



General Information

Flange Face Imperfections

Types of imperfections

Scratches & Gouges

These types of imperfections are typically caused by an item being dragged across the face serrations. Scratches are thinner and shallower than gouges and typically do not exceed the bottom of the serrations (0.005"). **See figure 1** Gouges exceed the depth of the serrations. Both can be detrimental to the flange's sealing ability. The orientation, radial projection and depth of the scratch/gouge will determine if the imperfection is permitted or rejectable.

Dents & Dings

These types of imperfections typically are caused by material impacting the face serrations. These can be less than the depth of serrations (superficial) or deeper than the serrations. **See figure 1** Dents and dings can be detrimental to the flanges sealing ability; however, they are less detrimental than scratches/gouges. The radial projection and depth of the dent/ding will determine if the imperfection is permitted or rejectable.

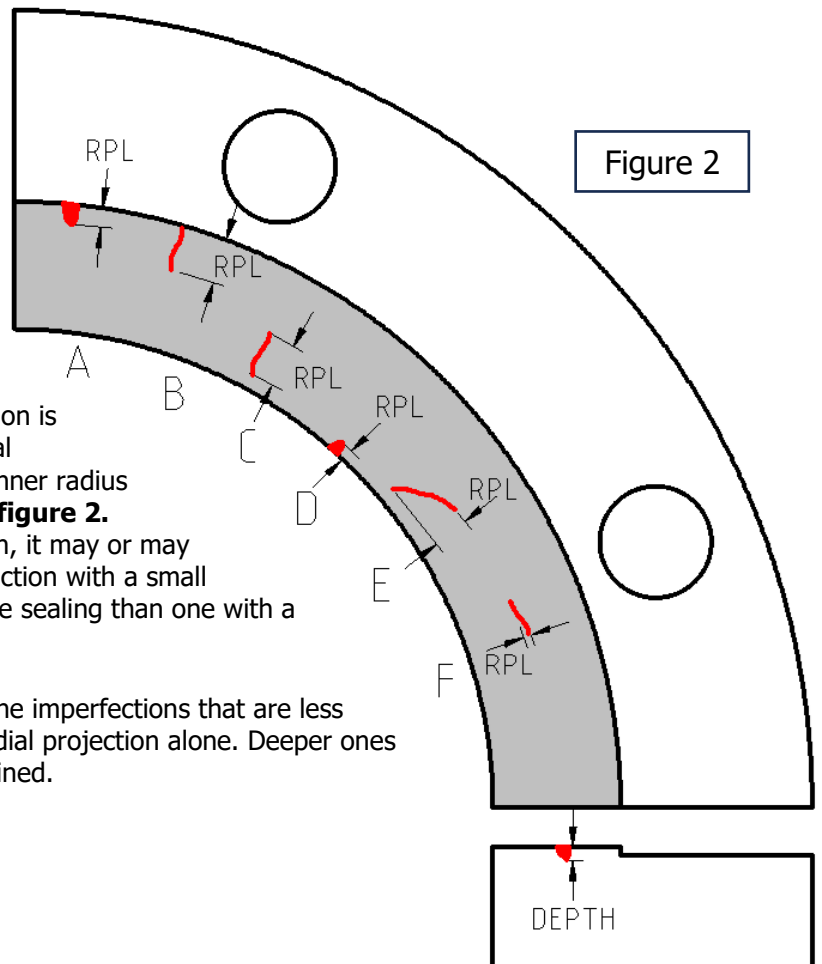
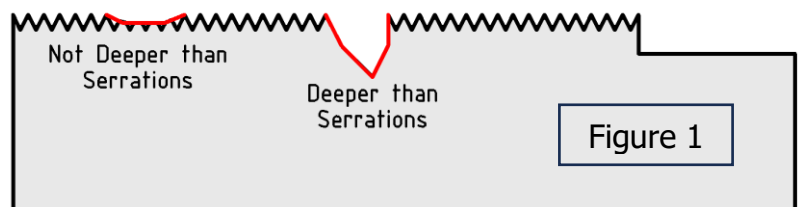
Measuring the imperfection

Radial Projection Length

Radial projection length (RPL) is the length radially the imperfection extends. Radial projection is different from the imperfection length. The radial projection can be evaluated by subtracting the inner radius from the outer radius of the imperfection. **See figure 2.** Depending on the orientation of the imperfection, it may or may not influence the flanges sealing ability. Imperfection with a small radial projection will have less of an effect on the sealing than one with a large radial projection.

Depth

Depth is simply how deep is the imperfection. The imperfections that are less than the depth of the serrations is judged on radial projection alone. Deeper ones will need both depth and radial projection examined.





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Permissible vs Impermissible

As per ASME B16.5 the tolerance for imperfections is dependent on three factors RPL Depth and flange nominal pipe size (NPS). Tolerance for imperfections that are not deeper than the bottom of the serrations follows the middle column. Deeper imperfection tolerance follows the last column.

We will use this procedure for the accept/reject criteria for flange damage claims.

ASME B16.5 Table II-3 Permissible Imperfections in Flange Facing Finish for Raised Face and Large Male and Female Flanges

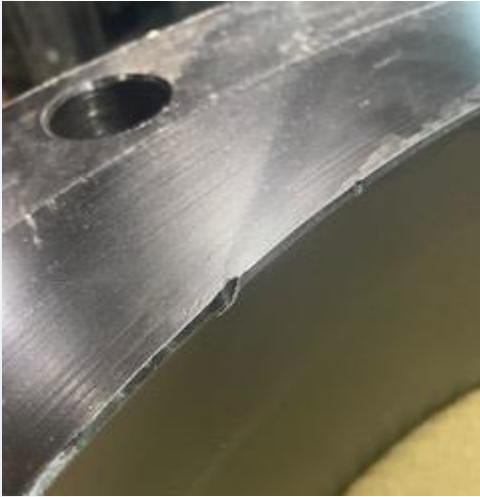
NPS	Maximum Radial Projection of Imperfections That Are No Deeper Than the Bottom of the Serrations. (in)	Maximum Depth and Radial Projection of Imperfections That Are Deeper Than the Bottom of the Serrations. (in)
1/2	0.12	0.06
3/4	0.12	0.06
1	0.12	0.06
1-1/4	0.12	0.06
1-1/2	0.12	0.06
2	0.12	0.06
2-1/2	0.12	0.06
3	0.18	0.06
3-1/2	0.25	0.12
4	0.25	0.12
5	0.25	0.12
6	0.25	0.12
8	0.31	0.18
10	0.31	0.18
12	0.31	0.18
14	0.31	0.18
16	0.38	0.18
18	0.50	0.25
20	0.50	0.25
24	0.50	0.25

* This information is provided for quick references, always consult applicable ASME, ASTM and Manufacture's standards.



These are some sample pictures of acceptable and rejectable imperfections. Keep in mind the acceptance/rejection criteria are based on a combination of radial projection length and depth.

Acceptable



Rejectable

