



# ***INSULATION SETS***



**JIC 7700-R**

TYPE 'R' - Raised Face

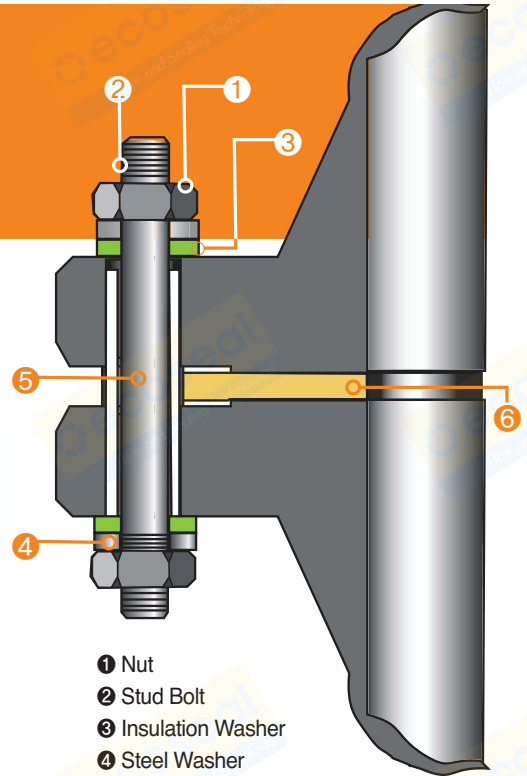
**JIC 7700-F**

TYPE 'F' - Full Face

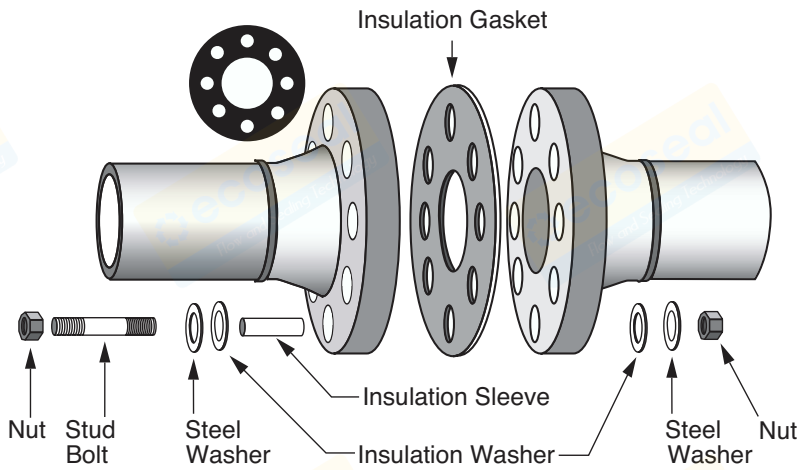
**JIC 7700-RJ**

TYPE 'RJ' - R.T.J

Insulation sets are used for pipeline flange corrosion protection and for complete electrical insulation protection where a seal is required between dissimilar flange materials. There are three standard styles available to suit raised face, full face and ring grooved flanges.

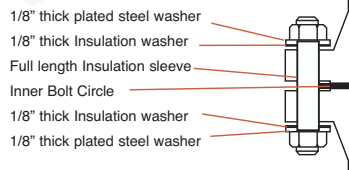
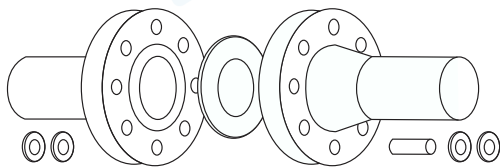


- ① Nut
- ② Stud Bolt
- ③ Insulation Washer
- ④ Steel Washer
- ⑤ Insulation Sleeve
- ⑥ Insulation Gasket

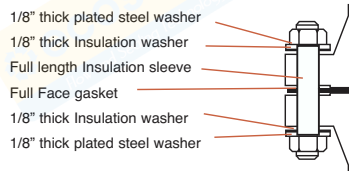
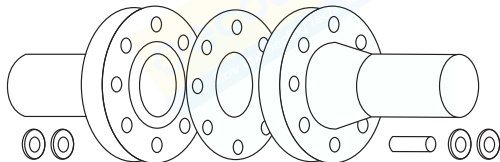


### [Standard Styles of Insulation Sets]

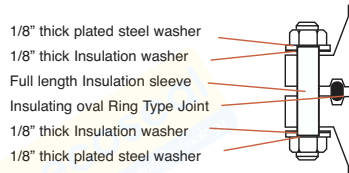
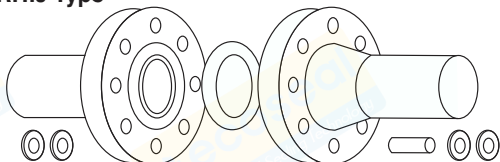
#### Raised Face Type



#### Full Face Type

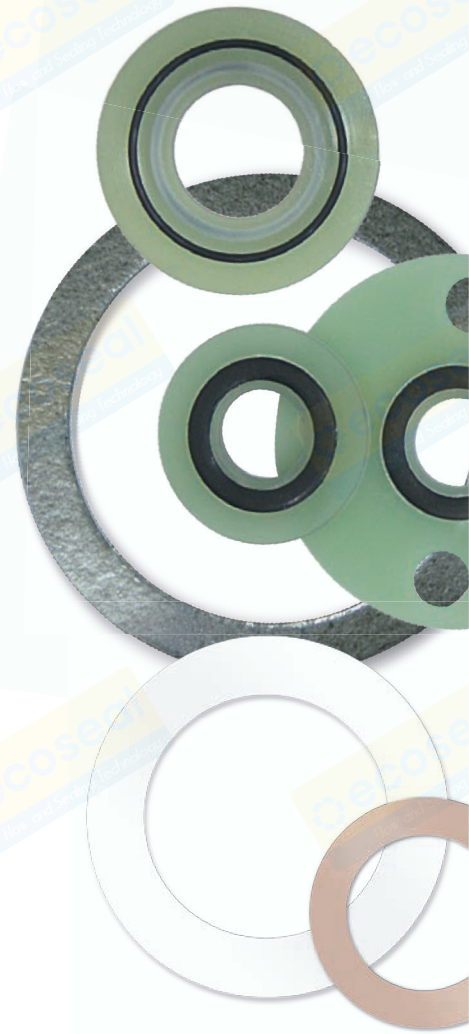


#### R.T.J Type





Insulation Gasket (JIC Code/Material)	Max. Temp. (°C)		Insulation Resistance (Ω)
	Pressure Class (lb)		
 PTFE Solid Gasket <b>JIC 8305</b>	-100 ~ 100		Over $2.0 \times 10^{13}$
	150		
 Reinforced PTFE Gasket <b>JIC 8305G</b>	-200 ~ 200		$1.3 \times 10^{11}$
	300		
 Neoprene Faced Phenolic Gasket <b>JIC 9020-CP</b>	-30 ~ 120		CR $1.6 \times 10^7$
	150		
 STARTEC™ Gasket (Glass Reinforced Epoxy Plate Gasket with Rubber O-Ring) <b>JIC 9210-ER</b>	-40 ~ 150		EPDM $2.0 \times 10^{13}$
	600		
 STARTEC™ Gasket (Reinforced Phenolic Plate Gasket with Rubber O-Ring) <b>JIC 9220-PR</b>	-40 ~ 150		R U B B E R VITON $9.7 \times 10^9$
	600		
 STARTEC™ Gasket (Glass Reinforced Epoxy Plate Gasket with Rubber O-Ring) EQ : PIKOTEK PGE TYPE <b>JIC 9230-ES</b>	-60 ~ 150		NBR $1.3 \times 10^{11}$
	600		
 STARTEC™ Gasket (Epoxy Faced Metal Plate with Rubber O-Ring) EQ : PIKOTEK VCS TYPE <b>JIC 9310-OS</b>	150		-
	1500		
 STARTEC™ Gasket (Epoxy Faced Metal Plate with PTFE Seal) EQ : PIKOTEK VCS Type <b>JIC 9320-OS</b>	150		Over $2.0 \times 10^{13}$
	2500		
 KAMMPROFILE Gasket with STARPITE® <b>JIC 3850-SE(HT)</b>	1000		$9.9 \times 10^{10}$
	2500		



- \* Insulation Resistance(Ω) ASTM D257-07 : Usage Voltage : 1000V, Capacity of Tester :  $2.0 \times 10^{13} \Omega$
- \* Gasket type confirmed by customer.
- \* For Specific size & application recommendations consult JEIL.
- \* PTFE Gasket : Not suitable for FR type.

- \* Without Flange application for line application purpose, please contact our Tech team first.
- \* PTFE material does not recommendable by creep to FR Type Gasket / Washer.

## Bolt / Nut / Sleeve / Washer

	Insulation Resistance (Ω)		Max. Temp. (°C)	Thickness
Insulation Sleeve	Glass Reinforced EPOXY	Over $2.0 \times 10^{13}$	150	0.8T ~ 1.0T
	Phenolic	$2.2 \times 10^8$	180	
	PTFE	Over $2.0 \times 10^{13}$	100	
	Mica	$9.9 \times 10^{10}$	1000	
Insulation Washer	Glass Reinforced EPOXY	Over $2.0 \times 10^{13}$	150	3.0T
	Phenolic	$2.2 \times 10^8$	180	
	Mica	$9.9 \times 10^{10}$	1000	
Steel Washer	Carbon Steel	N / A	N / A	3.0T ~ 5.0T
	Stainless Steel	N / A	N / A	
Nut (Heavy Hex Nut)	A194 Gr.2H (ASTM)	N / A	N / A	-
	A194 Gr.8 (ASTM)	N / A		
	A194 Gr.8M (ASTM)	N / A		
Bolt (Stud Bolt)	A193 Gr.B7 (ASTM)	N / A	N / A	-
	A193 Gr.B8 (ASTM)	N / A		
	A193 Gr.B8M (ASTM)	N / A		

- \* Insulation Resistance(Ω) ASTM D257-07: Usage Voltage: 1000V, Capacity of Tester :  $2.0 \times 10^{13} \Omega$
- \* Steel Washer, Nut, Bolt : Special Material can be available as customer's requirements.

## Insulation Set(Isolation Kit) Products

Item	Insulation Material		Insulation Gasket (JIC Code / Material)	Max. Temp. (°C)		Insulation Resistance (Ω)
	Sleeve	Washer		Pressure Class (lb)		
General	<input type="checkbox"/> PTFE <input type="checkbox"/> Epoxy <input type="checkbox"/> Phenolic	<input type="checkbox"/> Epoxy <input type="checkbox"/> Phenolic	<b>JIC 8305</b> PTFE Solid Gasket	-100 ~ 100	Over $2.0 \times 10^{13}$	
				150		
			<b>JIC 8305G</b> Reinforced PTFE Gasket	-200 ~ 200	$1.3 \times 10^{11}$	
				300		
			<b>JIC 9020-CP</b> Neoprene Faced Phenolic Gasket	-30 ~ 120	CR $1.6 \times 10^7$	
				150		
<b>JIC 9210-ER</b> <b>STARTEC™</b> Gasket (Glass Reinforced Epoxy Plate Gasket with Rubber O-Ring)	-40 ~ 150	EPDM $2.0 \times 10^{13}$				
	600					
<b>JIC 9220-PR</b> <b>STARTEC™</b> Gasket (Reinforced Phenolic Plate Gasket with Rubber O-Ring)	-40 ~ 150	R U B B E R  VITON $9.7 \times 10^9$				
	600					
<b>JIC 9230-ES</b> <b>STARTEC™</b> Gasket (Glass Reinforced Epoxy Plate Gasket with Rubber O-Ring) EQ : PIKOTEK PGE TYPE	-60 ~ 150	NBR $1.3 \times 10^{11}$				
	600					
High Pressure	<input type="checkbox"/> Mica <input type="checkbox"/> PTFE <input type="checkbox"/> Epoxy <input type="checkbox"/> Phenolic	<input type="checkbox"/> Mica <input type="checkbox"/> Epoxy <input type="checkbox"/> Phenolic	<b>JIC 9310-OS</b> <b>STARTEC™</b> Gasket (Epoxy Faced Metal Plate with Rubber O-Ring) EQ : PIKOTEK VCS TYPE	150	-	
				1500		
			<b>JIC 9320-OS</b> <b>STARTEC™</b> Gasket (Epoxy Faced Metal Plate with PTFE Seal) EQ : PIKOTEK VCS Type	150	Over $2.0 \times 10^{13}$	
				2500		
High Temp & Pressure	<input type="checkbox"/> Mica	<input type="checkbox"/> Mica	<b>JIC 3850-SE(HT)</b> KAMMPROFILE Gasket with <b>STARPITE®</b>	1000	$9.9 \times 10^{10}$	
				2500		

\* Without Flange application for line application purpose, please contact our Tech team first.

\* PTFE material does not recommendable by creep to FR Type Gasket / Washer.

# Insulation Set (Isolation Kit)

## 1. Tools required

Specific tools are required for cleaning and tensioning the fasteners. Additionally, always use standard safety equipment and follow good safety practices.

- Calibrated torque wrench, hydraulic or other tensioner
- Wire brush (brass if possible)
- Helmet, Safety goggles, Lubricant
- Other plant-specified equipment

## 2. Cleaning

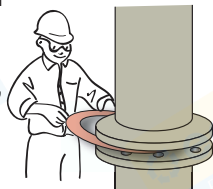
Remove all foreign material and debris from

## 3. Examine

- Examine fasteners (bolts or studs), Nuts and washers for defects such as burrs or cracks. Check insulating washers and insulating sleeves are torn or cracked.
- Examine flange surfaces for warping, radial scores, heavy tool marks, or anything prohibiting proper gasket seating. Make sure the gaskets are isolation gaskets.
- Replace components if found to be defective. If in doubt, seek advice.

## 4. Install Gasket

- Ensure gasket is the specified size and material.
- Examine the gasket to ensure it is free of defects.
- Carefully insert the gasket between the flanges.
- Make sure the gasket is centered between the flanges.
- Bring flanges together, ensuring the insulation materials (insulation sleeves, washers & gaskets) aren't pinched or damaged.
- Put insulation sleeves on the bolts and insert insulation washers and steel washers.



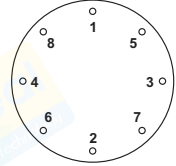
## 5. Install and tighten fasteners

### a. Always use proper tools

Calibrated torque wrench or other controlled tensioning device

### b. Consult your gasket manufacturer for guidance on torque specifications

### c. Always torque in a cross bolt tightening pattern.



## 6. Tighten the nuts in multiple steps

### Step 1. Tighten all nuts initially by hand

(Larger bolts may require a small hand wrench)

### Step 2. Torque each nut to ~30% of full torque

### Step 3. Torque each nut to ~60% of full torque

### Step 4. Torque each nut full torque, again still using the cross bolt tightening pattern (larger diameter flanges may require additional tightening passes)

### Step 5. Apply at least one final torque to all nuts in a clockwise direction until all torque is uniform (Larger diameter flanges may require additional passes)



## 7. Re-Tightening

### A. Caution

Consult your gasket manufacturer for guidance and recommendations re-tightening.

### B-1. Do Not

Re-torque elastomer-based, non-asbestos gaskets after they have been exposed to elevated temperature unless otherwise specified.

### B-2. Re-torque fasteners exposed to aggressive thermal cycling.

### B-3. All re-torquing should be performed at ambient temperature and atmospheric pressure.

## 8. Notes on use

Install a protective cover on insulation sets to prevent exposure on rainy days.

Note : Pay attention Insulation set of Mica material in particular.