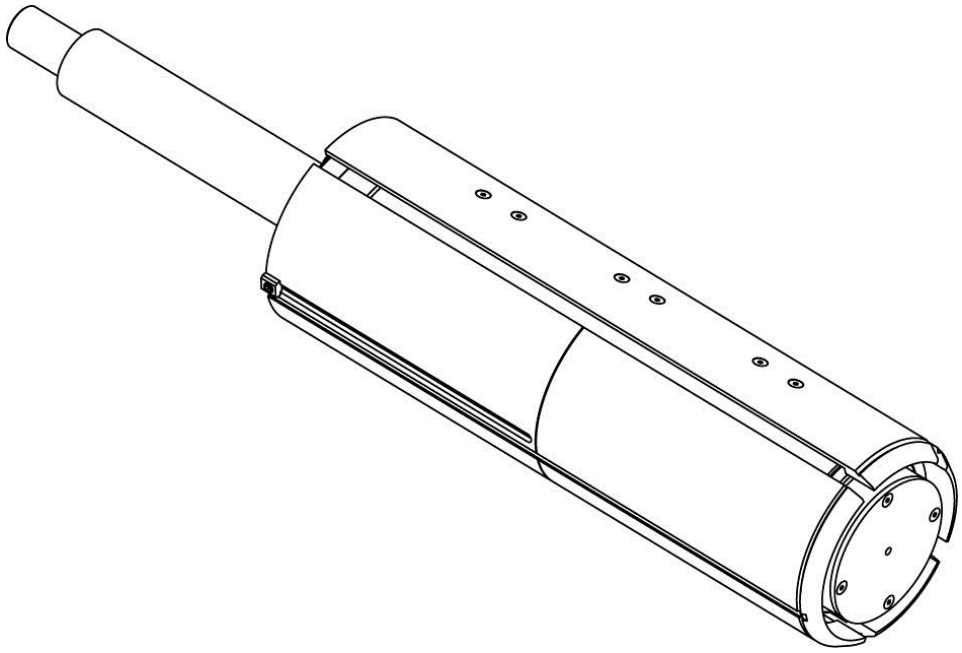
TIDLAND WINDING SOLUTIONS

MAXCESS®

TIDLAND

Tidland Great Expansion Leaf Shaft

Installation, Operation and Maintenance



EN

6" and 12" Shaft Diameter
with instructions for Add-on Leaf Assemblies

MI 27L536158 1 L

IMPORTANT SAFETY INSTRUCTIONS

When using this Tidland product, basic safety precautions should always be followed to reduce the risk of personal injury. Your company's safety instructions and procedures should always be followed. When using this product with any other equipment or machinery, all safety requirements stipulated by that equipment or machinery manufacturer must be followed. Compliance with local, state, and federal safety requirements is your responsibility. No part of these or the following instructions should be construed as conflicting with or nullifying the instructions from other sources. Be familiar with the hazards and safety requirements in your work environment and always work safely.

1. Read and understand all instructions and shaft design application limits before operation.
2. Never use this product for a purpose or in a machine that it was not specifically designed for. See Product Safety Data Sheet (PSDS).
3. Do not exceed the operation loads for this shaft as noted on its PSDS, Product Safety Data Sheet.
4. Follow all warnings and instructions marked on the product and on the PSDS.
5. Do not use fingers or other objects to deflate the shaft; Tidland recommends using the Tidland Air Release Tool (see Recommended Tools on next page).
6. Inspect the shaft for wear and/or other safety and functional deficiencies daily, before each use.
7. Wear safety glasses or proper eye protection when inflating or deflating or otherwise operating the air system.
8. Do not remove or otherwise alter any setscrews or fastening devices prior to using this product.
9. Do not operate this product if any setscrews or fastening devices are missing.
10. Do not lift shaft manually if it is beyond your capacity. Loads over 1/3 your body weight may be prohibitive. Consult your company safety policy.
11. When lifting a shaft, use proper lifting techniques, keeping back straight and lifting with the legs.
12. Do not carry or lift this product over wet or slippery surfaces.
13. Use appropriate mechanical lifting devices, such as a hoist or shaft puller, for heavier shafts.
14. When performing maintenance or repair procedures, do not pressurize the shaft if journal setscrews are loose or missing.
15. When performing maintenance procedures, do not pressurize the shaft if the journal is missing.
16. All replacement parts used on this product should be made to original Tidland specifications.
17. All maintenance and repair procedures performed on this product should be done to Tidland specifications by qualified personnel.

ASSEMBLY DIAGRAM AND PARTS

CAUTION

Wear eye protection when using tools or compressed air.

CUSTOMER SERVICE

+1.360.834.2345 www.maxcessintl.com

Visit the Maxcess Repair and Return Center online to review our return policies.
www.maxcessintl.com/returns

RECOMMENDED TOOLS

- Clean, non-lubricated air supply: 80-120 psi (5.5-8.3 bar) for proper operation.
- Tidland Inflation Tool (Part No. 27L128052)
- Tidland Air Release Tool (Part No. 27L111630)
- Rubber Tube Removal Tool (Part No. 536642)
- Pincers for removing hose clamps, if installed. See page 8.
- *LOCTITE® 243*
- Dow Corning Molykote® 55 o-ring grease

For more accessories to help with your winding processes, visit *www.maxcessintl.com*.

MAINTENANCE SCHEDULE

Daily

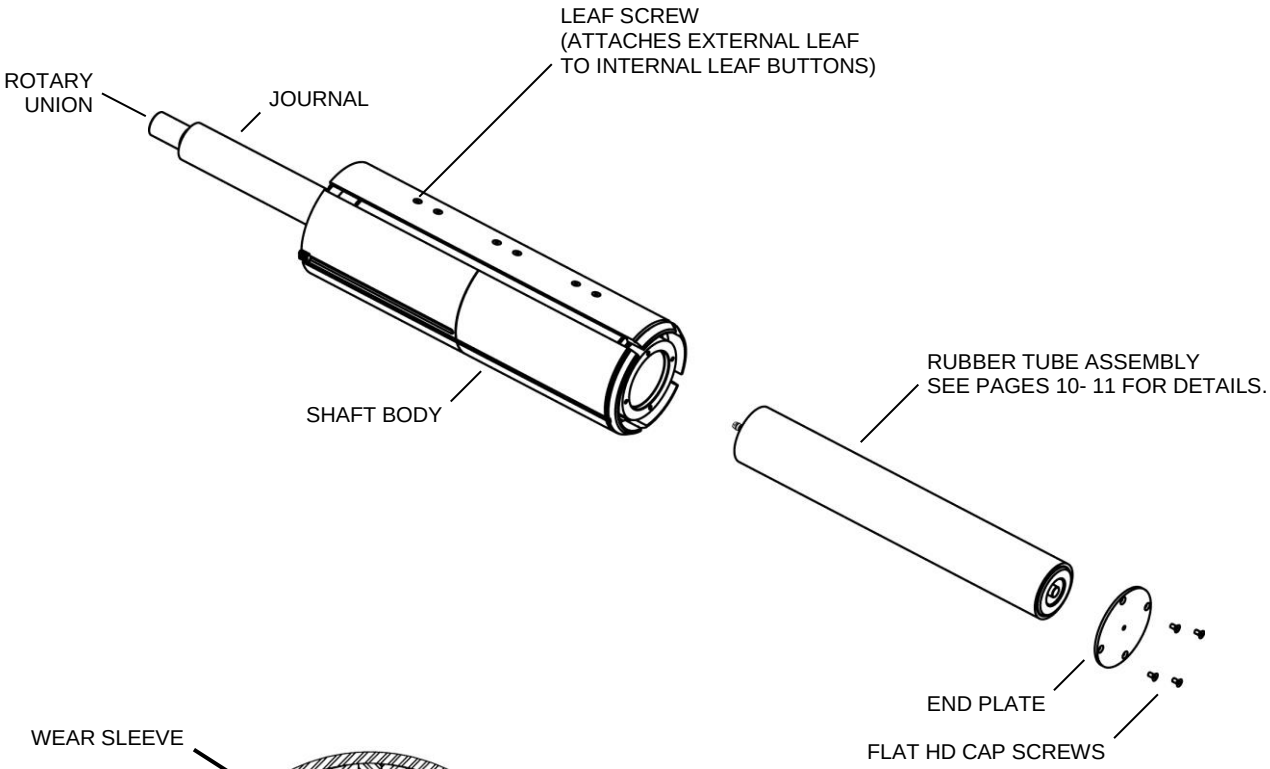
Keep shaft clean and dry.
Remove dust and debris buildup with compressed air.

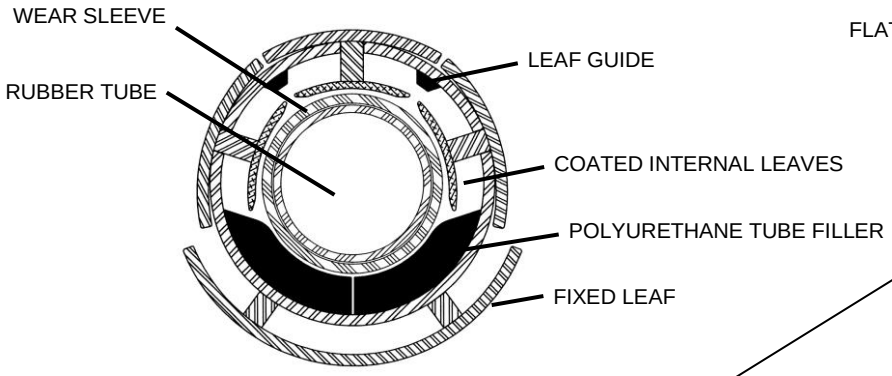
Periodically

Inspect journals for wear.
Check for bent external leaves.

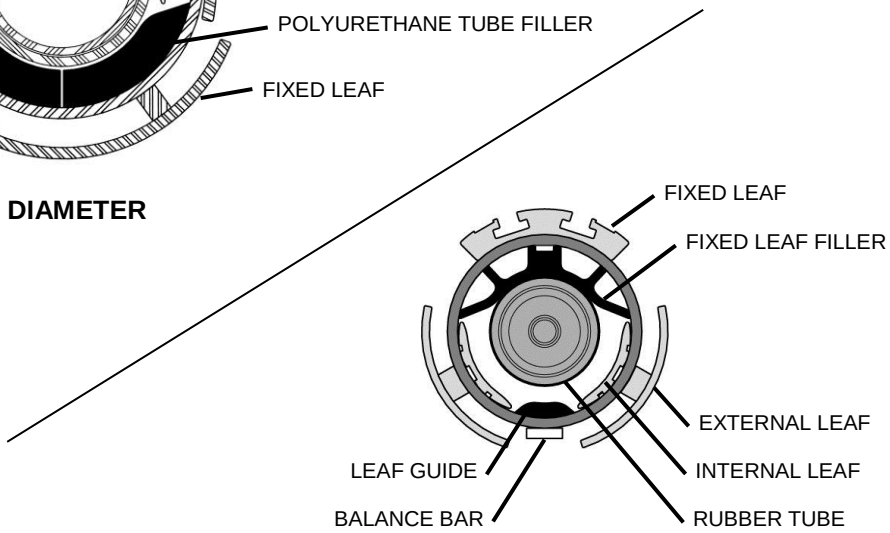
ASSEMBLY DIAGRAM AND PARTS

Shaft configurations vary. When ordering replacement parts, please have your serial number available. The number is typically stamped on the valve journal.





12" DIAMETER



6" DIAMETER

Lift and Load

- Positioning the fixed leaf at the top allows the internal rubber element to expand more uniformly, and prevents the internal element from having to lift the weight of the material roll.
- Inflating the shaft with the fixed leaf down or to the side can lead to excessive element wear and premature failure.

1. Install shaft as required for your machine application.
2. Rotate the shaft so that the fixed leaf is at the top; insert shaft into roll.
3. Inflate rubber tube to 80-120 psi (5.5-8.3 bar).
4. Load roll into machine to begin winding.

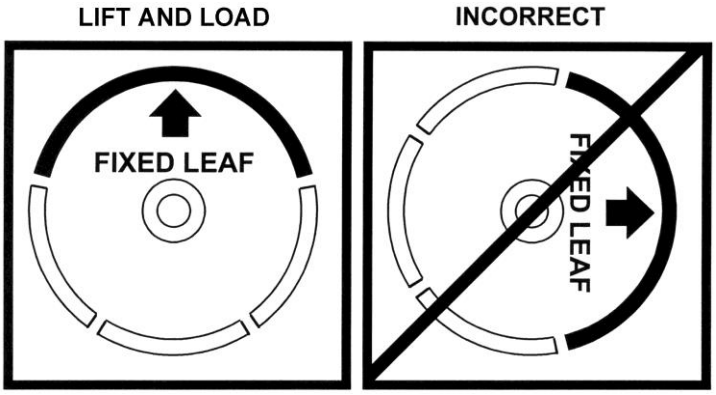
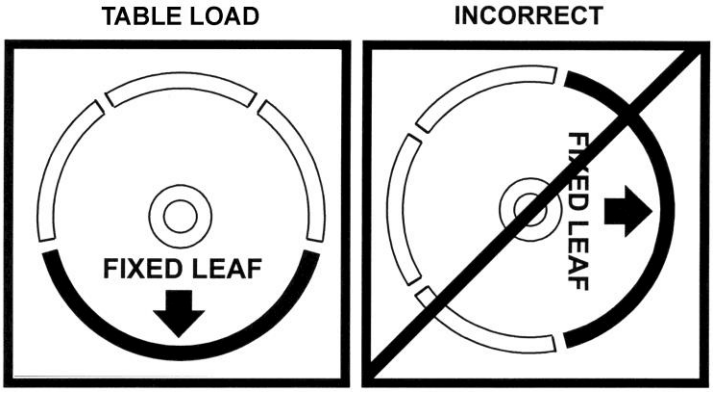


Table Load

1. Install shaft as required for your machine application.
2. Rotate the shaft so that the fixed leaf is at the bottom during table load.
3. Inflate rubber tube to 80-120 psi (5.5-8.3 bar).
4. Load roll into machine to begin winding.



Use only the Tidland Air Release Tool to deflate shafts when operation is complete.

Rubber Tube Fitting Designs

If your replacement rubber tube assembly looks like this ==========>>>

Remove your old rubber tube assembly (page **Error! Bookmark not defined.**) and install the new one, pushing the tube assembly firmly onto the o-ring connector in the journal.

If you are using re-using your tube fittings with bulk rubber tube material, see instructions starting on page **Error! Bookmark not defined.**.

If your replacement rubber tube assembly looks like this ==========>>>

=== then it is directly interchangeable with older shaft designs. There are fewer parts: rubber tube, tube fitting and hose clamp, pictured at right.

Remove your old rubber tube assembly (page **Error! Bookmark not defined.**) and install the new one, pushing the tube assembly firmly onto the o-ring connector in the journal.

See page 8 for using the hose clamp design with bulk rubber tube material.

If your replacement rubber tube assembly looks like this ==========>>>

=== then the shaft has a hole bored in the journal to accept the rubber tube assembly with a male o-ring connector, pictured at right.

Remove your old rubber tube assembly (page 10) and install the new one, pushing the tube assembly firmly into the socket in the journal.

See page 8 for using the hose clamp design with bulk rubber tube material.

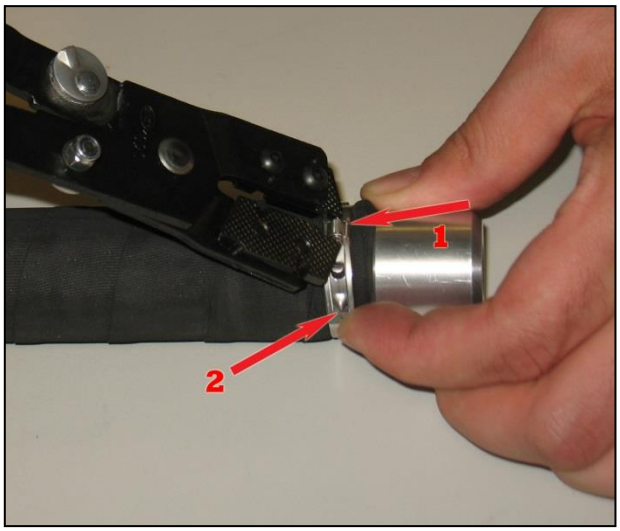
Using the hose clamp with bulk rubber tube material

Removing the hose clamp

Tidland recommends the use of a pincer for safe and easy removal of the hose clamp.

Standard pincer	Tidland Part No. 27L778957
Spring return pincer	Tidland Part No. 27L778958

1. With the pincer, squeeze the tangs **(1)** on the hose clamp until you can lift the load retaining hook **(2)**, and then release the pincer.
2. Remove the fittings and use them again with new rubber tube material. (Remember to reinstall the tube stiffener, if needed.)
3. To close the clamp, squeeze the tangs until you can snap the load retaining hook into place.



Replacing a Rubber Tube Assembly

Pinch Hazard
Keep fingers away from moving leaves.

Cantilevered shafts: rubber tubes can be replaced without removing shaft from machine.
It is not necessary to remove the shaft leaves for rubber tube maintenance.

Accessing the Rubber Tube

1. Position the shaft in the machine with the fixed leaf at the top.
2. Using the Tidland Air Release Tool, remove all air from the shaft.
3. Accessing the tube:
    A) Cantilevered shafts: remove the end plate and valve.
    B) Shafts with journals: match mark shaft and journal, and then
        a) If the journal has pull threads, use a slide hammer to remove the journal, or
        b) Use jacking screws.

Removing Rubber Tube Assembly from Shaft

1. **12" diameter shaft:** Thread the tube removal tool onto the threads of the tube fitting. Twist the tube while gently pulling it from the shaft, dislodging the o-ring connector inside the shaft.
   All other shaft diameters: Grasp rubber tube assembly firmly and twist while pulling from shaft.
2. Pull the rubber tube completely out of the shaft. The wear sleeve may remain lodged in the shaft due to cold flow.
3. Remove the wear sleeve by collapsing the sleeve in on itself; pull sleeve from the shaft. Do not reuse.
4. Clean the inside of the shaft and inspect for loose or worn parts. Repair as necessary.
5. Rubber tube can now be disassembled; fittings may be reused with new tube material.

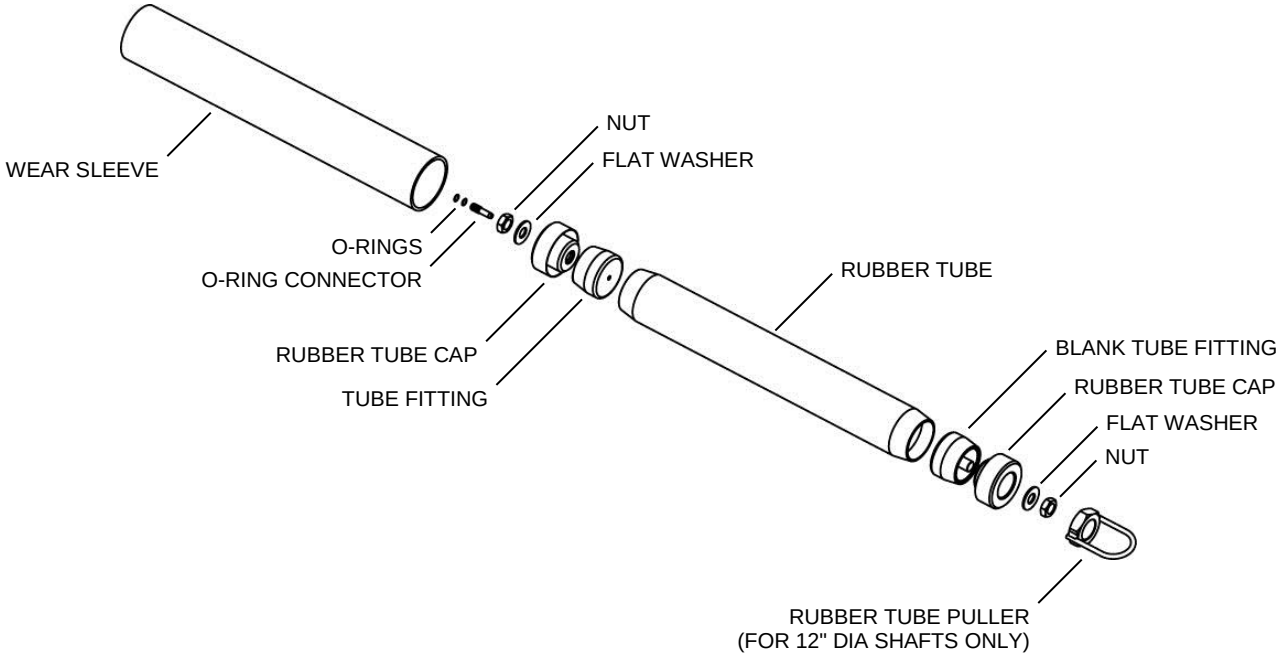
Reinstalling a Complete Rubber Tube Assembly (New)

Tidland recommends the use of Dow Corning III Compound for o-ring lube.

1. Remove the wear sleeve from the new rubber tube assembly.
2. For 12" diameter shaft, lightly lubricate the **O.D. of the rubber tube** with o-ring lube.
3. Reinstall the wear sleeve over the tube.
4. For 12" diameter shaft, lightly lubricate the **O.D. of the wear sleeve** with o-ring lube.
5. Apply o-ring lubricant to the o-rings on the o-ring connector.
6. Push the rubber tube assembly into the shaft with a twisting action until the o-ring fitting seats completely in the shaft.
7. Reinstall the end plate and flat head cap screws.

Disassembling a Rubber Tube Assembly

1. Remove rubber tube from shaft (page 9).
2. Remove the jam nuts and washers.
3. Remove all the end caps and fittings.



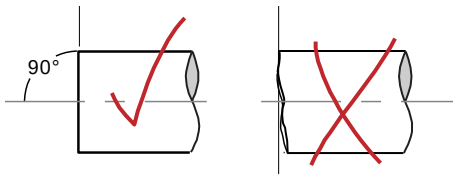
Note the difference in tube fittings:

- Valve end fittings are bored through for air passage.
- Non-valve fittings are solid.

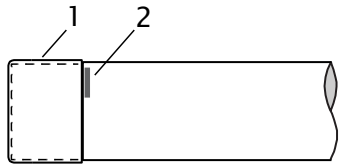
Note:
O-ring connector configurations vary. Make sure there is an o-ring in each groove before re-assembly.

Building the Rubber Tube Assembly

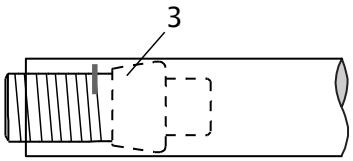
- When cutting rubber tube to length, it is very important to cut the ends square, without nicks or wavy edges. Heavy tin snips work well. Any uneven cuts will not let the rubber tube seat properly in the end cap, resulting in an unreliable assembly subject to failure under pressure.
- Before assembly, clean ends of rubber tube inside and out to make sure all mold release agents or other foreign coatings are removed. This will help prevent the rubber tube from squeezing out of the cap when the retaining nut is tightened.



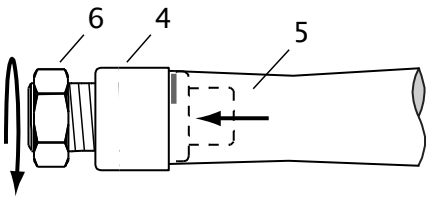
1. Cut rubber tube square at each end.



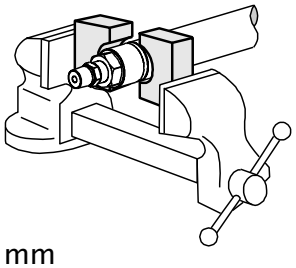
2. Install the end cap **(1)** on the rubber tube and mark its position on the tube **(2)**. Remove the end cap.



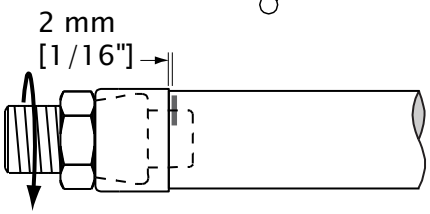
3. Insert the tube fitting **(3)** deep inside the rubber tube.



4. Fit the end cap **(4)** over the tube.
5. Squeeze the tube **(5)** to force the tube fitting back toward the end.
6. Apply Loctite to the tube fitting threads and install the nut **(6)**. Do not tighten.



7. Secure the shaft in a round clamping fixture.



8. Tighten the nut to draw the tube fitting out until fully seated in the end cap.
9. Tighten the nut to torque specified on page 12.
10. The end cap must be within 2 mm of the mark on the rubber tube. Tube fitting threads should be perpendicular to the rubber tube. If crooked, loosen the nut and repeat the procedure.
11. Repeat the procedure for the non-valve end.

Do not inflate rubber tube outside of shaft assembly. Tube fittings could disengage and become dangerous projectiles.

Assembly Torque Chart	
Tube Diameter	**Torque**
2 5/8" (67 mm)	58-60 ft·lbs (79-82 Nm)
5 1/4" (133 mm)	68-70 ft·lbs (92-95 Nm)

Replacing Base Leaves

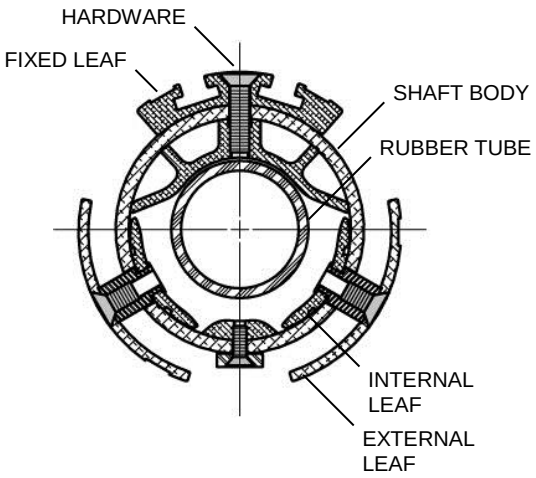
External Leaves

1. Inflate the shaft enough to lift the external leaves. This prevents collapse of the internal leaves, making it easier to remove the rubber tube assembly.
2. Remove all hardware from external leaves. (Leaves were installed using *Loctite 243*; you may need to use heat or an impact wrench to break the seal.)
3. Align the new leaves on the shaft.
4. Using the new hardware supplied with your leaves, apply a small amount of *Loctite 243* to the threads. Install the screws in the leaves and tighten.
5. Deflate the shaft completely.

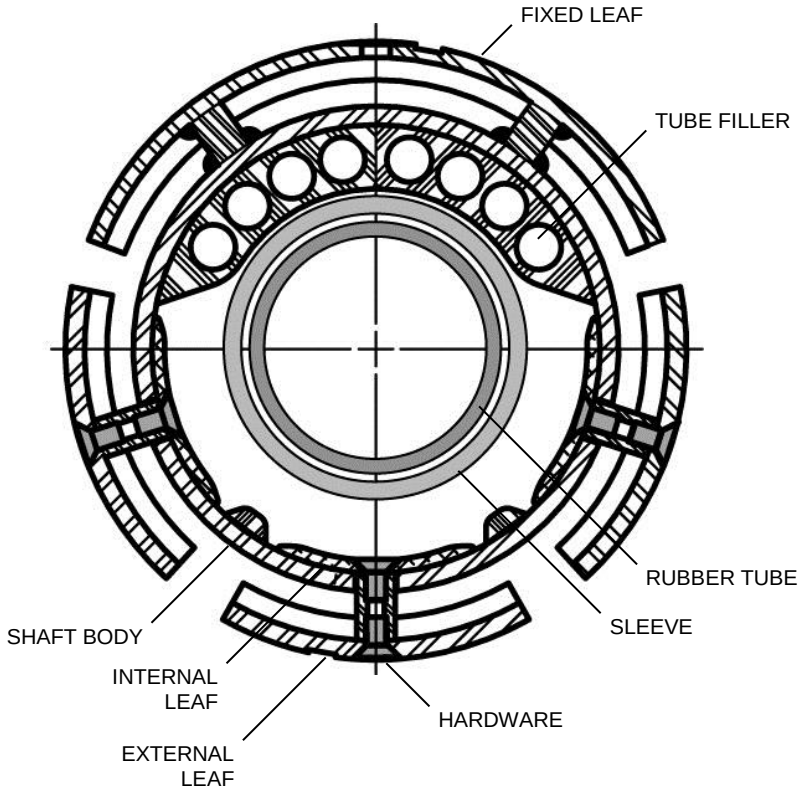
Internal Leaves

1. Remove the rubber tube assembly from the shaft (p. 9).
2. Remove one external leaf at a time and pull out the matching internal leaf until all leaves are removed. (Leaves were installed using *Loctite*; you may need to use heat or an impact wrench to break the seal.)
3. Use the new hardware supplied with your shaft to install the external leaves, applying a small amount of *Loctite 243* to the threads. Reinstall one internal leaf and its matching external leaf, one at a time, until all leaves are reinstalled.
4. Tighten all hardware.
5. Reinstall the rubber tube assembly (p. 9). If necessary, lift the external leaves and wedge them open to ease insertion of the rubber tube.

6" DIAMETER

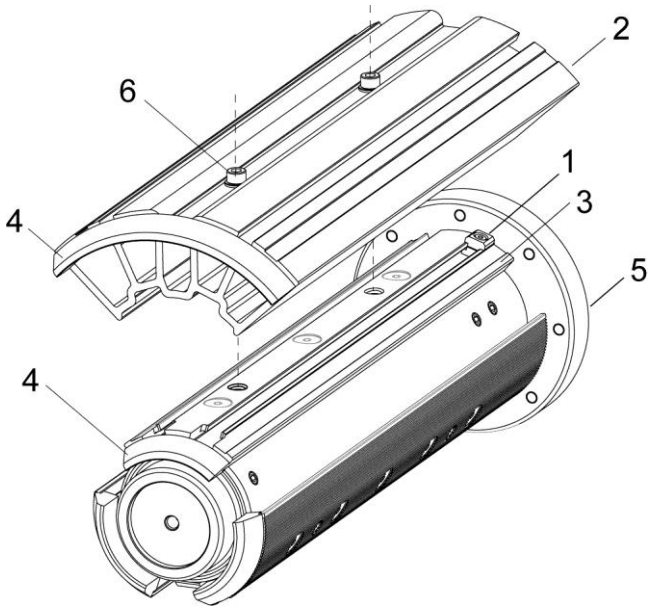


12" DIAMETER



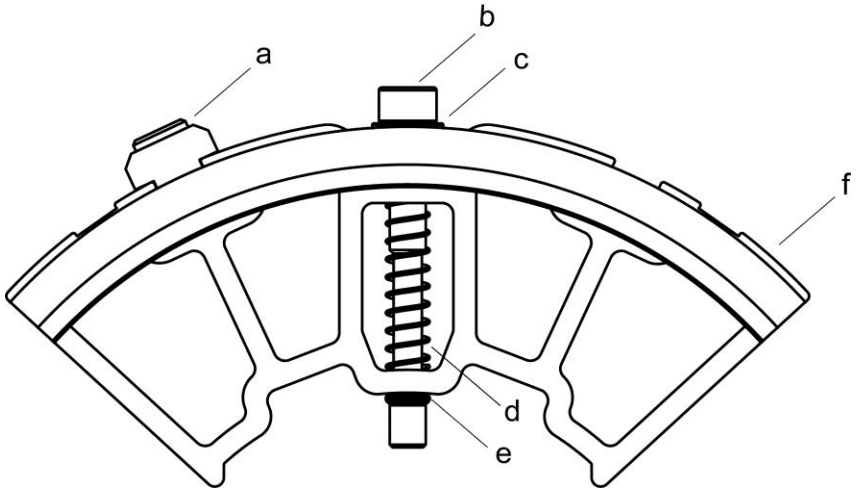
Converting from 6 inch to 12 inch shaft

Using Tidland add-on leaf assemblies



Tidland add-on leaf assemblies are provided with the mounting hardware captive in each leaf.

1. Taller core stops **(1)** may need to be removed.
2. Place the add-on leaf assembly **(2)** on the base shaft leaf **(3)** so that the beveled ends **(4)** align and point away from the flange mount end **(5)**.
3. Using a 8 mm T-handle hex drive wrench, tighten the mounting bolts **(6)**.
4. Repeat for all add-on leaves.
5. If required, install core stop in one of the add-on leaves. See item **(a)** in the illustration below. Use 8 mm hex drive to tighten the core stop.



Item	Description	Part No.
a	Core stop assembly	636708
b	Bolt, add-on leaf, M10 x 1.50 x 90 mm	636660
c	Flat washer, M10 steel	call
d	Spring, compression, Century 71489	581391
e	O-ring, Parker 2-011	126119
f	Add-on leaf	custom

TROUBLESHOOTING

Problem	Possible Cause	Recommended Solution
Shaft will not inflate or hold air	Leaking rubber tube assembly	Disassemble shaft and replace rubber tube assembly
	Rubber tube slips off o-ring connector	O-ring connector configurations vary. Make sure there is an o-ring in each groove. Use o-ring grease. Always use a thread sealant when replacing or reinstalling o-ring connectors.
	Valve leaking	Remove valve and apply a thread sealant according to manufacturer's directions. Reinstall valve and torque to 12-14 Nm (8.8-10 ft·lbs). Replace valve if necessary.
	Hose clamps not secure (new design, p. 7)	Make sure the load retaining hook is locked. (p. 8)
Cores slipping	Low air pressure	Operate shaft at 5.5 bar (80 psi minimum) for optimal performance.
	Air leak	Check rubber tube assembly for leaks and replace or repair as needed. Check valve for leaks. Remove valve and apply a thread sealant according to manufacturer's directions. Reinstall and torque to 12-14 Nm (8.8-10 ft·lbs). Replace valve if necessary.
	Other	Call Tidland for assistance.
Journals wear prematurely	High loads or speeds	Check PSDS specifications for your shaft application. Verify that journals are hardened.
Excessive shaft vibration	Shaft imbalance	Return shaft to Tidland for dynamic balancing.

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