

Why do I need to complete an application questionnaire?

This month's "Sealing Sense" was prepared by FSA member Larry Sheffield.

Every day, gasket manufacturers are asked to make recommendations to distributors and end users for sealing applications. The FSA has developed questionnaires that help gather most of the information necessary for gasket manufacturers to make the best possible recommendation. One form is specific to standard flanges while the other covers custom flanges. Both are available for completion and submission on the FSA website, www.fluidsealing.com. See Figure 1 for the standard flanges questionnaire.

Application Information

When the manufacturer or distributor is involved in the gasket selection process, it is most often to help solve an existing sealing problem or to seal a specific piece of equipment. In both these situations, specific information is required.

Since most leaking flanges have little to do with the gasket material itself, answering these questions may provide insight into where the problem lies. Generally, gasket manufacturers understand how their materials work under certain conditions and are dedicated to solving the problem, not just selling a gasket. Even though gathering this information may be somewhat tedious, this questionnaire is an invaluable tool in the decision making/recommendation process.

Recommendation Requirements

Three components must be considered to make a proper gasket recommendation: flanges, fasteners and application or operating conditions. Each component must be identified because each has a direct effect on the others. After deciding between a custom or standard flange design, the user completes the questionnaire. The information below is requested:

I. Application Information—This section identifies information that will narrow the gasket material choices. Conditions such as temperature, pressure, media (chemical compatibility) and cycling will eliminate the use of certain materials and reinforce the use of others. If the gasket recommendation request is based on an existing leak, additional

FLUID SEALING ASSOCIATION FSA **Gasketed Joint Application Information Standard Flanges**

Company Information

Company Name: _____ Company Contact: _____
 Address: _____ Email: _____
 City: _____ State/Province: _____ Zip/PC: _____
 Phone: _____ Fax: _____

Application Information

Industry: _____
 Type of Equipment: _____
 Type of Gasket (Style, Material): _____
 Application: _____
 Media: _____ Gas Liquid pH: _____ Concentration, %: _____
 Max. Pressure: _____ Max. Temperature: _____ Min. Temperature: _____
 At what point in the service life was the problem/leak noticed (immediately, 1 week, 1 year, etc)? _____
 If the application is cyclic at what point in the cycle does the problem/leak occur (heat up, cool down, constant)? _____
 Have there been any attempts to correct the problem/leak? If so, describe what was attempted. _____
 How long after the problem/leak was noticed was this attempt made to correct it? _____
 What was the outcome? _____

Flange Information - Standard Flange

Flange Designation: ASME B16.5 NPS: _____ Class: _____
 ASME B16.47 Series A Series B NPS: _____ Class: _____
 Large Diameter Intl. Std. NPS: _____ Class: _____
 DIN JIS DN: _____ PN: _____
 Other _____
 Flange Style (use illustration Figure #): _____
 Flange Material Description: _____
 Gasket Contact Surface: Smooth Rough Surface Finish: _____

Figure 1. Questionnaire for standard flanges

information on the actual leak may be required. As stated earlier, a leaking flange may have little to do with the gasket itself, but the incumbent gasket always gets the blame. See January 2008 "Sealing Sense: Was it really the gasket?"

II. Flange Information—Knowing the size and shape of the flanges to be sealed allows the gasket manufacturer to narrow the choices. In general, this information provides the amount and type of surface area to be sealed, which has a direct bearing on calculating gasket stress or the amount of required load to achieve a seal. Some flange designs and materials are more or less robust than others, and this can limit choices. The hydrostatic end force (flanges being forced apart) and internal pressure (gasket being pushed out) must be considered. Some tongue and groove designs produce extremely high compressive loads and must be considered

separately and with caution.

Flange Condition: Some imperfections on the sealing surface can be sealed with certain materials but not others and have to be identified. Allowable imperfections, flatness irregularities and misalignment are detailed in ASME PCC-1-2010 Appendices C, D, and E. ASME PCC-1-2010 is the accepted guideline for pressure boundary bolted flange joint assembly.

III. Fastener Information—These components—usually comprised of bolts, nuts and washers—and their installation procedures are responsible for most leaking flanges. All gaskets require even and sufficient compression, and this is the job of the fasteners, along with proper installation techniques. Under certain operating conditions, several grades of bolts cannot produce enough stress to achieve a tight gasket seal. Because of the relationship between gasket performance and fasteners, most gasket manufacturers are knowledgeable about bolting and understand that no gasket recommendation can be made without this information.

An often-overlooked consideration is the importance of fastener lubrication. As much as 50 percent or more of the perceived torque value can be lost due to friction between fastener components. Many of these guidelines are also in PCC-1-2010—including fastener selection, the importance of using hardened washers, proper lubrication and accepted tightening procedures and patterns.

The FSA has developed a pocket-size Gasket Installation Procedures pamphlet that addresses the basics of proper gasket installation. In most circumstances, an end user will ask the gasket manufacturer for the proper bolt torque specifications, too, once a suitable material and design have been selected.

Conclusion

The purpose of developing this questionnaire and asking for the information is to allow gasket material manufacturers to provide the best possible recommendation. Gathering the information on a convenient, concise form on the front end prevents any misinterpretation of the facts and eliminates the chance of any surprises. After all, everyone involved in this exercise wants the same result—leak-free, bolted flange connection.

Next Month: *Why do PTFE gaskets leak in FRP, plastic or other light load flanges?*

We invite your questions on sealing issues and will provide best effort answers based

on FSA publications. Please direct your questions to: sealingsense-questions@fluidsealing.com.

P&S

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