

**Q-FLEX™**



# **QFSC, QFTC & QFTU**

**Rubber Flexible Joints**

# Rubber Flexible Joints

## **DESCRIPTION ( FEATURES )**

It can be used for both suction and delivery (discharge) due to its excellent stability and pressure withstandability.

Its bursting pressure is anytime above 550psi and can be comfortably used within a normal internal pressure of 225psi.

The unique spherical shape of the connectors (QFSC, QFTC & QFTU) with its excellent indigenous structural design combined with its internally laid tough flexible fibers and lastly its moulding technique has much contributed to its success in the ability to withstand the force of creating a vacuum on both the delivery and the suction mode of applications.

Since its carcass is of spherical design, the rubber joint will not come into contact with the connecting bolts head even if it expands, thus ensuring security and reliability in use when subjected to extremely high pressure.

## **ITS CAPABILITIES**

1. The excellent weatherability of connectors (QFSC, QFTC & QFTU) is already proven with its special composition of synthetic rubber and that can even resist heat deterioration due to hot fluid such as oil, acid, hot water and also gasoline etc.
2. Since its carcass is soft and flexible, it can be readily deformed during any pipe connections thus enhancing easy installation despite of intolerable misalignment and so on etc.
3. The specially designed Q-FLEX connector (QFSC, QFTC & QFTU) not only can convey fluid at high pressure but also has its advantage of absorbing any sounds transmitted or vibration occurs along its connections in touch with any solid structure.

## **OTHER ADVANTAGES**

1. It needs no packing or gasket.
2. It is assembled with flanges, which enable easy installation of pipings without any difficulties.
3. It is able to absorb any intolerable elongation and contraction movements caused by expansion and contraction of the metal parts due to temperature changes, thus ensuring no breakdown in the equipment.
4. It is also able to absorb any pulsation of water from pumps and also prevent water hammering to certain extent.

## **EXAMPLE OF APPLICATIONS**

1. Air-condition and sanitary system i.e. pumps, air compressors, etc.
2. Industrial plant equipment i.e. pumps, compressors, root air blowers, refrigeration plant, cement conveyance connector, etc.
3. Marine use: Feed water, drainage equipment, cooling generator line systems, etc.
4. Other plant piping system: Power generation plants, chemical plants, ventilating line systems.
5. Special usage: Where other connections resulted from thermal expansion, and where subsidence of ground takes place after connection of the laid piping systems, etc.

## **OPERATING TEMPERATURE / MATERIALS USED**

Material Code	Elastomer ( Inner )	Elastomer ( Outer )	Maximum Operating Temp °C	Identification Colour Code
B 30	Neoprene	Neoprene	105 °C	Yellow
N 30	Nitrile	Nitrile	105 °C	Red
NR 30	Natural Rubber	Natural Rubber	Below 100 °C	White
EM 30	EPDM	EPDM	110 °C	Green
BR 30	Butyl	Butyl	115 °C	Blue
H 30	Hypalon	Hypalon	110 °C	Black

# QFTU Union Connector

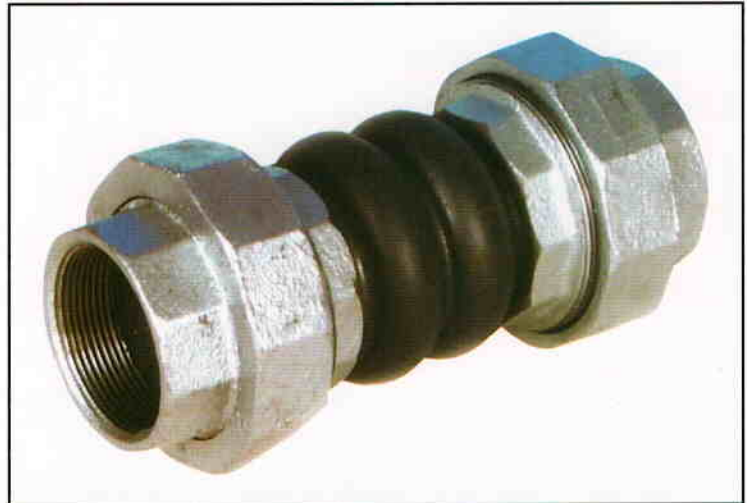
## Rubber Flexible Joints

### DESCRIPTION ( FEATURES )

Small diameter piping systems can present real problems when stress alleviation is required. Space is generally critical. Conventional flanged expansion joints cannot be used without relocating piping runs. QFTU type solves this problem because of their screw ends.

### TYPICAL APPLICATIONS

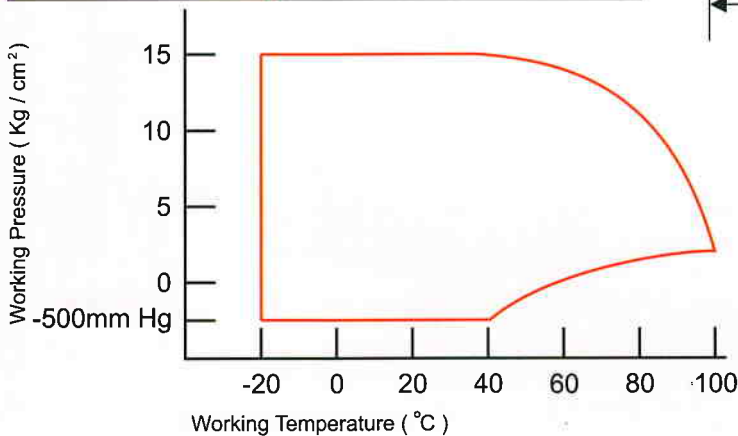
1. Building equipment, piping systems for industrial plants and piping systems for private residence.
2. Prevention of disasters due to earthquakes and subsidence of ground.
3. Waterworks, sewerage and sanitary lines ( feed - water and drainage ).



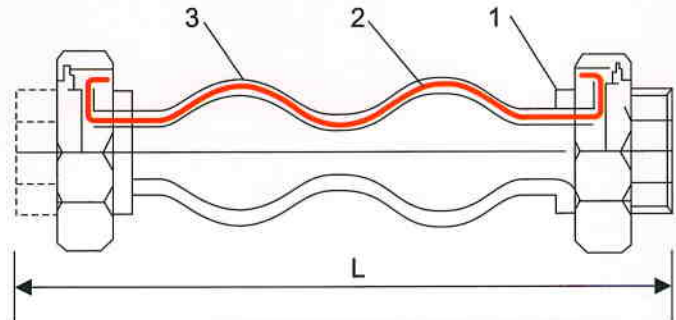
### OPERATING CONDITIONS

( based on Neoprene Rubber Material )

Operating Pressure	10kg / cm <sup>2</sup>
Burst Pressure	Over 50kg / cm <sup>2</sup> ( 711psi )
Negative Pressure	500mm Hg
Working Temperature	-20 °C to 100 °C ( -4 °F to 212 °F )
Working Fluids	Water, Hot Water, Sea Water, Compressed Air, Steam, Solvent, Acid, Weak Alkalies



### STRUCTURE



Part	Material
1 Union	Ductile Iron or Malleable Iron
2 Body	Nylon Cord
3 Body	* Heat Resisting Rubber

\* Standard rubber material uses Neoprene, may be replaced by other special synthetic rubber.

### DIMENSION AND ALLOWABLE TOLERANCE / MOVEMENT

Nominal Bore ( Inner Dia. ) Size	Installation Length		Transverse Movement ( ± mm )	Axial Elongation ( mm )	Axial Compression ( mm )	Angular Deflection
	End to End Distance L ( mm )	Total Acceptable Tolerance ( -mm )				
20mm ( 3/4 inch )	190	2	22	6	10	20°
25mm ( 1 inch )	202	2	22	6	10	20°
32mm ( 1 1/4 inch )	198	2	22	6	15	20°
40mm ( 1 1/2 inch )	198	2	22	6	15	20°
50mm ( 2 inch )	202	2	22	6	15	20°
65mm ( 2 1/2 inch )	235	2	30	6	15	20°
80mm ( 3 inch )	245	2	30	6	15	20°

# QFSC Single Sphere Joints

## Rubber Flexible Joints

Pipe Size	50 PSI	100 PSI	150 PSI	200 PSI	225 PSI	300 PSI
1					X	X
1 1/4					X	X
1 1/2					X	X
2					X	X
2 1/2					X	X
3					X	X
4					X	X
5					X	X
6				X	X	X
8				X	X	X
10				X	X	X
12			X	X	X	X
14			X	X	X	X
16	X	X	X	X	X	X
18	X	X	X	X	X	X
20	X	X	X	X	X	X
22	X	X	X	X	X	X
24	X	X	X	X	X	X

\* Note : X use control tie rods.

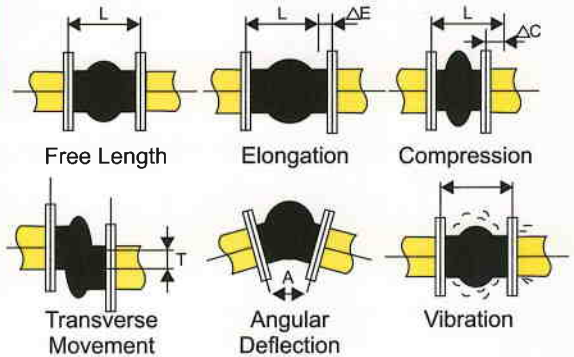


### DIMENSION AND ALLOWABLE TOLERANCE / MOVEMENT

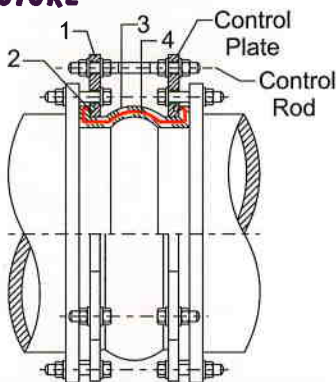
Nominal Bore ( Inner Dia. ) Size	Length of Bellows (mm)		Transverse Movement +/- (mm)	Axial Elongation (mm)	Axial Compression (mm)	Angular Deflection
	Face to Face Distance (mm)	Total Acceptable Tolerance +/- (mm)				
1 1/4" 32mm	95	3	5	5	10	15°
1 1/2" 40mm	95	3	5	5	10	15°
2" 50mm	115	3	10	10	10	15°
2 1/2" 65mm	125	3	10	10	10	15°
3" 80mm	150	3	10	10	15	15°
4" 100mm	150	3	10	10	15	15°
5" 125mm	150	3	10	10	15	15°
6" 150mm	150	3	10	10	20	15°
8" 200mm	150	3	10	10	20	15°
10" 250mm	200	3	20	15	20	15°
12" 300mm	205	3	20	15	20	15°
14" 350mm	205	3	20	15	20	15°
16" 400mm	210	3	20	15	25	15°
18" 450mm	210	3	20	15	25	15°
20" 500mm	205	3	20	15	25	15°
24" 600mm	255	3	25	20	25	15°

\* Although the dimensional allowance for installation is as given in the table above, when installing this connector for suction purposes do not allow for its elongation.

### ACCEPTANCE OF MOTION



### STRUCTURE



Item	Part	Material
1	Flange	* Mild Steel
2	Wire	Hard Steel Wire
3	Body	** Heat Resisting Rubber
4	Body	Nylon

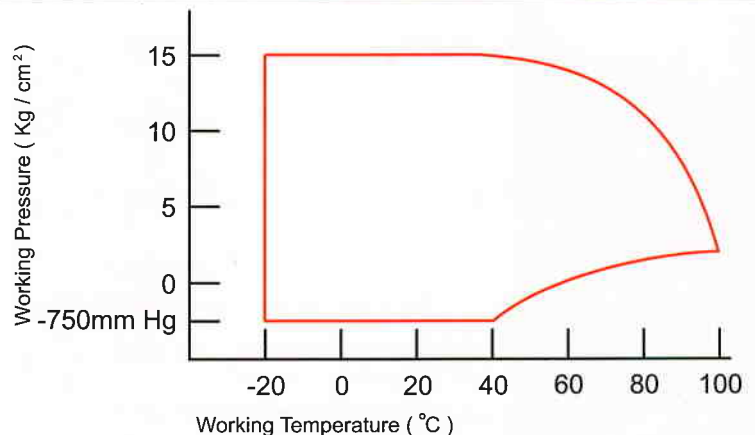
\* Flange material can be changed to Ductile Iron ( BS 2789 ) Grade 500-7 Epoxy Coating.

\*\* Standard rubber material uses Neoprene, may be replaced by other special synthetic rubber.

### OPERATING CONDITIONS

( based on Neoprene Rubber Material )

	32mm - 300mm	350mm - 600mm
Operating Pressure	16kg / cm <sup>2</sup> ( 228psi )	8kg / cm <sup>2</sup> ( 114 psi )
Burst Pressure	Over 50kg / cm <sup>2</sup> ( 711 psi )	Over 30kg / cm <sup>2</sup> ( 427 psi )
Negative Pressure	750mm Hg	
Working Temperature	-20°C to 100°C ( -4°F to 212°F )	
Working Fluids	Water, Hot Water, Sea Water, Compressed Air, Steam, Solvent, Acid, Weak Alkalies.	



# QFTC Twin Sphere Joints

## Rubber Flexible Joints

Pipe Size	50 PSI	100 PSI	150 PSI	200 PSI	225 PSI	300 PSI
2				X	X	X
2 1/2				X	X	X
3				X	X	X
4				X	X	X
5				X	X	X
6			X	X	X	X
8		X	X	X	X	X
10		X	X	X	X	X
12		X	X	X	X	X

\* Note : X use control tie rods.

### DIMENSION AND ALLOWABLE TOLERANCE / MOVEMENT

Nominal Bore ( Inner Dia. ) Size	Length of Bellows (mm)		Transverse Movement +/- (mm)	Axial Elongation (mm)	Axial Compression (mm)	Angular Deflection
	Face to Face Distance (mm)	Total Acceptable Tolerance +/- (mm)				
2"	50mm	145	3	15	20	25°
2 1/2"	65mm	145	3	15	20	25°
3"	80mm	225	3	20	25	25°
4"	100mm	225	3	20	25	25°
5"	125mm	235	3	25	25	25°
6"	150mm	220	3	20	25	25°
8"	200mm	220	3	20	25	25°
10"	250mm	300	3	30	30	25°
12"	300mm	300	3	30	30	25°

\* Although the dimensional allowance for installation is as given in the table above, when installing this connector for suction purposes do not allow for its elongation.

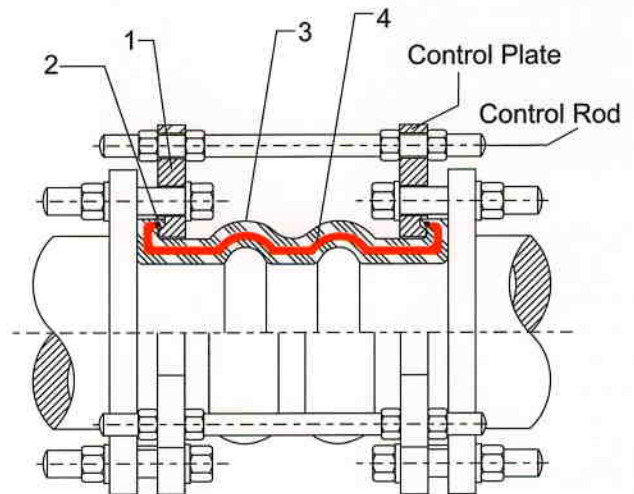


### STRUCTURE

Item	Part	Material
1	Flange	* Mild Steel
2	Wire	Hard Steel Wire
3	Body	** Heat Resisting Rubber
4	Body	Nylon

\* Flange material can be changed to Ductile Iron ( BS 2789 ) Grade 500-7 Epoxy Coating.

\*\* Standard rubber material uses Neoprene, may be replaced by other special synthetic rubber.

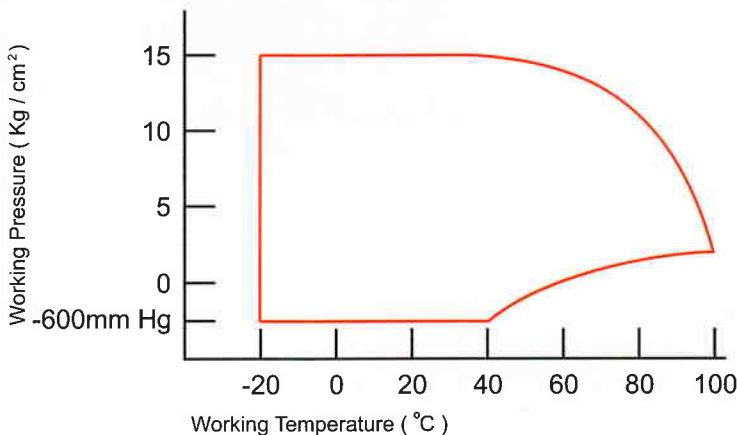
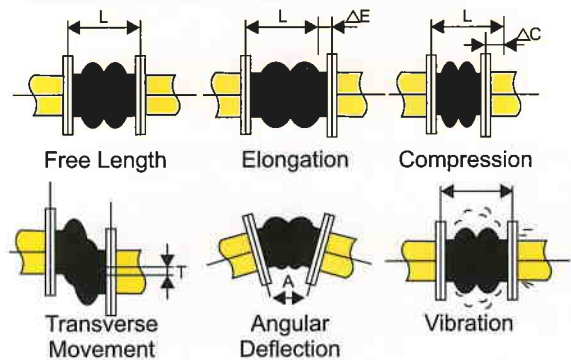


### OPERATING CONDITIONS

( based on Neoprene Rubber Material )

	50mm - 300mm
Operating Pressure	16kg / cm <sup>2</sup> ( 228psi )
Burst Pressure	Over 50kg / cm <sup>2</sup> ( 711 psi )
Negative Pressure	600mm Hg
Working Temperature	-20°C to 100°C ( -4°F to 212°F )
Working Fluids	Water, Hot Water, Sea Water, Compressed Air, Steam, Solvent, Acid, Weak Alkalies.

### ACCEPTANCE OF MOTION





# CAUTION

### **STANDARD WARRANTY**

All products sold by the Principal are warranted free from defects in material or workmanship within a period of 12 months from the date of delivery. Our liability for the breach of the said warranty, expressed or implied, is limited to refunding our invoice price of that particular product, or at our option, to replacement of that product free of charge provided that proper installation of that product must be carried out in accordance with our operational instruction.

This warranty becomes null and void should any installations be carried out in an improper way or not adhered to our installation procedure or the operating pressure applied to that particular product has exceeded our design pressure. This warranty does not cover ordinary wear and tear of parts nor does it cover any damages caused by misuse, neglect or failure to follow operational instruction.

### **INSTALLATION PROCEDURE**

1. Ensure that there are no contaminations of oil, grease, or welding remains, etc. on the end - connecting pipe flange face and the rubber flange face before installation.
2. Ensure that the distance between the two end - connecting pipe flange faces should not be longer than the face to face distance of the expansion bellows by the tolerance as stipulated in our catalogue.
3. The alignment of the piping system should be adjusted and secured with fixation point as close as possible on each side of the expansion joints at a distance less than 3 times the pipe nominal bore.
4. Ensure that the rubber expansion joints should not support any weight and be twisted during installation.
5. Ensure that bolts should be inserted on the arch side of the joint in order to avoid direct contact with the rubber body during expansion.
6. Crosswise tightening of bolts should be practiced during installation.
7. Ensure that full tightening of bolts should leave gap between the standard flange face and the end - connecting piping flange face on both sides of the joint as below :

Size	Gap
1 1/4" ~ 6"	2 to 3mm
8" ~ 10"	3 to 4mm
12" ~ 24"	5 to 6mm

Agent :



Factory & Sales Office :  
**Q - FLEX Industries (M) Sdn. Bhd.** ( 280826-M )  
( A member company of Unimech Group )  
17 - 23, Persiaran Kilang Pengkalan 28,  
Kawasan Pengkalan Maju Industrial Estate,  
31500 Ipoh, Perak, Malaysia.  
Tel : ( 605 ) - 322 8268, 322 6368  
Fax : ( 605 ) - 322 3323  
Website : <http://www.q-flex.com.my>  
E-mail : [q-flex@q-flex.com.my](mailto:q-flex@q-flex.com.my)



Headquarter Office :  
**Unimech Group Berhad**  
Wisma Unimech, 4934, Jalan Chain Ferry,  
12100 Butterworth, Penang, Malaysia.  
Tel : ( 604 ) - 332 8821 / 22 / 23  
Fax : ( 604 ) - 332 5176  
Email : [unimech@po.jaring.my](mailto:unimech@po.jaring.my)  
Website : <http://www.unimech.com.my>