

Leading Innovator of Sanitary Gaskets, Hoses, Hose  
Assemblies and Pump Parts

# Mastering challenges of hygienic assemblies

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## Gasket Installation



*10.07.2020 – Webinar 05*  
*by Sascha Butter, Christoph Neuffer, Dominik Wiese*



## Why emphasizing gasket installation?

To-Do's at the  
Gasket  
Installation

Dismounting the connection

New Gasket

Installation

Flange and Gasket  
Cleaning

Background  
considerations

Costly Downtime

Leakage

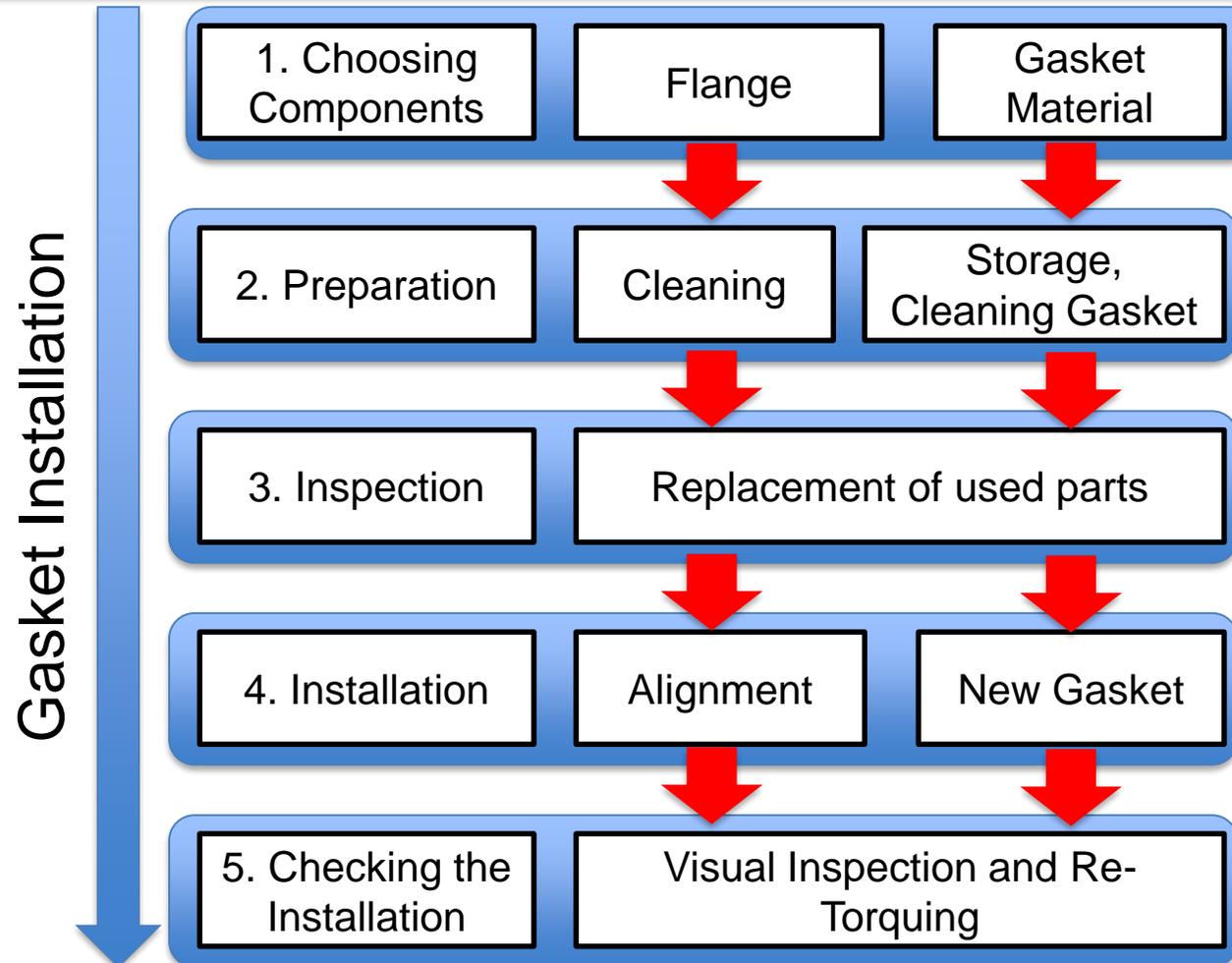
Product loss / Image Loss

Personal injury

Cross-contamination

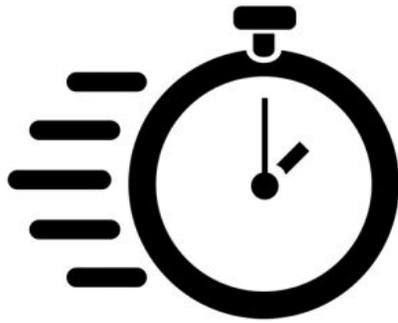
Flange Alignment

## Gasket Installation - Challenges



## Gasket Installation - Goals

Quick Connection



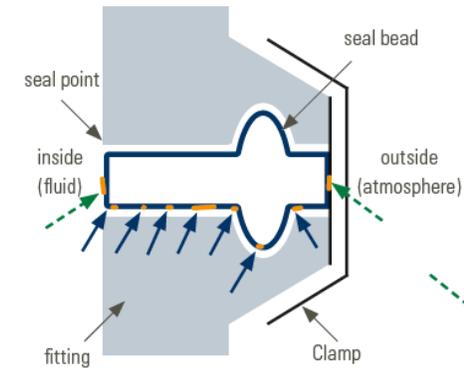
For Cleaning (COP),  
Maintenance and  
Reconfiguration

Secure  
Connection



With the correct  
pressure to  
prevent leakage

No area to collect  
contamination

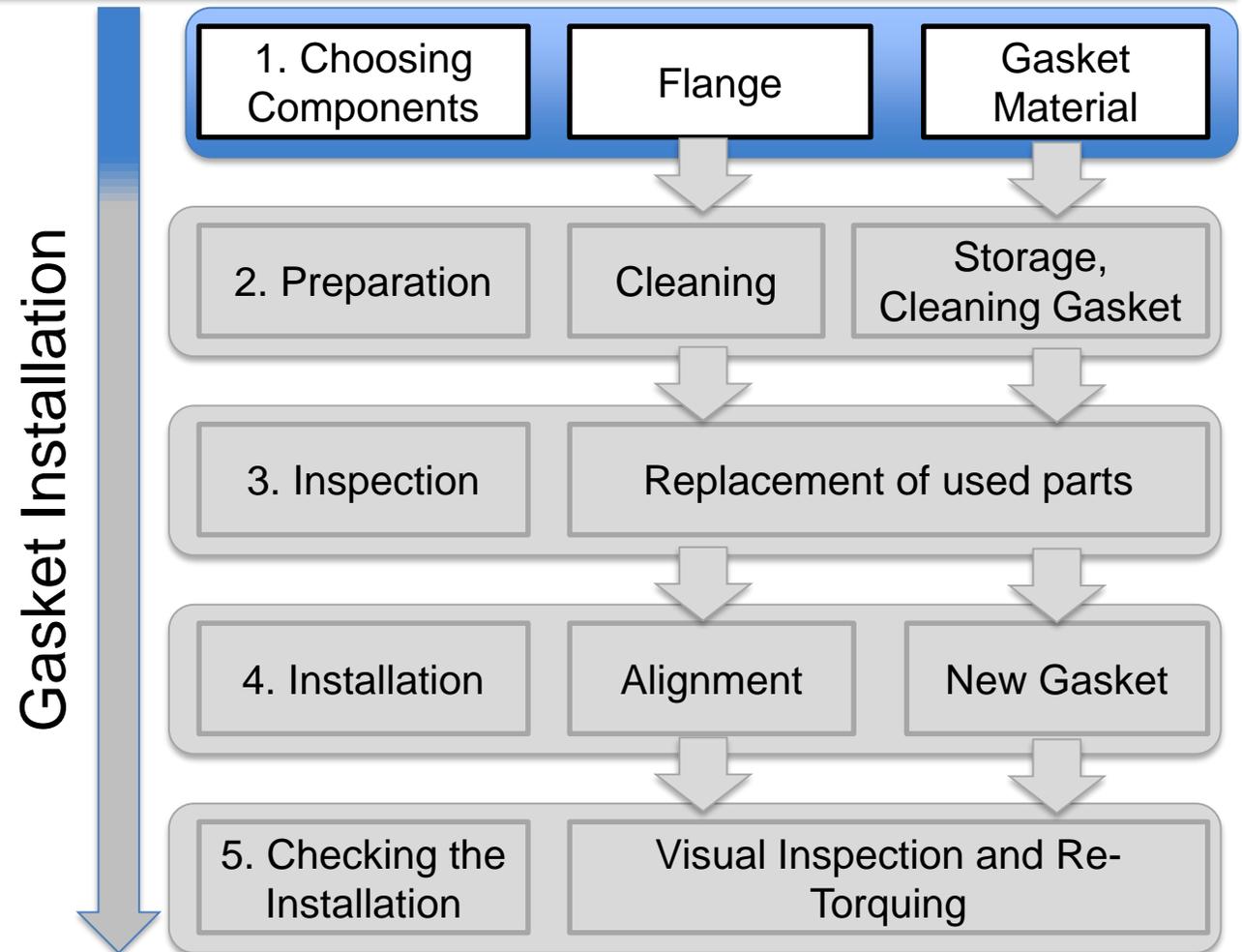


Right configuraton  
for the application

## 1. Choosing Components

### Questions:

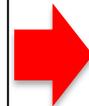
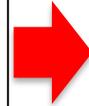
- Which components are required?
- Which gasketing material should be chosen?
- What tools do I need?



## 1. Choosing Components

### Questions:

- Which components are required?
- Which gasketing material should be chosen?
- What tools do I need?



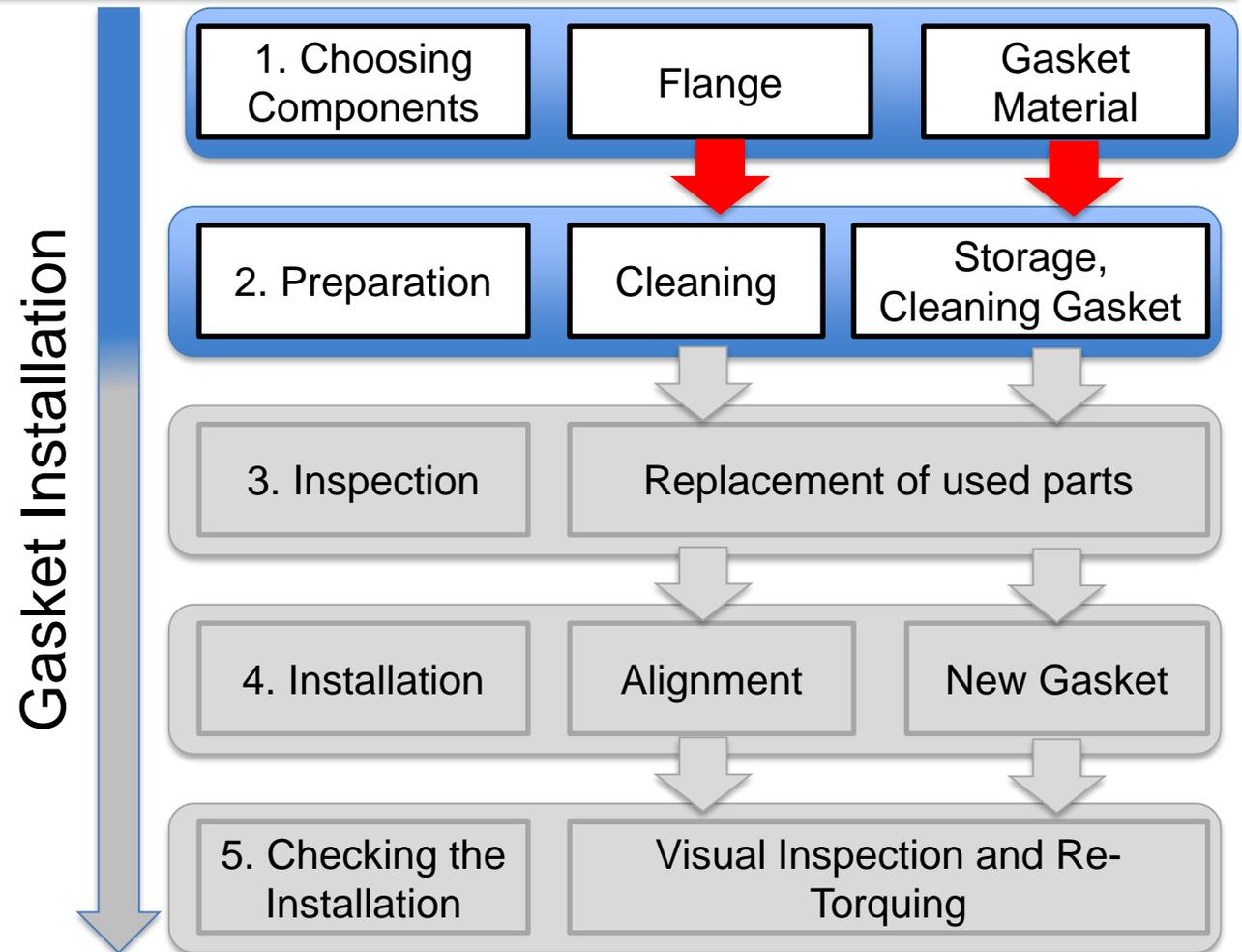
- **Ferrule:** Dimensions, Material
- **Gasket:** STAMP (Size, Temperature, Application, Media and Pressure)
- **Tools:** Brass Brush, Wing Nut, Validation Products (Torque Tee, Torque Rite), Torque Wrench,
- **Clamp:** Size, Torque, Type



## 2. Preparation

### Questions:

- Size of the Connection?
- Critical points about the storage of Gaskets and other components?
- Flange Preparation: How to clean the flange properly?
- Gasket cleaning before the Installation?



## Size and Storage

### Questions:

- Connection size?
- Critical points about gasket storage and other components?



- Dimensions/Size of the connection between gasket and flange must be correct
- Storage conditions should be as recommended by the supplier.

**Rubber Fab**  
a Garlock Hygienic Technologies company

### Dimensional Chart

For sanitary Tri-Clamp gaskets.

Size	OD	ID	Height	Material	Part No.	Part No.	Part No.	Part No.
1/2"	1.315	0.875	0.187	316	1000	1001	1002	1003
3/4"	1.625	1.187	0.187	316	1004	1005	1006	1007
1"	1.937	1.500	0.187	316	1008	1009	1010	1011
1 1/2"	2.250	1.812	0.187	316	1012	1013	1014	1015
2"	2.562	2.125	0.187	316	1016	1017	1018	1019
2 1/2"	2.875	2.437	0.187	316	1020	1021	1022	1023
3"	3.187	2.750	0.187	316	1024	1025	1026	1027
3 1/2"	3.500	3.062	0.187	316	1028	1029	1030	1031
4"	3.812	3.375	0.187	316	1032	1033	1034	1035
4 1/2"	4.125	3.687	0.187	316	1036	1037	1038	1039
5"	4.437	4.000	0.187	316	1040	1041	1042	1043
5 1/2"	4.750	4.312	0.187	316	1044	1045	1046	1047
6"	5.062	4.625	0.187	316	1048	1049	1050	1051
6 1/2"	5.375	4.937	0.187	316	1052	1053	1054	1055
7"	5.687	5.250	0.187	316	1056	1057	1058	1059
7 1/2"	6.000	5.562	0.187	316	1060	1061	1062	1063
8"	6.312	5.875	0.187	316	1064	1065	1066	1067
8 1/2"	6.625	6.187	0.187	316	1068	1069	1070	1071
9"	6.937	6.500	0.187	316	1072	1073	1074	1075
9 1/2"	7.250	6.812	0.187	316	1076	1077	1078	1079
10"	7.562	7.125	0.187	316	1080	1081	1082	1083
10 1/2"	7.875	7.437	0.187	316	1084	1085	1086	1087
11"	8.187	7.750	0.187	316	1088	1089	1090	1091
11 1/2"	8.500	8.062	0.187	316	1092	1093	1094	1095
12"	8.812	8.375	0.187	316	1096	1097	1098	1099
12 1/2"	9.125	8.687	0.187	316	1100	1101	1102	1103
13"	9.437	9.000	0.187	316	1104	1105	1106	1107
13 1/2"	9.750	9.312	0.187	316	1108	1109	1110	1111
14"	10.062	9.625	0.187	316	1112	1113	1114	1115
14 1/2"	10.375	9.937	0.187	316	1116	1117	1118	1119
15"	10.687	10.250	0.187	316	1120	1121	1122	1123
15 1/2"	11.000	10.562	0.187	316	1124	1125	1126	1127
16"	11.312	10.875	0.187	316	1128	1129	1130	1131
16 1/2"	11.625	11.187	0.187	316	1132	1133	1134	1135
17"	11.937	11.500	0.187	316	1136	1137	1138	1139
17 1/2"	12.250	11.812	0.187	316	1140	1141	1142	1143
18"	12.562	12.125	0.187	316	1144	1145	1146	1147
18 1/2"	12.875	12.437	0.187	316	1148	1149	1150	1151
19"	13.187	12.750	0.187	316	1152	1153	1154	1155
19 1/2"	13.500	13.062	0.187	316	1156	1157	1158	1159
20"	13.812	13.375	0.187	316	1160	1161	1162	1163
20 1/2"	14.125	13.687	0.187	316	1164	1165	1166	1167
21"	14.437	14.000	0.187	316	1168	1169	1170	1171
21 1/2"	14.750	14.312	0.187	316	1172	1173	1174	1175
22"	15.062	14.625	0.187	316	1176	1177	1178	1179
22 1/2"	15.375	14.937	0.187	316	1180	1181	1182	1183
23"	15.687	15.250	0.187	316	1184	1185	1186	1187
23 1/2"	16.000	15.562	0.187	316	1188	1189	1190	1191
24"	16.312	15.875	0.187	316	1192	1193	1194	1195
24 1/2"	16.625	16.187	0.187	316	1196	1197	1198	1199
25"	16.937	16.500	0.187	316	1200	1201	1202	1203
25 1/2"	17.250	16.812	0.187	316	1204	1205	1206	1207
26"	17.562	17.125	0.187	316	1208	1209	1210	1211
26 1/2"	17.875	17.437	0.187	316	1212	1213	1214	1215
27"	18.187	17.750	0.187	316	1216	1217	1218	1219
27 1/2"	18.500	18.062	0.187	316	1220	1221	1222	1223
28"	18.812	18.375	0.187	316	1224	1225	1226	1227
28 1/2"	19.125	18.687	0.187	316	1228	1229	1230	1231
29"	19.437	19.000	0.187	316	1232	1233	1234	1235
29 1/2"	19.750	19.312	0.187	316	1236	1237	1238	1239
30"	20.062	19.625	0.187	316	1240	1241	1242	1243
30 1/2"	20.375	19.937	0.187	316	1244	1245	1246	1247
31"	20.687	20.250	0.187	316	1248	1249	1250	1251
31 1/2"	21.000	20.562	0.187	316	1252	1253	1254	1255
32"	21.312	20.875	0.187	316	1256	1257	1258	1259
32 1/2"	21.625	21.187	0.187	316	1260	1261	1262	1263
33"	21.937	21.500	0.187	316	1264	1265	1266	1267
33 1/2"	22.250	21.812	0.187	316	1268	1269	1270	1271
34"	22.562	22.125	0.187	316	1272	1273	1274	1275
34 1/2"	22.875	22.437	0.187	316	1276	1277	1278	1279
35"	23.187	22.750	0.187	316	1280	1281	1282	1283
35 1/2"	23.500	23.062	0.187	316	1284	1285	1286	1287
36"	23.812	23.375	0.187	316	1288	1289	1290	1291
36 1/2"	24.125	23.687	0.187	316	1292	1293	1294	1295
37"	24.437	24.000	0.187	316	1296	1297	1298	1299
37 1/2"	24.750	24.312	0.187	316	1300	1301	1302	1303
38"	25.062	24.625	0.187	316	1304	1305	1306	1307
38 1/2"	25.375	24.937	0.187	316	1308	1309	1310	1311
39"	25.687	25.250	0.187	316	1312	1313	1314	1315
39 1/2"	26.000	25.562	0.187	316	1316	1317	1318	1319
40"	26.312	25.875	0.187	316	1320	1321	1322	1323
40 1/2"	26.625	26.187	0.187	316	1324	1325	1326	1327
41"	26.937	26.500	0.187	316	1328	1329	1330	1331
41 1/2"	27.250	26.812	0.187	316	1332	1333	1334	1335
42"	27.562	27.125	0.187	316	1336	1337	1338	1339
42 1/2"	27.875	27.437	0.187	316	1340	1341	1342	1343
43"	28.187	27.750	0.187	316	1344	1345	1346	1347
43 1/2"	28.500	28.062	0.187	316	1348	1349	1350	1351
44"	28.812	28.375	0.187	316	1352	1353	1354	1355
44 1/2"	29.125	28.687	0.187	316	1356	1357	1358	1359
45"	29.437	29.000	0.187	316	1360	1361	1362	1363
45 1/2"	29.750	29.312	0.187	316	1364	1365	1366	1367
46"	30.062	29.625	0.187	316	1368	1369	1370	1371
46 1/2"	30.375	29.937	0.187	316	1372	1373	1374	1375
47"	30.687	30.250	0.187	316	1376	1377	1378	1379
47 1/2"	31.000	30.562	0.187	316	1380	1381	1382	1383
48"	31.312	30.875	0.187	316	1384	1385	1386	1387
48 1/2"	31.625	31.187	0.187	316	1388	1389	1390	1391
49"	31.937	31.500	0.187	316	1392	1393	1394	1395
49 1/2"	32.250	31.812	0.187	316	1396	1397	1398	1399
50"	32.562	32.125	0.187	316	1400	1401	1402	1403
50 1/2"	32.875	32.437	0.187	316	1404	1405	1406	1407
51"	33.187	32.750	0.187	316	1408	1409	1410	1411
51 1/2"	33.500	33.062	0.187	316	1412	1413	1414	1415
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53 1/2"	34.750	34.312	0.187	316	1428	1429	1430	1431
54"	35.062	34.625	0.187	316	1432	1433	1434	1435
54 1/2"	35.375	34.937	0.187	316	1436	1437	1438	1439
55"	35.687	35.250	0.187	316	1440	1441	1442	1443
55 1/2"	36.000	35.562	0.187	316	1444	1445	1446	1447
56"	36.312	35.875	0.187	316	1448	1449	1450	1451
56 1/2"	36.625	36.187	0.187	316	1452	1453	1454	1455
57"	36.937	36.500	0.187	316	1456	1457	1458	1459
57 1/2"	37.250	36.812	0.187	316	1460	1461	1462	1463
58"	37.562	37.125	0.187	316	1464	1465	1466	14

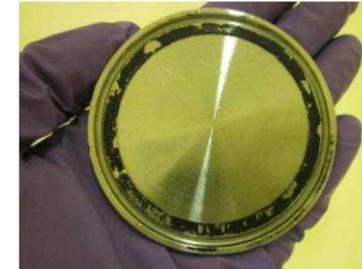
## Flange and Gasket Cleaning

### Questions:

- Flange Preparation: How to clean the flange properly?
- Gasket cleaning before the Installation or passivation?



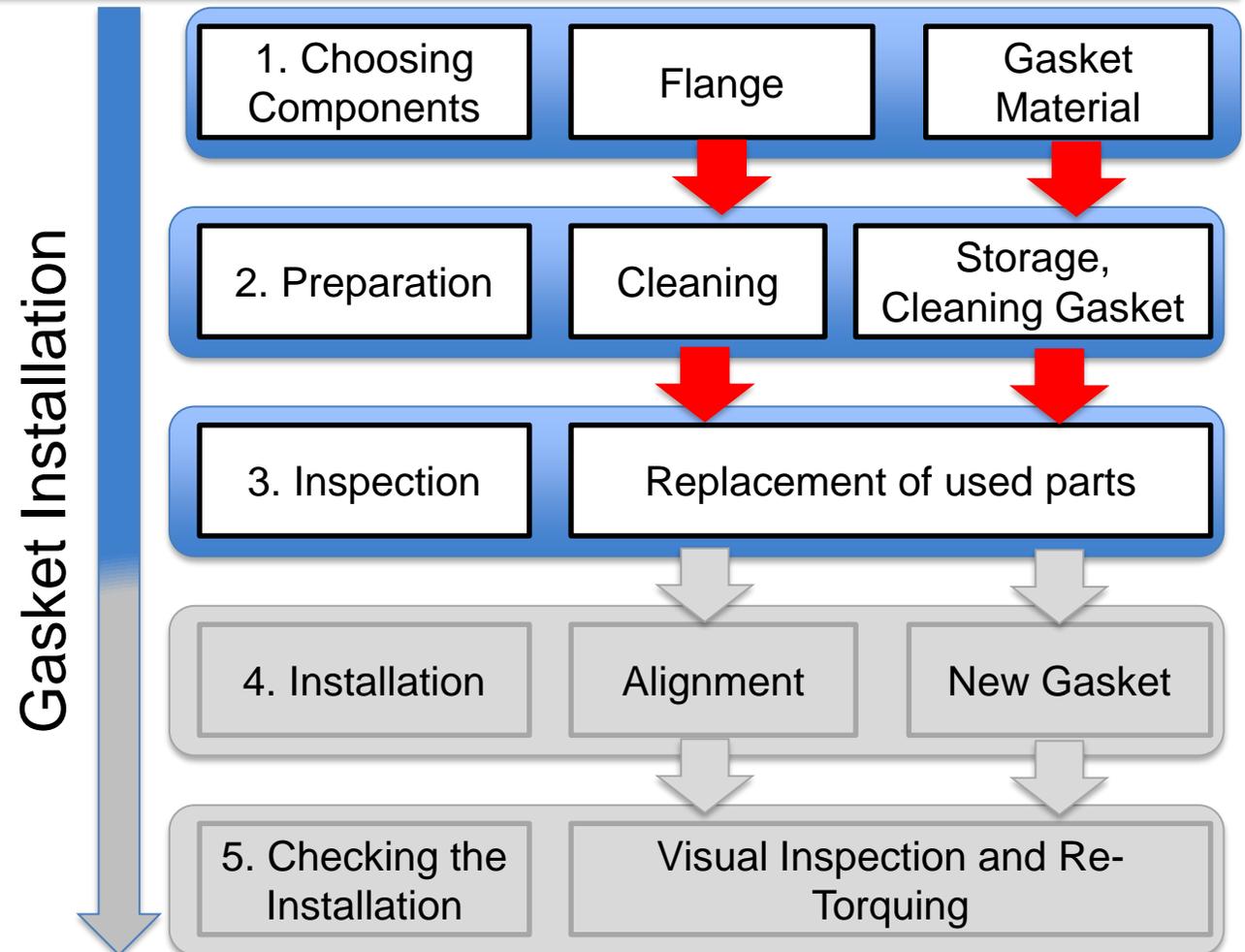
- Depending on the industry, advanced cleaning agents and processes may be required
- Gasket cleaning: Passivation or External cleaning
- When cleaning before the Gaskets should be cleaned in two steps for best result
  - First step is cleaning the Gaskets with a cleaning detergent
  - The second step is sterilization



## 3. Inspection

### Questions:

- Inspection of all used components and surfaces?
- How to read a used gasket?
- When to replace used components?
- How to handle ferrule alignment and misalignment?



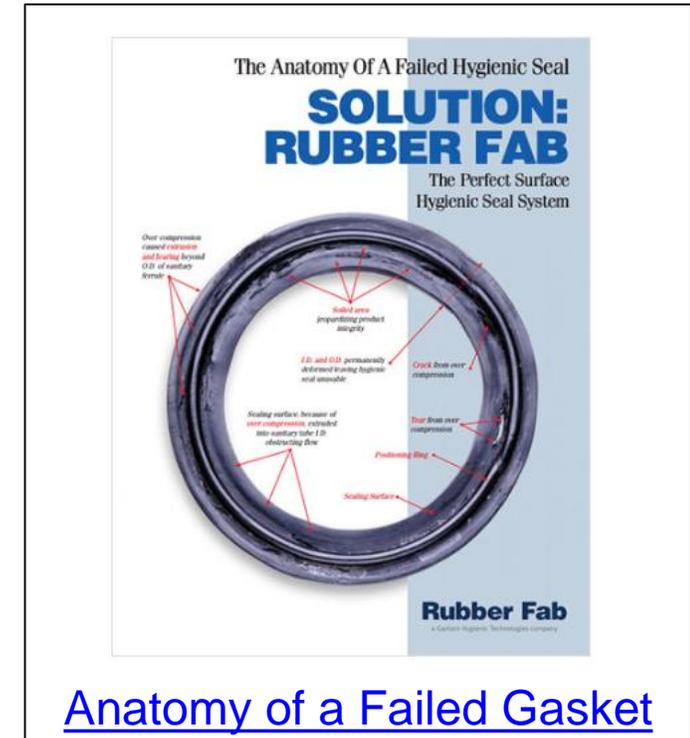
## Surface Finish

### Questions:

- Inspection of all used components and surfaces?
- How to read a used gasket?



- Inspect flange and surface finish
- Replace used items if necessary or after maintenance plan
- Gasket Material, Type and Defects
  - Control of the used Gasket
  - Disposal



[Anatomy of a Failed Gasket](#)

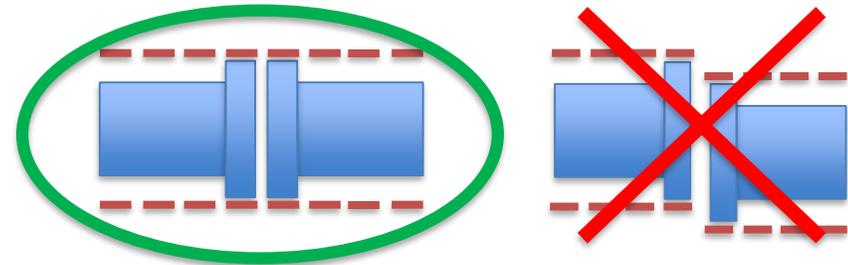
## Condition and Alignment

### Questions:

- When to replace used components?
- How to handle ferrule alignment and misalignment?



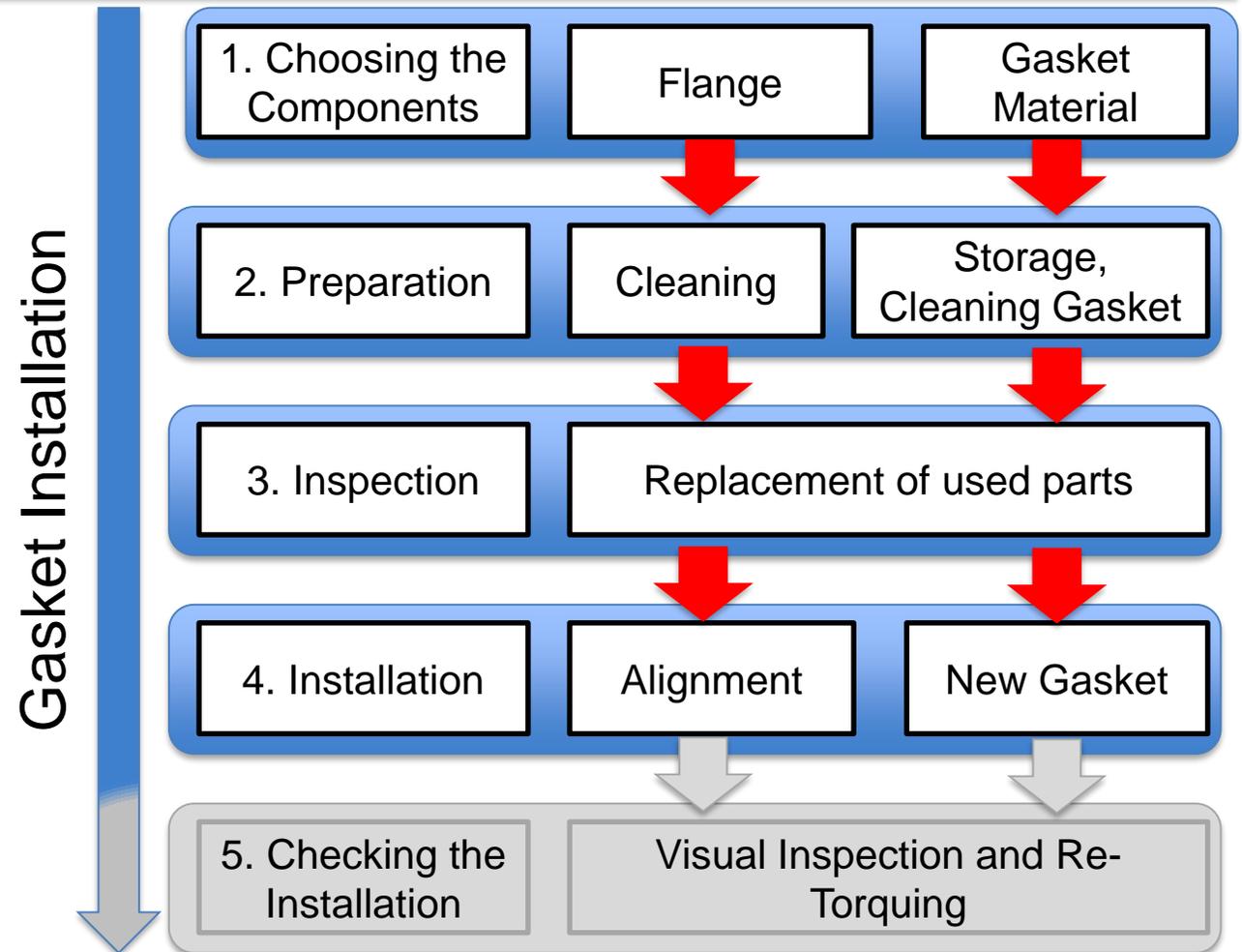
- Clamp condition: No cracks, No residues as they can indicate a leakage or the clamp is not closing correctly
- Ferrule Alignment: Ferrules must be „In-Line“
- Misaligned Ferrules should not be corrected with the Clamp



## 4. Installation

### Installation

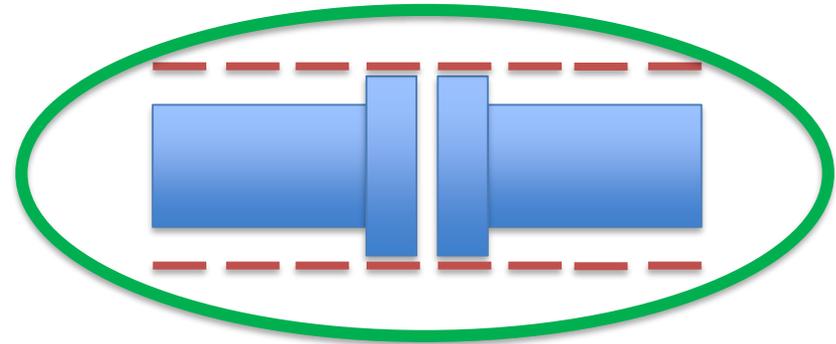
1. Facing the two Flanges
2. Set in the new Gasket
3. Use Clamp to hold the Alignment
4. Torque the Clamp with correct force
5. Check the installation



## Flange Line-Up, Insert Gasket

Correct and complete Installation:

1. Line-Up Flange Faces



2. Place the New gasket inbetween the flanges



## Clamp and Torque

### Correct and complete Installation:

3. Mate the faces of the flange with the Clamp groove



4. Tighten the Clamp with correct Torque

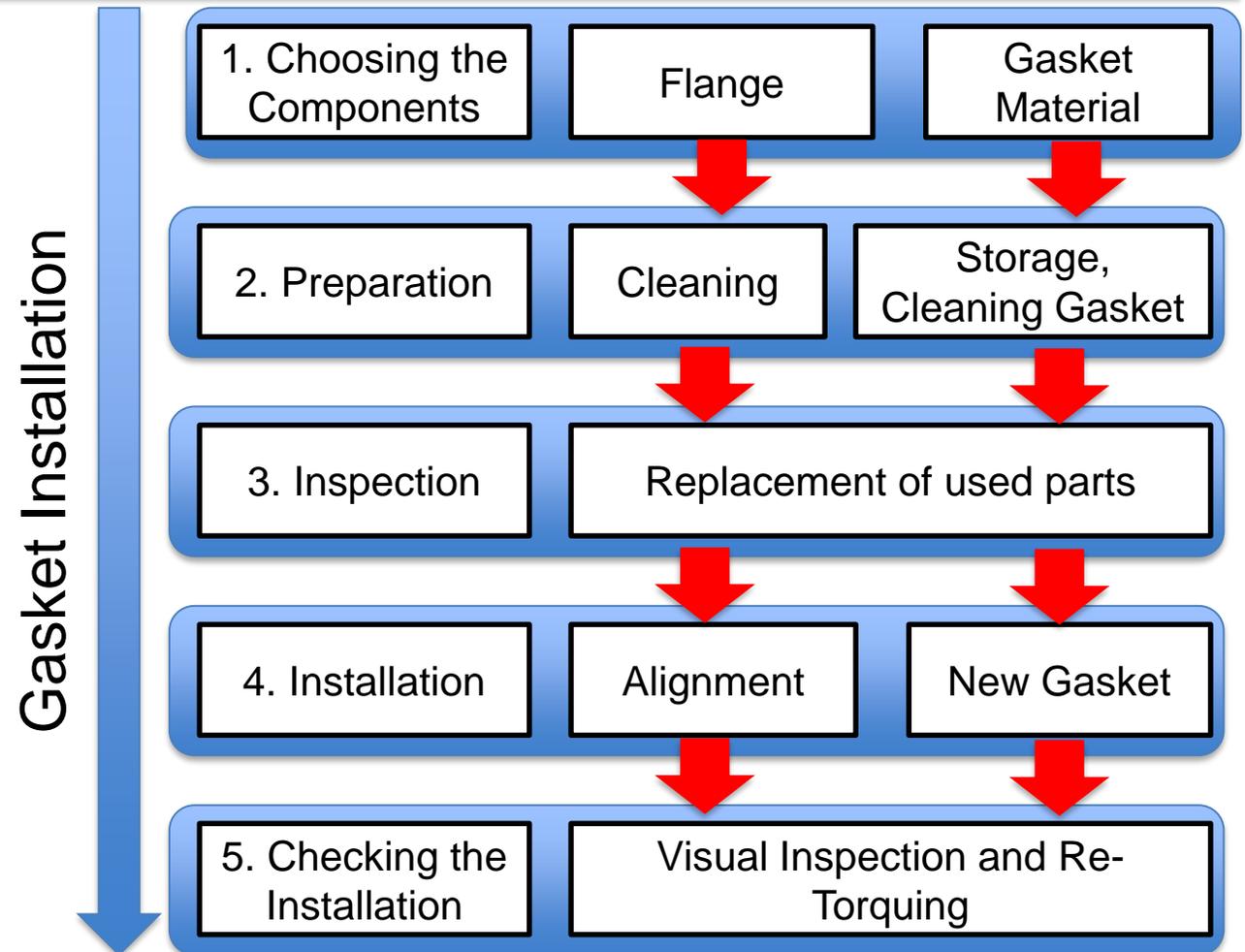


5. Check The Installation

## 5. Checking the Installation

### Questions:

- Which parts should be inspected again?
- Is a pressure testing required?
- How to apply the right torque force?
- Consideration of gasket material?
- When to Re-Torque?



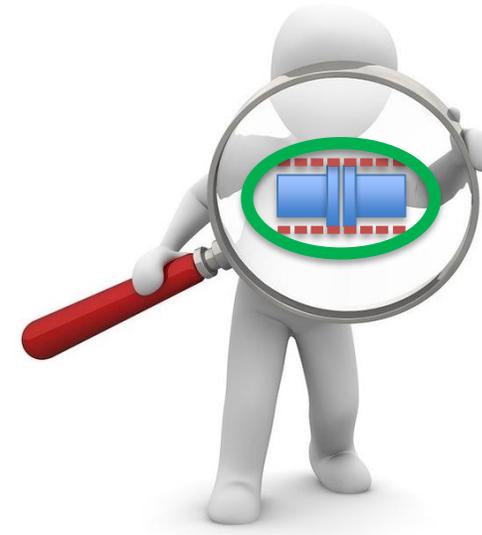
## Inspecting Components and Pressure Testing

### Questions:

- Which parts should be inspected again?
- Is a pressure testing required?



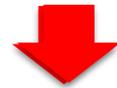
- All components that can be checked visually should be watched again
- Pressure Testing can help to find a leakage in the system before production starts.



## The Right Torque

### Questions:

- How to apply the right torque force?
- Consideration of gasket material?

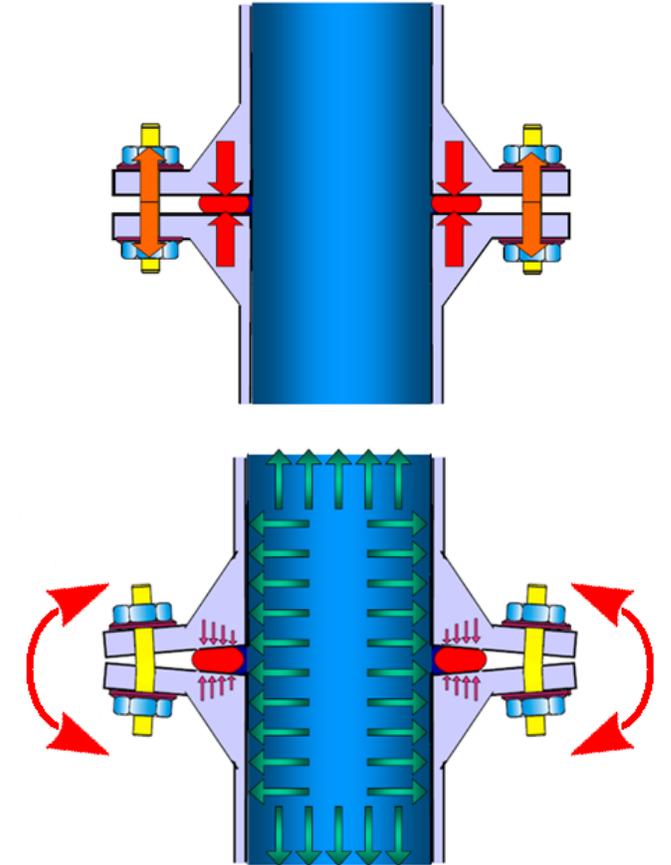


### Problems with over- or under-tightening a gasket:

- Both conditions should be avoided in a sanitary system.

### Maintaining a “Perfect Surface” Sanitary System.

- By maintaining a constant force on a Gasket the I.D. is maintained lowering bacteria count and enhancing product integrity.
- How to Maintain the Sanitary System



## Re-Torquing and Compression of Gaskets

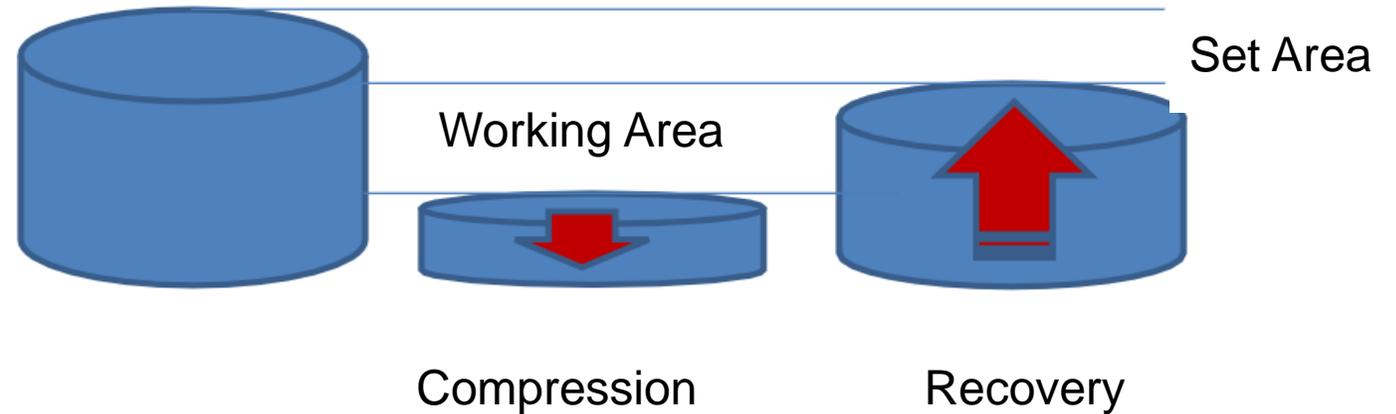
### Questions:

- When to Re-Torque?



### Re-Torquing

- Should be carried out under the right conditions
- When to Re-Torque



### Gasket Material in Movement

- The Gasket is the compensator in between the flanges.
- Also the compression of the gasket leads to its recovery.

## The Right Torque - Validation Tools



### Torque-Rite® Configurations

- >> 3,5 Nm (30 in/lbs) and 4,5 Nm (40 in/lbs) for all elastomers and Tuf-Flex
- >> 5,5 Nm (50 in/lbs) for PTFE, PTFE Envelope and Tuf-Steel

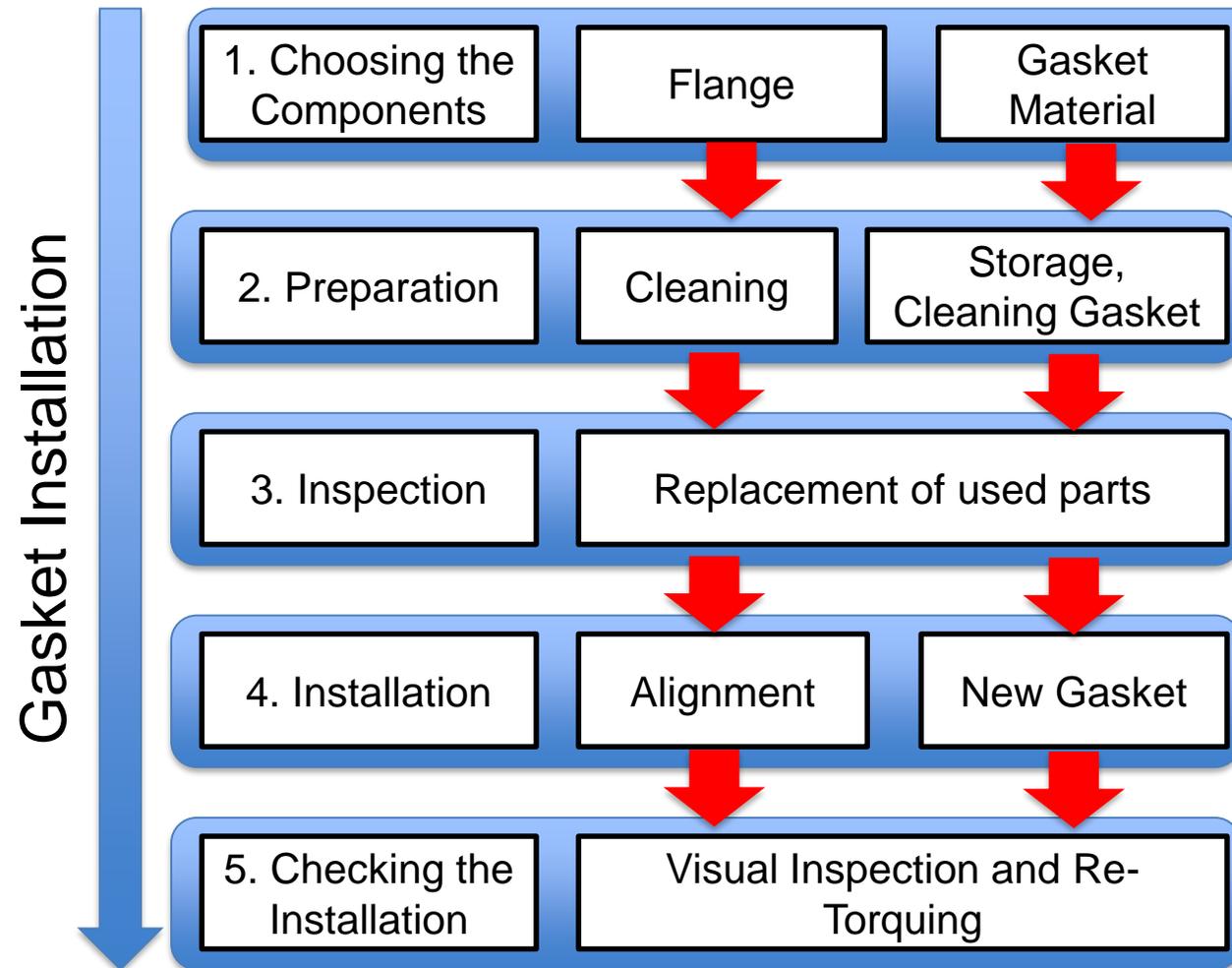


### Torque-Tee Configurations

- >> 3,5 Nm (30 in/lbs) and 4,5 Nm (40 in/lbs) for all elastomers and Tuf-Flex
- >> 5,5 Nm (50 in/lbs) for PTFE, PTFE Envelope and Tuf-Steel
- >> 7,9 Nm (70 in/lbs) for Gylon

Part Number	Product Color	Recommended For
TR-30-TEE-CP	Green	Buna, EPDM, FKM, Silicone, Tuf-Flex®
TR-40-TEE-CP	Blue	Buna, EPDM, FKM, Silicone, Tuf-Flex®
TR-50-TEE-CP	Red	PTFE, Tuf-Steel®, Envelope Gaskets
TR-70-TEE-CP	Aluminum	GYLON BIO-PRO®, GYLON BIO-PRO PLUS™

## Summary



# Feedback and outlook

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- Feedback in Microsoft Teams chat area – Microsoft Forms [survey](#)
- Feel free to address additional feedback by mail
  - Dominik Wiese – Area Sales Manager – [dwiese@rubberfab.com](mailto:dwiese@rubberfab.com)
  - Sascha Butter – Product Manager – [sbutter@rubberfab.com](mailto:sbutter@rubberfab.com)
  - Christoph Neuffer – Application Engineer – [cneuffer@rubberfab.com](mailto:cneuffer@rubberfab.com)
- Webinars
  - Webinar 04: It's all about hygiene – hygienic seals for highest process [GYLON® BIO-LINE]
  - Webinar 05: Mastering challenges of hygienic assemblies [Gasket Installation]
  - **Webinar 06: More than just a commodity!?** [Next Generation Elastomeric TC Gaskets]