

Components Should Be Easy



COMPONENT PRODUCTS BUYER'S GUIDE

MUELLER

Mueller® Has Your Solution

- Clear Communication
- Shipped to Your Door
- Creating Quality for Life
- Competitive Lead Times





Check out our easy online ordering platform to keep your project organized and your parts in stock.

shop.paulmueller.com

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Guide to Buying Tank Heads



DISHED AND CONICAL HEADS

Quote Checklist

Please provide the following information to expedite your tank head quotation. Thank you

- Quantity
- Head Style
- Material Type
- Minimum Thickness
- Material Thickness
- Radius
- X-Ray
- Preferred Bevel
- Diameter
- ASME Code

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Please provide the following information to expedite your tank head quotation. Thank you.

Contact Name: _____ Phone: _____ Date: _____
Email: _____ State: _____ Zip: _____
Company: _____
Address: _____
City: _____

HEAD SPECIFICATIONS

Quantity: _____	<input type="checkbox"/> O.D.	Head Style: _____
Diameter: <input type="checkbox"/> I.D.		Straight Flange Length: _____
Inside Draft Radius: _____		Material Type: _____
Inside X-axis Radius: _____	<input type="checkbox"/> No	Minimum Thickness: _____
Diameter: <input type="checkbox"/> Yes		Center Hole: _____
X-Ray: _____		

FINISH SPECIFICATIONS

Inside Flange: _____	Inside Weld Finish: _____
Outside Flange: _____	Outside Weld Finish: _____
Inside PVC: _____	Square Edge: _____
Outside PVC: _____	Inside Bevel: _____
Inside Taper: _____	Outside Bevel: _____
Outside Taper: _____	Inside Round-to-Point: _____
Shell Thickness: _____	Outside Round-to-Point: _____
Additional Notes: _____	

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Guide to Buying Tank Cylinders



CYLINDERS AND SHELLS

Quote Checklist

Please provide the following information to expedite your tank cylinder quotation. Thank you.

- Quantity
- Height
- Material Type
- Minimum Thickness
- Material Thickness
- X-Ray
- Bevel
- Diameter
- Width
- ASME Code
- Material Finish

Guide to Buying Manways



MANWAYS

Ordering Information

1. Visit shop.paulmueller.com for all your manway needs.
2. Determine pressure, temperature, ASME/non-code, and size requirements.
3. Call your Mueller Sales Representative with your questions at 1-800-545-5224.
4. Enjoy lifetime support from our responsive team.



ROUND

- Suitable for horizontal or vertical applications
- Available in various sizes
- Pressure-rated (ASME Code or PED compliant) and atmospheric options
- Accessories available: Spring assists, lift assists, sanitary fittings



OVAL

- Ideal for horizontal applications
- In-swing/out-swing door design for easy access
- Pressure- and vacuum-rated (ASME Code or PED compliant) and atmospheric options



RECTANGULAR

- Ideal for bottom tank access
- Unique shape allows quicker, more economical cleaning
- Multiple gasket material options for specific needs

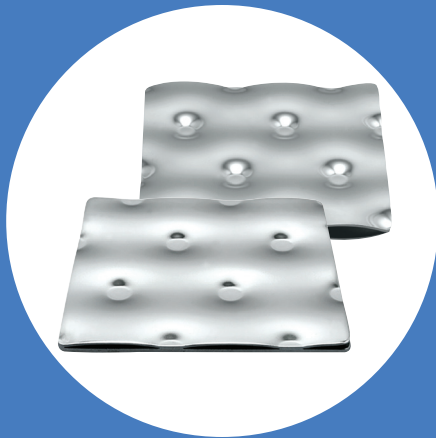
Guide to Buying Heat Transfer Surface



HEAT TRANSFER SURFACE

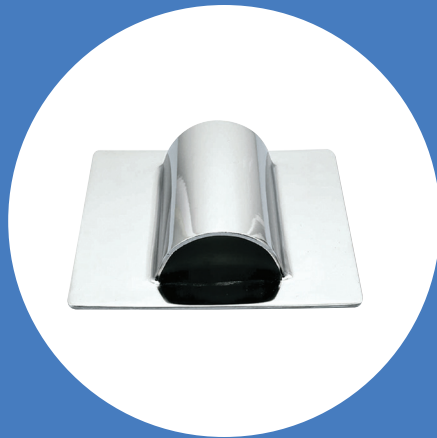
Ordering Information

1. Review the Mueller Component Products heat transfer options.
2. Work with your Mueller Sales Representative to determine the specifications.
3. Add to your Mueller Component Products order.
4. Call your Mueller Sales Representative with questions at 1-800-545-5224.



TEMP-PLATE®

- Economical heat transfer surface for tank walls and heads
- Available in single- and double-embossed designs
- Provides precise, consistent control with minimal pressure drop
- Spot-welded and inflated channels create fluid turbulence for high heat transfer efficiency



HALF-PIPE COIL

- Handles large volumes of flow and high-pressure applications
- Available for heads, shells, and cones
- Offered as fully welded, “fit-and-tacked” assembly, or loose coils



DIMPLED

- Ideal for applications with temperature and high-pressure extremes
- Custom sizes, shapes, and materials to fit any vessel design
- Compatible with various refrigerants or heating media

Component Products Capabilities



TESTS AND CERTIFICATIONS

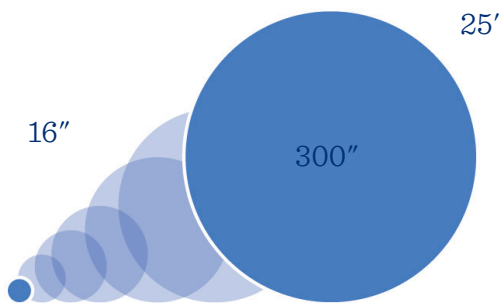
Paul Mueller Company supports your commitment to quality with rigorous in-house testing programs for on-time product delivery.

- ASME inspectors are on-site, and Mueller can comply with additional codes such as PED, 3-A, Chinese code, and API 650.
- On-site radiography team with a full lead-lined vault allows radiography without field mobilization.
- Welding engineering and grinding specialists can accommodate unusual materials for welding or grinding.
- Additional quality testing includes dye penetrant, Positive Material Identification (PMI), and ultrasonic material thickness testing.

Materials

- Type 304/304L
- Type 316/316L
- Type 317L
- Custom nickel alloys
- Monel®
- Inconel®
- Hastelloy®
- 254 SMO®
- Carbon steel
- Alloy 20
- Copper
- Aluminum
- AL-6XN®
- 904L
- Duplex
- And others

Head Sizes



Material Thickness



Material Finishes

The following finishes are available. Some applications may require a specific finish. For help determining final finish, contact your Mueller Sales Representative.



HOT ROLLED (HR)

Rough and dull appearance on surface. Most of the scale is removed by pickling. This applies to all steel plate thicknesses .1875" and above.



2B MILL FINISH

A smooth, bright, moderately reflective finish suitable for "as-is" specifications or a preliminary finish for further polishing.



#3 FINISH

Polished surface achieved by finishing with the equivalent of an 80-grit abrasive. This finish has a pronounced grit line. 75 Ra average.



#4 FINISH

Bright finish with visible grain for use where sanitary surfaces are required. 35 Ra target. Request 32 Ra maximum finish to comply with 3-A standards.



#6 FINISH

Polished surface achieved by finishing with the equivalent of a 240-grit abrasive. Higher reflectivity and finer grit lines. Improved product release and cleanability. 25 Ra target.



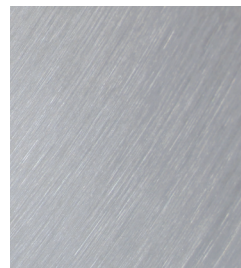
#7 FINISH

Highly reflective surface achieved by finishing with the equivalent of a 320-grit abrasive. Minimal grit lines. Used when product contact surfaces are critical. 15 Ra target.



GARNET-BEAD BLAST

Follows sandblasting to create a satin, gray appearance that resembles a 2B finish.



RADIAL SPIN POLISH

Spin polishing finishes of preformed, inside, outside, knuckle, and straight flange surfaces in a circular pattern. Results in an appealing sanitary finish.



CIRCUMFERENTIAL SPIN POLISH

Similar to radial spin polish, further reduces visibility of circular pattern. Results in superior aesthetic finish for high visibility tank heads.

Weld Finishes

The following weld finishes are available. Certain forming processes require specific finishes. Choose weld finishes with your Mueller Sales Representative during the custom quote step.



AS-IS

Quality welds are to remain as deposited with no grinding.



BUFF

Minimal removal of weld material. Welds are not ground flush and may contain crevices, ripples, and irregularities in the remaining weld material.



#2 WELD FINISH

The weld finish will not be ground flush. Defined by coarse grit lines which may run in any direction. Weld edge may not be completely removed.



#3 WELD FINISH

Welds are ground flush and weld discoloration is removed. Scattered nicks and scratches are acceptable. Ideal where a uniform surface is required.



#4 WELD FINISH

Normally used with #4 material finish when sanitary product contact surfaces are required. 35 Ra target. Request 32 Ra maximum to comply with 3-A standards.



#6 WELD FINISH

Characterized by finer grit lines and higher reflectivity than #4 finish. Improved product release, as well as cleanability. 25 Ra target.



#7 WELD FINISH

A highly reflective and sanitary surface with minimal grit lines. Provides excellent product release, as well as cleanability. 15 Ra target.

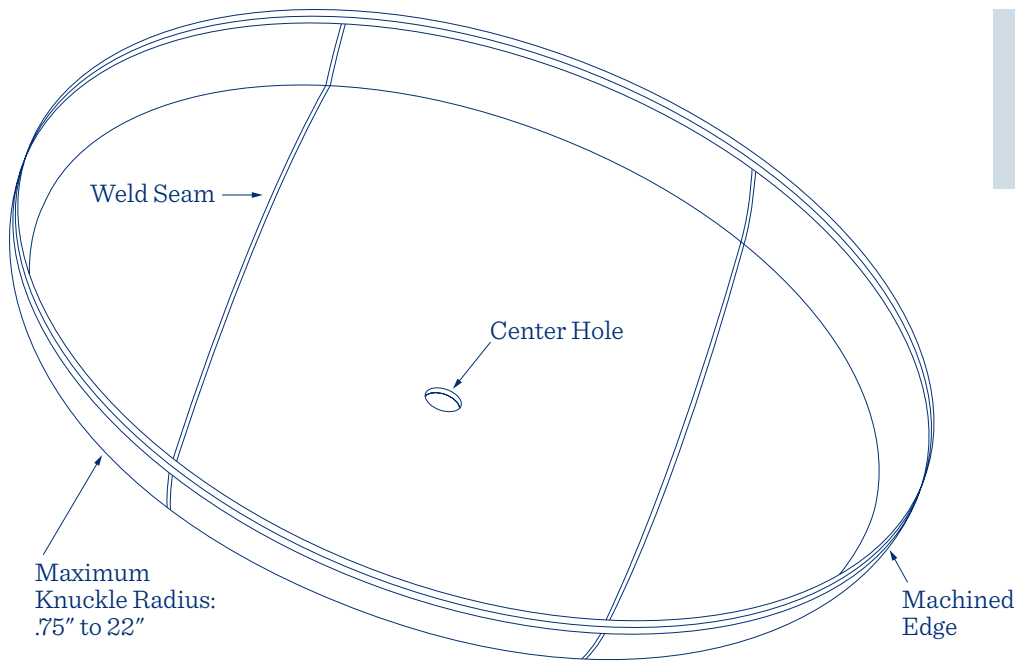


GARNET-BEAD BLAST

Follows sandblasting to create a satin, gray appearance that resembles a 2B finish.






Anatomy of a Tank Head

DISHED AND FLANGED TANK HEADS



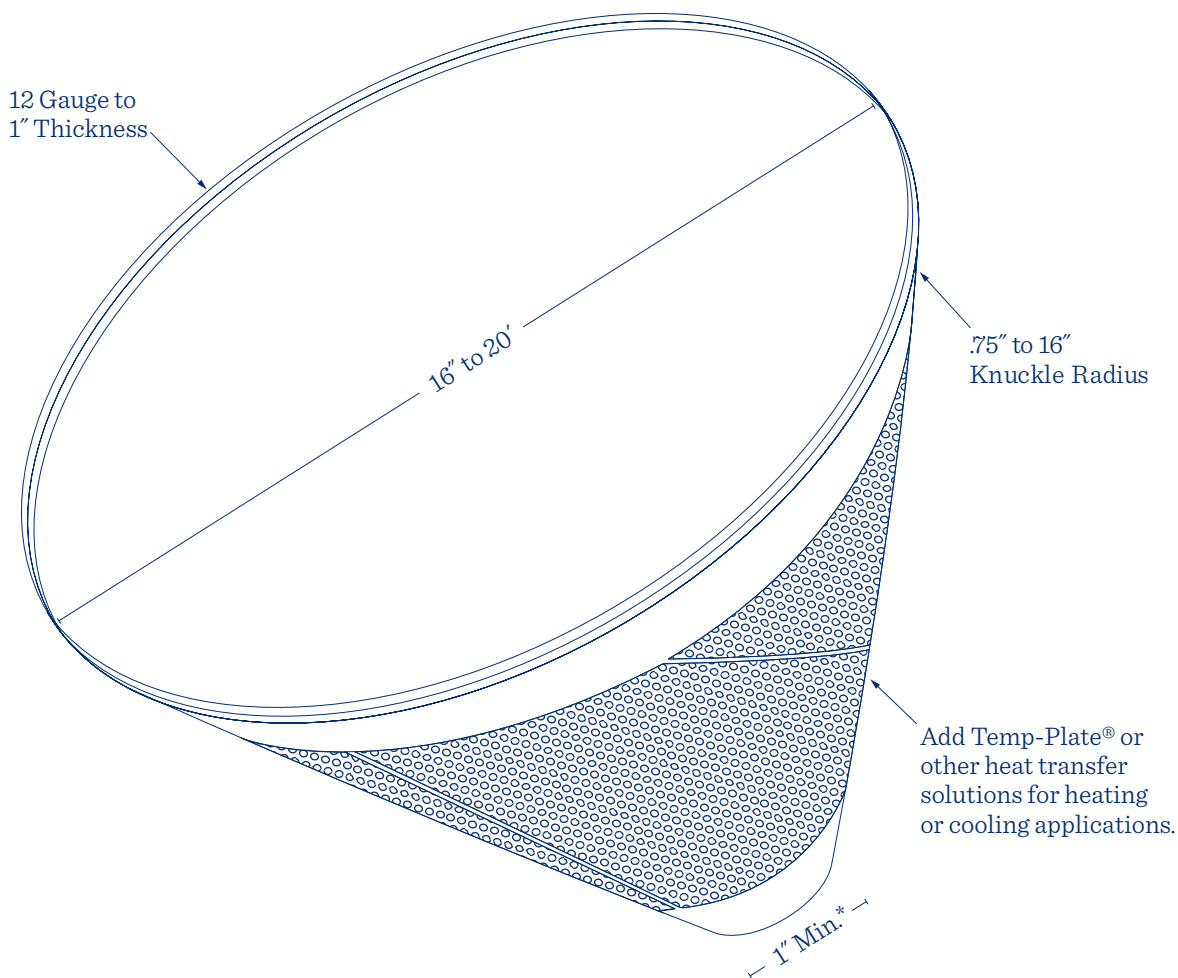
CENTER HOLE:

Center holes are standard; however, Paul Mueller Company also provides tank heads without center holes.

TYPICAL HEAD TYPES	DISH RADIUS	NUCKLE RADIUS	DIAMETER	THICKNESS
 Shallow Flanged and Dished	Equal to 150% of the outside diameter	2"	16" – 300"	12 gauge – 1"
 Standard Flanged and Dished	Equal to 100% of the outside diameter	2"	16" – 300"	12 gauge – 1"
 ASME Flanged and Dished	Equal to 100% of the outside diameter	Minimum of 6% outside diameter.	16" – 300"	12 gauge – 1"
 80/10 Flanged and Dished	80% of the outside diameter	10% of the outside diameter	20" – 220"	.375" – 1"
 2:1 Elliptical Flanged and Dished	Approximately 90% of the outside diameter.	Approximately 17% of the outside diameter	20" – 144"	.375" – 1"
Custom Flanged and Dished	Tank heads are fully customizable to meet your specific applications. Contact your Paul Mueller Company Sales Representative for additional configurations.			

Anatomy of a Tank Head

CONICAL TANK HEADS

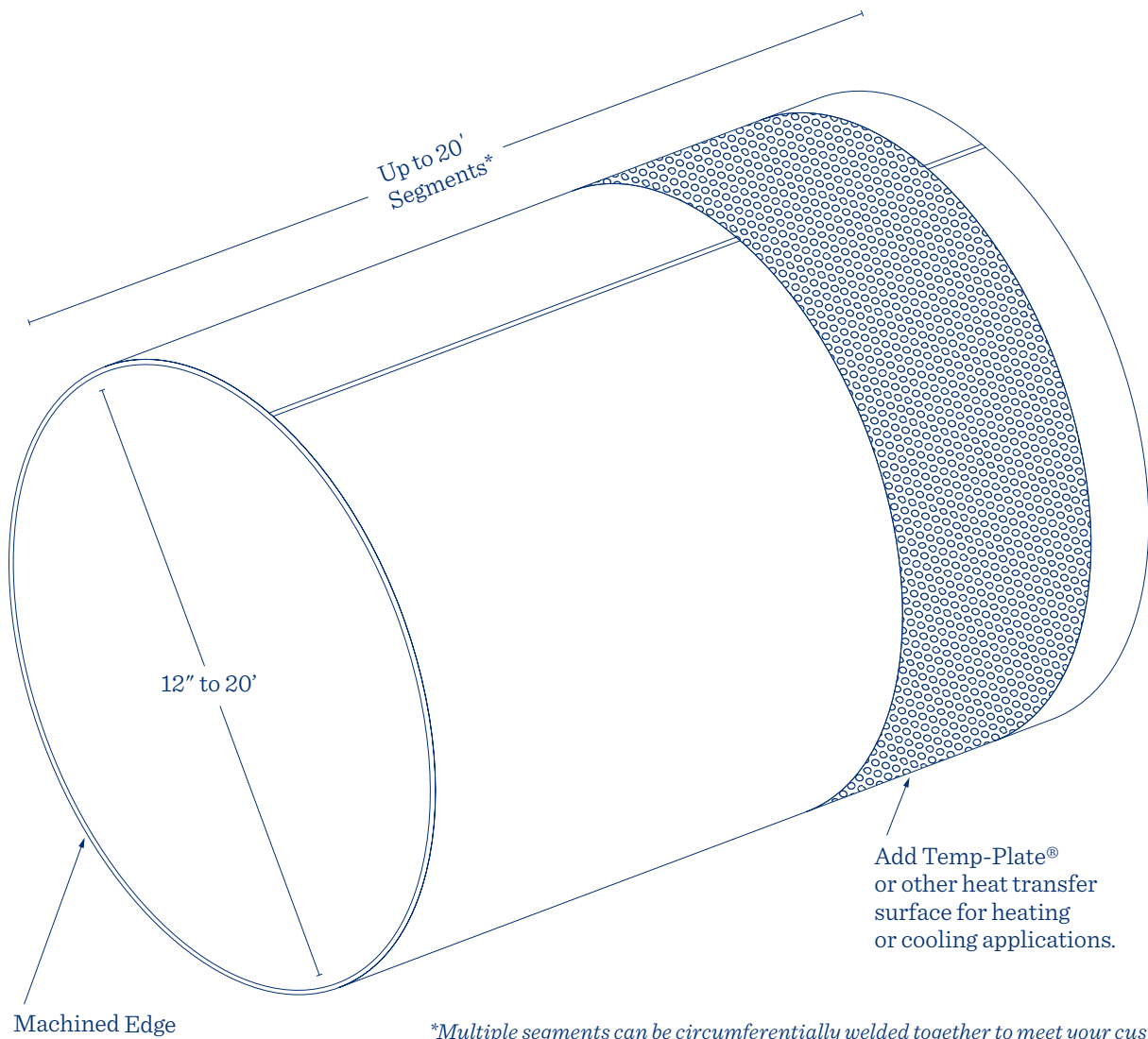


**Depending on thickness and geometry. Call a Mueller Sales Representative for specific details.*

Anatomy of a Cylinder

TANK CYLINDERS

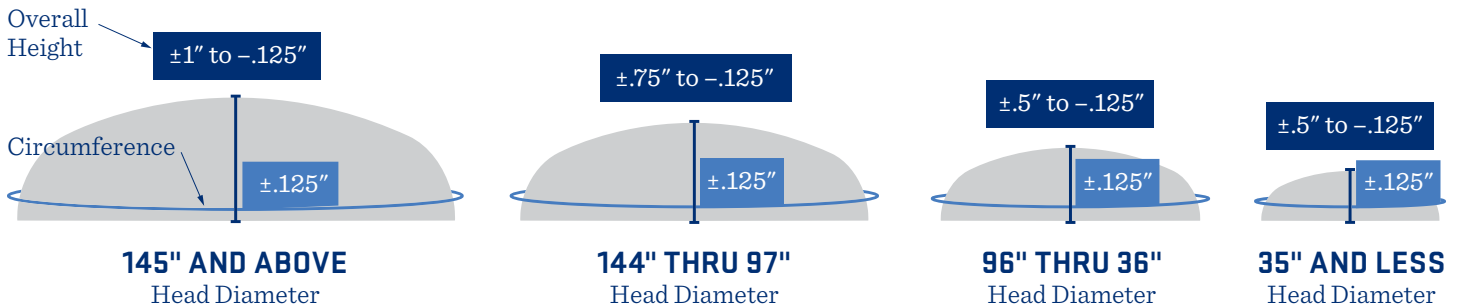
Paul Mueller Company's extensive manufacturing capabilities allow us to build cylinders to almost any specification. Whether you need a cylinder that is too big or too thick for your rolls or are simply having trouble meeting demand and need a little relief, we are here to provide a solution. Our in-house transportation team makes shipping cost-effective. Through expert utilization of jelly-rolling, cradling, and bracing techniques, we can optimize shipping expenses to get your products delivered on time and on budget.



Tolerances and Allowances

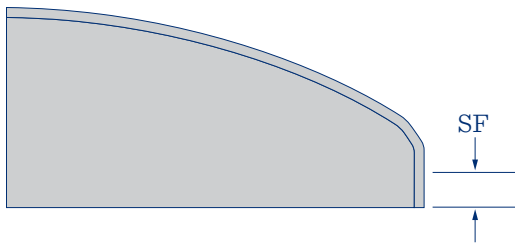
Circumference and Overall Height

The following tolerances apply to all typical flanged and dished heads. See page 13 for typical head types.



Straight Flange

Both straight flange and overall height cannot be held simultaneously. Heads will be trimmed to comply with overall depth tolerances, as long as minimum straight flange is held as follows:



Standard Straight Flange: One inch for heads less than 48" in diameter and 1.5" for heads greater than or equal to 48" in diameter.

STRAIGHT FLANGE (SF):

Flanges up to 3" can be supplied on some heads, providing material thickness is suitable.

Edge Machining Types*

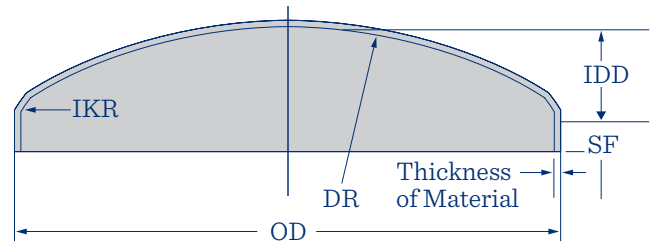
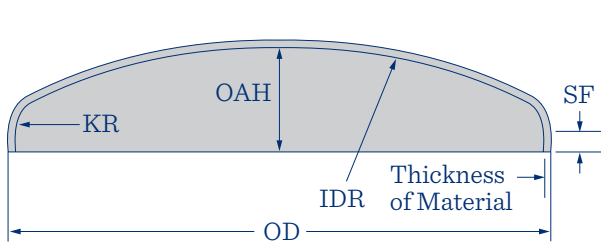
-  **SQUARE EDGE**
-  **SINGLE BEVEL ID/OD**
-  **SINGLE BEVEL WITH LAND ZONE ID/OD**
-  **DOUBLE BEVEL**
-  **DOUBLE BEVEL WITH LAND ZONE**
-  **SINGLE BEVEL WITH LAND ZONE AND 3:1 TAPER ID/OD**
-  **DOUBLE BEVEL WITH LAND ZONE AND 3:1 TAPER**

*Call for custom edge machining types.

Tolerances and Allowances

Forming Allowances

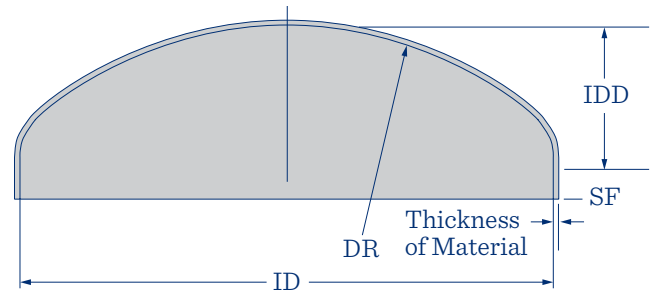
Minimum thickness of material after forming, not including polishing, for typical flanged and dished heads:



ASME FLANGED AND DISHED FORMING ALLOWANCES
Diameter: 16" to 300"
.5" Thick or Less: .03125"
Greater Than .5" Thick: 15% of the minimum thickness

80:10 FLANGED AND DISHED FORMING ALLOWANCES
Diameter: 20" to 220"
.5" Thick or Less: .0625"
Greater Than .5" Thick: 15% of the minimum thickness

KNUCKLE RADIUS (KR):
The radius formed during the flanging process. ASME flanged and dished heads must have a KR greater than or equal to 6% of the head's OD.



INSIDE DISH RADIUS (IDR):
The radius formed during the dishing process. ASME flanged and dished heads must have a IDR less than or equal to 100% of the head's OD.

2:1 ELLIPTICAL FLANGED AND DISHED FORMING ALLOWANCES
Diameter: 20" to 144"
.5" Thick or Less: .0625"
Greater Than .5" Thick: 15% of the minimum thickness

For custom flanged and dished, toriconical, or other designs with special order geometry, contact your Mueller Sales Representative for minimum thickness after forming.

Grinding Allowances

Due to the custom nature of fabricating components, we recommend contacting your Mueller Sales Representative to review your specifications and assess an agreed upon final nominal thickness with your quote.

Tolerances and Allowances

Reverse Dish Tolerances

Typical dished and flanged heads shall have a tolerance for maximum reversed condition as follows:

.25"

145" AND ABOVE
Head Diameter

.1875"

144" THRU 101"
Head Diameter

.125"

100" THRU 0"
Head Diameter

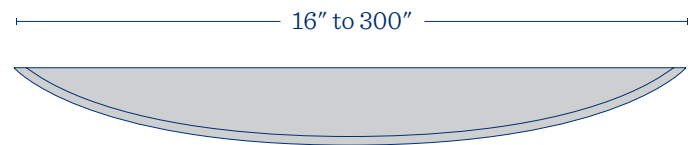
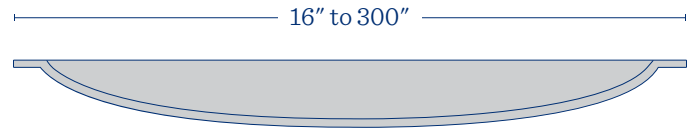
REVERSE DISH;
The amount of deviation towards the center of the head where the dish radius meets the knuckle radius.

FLARED AND DISHED HEADS
Outside Diameter: -0" to +.5"
Inside Diameter: ±.25"
Out-of-Round: Not to exceed 1% of OD

**Inside diameter tolerance is for reference only.*

DISHED-ONLY HEADS
Outside Diameter: -0" to +.5"
Inside Diameter: ±.25"
Out-of-Round: Not to exceed 1% of OD

**Inside diameter tolerance is for reference only.*



Flanged-Only Head Flatness Tolerance*

Flanged-only heads shall have a ±.125" circumference tolerance. Some warping of the flat portion may be expected depending on diameter, material thickness, and knuckle radius.

±.5"

120" THRU 96"
Head Diameter

±.25"

95" THRU 61"
Head Diameter

±.1875"

60" THRU 0"
Head Diameter

**Flanged-only head flatness tolerances do not apply to heads with weld seams.*

Component Products FAQs

Frequently Asked Questions

Below you will find a list of frequent questions about Component Products. If your question is not listed, you can always give us a call at 1-800-545-5224 for further assistance.



Paul Mueller Company builds tanks. Why would I buy from my competition?



Let us use our vast knowledge, heritage, and craftsmanship to bring value to your vessel fabrication project. Building tanks is only one manufacturing task of many that Paul Mueller Company offers. As a stand-alone business unit, Component Products is here to provide you with high-quality tank component solutions at a competitive price. Ask yourself, why should I buy components from someone who does not have tank fabrication experience?



How do I make purchases or view items online?



Go to shop.paulmueller.com and click on the register button in the top right-hand corner to create an account. Use the search bar or web store menu to search for specific items, add to your cart, and check out when finished. Mueller also offers easy online payment options including credit card payment or purchase order approval depending on your credit terms with Mueller. If you require any web store assistance, please contact us at 1-800-545-5224.



What shipment solutions can Mueller Component Products offer me?



In addition to standard shipping options, we are proud to offer services by Mueller Transportation, Inc. (MTI). MTI is a wholly-owned subsidiary of Paul Mueller Company tasked with delivering Mueller-fabricated equipment. We provide specialty freight from our floor to your door. MTI is not a freight forwarder, but a freight provider and supports all of our freight requirements from the routine to the extreme. MTI is safe, timely, professional, well-equipped, and clearly executed.



Where do I find the serial number on Mueller-fabricated equipment?



Serial numbers for Mueller-fabricated equipment can be located on the Mueller data plate or permanently stamped on the manway hinge lug, the agitator support truss, or the support legs and lugs. Data plate and permanent stamping locations may vary slightly from product to product. If you are having trouble locating your serial number, contact your Mueller Sales Representative.



How can I access 3D manway models for use in my own vessel drawings?



Logon to the Paul Mueller Company web store with the same account you use to purchase components and parts. Contact us at 1-800-545-5224 for access to 3D models. All models are .IGS files and are compatible with Inventor, SolidWorks, and ProE. To download the models, drop them into your assembly drawing and then purchase the part; you will have a simple path to obtain the components required to finish your project.



Still not sure we can build your tank components?



Chances are we have your solution. You may have some pretty interesting projects going in your shop. There is a good chance we have ready-built or customizable components to fit your specific project needs. Give us a call with your toughest cases today!

PAUL MUELLER COMPANY

Mueller® Turnkey Solutions

*Your Project Partner from Design to
Fabrication to Installation to Service.*

Our Products and Services

- Skids and Integrated Systems
- Custom Tanks and Vessels
- Refrigeration Products
- Clean Utilities
- Heat Transfer Solutions
- Tank and Agitation Components
- Metal Fabrication
- OEM and Engineered Solutions
- Aftermarket and Onsite Service Provider
- FTL and Oversized Freight Provided by Mueller Transportation, Inc.

Our Facilities and Resources

- Industry-Leading Safety Results
- Industry-Leading Workforce Retention
- Global Facilities of Nearly 1,500,000 Square Feet
- State-of-the-Art Fabrication Skills Lab and Training Center
- Comprehensive Test Facilities for Factory Acceptance Testing
- Onsite, Experienced Engineering Department

Industries We Serve

- Animal Health
- Beverage
- Brewing
- Chemical
- Dairy Farm
- Dairy
- Food
- Heat Transfer
- HVAC
- Mining
- Oil and Gas
- Personal Care
- Refrigeration
- Tank Fabrication
- Wine



Creating Quality
for **Life**

Component Products: components@paulmueller.com | 1-800-545-5224

PAULMUELLER.COM | 1-800-MUELLER

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