

# The Tube-Mac®

# PYPLOK® System



**It's the weldless, threadless way to join pipe/tube**



## **LEAKFREE PERFORMANCE, REDUCED INSTALLED COST AND MINIMISED DOWNTIME**

The Tube-Mac® PYPLOK® connecting system is sparkless and has a successful history of pipe and tube fabrication in the most demanding environments and systems, where fire safety is essential.

Using a portable, hand-held installation tool, fittings are cold worked and permanently compressed onto piping. This process deforms the pipe diameter a controlled amount, thus forming a permanent leaktight seal.

## **USE IT ANYWHERE YOU'D WELD... BUT WOULDN'T WANT TO**

Now you can have the benefits of a welded joint, but without the hazards of hot work, using the Tube-Mac® PYPLOK® coupling. It's not only a permanent system, it's also sparkless. It goes on cold. Which means all of the risks and requirements associated with "hot work" are avoided.

And the permanent characteristics of the Tube-Mac® PYPLOK® system make it ideal in place of welded flanges and threaded fittings which are prone to leaks due to flexure or vibration.

No hot work permits, no x-rays, no gas freeing, no system flushing or purging, no attached slag or contaminants enter the piping system. And with easy installation method, there is a substantial reduction of system downtime for repairs.

## **THE ADVANTAGES OF PYPLOK'S SEALING CHARACTERISTICS**

Tube-Mac® PYPLOK® Fittings incorporates unique sealing capabilities. It utilises four non-metallic o-rings, which make PYPLOK® Fittings adaptable to normal pipe and tube tolerances and surface conditions.

The outer o-ring seals prevent outside contaminants from entering the system.

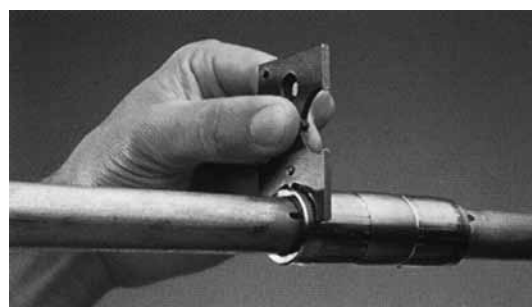
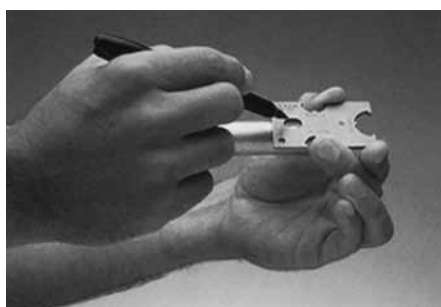
The Tube-Mac® PYPLOK® system is extremely versatile: Ideal for gaseous systems as well as fluids. Also available in various shapes: tees, elbows, 45° and 90°, reducers and custom ends.

## **HOW PYPLOK® IS INSTALLED**

The unique characteristics of the Tube-Mac® PYPLOK® Fitting system allows for installation on piping/tubing with normal tolerances and surface conditions.

Tooling is positioned around the fitting assembly and is pressurised using a manual or electric pump. The tool converts linear force into radial force, compressing, or swaging, the fitting and piping material together.

The connection results in joint tensile strength greater than the minimum pipe yield. A simple inspection gauge verifies proper diameter reduction.



## PYPLOK® Fitting Specifications

<b>Fitting Material:</b>	316L, Duplex and Super Duplex Stainless Steel, Carbon Steel, 70/30 CuNi
<b>Pressure Range:</b>	Up to 640 bar (9300 psi) with 3:1 Safety Factor
<b>Fitting Size Range:</b>	1/4" to 3" NB Pipe, 6.35 (1/4") to 50.8 mm* (2") OD Tube and 6 to 66 mm Metric Tube
<b>Fitting Material Temperature Limits:</b>	Stainless Steel -254 to 260°C (-425 to 500°F) Carbon Steel -45 to 260°C (-50 to 500°F) Copper Nickel -267 to 260°C (-452 to 500°F) Duplex -51 to 260°C (-60 to 500°F) Super Duplex -29 to 260°C (-20 to 500°F)
<b>Standard Seal Material Temperature Limits:</b> (other materials available upon request)	<ul style="list-style-type: none"> <li>• Viton® -26 to 205°C (-15 to 400°F)</li> <li>• EPDM -42 to 260°C (-45 to 500°F)</li> </ul>
<b>Standards and Testing:</b>	<ul style="list-style-type: none"> <li>• ABS, DNV, BV, RMRS and NAVSEA certified, MIL-S-901D shock tested</li> <li>• API 6FB and ISO 15540/19921 fire tested</li> <li>• Meets ASME B31.1 and B31.3 Requirements</li> </ul>

\* Up to 101.6 mm (4") available on request

## PYPLOK® System Benefits

### TUBE-MAC® PYPLOK® SYSTEM ASSISTS YOU AND YOUR TEAM WITH SAFE AND COST EFFECTIVE WORK PRACTICES

#### Most Cost Effective On-site Pipe Work Fabrication and Repairs

- Reduces on-site time and labor – PYPLOK® fittings are swaged on cold, hot work permits are no longer required. PYPLOK® tooling is hydraulically actuated deleting special site services.
- PYPLOK® system prevents the need for Gas Freeing, System Flushing, NDT, and Fire Watch – designed as a one person operation.
- Swaged fittings are verified with a “Go-No-Go” inspection gauge – much quicker than NDT.
- Provides an Improved Safety Environment.
- The PYPLOK® system, developed to reduce hot work, is in itself a safe system since no torches, open flames or sparks are associated with the installation or maintenance.

#### PYPLOK® System on EVERY Installation Achieves

- Improved productivity – many tasks carried out in only one-shift with minimum disruption to production.
- Installed cost reduction of up to 65%.

#### PYPLOK® System on EVERY Installation Offers

- High tensile AND high torque hold.
- Crevice Corrosion protection.
- Minimum pipe preparation (seals on corroded pipe).



#### Requires Very Little Specialised Skill and Training

- PYPLOK® system provides a range of fittings and hand-held tooling that requires a minimum of specialised skills to install – easy and user friendly.
- Training is provided at no cost and takes less than 30 minutes to complete.
- Fully detailed, simple to follow documentation (Installation and Preventive Maintenance Manuals including Inspection Criteria Instructions) are provided with each purchased kit.

#### How Much Does it Cost - Rent or Buy?

- Clients have recuperated tooling and fitting cost in one system installation.
- Tooling can be purchased over a 12 month period – no Capital Expenditure issues.
- For Tooling Rental Program, please contact Prochem.

# PYPLOK® Tube and Pipe Qualification

NB Pipe		
Size	Min. Wall	Max. Wall
1/4"	SCH 10	SCH 80
3/8"	SCH 10	SCH 80
1/2"	SCH 10	SCH 80
3/4"	SCH 10	SCH 160
1"	SCH 10	SCH 160
1-1/4"	SCH 10	SCH 160
1-1/2"	SCH 10	SCH 160
2"	SCH 10	SCH 160
2-1/2"	SCH 10	SCH 80
3"	SCH 10	SCH 80

OD Tube			
Size		Min. Wall	Max. Wall
mm	inch	mm (inch)	mm (inch)
6.35	1/4"	0.71 (0.028")	2.11 (0.083")
9.53	3/8"	0.71 (0.028")	2.41 (0.095")
12.70	1/2"	0.89 (0.035")	3.05 (0.120")
15.88	5/8"	0.89 (0.035")	3.05 (0.120")
19.05	3/4"	1.24 (0.049")	4.57 (0.180")
25.40	1"	1.24 (0.049")	4.57 (0.180")
31.75	1-1/4"	1.65 (0.065")	5.59 (0.220")
38.10	1-1/2"	1.65 (0.065")	5.59 (0.220")
50.80	2"	2.11 (0.083")	5.59 (0.220")

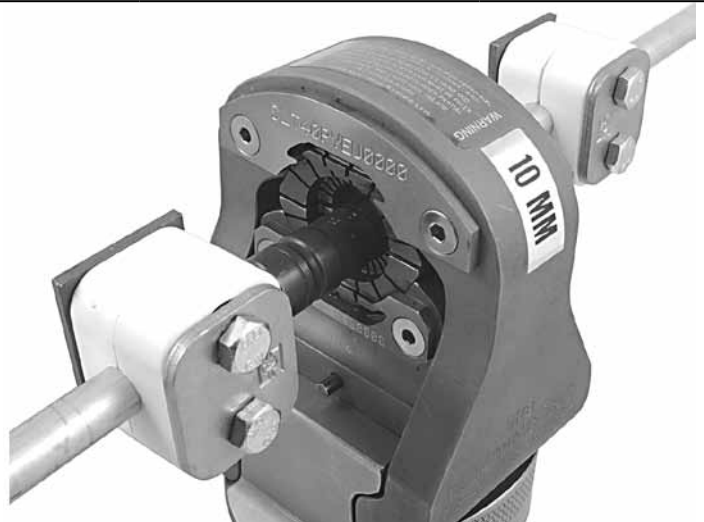
Metric Tube		
Size	Min. Wall	Max. Wall
6mm	0.8 mm	2.0 mm
10mm	0.8 mm	2.5 mm
12mm	1.0 mm	3.0 mm
16mm	1.0 mm	3.0 mm
20mm	1.0 mm	4.0 mm
25mm	1.0 mm	4.0 mm
30mm	1.2 mm	5.0 mm
38mm	1.5 mm	6.0 mm
42mm	1.5 mm	6.0 mm
44.5mm	1.0 mm	4.0 mm
50mm	1.5 mm	7.0 mm
57mm	1.0 mm	4.0 mm
60mm	2.0 mm	8.0 mm



Qualified Pipe/Tube
<p><b>Carbon Steel PYPLOK®</b></p> <p>ASTM A106/A53S                      ASTM A53E/A587                      ASTM A179                      DIN 2391c Gr.37.4 (E235+N)                      A135 ERW Grade A &amp; B                      API 5L Seamless/Electric Weld                      MIL-T-20157"</p>
<p><b>Stainless Steel PYPLOK®</b></p> <p>ASTM A312                      ASTM A269 (EN 10216-5)                      Types 304/304L/316/316L                      MIL-P-1144                      DIN 2391c Gr.52.4 (E355+N)                      EN10217-7 (DIN 17457)                      EN ISO 1127 (D3 and D4)</p>
<p><b>Copper Nickel PYPLOK®</b></p> <p>ASTM B280                      ASTM B75                      MIL-T-16420                      CuNi 90/10                      CuNi 70/30                      MIL-T-24107</p>

**Note:** Not every pipe/tube specification has been listed. If you do not see your specification please consult your local Prochem office to confirm pipe/tube qualification.

Allowable Outside Pipe/Tube Diameter Tolerances for PYPLOK®		
NB Pipe	1/4" to 1-1/2"	+/- 0.381 mm (0.015")
	2" to 3"	+/- 0.762 mm (0.030")
OD Tube	6.35 (1/4") to 9.53 mm (3/8")	+/- 0.127 mm (0.005")
	12.7 (1/2") to 38.1 mm (1-1/2")	+/- 0.254 mm (0.010")
	50.8 mm (2")	+/- 0.381 mm (0.015")
Metric Tube	6 to 66 mm	+/- 0.254 mm (0.010")



## PYPLOK® Working Pressures

**THE SELECTION OF THE PROPER PYPLOK® FITTING DEPENDS ON THE PRESSURE RATING OF YOUR PIPING SYSTEM, PIPE SIZE AND TYPES OF PIPE MATERIALS WITHIN THE APPLICATION.**

### TUBE-MAC® PYPLOK® (NB, OD, METRIC)

- PYPLOK® fittings made of Type 316, Duplex and Super Duplex Stainless Steel, Carbon Steel, 70/30 CuNi (Copper Nickel).
- Used in systems with 620 bar (9000 psi) maximum operating pressure.
- Available in NB Pipe, OD Tube and Metric Tube configurations.
- Pipe fitting sizes range from 1/4" to 3" NB.
- OD fitting sizes range from 6.35 (1/4") to 50.8 mm (2") OD.
- Metric fittings sizes range from 6 to 60 mm.



### NB Pipe – DM 20 Series / DP 40 Series

NB Pipe	Stainless Steel Pressure Ratings				Carbon Steel Pressure Ratings				CuNi 70/30 Pressure Ratings			
	4:1 Safety Factor		3:1 Safety Factor		4:1 Safety Factor		3:1 Safety Factor		4:1 Safety Factor		3:1 Safety Factor	
	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
1/4"	414	6000	552	8000	345	5000	460	6667	269	3896	358	5195
3/8"	414	6000	552	8000	345	5000	460	6667	269	3896	358	5195
1/2"	407	5900	543	7866	339	4917	452	6555	264	3831	352	5108
3/4"	400	5800	533	7733	333	4833	444	6444	260	3766	346	5022
1"	393	5700	524	7600	328	4750	437	6333	255	3701	340	4935
1-1/4"	390	5650	520	7533	325	4708	433	6278	253	3669	337	4892
1-1/2"	390	5650	520	7533	325	4708	433	6278	253	3669	337	4892
2"	331	4800	441	6400	276	4000	368	5333	215	3117	287	4156
2-1/2" *	41	600	55	800	41	600	55	800	13	188	17	250
3" *	23	338	31	451	23	338	31	451	13	188	17	250

\* DP 40 Low Pressure Series

### OD Tube – DM 60 Series

OD Tube		Stainless Steel Pressure Ratings				Carbon Steel Pressure Ratings				CuNi 70/30 Pressure Ratings			
		4:1 Safety Factor		3:1 Safety Factor		4:1 Safety Factor		3:1 Safety Factor		4:1 Safety Factor		3:1 Safety Factor	
mm	inch	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
6.35	1/4"	483	7000	644	9333	402	5833	536	7778	313	4545	418	6060
9.53	3/8"	400	5800	533	7733	333	4833	444	6444	260	3766	346	5022
12.7	1/2"	421	6100	561	8133	351	5083	467	6778	273	3961	364	5281
15.88	5/8"	421	6100	561	8133	351	5083	467	6778	273	3961	364	5281
19.05	3/4"	414	6000	552	8000	345	5000	460	6667	269	3896	358	5195
25.4	1"	400	5800	533	7733	333	4833	444	6444	260	3766	346	5022
31.75	1-1/4"	400	5800	533	7733	333	4833	444	6444	260	3766	346	5022
38.1	1-1/2"	390	5650	520	7533	325	4708	433	6278	253	3669	337	4892
50.8	2"	331	4800	441	6400	276	4000	368	5333	215	3117	287	4156

# PYPLOK® Working Pressures

## Metric Tube – DM 80 / DP 04 Series

Stainless Steel Pressure Ratings				
Metric Tube	4:1 Safety Factor		3:1 Safety Factor	
	bar	psi	bar	psi
6 mm	448	6500	598	8666
8 mm	428	6200	570	8266
10 mm	414	6000	552	8000
12 mm	400	5800	533	7733
16 mm	400	5800	533	7733
20 mm	390	5650	520	7533
25 mm	390	5650	520	7533
30 mm	390	5650	520	7533
38 mm	390	5650	520	7533
42 mm	390	5650	520	7533
50 mm	352	5100	469	6800
60 mm	331	4800	441	6400

Carbon Steel Pressure Ratings				
Metric Tube	4:1 Safety Factor		3:1 Safety Factor	
	bar	psi	bar	psi
6 mm	374	5417	498	7222
8 mm	356	5167	475	6889
10 mm	345	5000	460	6667
12 mm	333	4833	444	6444
16 mm	333	4833	444	6444
20 mm	325	4708	433	6278
25 mm	325	4708	433	6278
30 mm	325	4708	433	6278
38 mm	325	4708	433	6278
42 mm	325	4708	433	6278
50 mm	293	4250	391	5667
60 mm	276	4000	368	5333

CuNi 70/30 Pressure Ratings				
Metric Tube	4:1 Safety Factor		3:1 Safety Factor	
	bar	psi	bar	psi
6 mm	291	4221	388	5628
8 mm	278	4026	370	5368
10 mm	269	3896	358	5195
12 mm	260	3766	346	5022
16 mm	260	3766	346	5022
20 mm	253	3669	337	4892
25 mm	253	3669	337	4892
30 mm	253	3669	337	4892
38 mm	253	3669	337	4892
42 mm	253	3669	337	4892
44.5 mm*	41	600	55	800
50 mm	228	3312	305	4415
57 mm*	41	600	55	800
60 mm	215	3117	287	4156

\* DP 04 Low Pressure Series

## PYPLOK® Application

PYPLOK® fittings are suitable for a wide range of applications:

- CNG – Compressed Natural Gas
- CO<sub>2</sub> Cofferdam Inerting
- Condensate Piping
- Deluge Systems
- Down Well Coiled Tubing
- Drains and Plumbing Vent
- Ethylene Glycol/Water
- Fuel Oil and Fuel Gas
- Gases – Nitrogen, Air, Helium
- Heating Coil
- High Pressure Water Mist – Fire Suppression Systems
- Hydraulic Oil
- Low Temperature Steam
- LPG – Liquefied Petroleum Gas
- Lubrication and Grease
- Natural Gas
- Plant, Instrumentation and Utility Air
- RAD Waste Systems
- Solvents and Water Based Paints
- Steam Tracer Lines
- Waster Water



**If you don't see YOUR application  
..... please contact us**



# PYPLOK® – NB PIPE – DM 20 / DP 40 SERIES

## GENERAL CHARACTERISTICS

**Fitting Material Specifications**

K = Stainless Steel	ASTM-A479/A182-316
G = Carbon Steel	ASTM-A105/A350 LF2
B = Copper Nickel	ASTM B466/MIL-T16420-70/30
D = Duplex	ASTM-A182/A479-S31803
Z = Super Duplex	ASTM-A182/A479-S32750

**Fitting Material Temperature Limits\***

-254 to 260°C (-425 to 500°F)
-45 to 260°C (-50 to 500°F)
-267 to 260°C (-452 to 500°F)
-51 to 260°C (-60 to 500°F)
-29 to 260°C (-20 to 500°F)

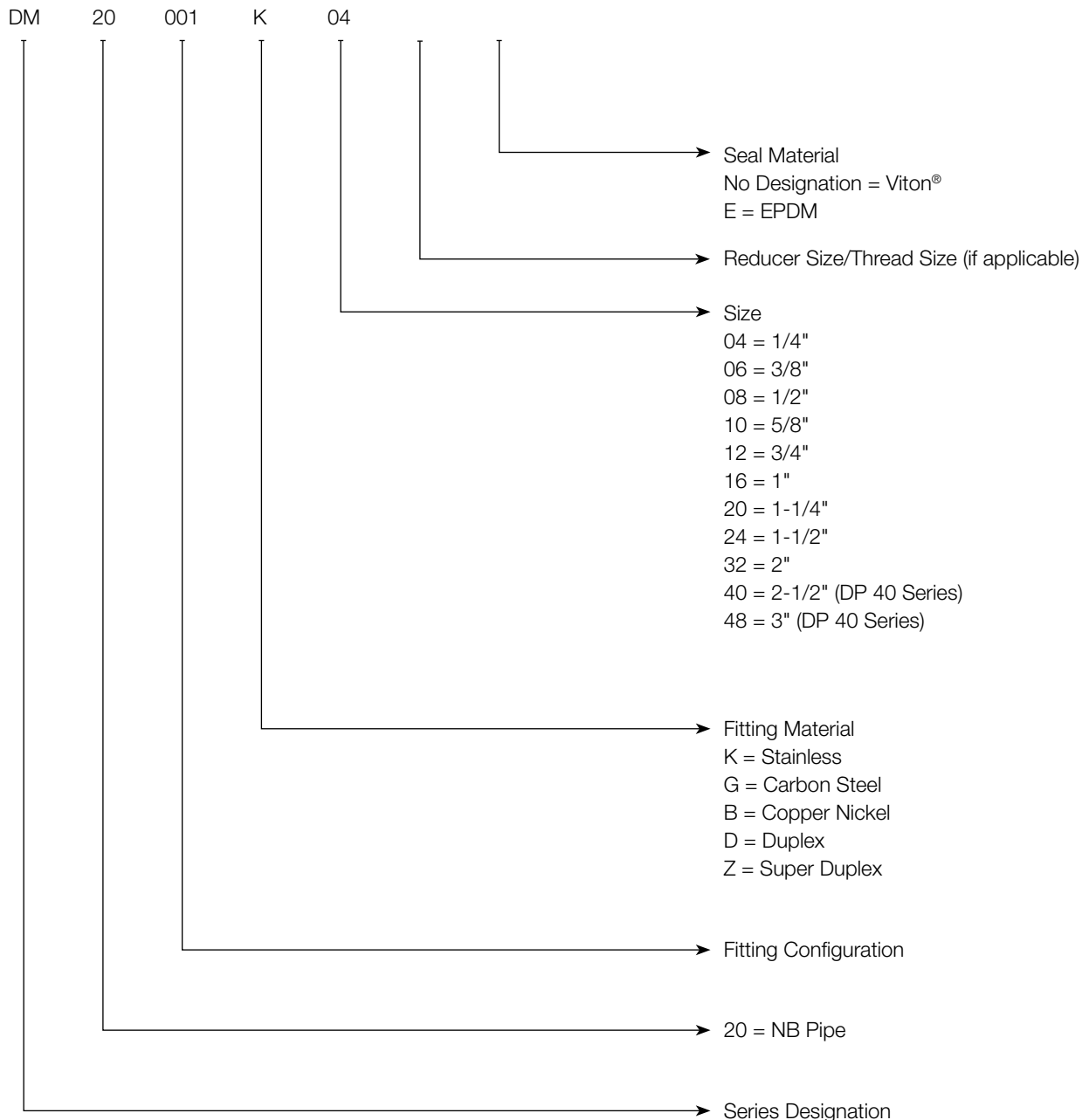
O-Ring Operating Temperature Limits ..... -26 to 205°C (-15 to 400°F) – VITON®  
 -42 to 260°C (-45 to 500°F) – EPDM

Fitting Size Range: ..... 1/4" NB to 3" NB (Note: Sizes above 2" are DP 40 Series)

Pressure Range: ..... See PYPLOK® Fitting Selection page 6


\* Temperatures according to ASME B31.3

**ORDERING INFORMATION**



# NB PIPE – DM 20 / DP 40 SERIES

## FITTING CONFIGURATION GUIDE

<p>Coupling</p>  <p>001</p>	<p>90° Elbow 003</p>  <p>003</p>	<p>45° Elbow 017</p>  <p>017</p>	<p>Tee</p>  <p>004</p>	<p>Reducer</p>  <p>101</p>
<p>End Cap</p>  <p>085</p>	<p>ANSI #150 – PN16</p>  <p>018</p>	<p>ANSI #300 – PN40</p>  <p>019</p>	<p>Male JIC 37°</p>  <p>055</p>	<p>Female JIC 37° Swivel</p>  <p>054</p>
<p>90° Elbow Male JIC 37°</p>  <p>355</p>	<p>Branch Tee Male JIC 37°</p>  <p>177</p>	<p>Run Tee Male JIC 37°</p>  <p>178</p>	<p>90° Elbow Female JIC 37° Swivel</p>  <p>354</p>	<p>Branch Tee Female JIC 37° Swivel</p>  <p>170</p>
<p>Male ORFS</p>  <p>010</p>	<p>Female ORFS Swivel</p>  <p>020</p>	<p>90° Elbow Male ORFS</p>  <p>011</p>	<p>Branch Tee Male ORFS</p>  <p>013</p>	<p>Run Tee Male ORFS</p>  <p>014</p>
<p>90° Elbow Female ORFS</p>  <p>021</p>	<p>Branch Tee Female ORFS</p>  <p>023</p>	<p>Male SAE</p>  <p>088</p>	<p>Female SAE</p>  <p>087</p>	<p>90° Elbow Male SAE</p>  <p>105</p>
<p>Branch Tee Male SAE</p>  <p>174</p>	<p>Run Tee Male SAE</p>  <p>179</p>	<p>Branch Tee Female SAE</p>  <p>171</p>	<p>Male BSSP</p>  <p>153</p>	<p>Female BSSP</p>  <p>086</p>
<p>90° Elbow Male BSPP</p>  <p>168</p>	<p>Branch Tee Male BSPP</p>  <p>175</p>	<p>Run Tee Male BSPP</p>  <p>180</p>		

# PYPLOK® – OD TUBE – DM 60 SERIES

## GENERAL CHARACTERISTICS

**Fitting Material Specifications**

K = Stainless Steel	ASTM-A479/A182-316
G = Carbon Steel	ASTM-A105/A350 LF2
B = Copper Nickel	ASTM B466/MIL-T16420-70/30
D = Duplex	ASTM-A182/A479-S31803
Z = Super Duplex	ASTM-A182/A479-S32750

**Fitting Material Temperature Limits\***

-254 to 260°C (-425 to 500°F)
-45 to 260°C (-50 to 500°F)
-267 to 260°C (-452 to 500°F)
-51 to 260°C (-60 to 500°F)
-29 to 260°C (-20 to 500°F)

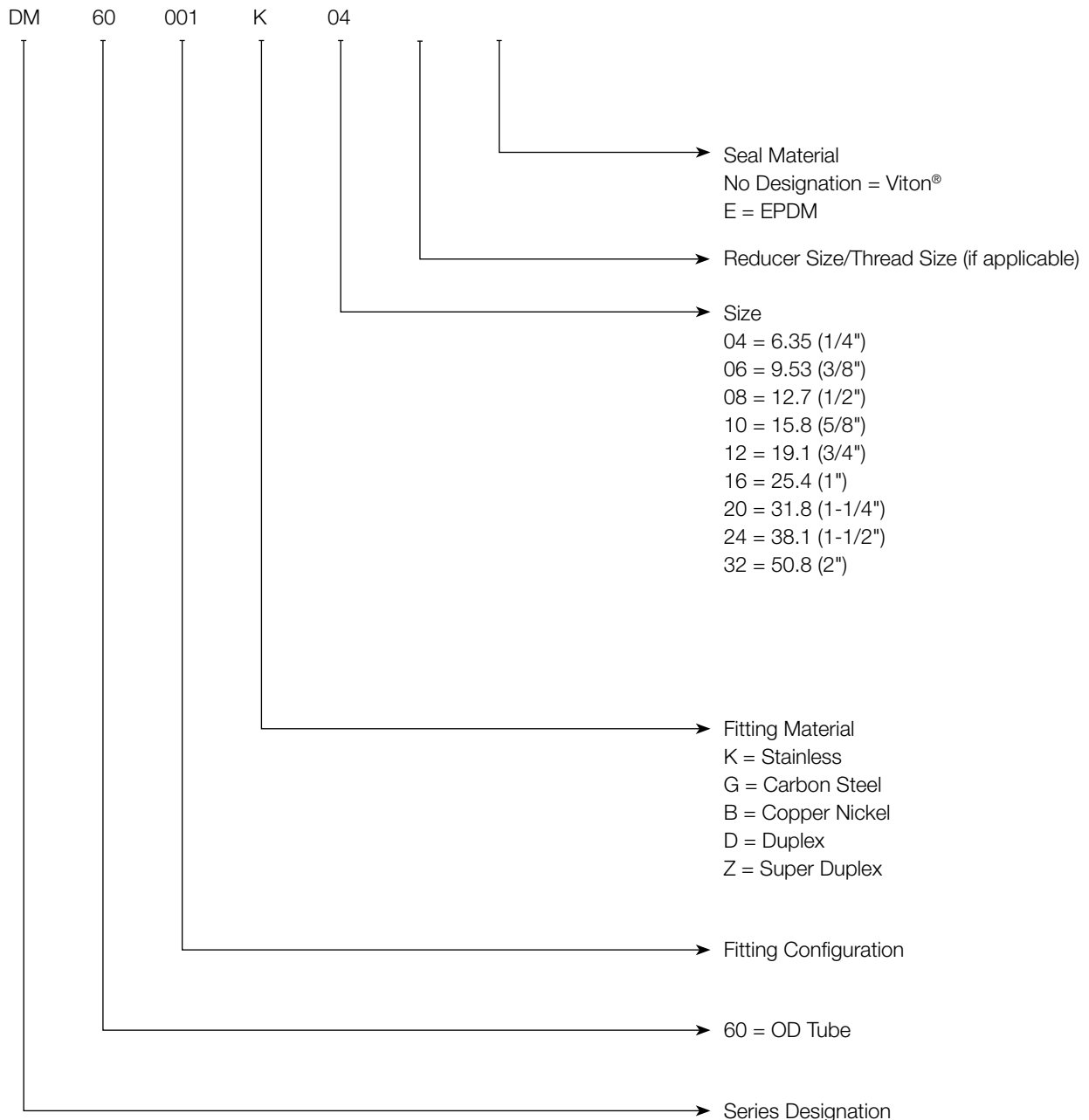
O-Ring Operating Temperature Limits ..... -26 to 205°C (-15 to 400°F) – VITON®  
 -42 to 260°C (-45 to 500°F) – EPDM

Fitting Size Range: .....6.35 (1/4") to 50.8 mm (2") OD

Pressure Range: .....See PYPLOK® Fitting Selection page 6

\* Temperatures according to ASME B31.3

**ORDERING INFORMATION**





# OD TUBE – DM 60 SERIES

## FITTING CONFIGURATION GUIDE

<p>Coupling</p>  <p>001</p>	<p>90° Elbow</p>  <p>003</p>	<p>45° Elbow</p>  <p>017</p>	<p>Tee</p>  <p>004</p>	<p>Reducer</p>  <p>101</p>
<p>End Cap</p>  <p>085</p>	<p>Male JIC 37°</p>  <p>055</p>	<p>Female JIC 37° Swivel</p>  <p>054</p>	<p>90° Elbow Male JIC 37°</p>  <p>355</p>	<p>Branch Tee Male JIC 37°</p>  <p>177</p>
<p>Run Tee Male JIC 37°</p>  <p>178</p>	<p>90° Elbow Female JIC 37° Swivel</p>  <p>354</p>	<p>Branch Tee Female JIC 37° Swivel</p>  <p>170</p>	<p>Male ORFS</p>  <p>010</p>	<p>Female ORFS Swivel</p>  <p>020</p>
<p>90° Elbow Male ORFS</p>  <p>011</p>	<p>Branch Tee Male ORFS</p>  <p>013</p>	<p>Run Tee Male ORFS</p>  <p>014</p>	<p>90° Elbow Female ORFS</p>  <p>021</p>	<p>Branch Tee Female ORFS</p>  <p>023</p>
<p>Male SAE</p>  <p>088</p>	<p>Female SAE</p>  <p>087</p>	<p>90° Elbow Male SAE</p>  <p>105</p>	<p>Branch Tee Male SAE</p>  <p>174</p>	<p>Run Tee Male SAE</p>  <p>179</p>
<p>Male NPT</p>  <p>056</p>	<p>Female NPT</p>  <p>060</p>	<p>90° Elbow Male NPT</p>  <p>057</p>	<p>Branch Tee Male NPT</p>  <p>176</p>	<p>Run Tee Male NPT</p>  <p>181</p>
<p>SAE Code 61 Flange</p>  <p>091</p>	<p>SAE Code 62 Flange</p>  <p>092</p>	<p>SAE Code 61 Split Flange</p>  <p>093</p>	<p>SAE Code 62 Split Flange</p>  <p>094</p>	<p>SAE Code 61 Tapped Flange</p>  <p>095</p>
<p>SAE Code 62 Tapped Flange</p>  <p>096</p>	<p>Cross Fitting with 2 SAE Ports</p>  <p>220</p>	<p>Cross Fitting with 4 SAE Ports</p>  <p>240</p>		

# PYPLOK® – METRIC TUBE – DM 80 / DP 04 SERIES

## GENERAL CHARACTERISTICS

**Fitting Material Specifications**

K = Stainless Steel	ASTM-A479/A182-316
G = Carbon Steel	ASTM-A105/A350 LF2
B = Copper Nickel	ASTM B466/MIL-T16420-70/30
D = Duplex	ASTM-A182/A479-S31803
Z = Super Duplex	ASTM-A182/A479-S32750

**Fitting Material Temperature Limits\***

-254 to 260°C (-425 to 500°F)
-45 to 260°C (-50 to 500°F)
-267 to 260°C (-452 to 500°F)
-51 to 260°C (-60 to 500°F)
-29 to 260°C (-20 to 500°F)

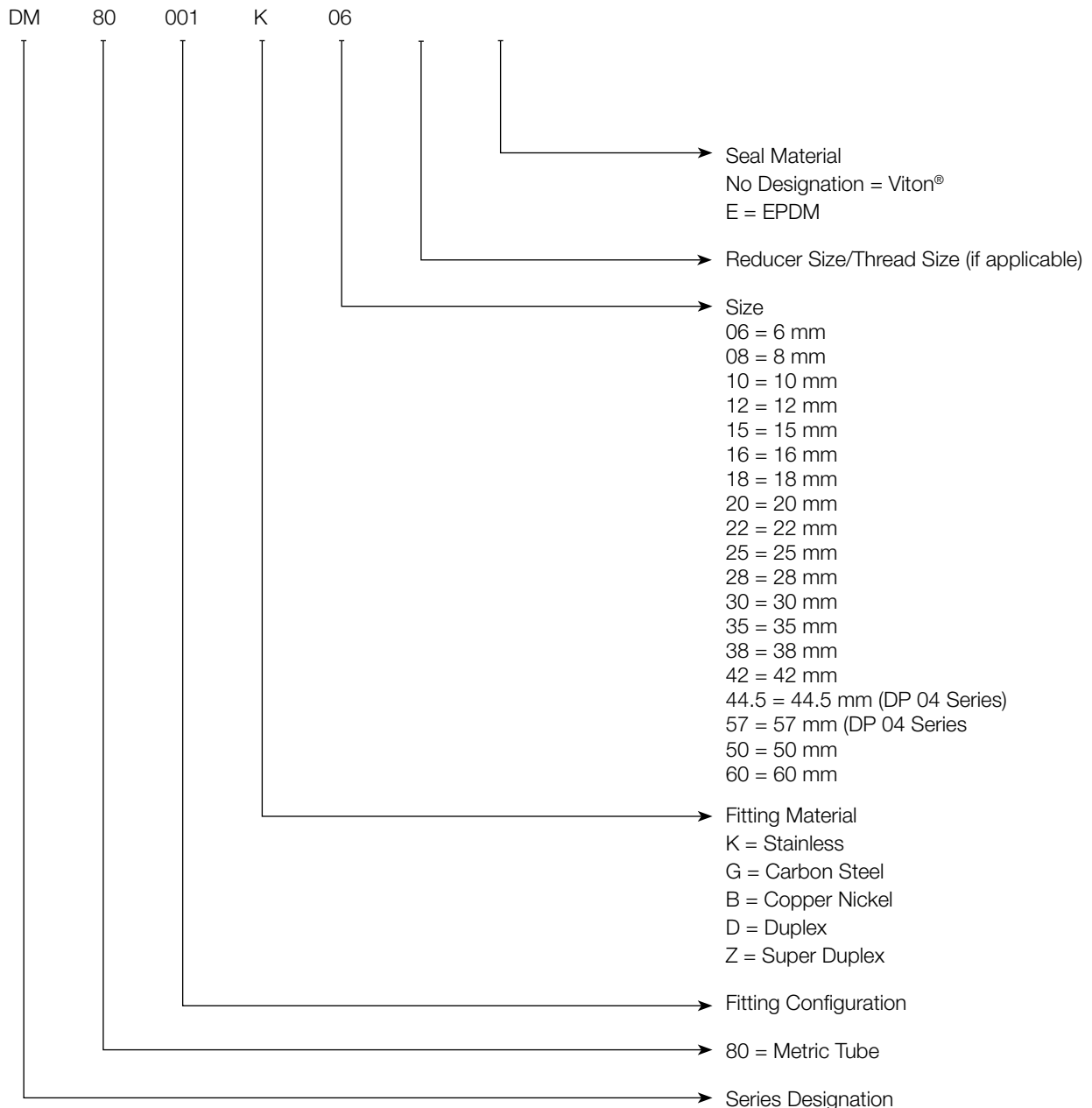
O-Ring Operating Temperature Limits ..... -26 to 205°C (-15 to 400°F) – VITON®  
 -42 to 260°C (-45 to 500°F) – EPDM

Fitting Size Range: .....6 to 60 mm

Pressure Range: .....See PYPLOK® Fitting Selection page 7


\* Temperatures according to ASME B31.3

**ORDERING INFORMATION**



# METRIC TUBE – DM 80 / DP 04 SERIES

## FITTING CONFIGURATION GUIDE

<p>Coupling</p>  <p>001</p>	<p>90° Elbow</p>  <p>003</p>	<p>45° Elbow</p>  <p>017</p>	<p>Tee</p>  <p>004</p>	<p>Reducer</p>  <p>101</p>
<p>End Cap</p>  <p>085</p>	<p>Male JIC 37°</p>  <p>055</p>	<p>Female JIC 37° Swivel</p>  <p>054</p>	<p>90° Elbow Male JIC 37°</p>  <p>355</p>	<p>Branch Tee Male JIC 37°</p>  <p>177</p>
<p>Run Tee Male JIC 37°</p>  <p>178</p>	<p>90° Elbow Female JIC 37° Swivel</p>  <p>354</p>	<p>Branch Tee Female JIC 37° Swivel</p>  <p>170</p>	<p>Male BSSP</p>  <p>153</p>	<p>Female BSSP</p>  <p>086</p>
<p>90° Elbow Male BSPP</p>  <p>168</p>	<p>Branch Tee Male BSPP</p>  <p>175</p>	<p>Run Tee Male BSPP</p>  <p>180</p>	<p>Branch Tee Female BSPP</p>  <p>172</p>	<p>Male DIN 24°</p>  <p>066</p>
<p>Female DIN 24° Swivel</p>  <p>068</p>				