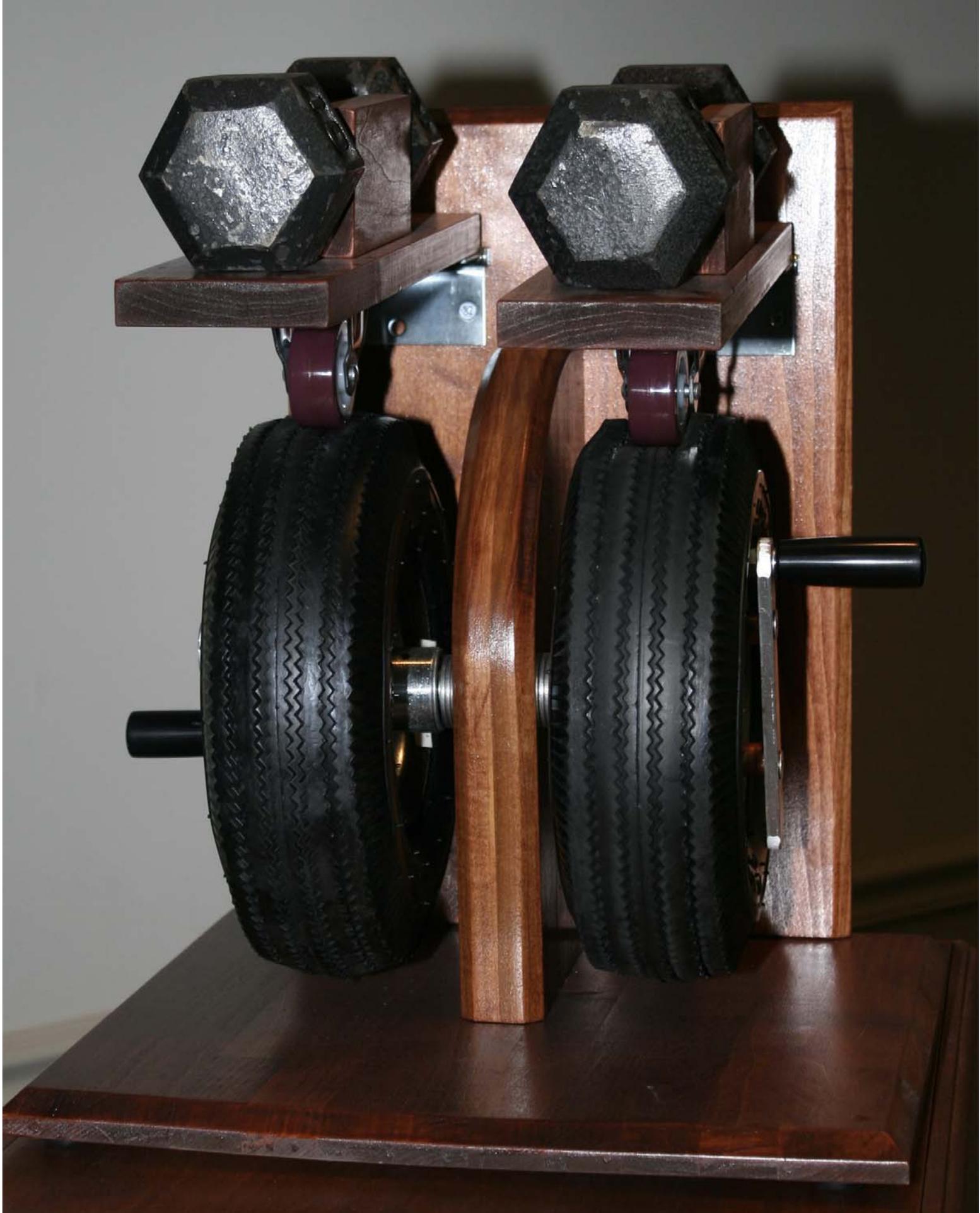


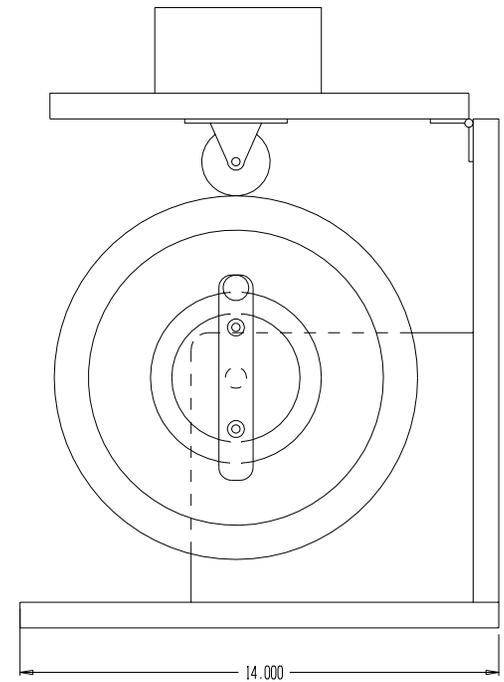
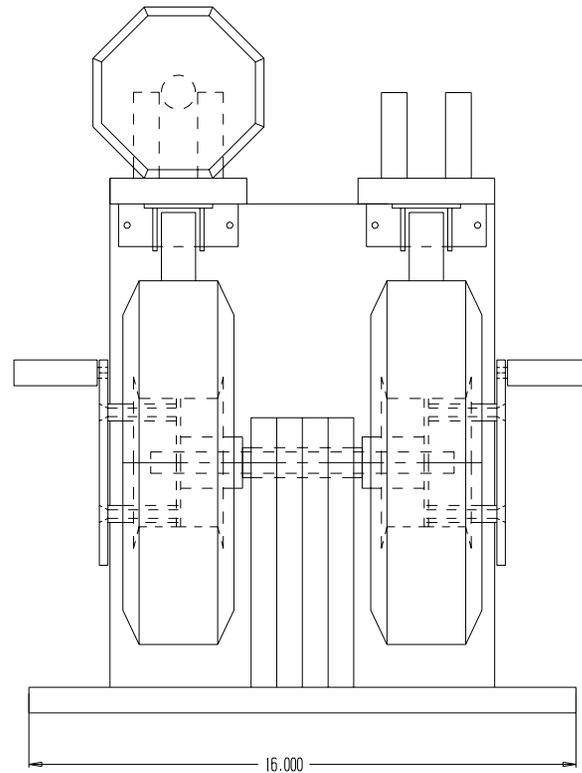
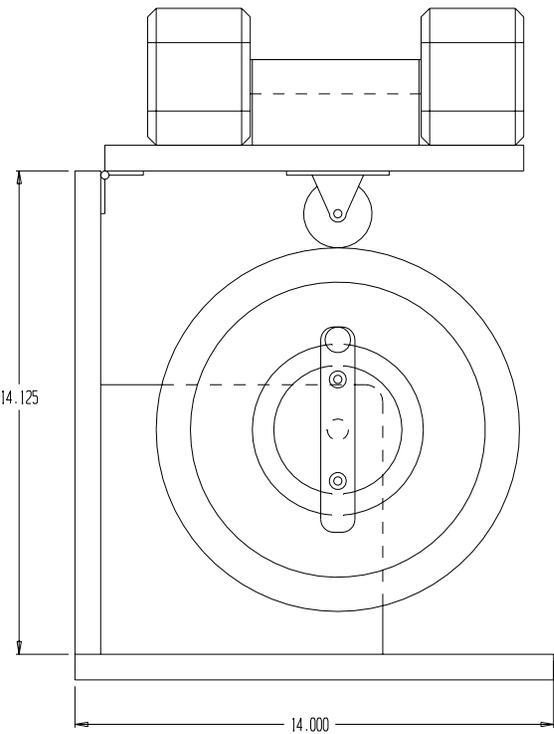
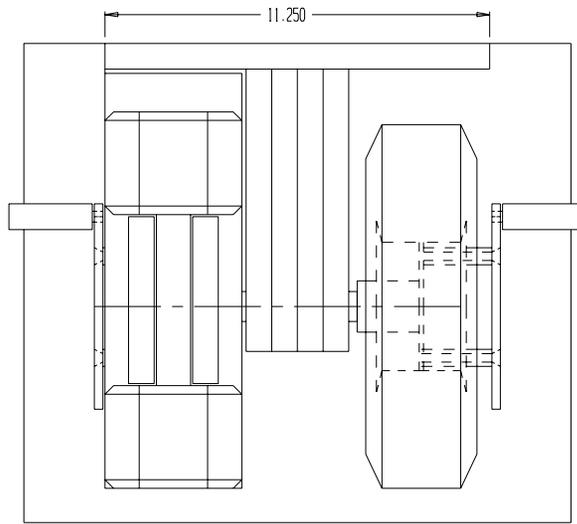
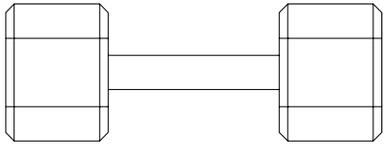


8a Tire Inflation Display to feel difference in proper pressure vs underinflation.JPG

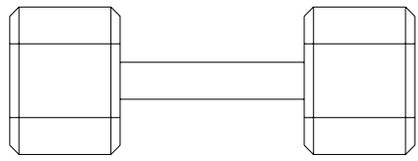


8b Tire Inflation Display to feel difference in proper pressure vs underinflation.jpg

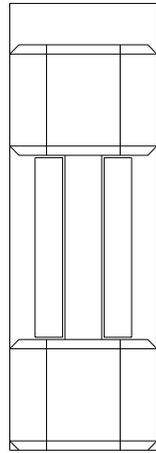
10 Lb Weight



Tire Resistance Display	Ver 4.0
Michael Rowe 304 541-6444	4-1-2010

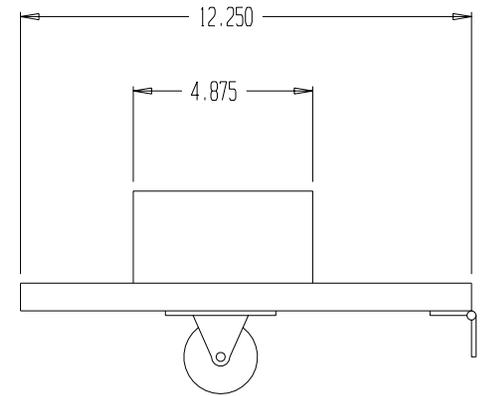
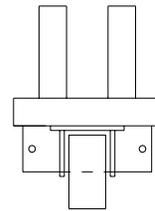
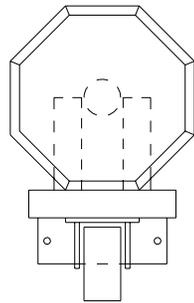
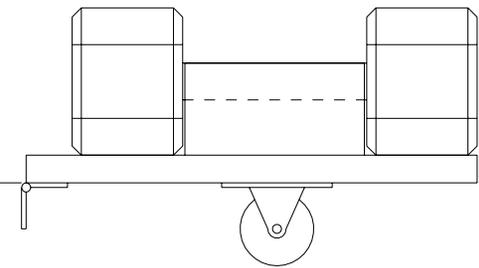


10 lb weight
 Note(Faceted Weights
 are much more stable)

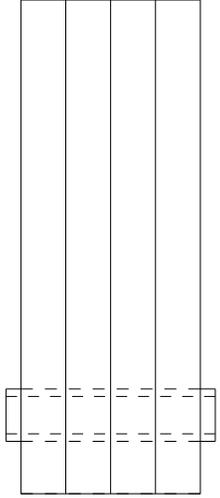


Weight Holders are pieces of 1x4 lumber with smaller pieces of 1x3 lumber screwed on to them. They serve the purpose of holding the weights in place while in use and allowing for easy removal for transport. They use 3 inch cabinet hinges at the back edge, and a 2 inch caster positioned so that they are over the center of the pneumatic tires.

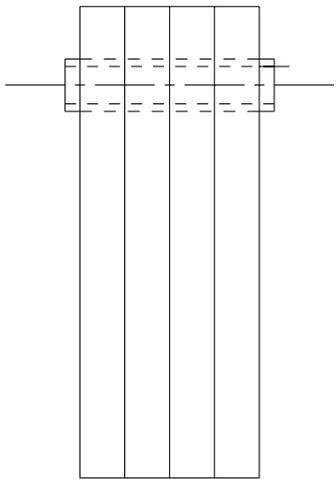
The Size of the wood is determined by the size of the weights. The wood should be fastened to allow minimal movement. Velcro straps can be used to secure the weights in the holders.



Tire Resistance Display		ver 4.0
Weight Holder	Material: Wood	Qty 2
Michael Rowe	304 541-6444	4-1-2010



Top View



Front View

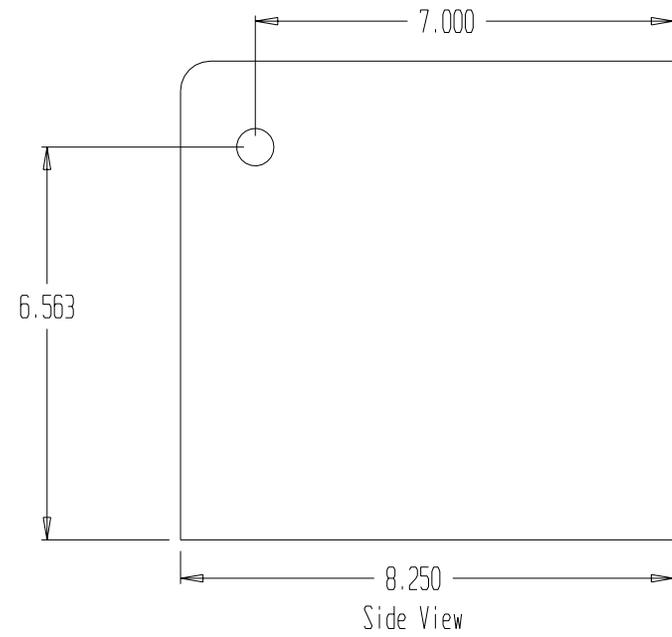
Glue 4 blocks of 3/4 in thick wood together. Then cut to size and clean up with sander

Drill hole for metal sleeve

Use either aluminum tube in list or piece of metal or plastic gas pipe

Pipe must be close fit to 5/8 in threaded rod that is used as axle. Glue tube in block of wood after finishing wood. Tube will act as spacer to maintain offset of wheels to each side of block as wood shrinks over time.

Sleeve is 3.5 inches long and sticks out about 1/4 inch on each side.



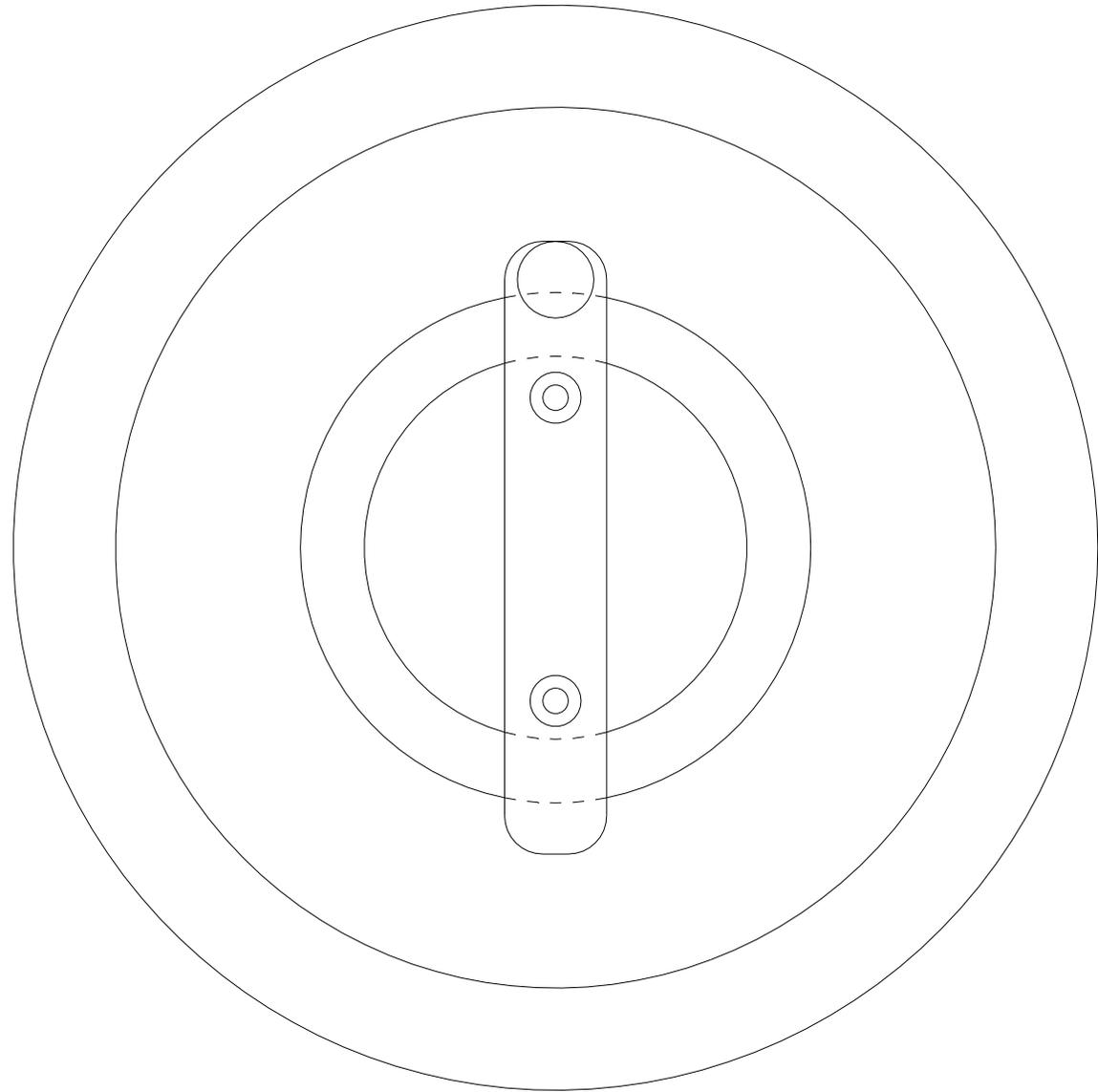
Side View

Tire Resistance Display		Ver 4.0
Hub Support	Material: Wood	Qty 1
Michael Rowe	304 541-6444	4-1-2010

Cranks (2) are made from 1/4 in thick aluminum. They are 6 inches long and rounded on the ends. They have a swiveling handle at one end. The handle has a hole drilled and tapped for the handle to screw into. The aluminum can be polished with steel wool and sprayed with clear enamel to keep it shiny. The handles are mounted to 2 of the bolt holes of the wheel. The spacing of the mounting holes should be measured since it may vary depending on wheel supplier.

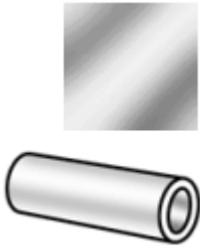
I used 1/2 in copper plumbing to make spacers to hold the handle from the hub. Make sure the spacers allow enough clearance to get a wrench in to tighten the 5/8 in locknut that holds the assembly onto the 5/8 in threaded rod that acts as an axle.

For bolts I used 1/4-20 bolts with a flat head and had to countersink the holes. For simplicity you could use rounded (Button Head) bolts. Use locknuts on these bolts or they will come loose.



Tire Resistance Display		Ver 4.0
Crank	Material: Aluminum	Qty 2
Michael Rowe	304 541-6444	4-2-2010

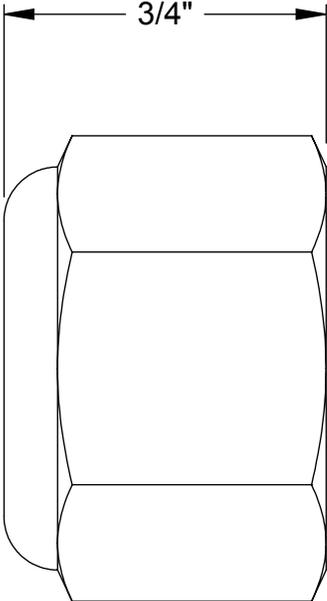
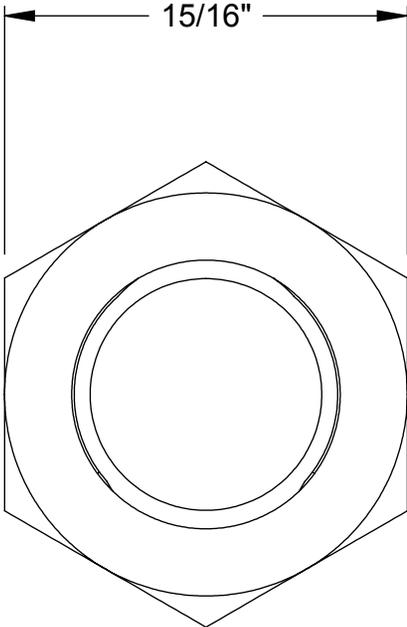
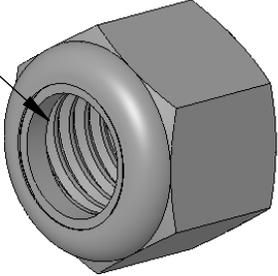
Aluminum

Part Number: **4568T15**

\$10.35 Each

Material	Ultra-Corrosion-Resistant Architectural Aluminum (Alloy 6063)
Shape	Tubes
Tube Type	Round
Finish/Coating	Anodized
Anodized Type	Anodized
Round Tube Type	Single-Wall
Tolerance	Standard
Wall Thickness	.065"
Wall Thickness Tolerance	±.008"
Coating Thickness	.0002" and .0001" to .0002" penetrates the material.
Length	6'
Length Tolerance	±1/4"
Inside Diameter	.620"
Outside Diameter	3/4"
Straightness Tolerance	.010" per foot
Test Report	Without Test Report
Temper	T5 (Before Coating)
Hardness	Rockwell E60-E80
Yield Strength	15,000 psi (Before Coating)
Temperature Range	-320° to +212° F
Specifications Met	American Society for Testing and Materials (ASTM), Military Specifications (MIL)
ASTM Specification	ASTM B211
MIL Specification	MIL-A-8625F
WARNING	Hardness and yield strength are not guaranteed and are intended only as a basis for comparison.

5/8"-11 Thread



McMASTER-CARR CAD

PART
NUMBER

90640A135

<http://www.mcmaster.com>
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Zinc-Plated Grade 2 Steel
Nylon-Insert Hex Locknut

Information in this drawing is provided for reference only.

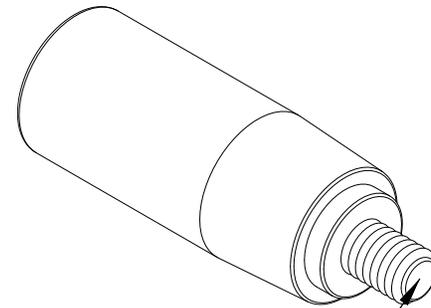
Casters



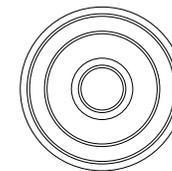
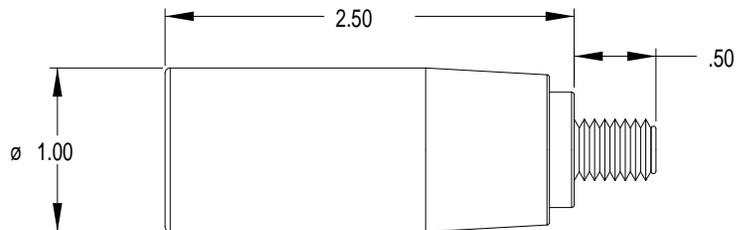
Part Number: **78155T33**

\$2.05 Each

Capacity	150 lbs.
Mounting Type	Plate
Caster Type	Rigid
Wheel Material	Rubber
Floor Material	Carpet, Concrete, Steel
Wheel Diameter	2"
Wheel Width	1"
Mount Height	2-1/2"
Rubber Wheel Material	Solid Rubber
Plate Length x Width	2-21/32" x 1-1/2"
Plate Thickness	1/16"
Center-to-Center	15/16" x 2-1/8"
Slotted to	Not slotted
Bolt Size	1/4"
Number of Bolt Holes	4
Frame Material Type	Steel
Frame Construction	Cold Formed
Frame Finish/Coating	Zinc Plated
Application	General Purpose, Furniture
Wheel Bearing Type	Plain Bore (No Bearings)
Leg Thickness	1/16"
Wheel Durometer	75D
Wheel Color	Gray
Number of Wheels	One
McMaster-Carr Name	Huron Jr.
Specifications Met	Not Rated
For Compatible Swivel Caster, Order:	78155T31
For Compatible Swivel Caster with Brake, Order:	78155T32



3/8"-16 THREAD



NOTES:
1. USE OVERALL LENGTH DIMENSION TO ESTABLISH SCALE

McMASTER-CARR SUPPLY COMPANY		PART NUMBER: <p style="text-align: center;">64425K74</p>
		DESCRIPTION: ALUMINUM REVOLVING HANDLE WITH STUD 3/8"-16 THREAD, 2.50" HANDLE LENGTH
DATE: JULY 2000	PAGE 1 OF 1	
SCALE: NOTE 1		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES		http://www.mcmaster.com (c) 2000 McMaster-Carr Supply Company

Socket Cap Screws

Part Number: **92949A553**

\$7.03 per Pack of 10

Head Style	Button
Material Type	Stainless Steel
Finish	Plain
Class	Not Rated
Stainless Steel Type	18-8 Stainless Steel
Drive Style	Hex Socket
Inch Thread Size	1/4"-20
Length	2-3/4"
Thread Length	Partially Threaded
Thread Length Note	Thread length may vary from 1" to fully threaded.
Thread Direction	Right Handed
Tip Type	Plain
Self-Locking Method	None
Screw Quantity	Individual Screw
Hex Size	5/32"
Head Diameter	.437"
Head Height	.132"
Rockwell Hardness	Minimum B70
Minimum Tensile Strength	70,000 psi
Thread Fit	Class 3A
Specifications Met	Not Rated

Bumpers

For information about rubber, see page 3498. For vibration mounts, see pages 1363-1371.

Bumpers with Threaded Stud

Our bumpers have a built-in stud so you won't need additional fasteners for installation.

Bumpers with Metal Core

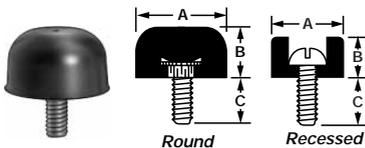


Bumpers with a metal core withstand impact with a tough steel core that is surrounded by cushioning material. For indoor and outdoor use. *Medium-soft* bumpers have a durometer hardness of 40A. *Hard* bumpers have a durometer hardness of 70A-80A.

Neoprene rubber bumpers are gasoline and oil resistant. Temperature range is -40° to +200° F. Material is marking but nonstaining. Color is black. *Polyurethane* bumpers are abrasion and ozone resistant. Temperature range is -65° to +200° F. Material is marking but nonstaining. Color is red.

Dia. (A)	Ht. (B)	Thread Size	Thread Lg. (C)	Rubber Thick. (D)	NEOPRENE RUBBER		POLYURETHANE							
					Medium-Soft	Hard	Medium-Soft	Hard						
					Each	Each	Each	Each						
Inch														
1 1/4"	1 1/4"	3/8"-16	5/8"	1/2"	9546K78	\$10.77		1"	9223K28	\$16.60	1/2"	9546K88	\$12.47	
1 1/4"	1 1/4"	3/8"-16	1"	1/2"	9546K19	11.02		1"	9223K29	17.00	1/2"	9546K65	12.69	
1 1/4"	1 1/4"	3/8"-16	1 1/4"	1/2"	9546K21	11.23		1"	9223K31	17.42	1/2"	9546K66	13.35	
1 1/4"	1 1/4"	1/2"-13	3/4"	1/2"	9546K28	12.03		1 5/16"	9223K32	17.85	1/2"	9546K67	13.60	
1 1/4"	1 1/4"	5/8"-18	1"	1/2"	9546K22	12.10		2 1/32"	9223K33	18.31	1/2"	9546K68	13.95	
1 1/2"	1 3/16"	3/8"-16	3/4"	1/4"	9546K27	16.20		9/16"	9223K27	21.50	1/4"	9546K64	17.60	
Inch with Hex Shoulders														
3/4"	5/8"	10-24	1/2"	1/4"			9546K93	\$6.08	1/2"	9223K39	10.50	1/4"	9546K94	7.54
3/4"	5/8"	10-24	1 1/4"	1/4"			9546K95	6.35	1/2"	9223K41	10.86	1/4"	9546K96	7.87
3/4"	5/8"	10-32	1/2"	1/4"			9546K97	6.64	1/2"	9223K42	10.76	1/4"	9546K98	8.21
3/4"	5/8"	10-32	1 1/4"	1/4"			9546K112	6.98	1/2"	9223K43	10.86	1/4"	9546K115	8.59
3/4"	5/8"	1/4"-20	1/2"	1/4"			9546K118	7.32	1 5/32"	9223K44	11.20	1/4"	9546K122	8.99
3/4"	5/8"	1/4"-20	1 1/4"	1/4"			9546K123	7.73	1 5/32"	9223K45	11.74	1/4"	9546K124	9.44
3/4"	5/8"	1/4"-28	1/2"	1/4"			9546K125	7.94	1 5/32"	9223K46	12.11	1/4"	9546K126	9.49
3/4"	5/8"	1/4"-28	1 1/4"	1/4"			9546K131	8.16	1 5/32"	9223K47	13.28	1/4"	9546K133	9.97
3/4"	5/8"	5/16"-18	1/2"	1/4"			9546K17	8.18	9/16"	9223K48	12.97	1/4"	9546K62	9.72
3/4"	5/8"	5/16"-18	1 1/4"	1/4"			9546K18	8.31	9/16"	9223K49	13.86	1/4"	9546K63	10.14
3/4"	5/8"	5/16"-24	1/2"	1/4"			9546K137	8.41	9/16"	9223K51	15.96	1/4"	9546K138	10.51
3/4"	5/8"	5/16"-24	1 1/4"	1/4"			9546K139	8.65	9/16"	9223K52	16.95	1/4"	9546K141	11.11
Metric (Dimensions are given in millimeters.)														
19	16	M6 x 1.0	18	7			9546K235	6.63	12	9223K34	10.95	7	9546K236	8.22
19	16	M8 x 1.25	18	7			9546K241	6.95	10.7	9223K35	11.93	7	9546K242	8.77
32	32	M10 x 1.5	15	13	9546K251	11.11						13	9546K262	12.34
32	32	M10 x 1.5	30	13	9546K243	11.48			25.6	9223K36	16.79	13	9546K244	13.30
32	32	M12 x 1.75	30	13	9546K245	12.92			24.5	9223K37	18.73	13	9546K246	13.84
32	32	M16 x 2.0	15	13	9546K247	14.14						13	9546K248	15.55
32	32	M16 x 2.0	30	13	9546K253	13.77						13	9546K264	14.87
45	42	M16 x 2.0	30	19.5	9546K255	15.76						19.5	9546K266	19.76

Bumpers without Metal Core



Bumpers without a metal core have a built-in screw surrounded by cushioning material. Durometer hardness is 70A-80A, unless noted.

SBR rubber bumpers are abrasion resistant. Temperature range is -30° to +180° F, unless noted. For indoor use. All are nonmarking except the 7/16" dia. bumper which is marking. Color is black. *Polyurethane* bumpers are abrasion and ozone resistant. Temperature range is -65° to +200° F. For indoor and outdoor use. Material is marking but nonstaining. Color is red.

Dia. (A)	Ht. (B)	Thread Size	Thread Lg. (C)	Pkg. Qty.	Hard SBR Rubber		Hard Polyurethane		
					Per Pkg.	Each	Per Pkg.	Each	
Round									
7/16"	1/4"	6-32	1/4"	25	9541K8▲	\$6.64			
3/4"	7/16"	8-32	3/8"	25	9541K2	10.22			
1"	1/2"	10-24	3/8"	25	9541K3	10.87			
1"	1"	5/16"-18	7/8"				9541K11	\$9.69	
1 1/2"	1 1/2"	5/16"-18	7/8"				9541K13	10.77	
2"	2"	5/16"-18	7/8"				9541K15	15.25	
2 1/2"	2 1/2"	3/8"-16	7/8"				9541K17	24.27	
3"	3"	1/2"-13	1 1/4"				9541K19	32.14	
4"	4"	1/2"-13	1 5/16"				9541K21	61.06	
Recessed									
1/2"	1/4"	6-32	1/4"	25	9541K1	5.59			

▲ Temperature range is -60° to +180° F; durometer hardness is 60A medium-hard.

Roller Bumpers



Protect equipment and adjacent surfaces with these SBR rubber roller bumpers. They easily fit over round and square tubing and rods; a concealed bolt holds it together. Material is medium-hard with a durometer hardness of 67A. Temperature range is -40° to +180° F. For indoor and outdoor use. Material is nonmarking. Color is gray.

Dia.	Hole Dia.	Thick.	Each	Dia.	Hole Wd. x Lg.	Thick.	Each		
For Round Tubing									
3"	5/8"	1 5/16"	9764K42	\$8.71	3"	1" x 1"	1 5/16"	9764K41	\$8.72
3"	3/4"	1 5/16"	9764K44	8.37	5"	1" x 1"	1 13/16"	9764K43	12.58
3"	1"	1 5/16"	9764K47	8.37	5"	1 1/2" x 1 1/2"	1 13/16"	9764K45	12.32
3"	1 1/4"	1 5/16"	9764K49	8.84	5"	2" x 2"	1 13/16"	9764K46	12.32
5"	1"	1 1/8"	9764K52	13.89					
5"	1 1/4"	1 1/8"	9764K54	14.11					
5"	1 1/2"	1 1/8"	9764K56	12.16					

Threaded Rods and Studs

Part Number: **90034A450**

\$3.10 Each

Material Type	Steel
Finish	Zinc-Plated
Grade/Class	Not Rated
Type	Fully Threaded Rods and Studs
Steel Type	General Purpose Steel
Thread Direction	Right Hand Thread
Inch Thread Size	5/8"-11
Overall Length	12"
Rockwell Hardness	Minimum B61
Minimum Tensile Strength	53,000 psi
Thread Fit	Class 2A
Specifications Met	Not Rated
Notes	Length is measured from end to end.

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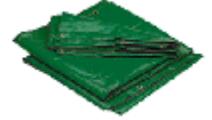
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