

1. Flange Lining Method

There are many ways to line flanges. The following diagrams (Fig. 10-3, Fig. 10-4 and Fig. 10-5) provide possible options however end-user specifications, materials used and service conditions should all be considered to determine the appropriate method.

2. Curing the Flanges

- 2.1 For atmospheric cures, the flanges should be “bagged” by wrapping plastic sheeting around the nozzle to contain the steam.
- There must be a small hole in the plastic near the bottom to allow condensate to drain.
 - There must be adequate steam to force steam out through the drain hole to assure proper cure of the flange rubber.

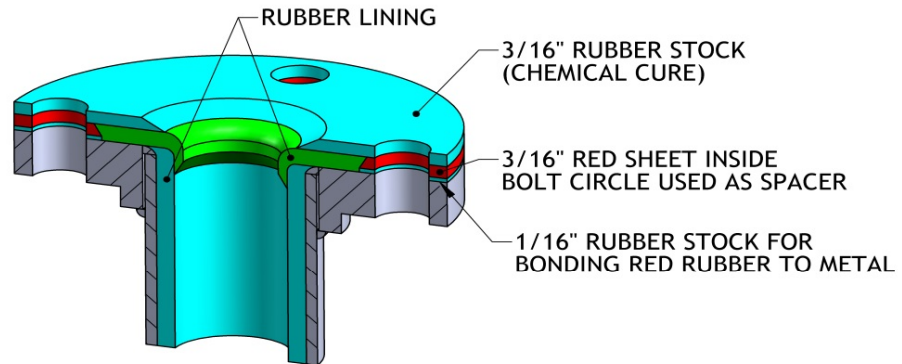
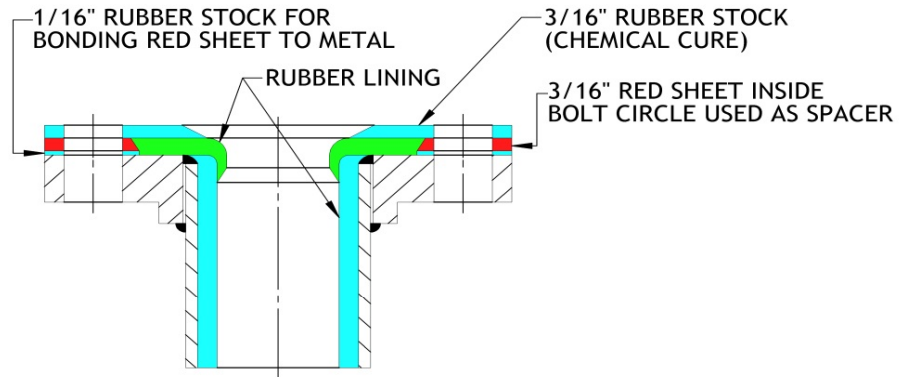


Fig. 10-3 Internal steam cure vessel - Flange detail for outlets
(This method is recommended on vacuum equipment)

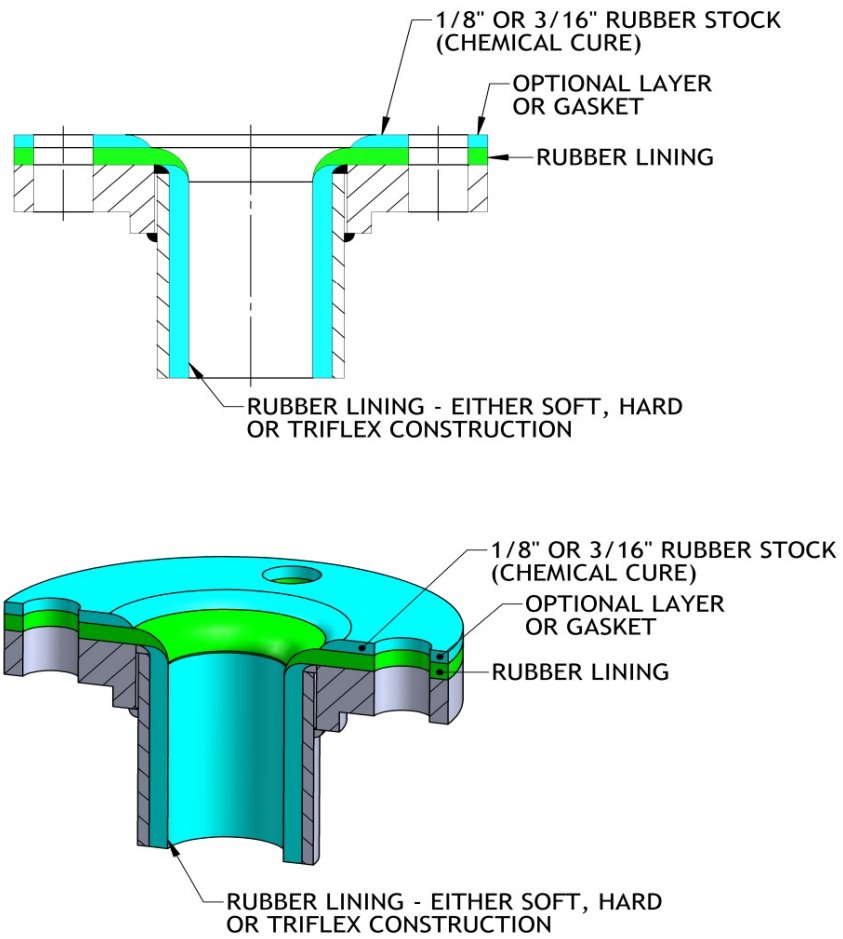


Fig. 10-4 Internal steam cure vessel - Flange detail for outlets

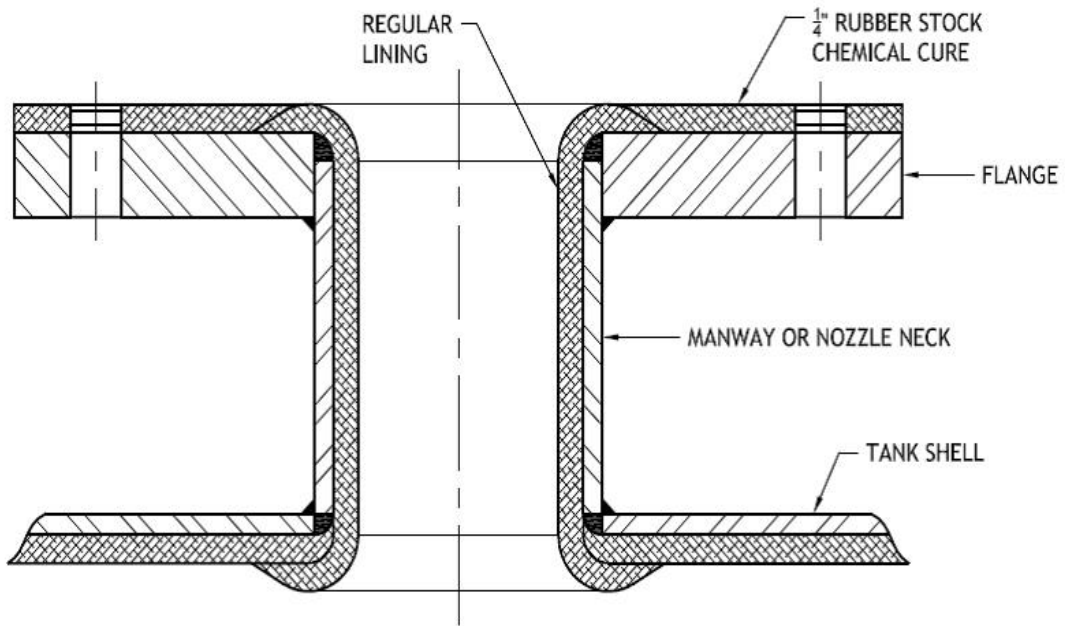
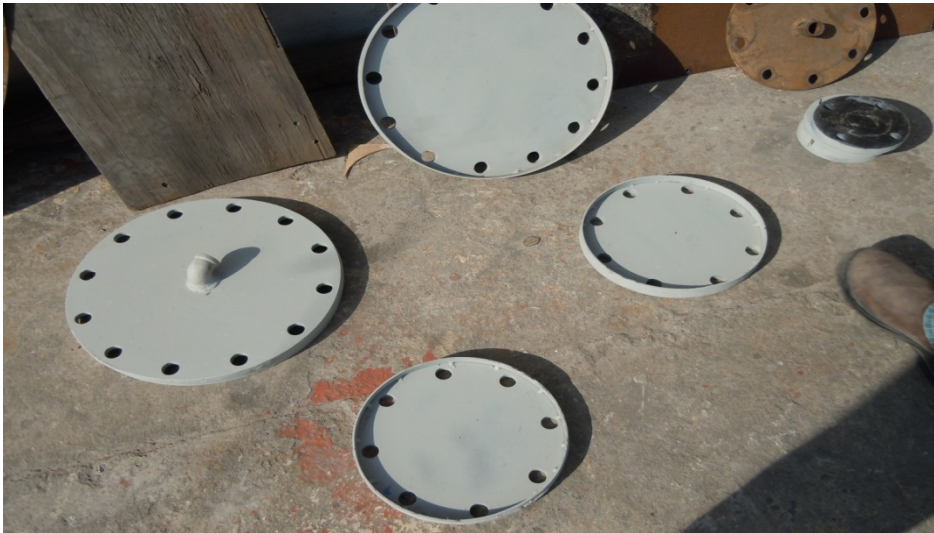


Fig 10-5 Internal steam cure vessel flange detail for outlets

- 2.2 For internal pressure curing, special blind flanges can be made to pressure cure the flange face without distorting the rubber. See the picture below.
- The thin steel strip welded to the blind flange should be wider than the thickness of the flange lining so live steam can cure the flange face.
 - Bolting on these special blinds requires a rubber gasket and a washer for each bolt to contain the steam during the internal pressure cure.
 - The flange face can be buffed flat after cure.



3. Gaskets

A gasket may be used between mating surfaces in-service.

4. Release Agents

Release agents should be applied to prevent the sticking of the flange face rubber to the mating surface. Options include:

- Various anti-seize compounds can be effective but are very messy.
- Talc pastes made by mixing with water have been used but may not be as effective over the long term.
- Silicone and water emulsions offer good release properties over a long period of time.
- For internal pressure cures, be sure to allow the water to evaporate before bolting on blind flanges. **Silicone solutions are not to be used when**

hydrofluoric acid is present. Silicone is attacked by HF and could contaminate the acid.

5. Torque Specification

Procedure to torque bolts on rubber-lined flanges.

- Bring mating flanges into contact and install bolts/torqueing nuts “finger tight”.
- Align surfaces and adjust bolts to produce a uniform gap between the flange faces.
- Torque two opposing bolts together to ½ the full torque specified for the pipe size being installed.
- Repeat above step for the two bolts at 90 degrees to the first bolts torqued.
- Continue torqueing opposite pairs of bolts until all bolts have been tightened.
- Repeat procedure until all opposite pairs have been torqued to the full value specified for the pipe size installed.

Bolt Torqueing Guideline

Pipe Size (Inches)	Bolt Size (Inches)	No. Bolts	Half Torque (ft•lb)	Full Torque (ft•lb)
2	5/8	4	6	12
3	5/8	4	8	16
4	5/8	8	5.5	11
6	¾	8	7.5	15
8	¾	8	11	22
10	7/8	12	12	24
12	7/8	12	18	32
14	1	12	22	44
16	1	16	20	40
18	1-1/8	16	21.5	43
20	1-1/8	20	20	40
24	1-1/4	20	28	56
30	1-1/4	28	27	54