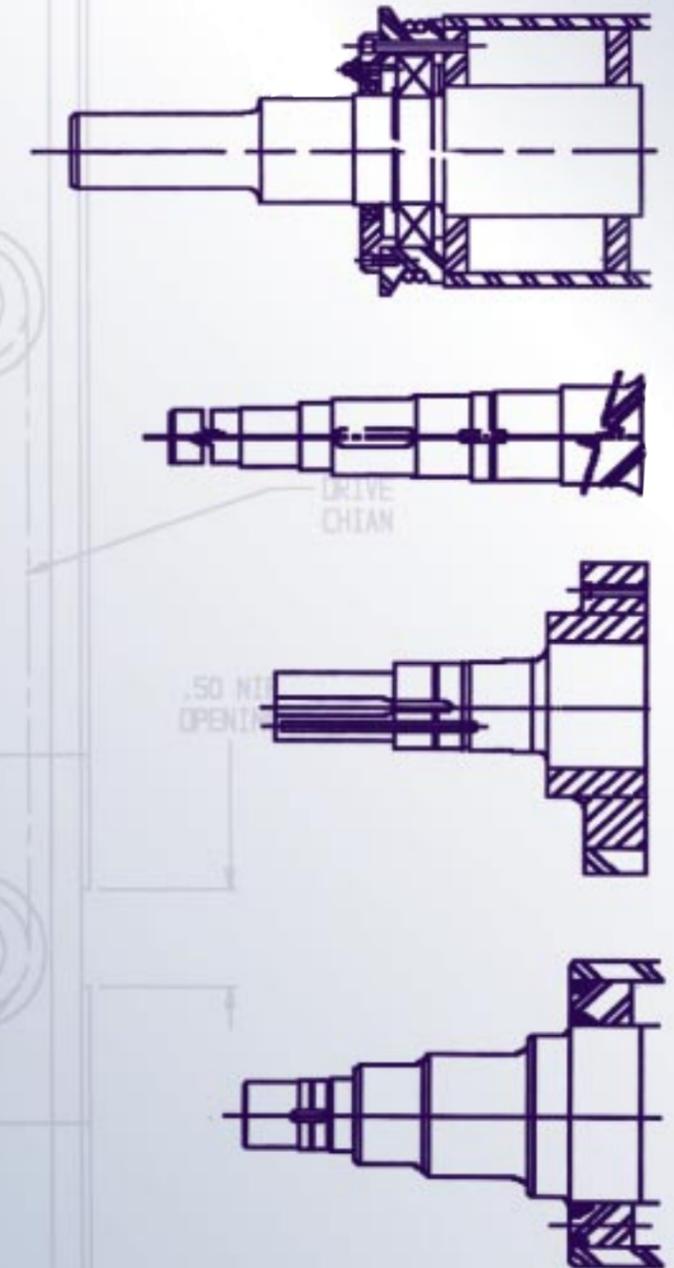




PERMA-FLEX ENGINEERING

Roll Design & Fabrication



Complete Range of Roll Sizes:

- Diameter: Up to 42 inches
- Length: Up to 400 inches o.a.l.

Exceptional Diameter Accuracy:

- Metal and Electro plated rolls
Within .0001 inch
Precision grinding down to .0002 inch
- Rubber Rolls:
Diameters up to 8 inches: ± 0.005 inches
Diameters of 8 to 30 inches: .002 per inch of diameter
Diameters over 30 inches: .062 inches
Conforms to Rubber industry dimension specs

Noteworthy T.I.R. Accuracy:

- Metal and Electro plated rolls to within .0002 inches
- Rubber rolls conform to a standard of .002 inches

Variety of Quality Materials:

- Steel, stainless steel, aluminum, cast iron, brass or bronze rolls
- Various high carbon alloys, steel, titanium, hastaloy, monel and 440 series stainless steel for hardened roll face, chemical resistance and special wear properties
- High strength alloys, stainless steel, monel, titanium and 17-4PH stainless for special needs
- Rolite-carbon fiber composites

We hold the **ASME** "R", "U" and "UM" approval stamp. The American Society of Mechanical Engineers has qualified Perma-Flex Engineering to supply and repair rolls designed and manufactured to Section VIII, Division I of the **ASME** Boiler & Pressure Vessel Code. Perma-Flex Engineering is certified to weld up to 8" thick and a working pressure of 3,000 PSI.

Contact us for more information about Perma-Flex Engineering's top of the line products.

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Email: mhebert@permaflexeng.com
Toll Free: (800) 828-8482
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Fax: (978) 544-6748

Perma-Flex Rollers, Inc.
375 Bellevue Road
Newark, DE 19713
Toll Free: (800) 441-7470
Phone: (302) 731-7880
Fax: (302) 731-0483

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1415 Jake Alexander Blvd. S.
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Toll Free: (800) 438-6026
Phone: (704) 633-1201
Fax: (704) 633-1208

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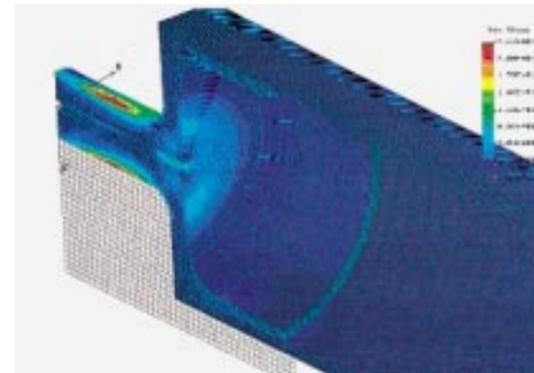
Superior Products
Distinctive Service

The roll fabrication services you need.

At Perma-Flex Engineering, customer satisfaction is our top priority. Our knowledgeable sales managers have a proactive mindset, allowing them to propose solutions to issues before they become problematic.

The Perma-Flex Engineering sales group understands not only the intricacies of rollers, but the importance of keeping your business running smoothly. Familiarity with our customers and their industries lends a distinct advantage to our sales staff. In addition, our enhanced computerized ordering and production system insures reliable and rapid delivery.

Perma-Flex Engineering offers a wide array of professional capabilities and services. We combine innovation and construction to offer custom built rollers, repair and



replacement of roller elements and complete roller reconstruction for every application. Our custom fabricated rolls are strategically engineered to satisfy designated loads, deflection and safe stresses. We offer unique and valuable services to a variety of industries, including rubber, paper, wood, film, steel, glass, textiles, plastics and packaging.

Chromium Plating Expertise:

- Complete in-house chrome plating and finishing operation for all types of finishes
- Finishes range from tank, polished, ground to given Ra and flawless mirror
- Matte surfaces from light to heavy (300 Ra)



Final inspection of Chrome Roll prior to shipping

Advanced Hardening Options:

- Flame and induction hardening
- Custom engineered approaches for every application

Premium Overlay Features:

- Overlay with 400 series stainless steel
- Rc 50 or harder under chrome plating, adding support, reducing denting

- Standard overlay thickness of .125" in depth
- Customized thick overlay available
- Quality modified 420ss weld used
- Corrosion resistant overlay option, without hardness requirement
- Steel roll overlay with 410ss up to 1.0" thick.

Fine Finishes:

- Steel Plain: down to 6-8 RMS
- Steel Hardened: down to 1-2 RMS
- Aluminum, Brass and SS: down to 4-6 RMS
- Chrome Plated: 0.5 RMS or flawless mirror finish
- All materials may be treated to obtain various matte finishes
- Rubber finish supplied with a smooth ground finish unless otherwise specified. Also available are wheel or belt finish, rough grind, crepe or matte finish and tooled surfaces

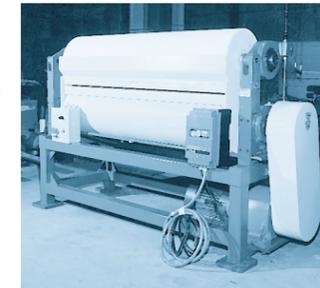


Thermal-Flo Roll

The high quality you expect.

Impressive Balance Capability:

- Equipped to balance rolls to 7000 FPM
- All rolls dynamically balanced; rolls are also statically balanced for no rotation



Outstanding CompuSolve Analysis:

- Complimentary computer aided design analysis for body and shaft deflections, shaft stress and critical speeds
- Calculations on double shelled rolls for uniform heat transfer, fluid velocity at given GPM, pressure drop across roll and temperature differential across roll faces



Note: Nip Guards have been removed for clarity

We manufacture superior products. Perma-Flex engineers will design and fabricate assemblies and rolls to meet your special application needs.

Thermal-Flo Rolls

- One of the most commonly used rolls by major plastic sheet and film manufacturers
- Carefully constructed, utilizing our Shaf-Tite design
- Rigorously pressure tested to ensure sound welds
- Precise fluid velocity to provide optimum heat transfer
- Computerized heat transfer analysis accurately determines all necessary heat transfer calculations for every roll application

AccuNip Squeezer Assembly

- Rugged, compact, "add-on" squeezer assembly
- Pre-engineered with load capacity up to 22,000 lbs.

AccuNip I

- Rugged Cast Iron, off the shelf frames in three models:
Light Duty: 4,000 lbs. 6 1/2" - 12" diameter rolls
Medium Duty: 8,000 lbs. 8" - 14" diameter rolls
Heavy Duty: 22,000 lbs. 12" - 24" diameter rolls
- Vertical or horizontal roll configuration

AccuNip III

- Black hard anodized aluminum frame offers a light-weight, compact configuration yet durable performance
- Especially suited to loads up to 2,000 lbs.
- Compatible with various size roll combinations not available with the standard AccuNip I
- Roll sizes 4 1/4" and up



Note: Nip Guards have been removed for clarity

AccuNip Options:

- Adjustable nip opening to within .0005", gap indicator, dual roll chain or gear drive, roll skewing, drives, mounting table
- Custom AccuNips