability and longevity. Forgings can be designed to match any circular configuration. Multiple heat treatment options exist as well to achieve the desired mechanical properties required by the application.

TRANSPORTATION

McKee's Rocks produces wheels that can withstand mill applications such as internal railways, mill transfer cars, and ladle cars. We also produce industrial tires used in trolley car, transit, and subway systems.

MATERIAL HANDLING

McKee's Rocks manufactures rollers and mine car wheels for material transport applications. Various alloys and heat treatments are employed to match the loading and environment the wheels will see.

SPECIALTY MARKETS

McKee's Rocks Forgings has supplied specialty wheels for many historic railroads throughout the country. Our wheels have also been utilized in the Pittsburgh Incline. Contact us today so that we can help you with your specialty project.

McKEES ROCKS FORGINGS

75 NICHOL AVENUE, MCKEES ROCKS, PA 15136

1.800.223.2818
412.778.2025
mckeesrocksforgings.com