

Ficha técnica

Línea Hidráulica Fusión

Fecha: Junio 2021



Línea Hidráulica Fusión

| Características | Descripción | Descripción | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|---------------------------------------|------------------------------|--------------------------|-------------------------|--|---------------------------------------|------------------------------|-------------------------------|----------------------------------|----|---|---|---|---|----|---|---|---|---|----|---|---|---|---|----|----|--|---|---|----|----|--|---|---|----|----|--|---|---|----|----|--|---|---|----|----|--|---|---|-----|----|--|----|---|-----|----|--|----|---|
| | Clase 10 | Clase 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Descripción | Sistema de tubería y conexiones para el transporte de agua fría | Sistema de tubería y conexiones para el transporte de agua fría y caliente a presión, así como para conducción de aire comprimido. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Presión Nominal / Presión de diseño | 10 kg/cm ² (10 Bar) (1.0 Mpa) a 20°C | 16 kg/cm ² (16 Bar) (1.6 Mpa) a 20°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Configuración | Bicapa Capa externa verde con franja azul Capa interna blanca | Bicapa Capa externa verde Capa interna blanca | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Materia Prima | Bicapa Capa externa polipropileno Random Tipo 3 + Ultra Violeta Capa interna polipropileno Random Tipo 3 + AntiBacterial" | Bicapa Capa externa polipropileno Random Tipo 3 + Ultra Violeta Capa interna polipropileno Random Tipo 3 + AntiBacterial | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dimensiones | Diámetro exterior nominal de 20, 25, 32, 40, 50, 63, 75, 90, 110 y 160mm Longitud de barras 4 metros. | Diámetro exterior nominal de 20, 25, 32, 40, 50, 63, 75, 90 y 110 mm Longitud de barras 4 metros. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tecnología de unión | Termofusión a Socket (Calentamiento de tubo y conexión a 260 °C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tiempos de fusión | <table border="1"> <thead> <tr> <th rowspan="2">DN Tubería y Conexión</th> <th colspan="2">Tiempo de calentamiento</th> <th rowspan="2">Intervalo máximo para el acople (Seg)</th> <th rowspan="2">Tiempo de enfriamiento (min)</th> </tr> <tr> <th>Clase 10 Serie 5 SDR 11</th> <th>Clase 16 Serie 3.2 SDR 7.4</th> </tr> </thead> <tbody> <tr><td>20</td><td>4</td><td>5</td><td>4</td><td>2</td></tr> <tr><td>25</td><td>5</td><td>7</td><td>4</td><td>2</td></tr> <tr><td>32</td><td>7</td><td>8</td><td>6</td><td>4</td></tr> <tr><td>40</td><td colspan="2">12</td><td>6</td><td>4</td></tr> <tr><td>50</td><td colspan="2">18</td><td>6</td><td>4</td></tr> <tr><td>63</td><td colspan="2">24</td><td>8</td><td>6</td></tr> <tr><td>75</td><td colspan="2">30</td><td>8</td><td>6</td></tr> <tr><td>90</td><td colspan="2">40</td><td>8</td><td>6</td></tr> <tr><td>110</td><td colspan="2">50</td><td>10</td><td>8</td></tr> <tr><td>160</td><td colspan="2">70</td><td>10</td><td>8</td></tr> </tbody> </table> | | | | DN Tubería y Conexión | Tiempo de calentamiento | | Intervalo máximo para el acople (Seg) | Tiempo de enfriamiento (min) | Clase 10 Serie 5 SDR 11 | Clase 16 Serie 3.2 SDR 7.4 | 20 | 4 | 5 | 4 | 2 | 25 | 5 | 7 | 4 | 2 | 32 | 7 | 8 | 6 | 4 | 40 | 12 | | 6 | 4 | 50 | 18 | | 6 | 4 | 63 | 24 | | 8 | 6 | 75 | 30 | | 8 | 6 | 90 | 40 | | 8 | 6 | 110 | 50 | | 10 | 8 | 160 | 70 | | 10 | 8 |
| DN Tubería y Conexión | Tiempo de calentamiento | | Intervalo máximo para el acople (Seg) | Tiempo de enfriamiento (min) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Clase 10 Serie 5 SDR 11 | Clase 16 Serie 3.2 SDR 7.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 4 | 5 | 4 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 5 | 7 | 4 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | 7 | 8 | 6 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 12 | | 6 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 18 | | 6 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63 | 24 | | 8 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 75 | 30 | | 8 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | 40 | | 8 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 110 | 50 | | 10 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 160 | 70 | | 10 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Presión máxima de trabajo continuo (con factor de seguridad aplicable) | 12.5 Kg/cm ² en agua a 20°C | 20 Kg/cm ² en agua a 20°C y 10 Kg/cm ² para aire comprimido | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Ficha técnica

Línea Hidráulica Fusión



Fecha: Junio 2021

| Características | Descripción | Descripción |
|---|--|---|
| | Clase 10 | Clase 16 |
| Rango de temperatura de trabajo | 5 – 60 °C | 5 - 20 °C = más de 50 años 21 - 40 °C = hasta 25 80 - 95 °C = 1 año (Ver tabla 1) |
| Vida útil esperada | más de 50 años | |
| Protección al intemperismo | más de 30 años | |
| Antibacterial probado contra los siguientes organismos: | <ul style="list-style-type: none"> - S aureus 6538. (resistencia baja) (infecciones en la garganta, oído y piel); - E. coli 11229 (resistencia intermedia) (gastrointestinales v.g. Diarrea del viajero); - E. faecalis 29212 (resistencia alta) (vejiga, riñones y gastrointestinales). - Ps aeruginosa 15442(resistencia muy alta) (meningitis,otitis) | |
| Norma de producto | NMX-E-226/2-CNCP. Basadas en Normas Alemanas DIN 8077, 8078 y 16962. | |
| Certificado de conformidad de producto | Sí, por Certificación Mexicana | |
| Coefficiente de conductividad térmica | 0.24 (Kcal/h)/(m °C) | |
| Radio mínimo de curvatura | No Aplica | |
| Grado de insonorización acústica | Hasta 30 db comparado con el cobre | |
| Conexiones de transición | Roscas NPT Bridas Tipo DIN | |
| Coefficiente de dilatación lineal | 1.5 x 10 ⁻⁴ °K ⁻¹ | |
| Tensión de ruptura | 23 N/mm ² | |
| Módulo de elasticidad | 800 N/mm ² | |
| Rugosidad interna | 0.007 mm | |
| Coefficiente Hazen Williams | 140 | |
| Resistencia a la corrosión | Soporta contacto directo con sustancias con PH del 1 al 14 | |
| Calidad del agua transportada | Alta. No aporta olor, color o sabor. | |
| Conexión directa al calentador | Sí, gracias a sus conectores con inserto metálico | |
| Resistencia al congelamiento del líquido transportado | Alta. Se expande sin romperse para absorber el incremento de volumen por congelamiento del líquido (evitar golpes externos) | |

Ficha técnica

Línea Hidráulica Fusión

Fecha: Junio 2021



Capacidad mecánica de la tubería (presión y temperatura)

TABLA 1

| Temperatura °C | Tiempo de servicio continuo (años) | Clase 10 | | Clase 16 | |
|-------------------|---------------------------------------|------------------------------|--------|----------|--------|
| | | Presiones máximas de trabajo | | | |
| 20 | 1 | 1,4 | (14,1) | 2,2 | (22,3) |
| | 5 | 1,3 | (13,2) | 2,0 | (20,8) |
| | 10 | 1,3 | (12,7) | 2,0 | (20,2) |
| | 25 | 1,2 | (12,2) | 1,9 | (19,4) |
| | 50 | 1,2 | (11,8) | 1,8 | (18,7) |
| 30 | 1 | 1,2 | (11,9) | 1,9 | (19,0) |
| | 5 | 1,1 | (11,0) | 1,7 | (17,4) |
| | 10 | 1,0 | (10,6) | 1,6 | (16,7) |
| | 25 | 1,0 | (10,2) | 1,6 | (16,1) |
| | 50 | 1,0 | (9,8) | 1,5 | (15,5) |
| 40 | 1 | 1,0 | (9,9) | 1,5 | (15,7) |
| | 5 | 0,9 | (9,1) | 1,4 | (14,4) |
| | 10 | 0,9 | (8,8) | 1,4 | (14,0) |
| | 25 | 0,8 | (8,4) | 1,3 | (13,4) |
| | 50 | 0,8 | (7,9) | 1,2 | (12,4) |
| 50 | 1 | 0,8 | (8,2) | 1,3 | (12,8) |
| | 5 | 0,7 | (7,4) | 1,2 | (11,8) |
| | 10 | 0,7 | (7,1) | 1,1 | (11,4) |
| | 25 | 0,6 | (6,2) | 1,0 | (9,9) |
| | 50 | 0,5 | (5,2) | 0,8 | (8,2) |
| 60 | 1 | 0,7 | (6,6) | 1,0 | (10,5) |
| | 5 | 0,6 | (6,1) | 1,0 | (9,7) |
| | 10 | 0,5 | (5,3) | 0,8 | (8,4) |
| | 25 | 0,4 | (4,2) | 0,7 | (6,6) |
| | 50 | 0,4 | (3,6) | 0,6 | (5,6) |
| 70 | 1 | 0,5 | (5,4) | 0,8 | (8,6) |
| | 5 | 0,4 | (4,5) | 0,7 | (7,1) |
| | 10 | 0,4 | (3,7) | 0,6 | (5,8) |
| | 25 | 0,3 | (2,9) | 0,4 | (4,5) |
| | 50 | 0,2 | (2,4) | 0,4 | (3,9) |

NOTA. Para el cálculo de la presión se considero un factor de seguridad de 1.5.

NOTA 2. También resiste temperaturas de 80 y 95 °C solo con picos anuales entre 90 y 60 días.

Ficha técnica

Línea Hidráulica Fusión



Fecha: Junio 2021

Características técnicas de las tuberías

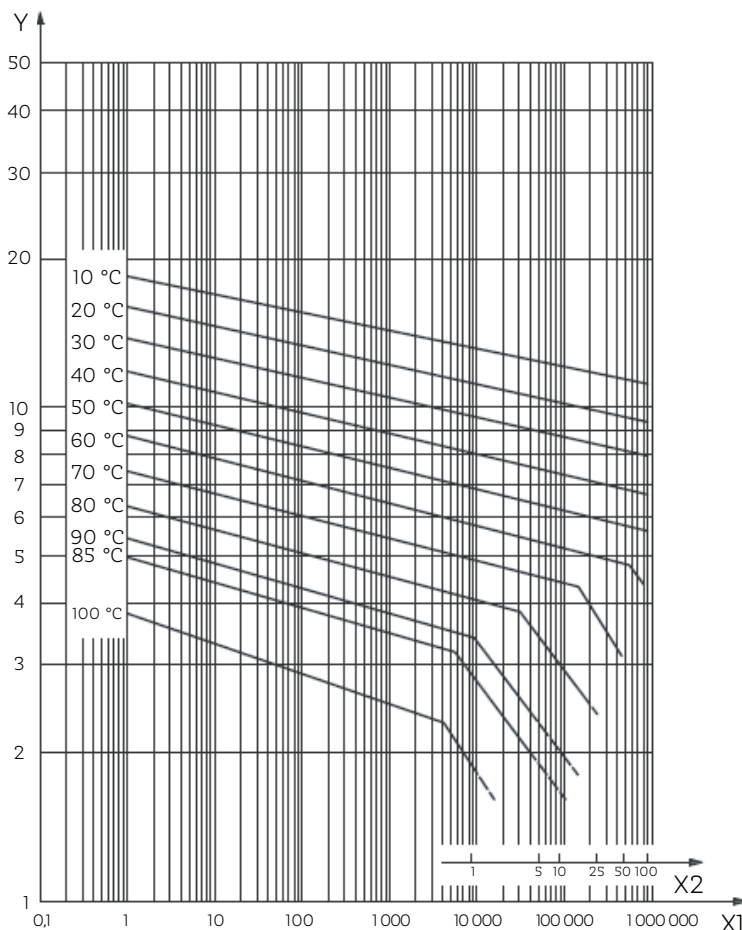
TABLA 2

| Dn | Diámetro Externo | Longitud | Clase 10 Serie 5 SDR 11 | | | Clase 16 Serie 3.2 SDR 7.4 | | |
|------|------------------|----------|-------------------------------|---------|--------------|----------------------------------|---------|--------------|
| | | | Diámetro Interior | Espesor | Peso x Metro | Diámetro Interior | Espesor | Peso x Metro |
| (mm) | (mm) | (m) | (mm) | (mm) | (Kg) | (mm) | (mm) | (Kg) |
| 20 | 20 | 4.0 | 15.6 | 2.2 | 0.125 | 14.4 | 2.8 | 0.148 |
| 25 | 25 | 4.0 | 20.0 | 2.5 | 0.175 | 18.0 | 3.5 | 0.230 |
| 32 | 32 | 4.0 | 26.0 | 3.0 | 0.310 | 23.2 | 4.4 | 0.375 |
| 40 | 40 | 4.0 | 32.6 | 3.7 | 0.450 | 29.0 | 5.5 | 0.582 |
| 50 | 50 | 4.0 | 40.8 | 4.6 | 0.725 | 36.2 | 6.9 | 0.894 |
| 63 | 63 | 4.0 | 51.4 | 5.8 | 1.100 | 45.8 | 8.6 | 1.418 |
| 75 | 75 | 4.0 | 61.2 | 6.9 | 1.600 | 54.4 | 10.3 | 2.015 |
| 90 | 90 | 4.0 | 73.6 | 8.2 | 2.250 | 65.4 | 12.3 | 2.901 |
| 110 | 110 | 4.0 | 90.0 | 10.0 | 3.400 | 79.8 | 15.1 | 4.310 |
| 160 | 160 | 4.0 | 130.8 | 14.6 | 6.450 | | | |

Curvas de Regresión de PP-R

Gráfica 1

- X1 Tiempo, t1, para fracturar, en horas
- X2 Tiempo, t2, para fracturar, en años
- Y Esfuerzo hidrostático, σ , megapascales



Ficha técnica

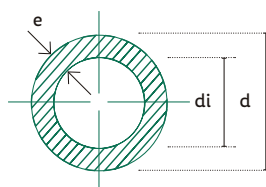
Línea Hidráulica Fusión

Fecha: Junio 2021



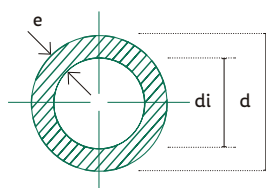
Lista de productos

Tubería agua fría clase 10



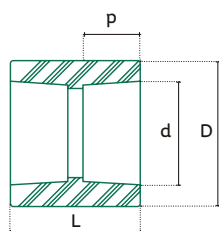
| Código | d | di | e | Peso (kg/m) |
|--------|-----|-------|------|-------------|
| 200385 | 20 | 15.6 | 2.2 | 0.125 |
| 200386 | 25 | 20.0 | 2.5 | 0.175 |
| 200387 | 32 | 26.0 | 3.0 | 0.310 |
| 200388 | 40 | 32.6 | 3.7 | 0.450 |
| 200389 | 50 | 40.8 | 4.6 | 0.725 |
| 200390 | 63 | 51.4 | 5.8 | 1.100 |
| 200391 | 75 | 61.2 | 6.9 | 1.600 |
| 200383 | 90 | 73.6 | 8.2 | 2.250 |
| 200384 | 110 | 90.0 | 10.0 | 3.400 |
| 200543 | 160 | 130.8 | 14.6 | 6.450 |

Tubería agua fría y caliente clase 16



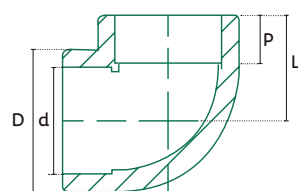
| Código | d | di | e | Área (cm ²) | Peso (kg/m) |
|--------|-----|-------|-------|-------------------------|-------------|
| 200224 | 20 | 14.40 | 2.80 | 1.63 | 0.148 |
| 200225 | 25 | 18.00 | 3.50 | 2.54 | 0.230 |
| 200226 | 32 | 23.20 | 4.40 | 4.23 | 0.375 |
| 200227 | 40 | 29.00 | 5.50 | 6.60 | 0.582 |
| 200228 | 50 | 36.20 | 6.90 | 10.29 | 0.894 |
| 200229 | 63 | 45.80 | 8.60 | 16.47 | 1.418 |
| 200230 | 75 | 54.40 | 10.30 | 23.24 | 2.015 |
| 200231 | 90 | 65.40 | 12.30 | 33.59 | 2.901 |
| 200223 | 110 | 79.80 | 15.1 | 50.01 | 4.310 |

Cople



| Código | d | D | p | L | Peso |
|--------|-----|-----|----|----|------|
| 200065 | 20 | 29 | 16 | 35 | 12 |
| 200066 | 25 | 35 | 18 | 39 | 15 |
| 200067 | 32 | 43 | 20 | 42 | 24 |
| 200068 | 40 | 53 | 22 | 49 | 44 |
| 200069 | 50 | 65 | 26 | 54 | 78 |
| 200070 | 63 | 82 | 30 | 64 | 141 |
| 200071 | 75 | 100 | 30 | 66 | 236 |
| 200072 | 90 | 120 | 33 | 72 | 380 |
| 200064 | 110 | 145 | 41 | 88 | 553 |

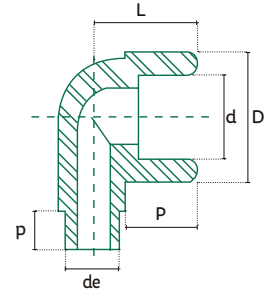
Codos 90°



| Código | d | D | p | L | Peso |
|--------|-----|-----|----|----|------|
| 200014 | 20 | 29 | 15 | 27 | 19 |
| 200015 | 25 | 35 | 18 | 31 | 25 |
| 200016 | 32 | 43 | 19 | 35 | 41 |
| 200017 | 40 | 52 | 21 | 42 | 75 |
| 200018 | 50 | 64 | 24 | 50 | 134 |
| 200019 | 63 | 82 | 28 | 61 | 255 |
| 200020 | 75 | 100 | 29 | 70 | 455 |
| 200021 | 90 | 120 | 33 | 80 | 745 |
| 200013 | 110 | 145 | 41 | 95 | 1181 |

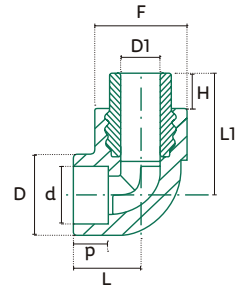
Codo macho-hembra 90°

| Código | d-de | D | P | L | Peso |
|--------|------|----|----|----|------|
| 200037 | 20 | 30 | 16 | 27 | 18 |
| 200038 | 25 | 34 | 18 | 31 | 23 |



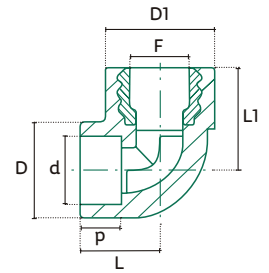
Codo 90° con rosca macho

| Código | d | | F | D | D1 | p | L | L1 | H | Peso |
|--------|----|---|-----|----|----|----|----|----|----|------|
| 200028 | 20 | x | 1/2 | 30 | 33 | 16 | 27 | 31 | 14 | 100 |
| 200029 | 25 | x | 1/2 | 36 | 40 | 18 | 30 | 37 | 14 | 122 |
| 200030 | 25 | x | 3/4 | 36 | 43 | 18 | 31 | 37 | 17 | 161 |
| 200032 | 32 | x | 1/2 | 43 | 49 | 20 | 35 | 47 | 14 | 171 |
| 200033 | 32 | x | 3/4 | 43 | 49 | 20 | 35 | 47 | 17 | 208 |
| 200031 | 32 | x | 1 | 43 | 49 | 20 | 35 | 47 | 20 | 296 |



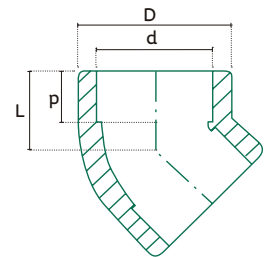
Codo 90° con rosca hembra

| Código | d | | F | D | D1 | p | L | L1 | Peso |
|--------|----|---|-----|----|----|----|----|----|------|
| 200022 | 20 | x | 1/2 | 30 | 33 | 16 | 27 | 31 | 74 |
| 200023 | 25 | x | 1/2 | 36 | 40 | 18 | 30 | 37 | 86 |
| 200024 | 25 | x | 3/4 | 36 | 43 | 18 | 31 | 37 | 106 |
| 200026 | 32 | x | 1/2 | 43 | 49 | 20 | 35 | 47 | 135 |
| 200027 | 32 | x | 3/4 | 43 | 49 | 20 | 35 | 47 | 153 |
| 200025 | 32 | x | 1 | 43 | 49 | 20 | 35 | 47 | 182 |



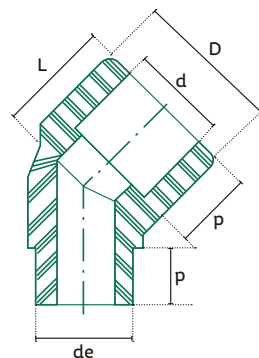
Codo 45°

| Código | d | D | p | L | Peso |
|--------|-----|-----|----|----|------|
| 200005 | 20 | 29 | 15 | 20 | 14 |
| 200006 | 25 | 35 | 18 | 23 | 19 |
| 200007 | 32 | 42 | 20 | 27 | 31 |
| 200008 | 40 | 52 | 22 | 31 | 54 |
| 200009 | 50 | 64 | 24 | 36 | 96 |
| 200010 | 63 | 82 | 28 | 44 | 178 |
| 200011 | 75 | 100 | 29 | 48 | 345 |
| 200012 | 90 | 120 | 33 | 53 | 565 |
| 200004 | 110 | 145 | 41 | 51 | 896 |



Codo macho-hembra 45°

| Código | d-de | D | p | L | Peso |
|--------|------|----|----|----|------|
| 200034 | 20 | 30 | 16 | 20 | 15 |



Codo a 90 plástico con Rosca Hembra

| Código | milímetros | Pulgadas (") |
|--------|------------|--------------|
| 200306 | 20 x 1/2 | 1/2 x 1/2 |

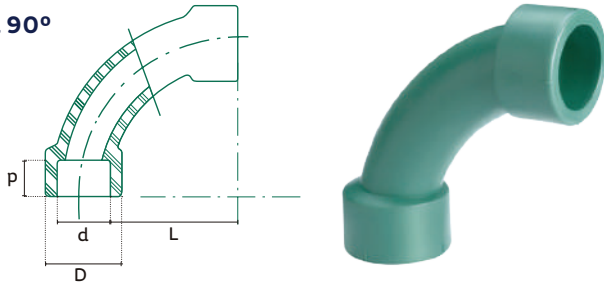


Conector plástico Macho

| Código | milímetros | Pulgadas (") |
|--------|------------|--------------|
| 200305 | 20 x 1/2 | 1/2 x 1/2 |
| 200309 | 25 x 3/4 | 3/4 x 3/4 |



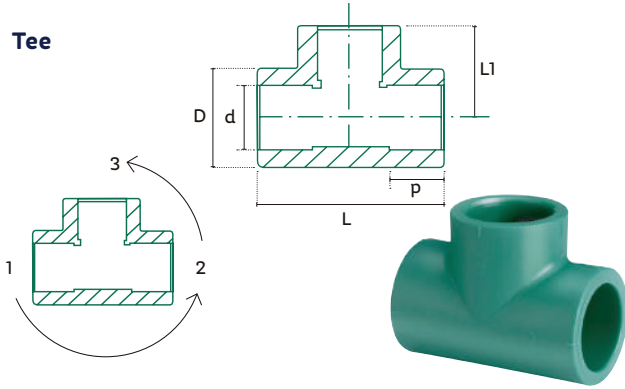
Curva 90°



| Código | d | D | p | L | Peso |
|--------|----|----|----|------|------|
| 200085 | 20 | 31 | 16 | 50.0 | 26 |
| 200086 | 25 | 47 | 18 | 62.5 | 38 |
| 200087 | 32 | 43 | 20 | 83.0 | 66 |

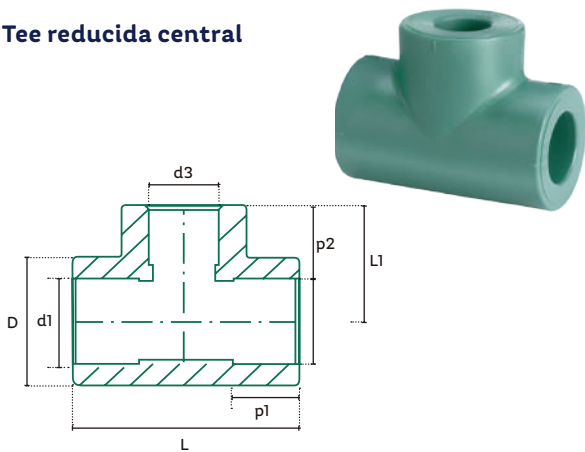
Para leer los diámetros de las Tees Tuboplus, sigue esta secuencia: 1) Extremo de diámetro mayor 2) Extremo 3) Centro

Tee



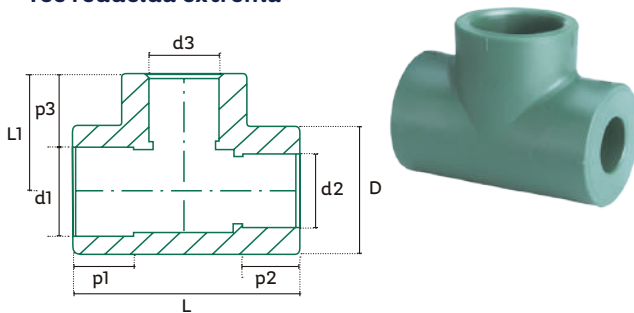
| Código | d | D | p | L | L1 | Peso |
|--------|-----|-----|----|-----|----|------|
| 200178 | 20 | 29 | 16 | 54 | 27 | 23 |
| 200179 | 25 | 35 | 18 | 63 | 32 | 32 |
| 200180 | 32 | 43 | 20 | 75 | 39 | 55 |
| 200181 | 40 | 53 | 22 | 85 | 43 | 96 |
| 200182 | 50 | 65 | 26 | 102 | 51 | 172 |
| 200183 | 63 | 82 | 30 | 122 | 60 | 318 |
| 200165 | 75 | 100 | 30 | 140 | 70 | 568 |
| 200184 | 90 | 122 | 33 | 158 | 75 | 920 |
| 200164 | 110 | 145 | 41 | 195 | 98 | 1387 |

Tee reducida central



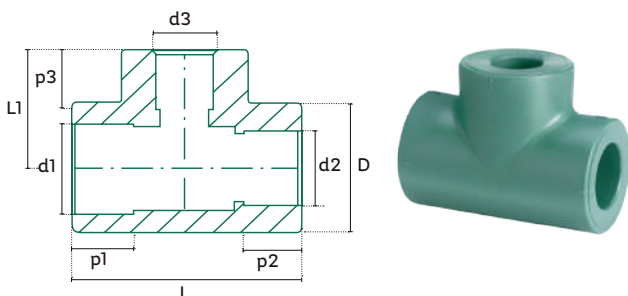
| Código | d1 | d2 | d3 | D | P1 | P2 | L | L1 | Peso | Correspondencia en pulgadas |
|--------|----|----|----|-----|----|----|-----|----|------|-----------------------------|
| 200185 | 25 | 25 | 20 | 35 | 18 | 16 | 63 | 32 | 35 | 3/4 x 3/4 x 1/2 |
| 200186 | 32 | 32 | 20 | 43 | 20 | 16 | 75 | 39 | 63 | 1 x 1 x 1/2 |
| 200187 | 32 | 32 | 25 | 43 | 20 | 18 | 75 | 39 | 61 | 1 x 1 x 3/4 |
| 200188 | 40 | 40 | 25 | 53 | 22 | 18 | 85 | 43 | 114 | 1 1/4 x 1 1/4 x 3/4 |
| 200189 | 40 | 40 | 32 | 53 | 22 | 20 | 85 | 43 | 105 | 1 1/4 x 1 1/4 x 1 |
| 200190 | 50 | 50 | 32 | 65 | 26 | 20 | 102 | 51 | 201 | 1 1/2 x 1 1/2 x 1 |
| 200191 | 50 | 50 | 40 | 65 | 26 | 22 | 102 | 51 | 193 | 1 1/2 x 1 1/2 x 1 1/4 |
| 200192 | 63 | 63 | 40 | 82 | 30 | 22 | 122 | 60 | 373 | 2 x 2 x 1 1/4 |
| 200193 | 63 | 63 | 50 | 82 | 30 | 26 | 122 | 60 | 357 | 2 x 2 x 1 1/2 |
| 200194 | 75 | 75 | 50 | 100 | 30 | 26 | 140 | 70 | 428 | 2 1/2 x 2 1/2 x 1 1/2 |
| 200195 | 75 | 75 | 63 | 100 | 30 | 30 | 140 | 70 | 492 | 2 1/2 x 2 1/2 x 2 |
| 200196 | 90 | 90 | 63 | 122 | 33 | 30 | 158 | 75 | 692 | 3 x 3 x 2 |
| 200197 | 90 | 90 | 75 | 122 | 33 | 30 | 158 | 75 | 838 | 3 x 3 x 2 1/2 |

Tee reducida extrema



| Código | d1 | d2 | d3 | D | p1 | p2 | p3 | L | L1 | Peso | Correspondencia en pulgadas |
|--------|----|----|----|----|----|----|----|----|----|------|-----------------------------|
| 200198 | 25 | 20 | 20 | 35 | 18 | 16 | 16 | 63 | 32 | 40 | 3/4 x 1/2 x 1/2 |
| 200200 | 32 | 20 | 20 | 43 | 20 | 16 | 16 | 75 | 39 | 83 | 1 x 1/2 x 1/2 |
| 200199 | 25 | 20 | 25 | 35 | 18 | 16 | 18 | 63 | 32 | 36 | 3/4 x 1/2 x 3/4 |
| 200202 | 32 | 25 | 25 | 43 | 20 | 18 | 18 | 75 | 39 | 74 | 1 x 3/4 x 3/4 |
| 200201 | 32 | 20 | 32 | 42 | 20 | 16 | 20 | 75 | 39 | 68 | 1 x 1/2 x 1 |
| 200203 | 32 | 25 | 32 | 42 | 20 | 18 | 20 | 75 | 39 | 69 | 1 x 3/4 x 1 |

Tee reducida extrema y central

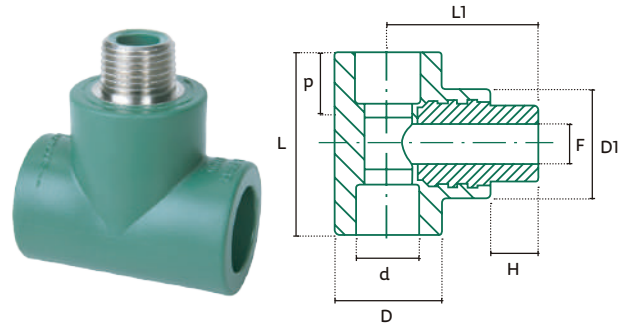


| Código | d1 | d2 | d3 | D | p1 | p2 | p3 | L | L1 | Peso | Correspondencia en pulgadas |
|--------|----|----|----|----|----|----|----|----|----|------|-----------------------------|
| 200204 | 32 | 25 | 20 | 20 | 20 | 18 | 16 | 75 | 39 | 78 | 1 x 3/4 x 1/2 |
| 200205 | 32 | 20 | 25 | 20 | 20 | 16 | 18 | 75 | 39 | 77 | 1 x 1/2 x 3/4 |

Referencias: peso de las conexiones en gramos; dimensiones en mm.

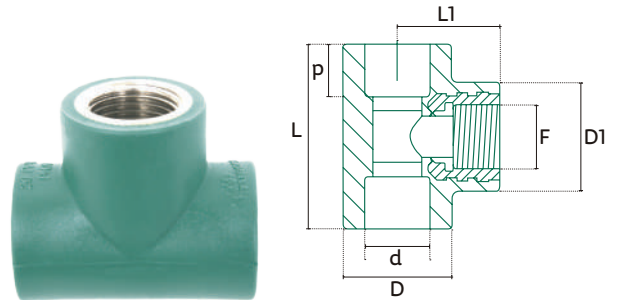
Tee con rosca central macho

| Código | d | | F | D | D1 | p | L | L1 | H | Peso |
|---------|----|---|-----|----|----|----|----|----|----|------|
| 2000172 | 20 | x | 1/2 | 29 | 36 | 16 | 54 | 45 | 12 | 107 |
| 2000173 | 25 | x | 1/2 | 33 | 43 | 18 | 63 | 51 | 12 | 121 |
| 2000174 | 25 | x | 3/4 | 33 | 43 | 18 | 63 | 54 | 15 | 124 |
| 2000176 | 32 | x | 1/2 | 42 | 54 | 20 | 74 | 57 | 12 | 161 |
| 2000177 | 32 | x | 3/4 | 42 | 54 | 20 | 74 | 60 | 15 | 204 |
| 2000175 | 32 | x | 1 | 42 | 54 | 20 | 74 | 65 | 20 | 294 |



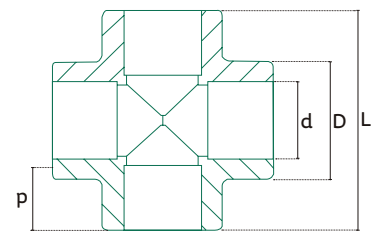
Tee con rosca central hembra

| Código | d | | F | D | D1 | p | L | L1 | Peso |
|---------|----|---|-----|----|----|----|----|----|------|
| 2000166 | 20 | x | 1/2 | 29 | 37 | 16 | 54 | 33 | 71 |
| 2000167 | 25 | x | 1/2 | 33 | 43 | 18 | 63 | 39 | 85 |
| 2000168 | 25 | x | 3/4 | 33 | 43 | 18 | 63 | 39 | 105 |
| 2000170 | 32 | x | 1/2 | 42 | 54 | 20 | 74 | 44 | 127 |
| 2000171 | 32 | x | 3/4 | 42 | 54 | 20 | 74 | 44 | 149 |
| 2000169 | 32 | x | 1 | 42 | 54 | 20 | 74 | 44 | 180 |



Cruz

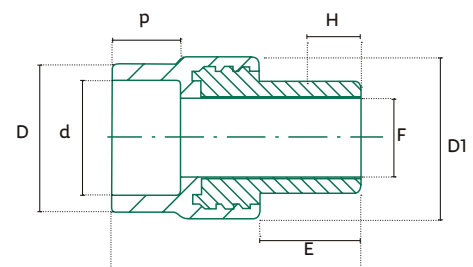
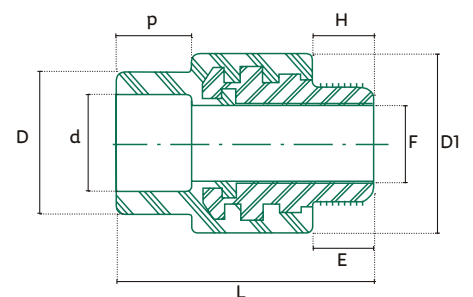
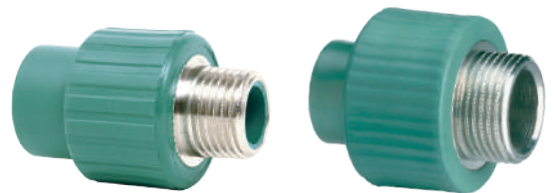
| Código | d | D | p | L | Peso |
|--------|----|----|----|----|------|
| 200082 | 20 | 27 | 16 | 54 | 20 |



Conectores rectos

Conector macho

| Código | d | | f | D | D1 | p | L | H | E | Peso |
|--------|----|---|-------|-----|-----|----|-----|----|----|------|
| 200051 | 20 | x | 1/2 | 27 | 38 | 16 | 53 | 12 | | 95 |
| 200052 | 20 | x | 3/4 | 32 | 41 | 17 | 60 | 18 | | 150 |
| 200053 | 25 | x | 1/2 | 36 | 41 | 17 | 62 | 15 | | 106 |
| 200054 | 25 | x | 3/4 | 36 | 41 | 17 | 65 | 18 | | 148 |
| 200056 | 32 | x | 3/4 | 43 | 48 | 19 | 73 | 18 | | 180 |
| 200055 | 32 | x | 1 | 43 | 48 | 19 | 75 | 20 | | 270 |
| 200057 | 40 | x | 1 1/4 | 53 | 66 | 21 | 92 | 20 | 22 | 510 |
| 200058 | 50 | x | 1 1/2 | 58 | 74 | 24 | 97 | 22 | 20 | 585 |
| 200059 | 63 | x | 2 | 78 | 85 | 29 | 102 | 20 | 22 | 744 |
| 200060 | 75 | x | 2 1/2 | 100 | 109 | 31 | 108 | 21 | 77 | 1926 |
| 200061 | 90 | x | 3 | 120 | 128 | 34 | 115 | 27 | 90 | 1503 |



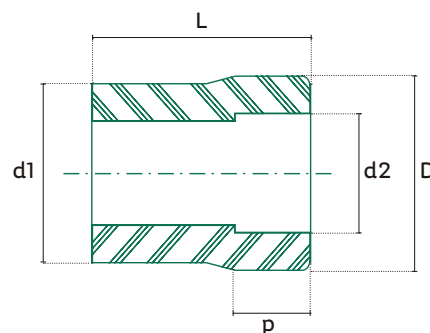
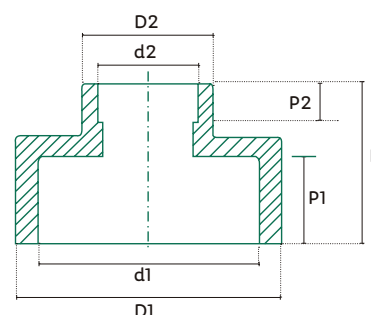
Conector hembra

| Código | d | | F | D | D1 | p | L | H | E | Peso |
|--------|----|---|-------|-----|-----|----|----|----|----|------|
| 200039 | 20 | x | 1/2 | 27 | 41 | 16 | 53 | 12 | | 59 |
| 200040 | 20 | x | 3/4 | 32 | 41 | 17 | 42 | 16 | | 96 |
| 200041 | 25 | x | 1/2 | 36 | 41 | 17 | 47 | 12 | | 69 |
| 200042 | 25 | x | 3/4 | 36 | 41 | 17 | 47 | 16 | | 94 |
| 200044 | 32 | x | 3/4 | 43 | 47 | 19 | 55 | 17 | | 125 |
| 200043 | 32 | x | 1 | 43 | 48 | 19 | 55 | 17 | | 157 |
| 200045 | 40 | x | 1 1/4 | 53 | 67 | 21 | 70 | 22 | 20 | 408 |
| 200046 | 50 | x | 1 1/2 | 64 | 73 | 25 | 75 | 24 | 20 | 481 |
| 200047 | 63 | x | 2 | 78 | 85 | 29 | 80 | 24 | 20 | 613 |
| 200048 | 75 | x | 2 1/2 | 100 | 109 | 31 | 84 | 22 | 82 | 945 |
| 200049 | 90 | x | 3 | 120 | 128 | 34 | 91 | 25 | 95 | 1204 |



Reducción

| Código | d1 | d2 | D | p | L | Peso |
|--------|----|----|-----|----|----|------|
| 200140 | 25 | 20 | 29 | 16 | 39 | 11 |
| 200141 | 32 | 20 | 29 | 18 | 44 | 21 |
| 200142 | 32 | 25 | 35 | 18 | 46 | 18 |
| 200143 | 40 | 25 | 35 | 18 | 48 | 26 |
| 200144 | 40 | 32 | 43 | 20 | 48 | 27 |
| 200145 | 50 | 32 | 43 | 20 | 56 | 41 |
| 200146 | 50 | 40 | 52 | 22 | 56 | 50 |
| 200147 | 63 | 40 | 52 | 22 | 64 | 75 |
| 200148 | 63 | 50 | 64 | 25 | 64 | 86 |
| 200149 | 75 | 50 | 64 | 22 | 68 | 119 |
| 200150 | 75 | 63 | 82 | 29 | 74 | 173 |
| 200151 | 90 | 63 | 82 | 29 | 78 | 186 |
| 200152 | 90 | 75 | 100 | 29 | 82 | 264 |

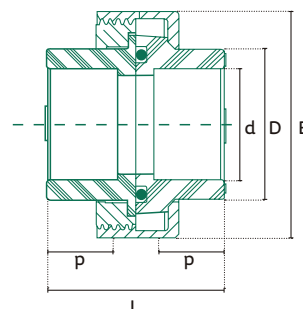
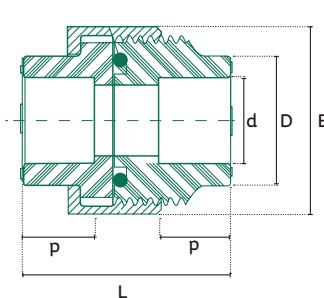


| Código | d1 | d2 | D1 | D2 | P1 | P2 | L | Peso |
|--------|-----|----|-----|-----|----|----|----|------|
| 200136 | 110 | 50 | 145 | 66 | 41 | 23 | 72 | 438 |
| 200137 | 110 | 63 | 145 | 82 | 41 | 26 | 75 | 470 |
| 200138 | 110 | 75 | 145 | 98 | 41 | 31 | 81 | 508 |
| 200139 | 110 | 90 | 145 | 119 | 41 | 38 | 88 | 562 |

Tuercas

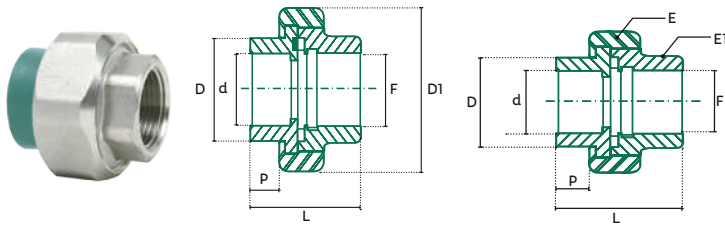
Tuerca unión

| Código | d | D | E | L | p | Peso |
|--------|----|----|----|----|----|------|
| 200232 | 20 | 29 | 44 | 46 | 16 | 93 |
| 200233 | 25 | 34 | 47 | 49 | 17 | 132 |
| 200234 | 32 | 43 | 66 | 50 | 19 | 232 |



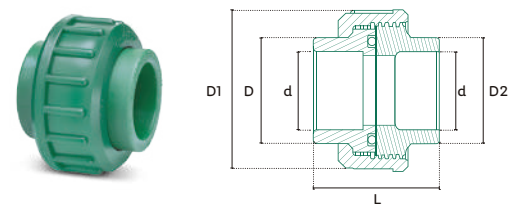
Tuerca unión mixta

| Código | d | F | D | L | D1 | E | E1 | Peso | P |
|--------|----|-------|----|----|----|----|----|------|----|
| 200235 | 20 | x 1/2 | 29 | 43 | 46 | 42 | 27 | 181 | 16 |
| 200236 | 25 | x 3/4 | 34 | 51 | 51 | 47 | 32 | 236 | 18 |
| 200237 | 32 | x 1 | 42 | 49 | 68 | 64 | 41 | 434 | 20 |



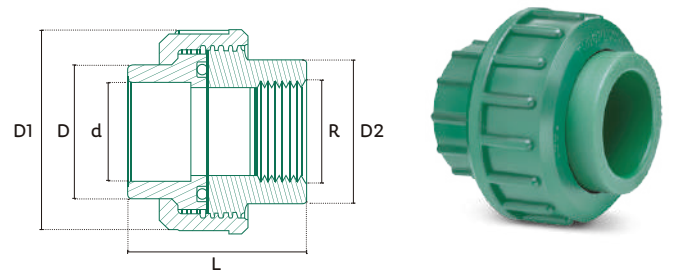
Tuerca unión plástica

| Código | d | D | D1 | D2 | L | Peso |
|--------|----|----|----|----|----|------|
| 200377 | 20 | 30 | 50 | 30 | 46 | 41 |
| 200378 | 25 | 35 | 55 | 34 | 50 | 48 |
| 200379 | 32 | 43 | 67 | 43 | 50 | 72 |



Tuerca unión plástica mixta

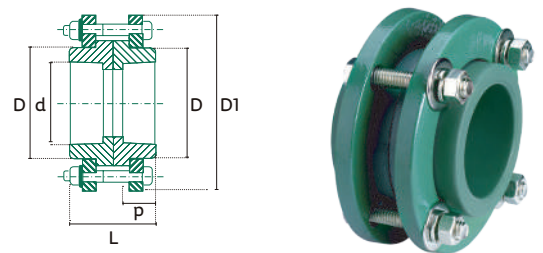
| Código | d | D | D1 | D2 | L | R | Peso |
|--------|----|------|----|----|----|----------|------|
| 200381 | 20 | x 30 | 50 | 32 | 49 | 1/2" NPT | 41 |
| 200380 | 25 | x 35 | 55 | 38 | 53 | 3/4" NPT | 50 |
| 200382 | 32 | x 43 | 67 | 46 | 59 | 1" NPT | 79 |



Uniones

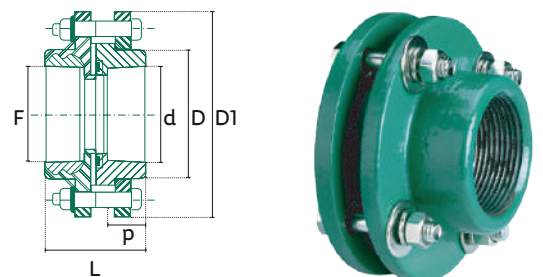
Unión bridada

| Código | d | D | p | L | D1 | Peso |
|--------|-----|-----|----|-----|-----|------|
| 200238 | 40 | 53 | 22 | 53 | 96 | 752 |
| 200239 | 50 | 67 | 25 | 60 | 108 | 780 |
| 200240 | 63 | 84 | 28 | 66 | 138 | 1079 |
| 200241 | 75 | 100 | 30 | 80 | 160 | 2800 |
| 200242 | 90 | 122 | 33 | 90 | 180 | 3200 |
| 200243 | 110 | 138 | 43 | 112 | 200 | 3800 |



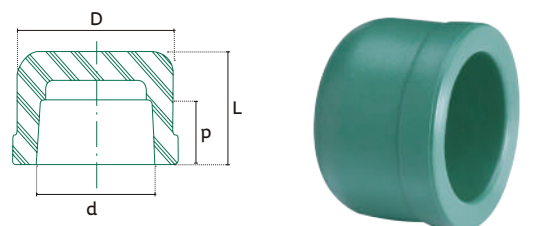
Unión bridada mixta

| Código | d | F | D | p | L | D1 | Peso |
|--------|-----|---------|-----|----|----|-----|------|
| 200249 | 40 | x 1 1/4 | 53 | 22 | 60 | 96 | 980 |
| 200244 | 50 | x 1 1/2 | 67 | 25 | 64 | 108 | 1085 |
| 200245 | 63 | x 2 | 84 | 28 | 67 | 138 | 1475 |
| 200246 | 75 | x 2 1/2 | 100 | 30 | 76 | 160 | 3400 |
| 200247 | 90 | x 3 | 122 | 33 | 78 | 180 | 4000 |
| 200248 | 110 | x 4 | 138 | 43 | 98 | 200 | 4450 |



Tapón

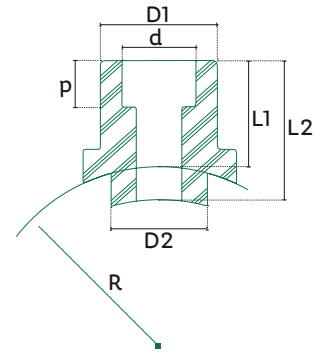
| Código | d | D | p | L | Peso |
|--------|-----|-----|----|----|------|
| 200155 | 20 | 30 | 16 | 20 | 9 |
| 200156 | 25 | 33 | 18 | 23 | 12 |
| 200157 | 32 | 42 | 20 | 26 | 20 |
| 200158 | 40 | 52 | 22 | 30 | 41 |
| 200159 | 50 | 66 | 27 | 35 | 75 |
| 200160 | 63 | 83 | 32 | 42 | 142 |
| 200161 | 75 | 100 | 29 | 60 | 250 |
| 200162 | 90 | 120 | 33 | 68 | 391 |
| 200154 | 110 | 145 | 41 | 75 | 560 |



Referencias: peso de las conexiones en gramos; dimensiones en mm.

Montura de derivación o silleta

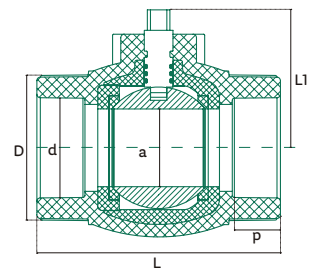
| Código | Tubo | d | D1 | D2 | p | R | L1 | L2 |
|--------|------|----|----|----|----|----|----|----|
| 200121 | 63 | 20 | 28 | 25 | 16 | 32 | 28 | 37 |
| 200122 | 75 | 20 | 28 | 25 | 16 | 38 | 28 | 39 |
| 200123 | 90 | 20 | 28 | 25 | 16 | 45 | 28 | 41 |
| 200124 | 110 | 20 | 28 | 25 | 16 | 55 | 28 | 45 |
| 200125 | 63 | 25 | 34 | 25 | 18 | 32 | 31 | 39 |
| 200126 | 75 | 25 | 34 | 25 | 18 | 38 | 31 | 42 |
| 200127 | 90 | 25 | 34 | 25 | 18 | 45 | 30 | 43 |
| 200128 | 110 | 25 | 34 | 25 | 18 | 55 | 30 | 47 |
| 200117 | 75 | 32 | 43 | 33 | 20 | 38 | 34 | 46 |
| 200118 | 90 | 32 | 43 | 33 | 20 | 45 | 34 | 48 |
| 200119 | 110 | 32 | 43 | 33 | 20 | 45 | 34 | 51 |
| 200120 | 110 | 40 | | | | | | |



Válvulas

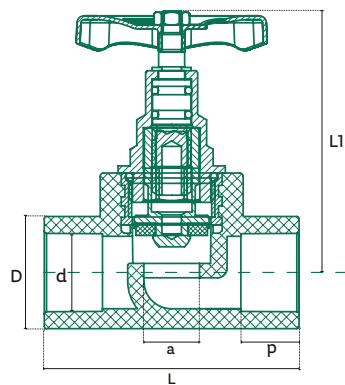
Válvulas Esfera PP-R

| Código | d | D | p | a | L | L1 | Peso |
|--------|-----|-----|----|----|-----|-----|------|
| 200360 | 20 | 29 | 18 | 15 | 77 | 45 | 0.11 |
| 200361 | 25 | 36 | 18 | 18 | 79 | 49 | 0.16 |
| 200362 | 32 | 44 | 20 | 23 | 88 | 57 | 0.25 |
| 200363 | 40 | 55 | 21 | 32 | 103 | 65 | 0.41 |
| 200364 | 50 | 69 | 23 | 38 | 115 | 80 | 0.79 |
| 200365 | 63 | 87 | 27 | 42 | 132 | 82 | 1.19 |
| 200366 | 75 | 95 | 32 | 47 | 165 | 97 | 1.78 |
| 200367 | 90 | 113 | 35 | 56 | 185 | 113 | 2.71 |
| 200368 | 110 | 138 | 41 | 68 | 220 | 123 | 4.37 |



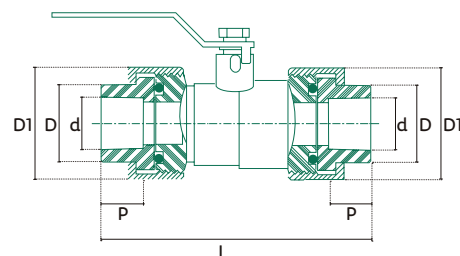
Válvulas Globo PP-R

| Código | d | D | p | a | L | L1 | Peso |
|--------|----|----|----|----|-----|-----|------|
| 200668 | 20 | 28 | 16 | 13 | 67 | 74 | 0.15 |
| 200667 | 25 | 34 | 17 | 17 | 78 | 81 | 0.24 |
| 200666 | 32 | 43 | 20 | 17 | 80 | 84 | 0.26 |
| 200372 | 40 | 52 | 22 | 21 | 95 | 95 | 0.41 |
| 200373 | 50 | 66 | 25 | 26 | 111 | 114 | 0.62 |
| 200374 | 63 | 82 | 26 | 31 | 121 | 121 | 0.86 |



Válvula Esfera desmontable

| Código | d | D | D1 | p | L | Peso |
|--------|----|----|-----|----|-----|------|
| 200252 | 20 | 26 | 42 | 12 | 82 | 300 |
| 200253 | 25 | 34 | 50 | 16 | 94 | 425 |
| 200254 | 32 | 42 | 60 | 18 | 105 | 675 |
| 200255 | 40 | 52 | 73 | 21 | 127 | 1150 |
| 200256 | 50 | 65 | 91 | 23 | 147 | 1850 |
| 200257 | 63 | 82 | 115 | 28 | 169 | 3050 |



Llave de paso sala de máquina

| Código | Milímetros (mm) | Pulgadas (") |
|--------|-----------------|--------------|
| 200342 | 20 | 1/2 |
| 200341 | 25 | 3/4 |
| 200340 | 32 | 1 |
| 200339 | 40 | 1 1/4 |
| 200338 | 50 | 1 1/2 |
| 200337 | 63 | 2 |



Válvula de Globo Cromada

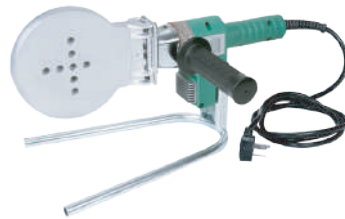
| Código | Milímetros (mm) | Pulgadas (") |
|--------|-----------------|--------------|
| 200345 | 20 | 1/2 |
| 200344 | 25 | 3/4 |
| 200343 | 32 | 1 |



Termofusoras

Termofusora 1200 W Digital

| Código | Diámetros |
|--------|------------------------|
| 200335 | Desde 20mm hasta 110mm |



Termofusora 800 W Digital

| Código | Diámetros |
|--------|-----------------------|
| 200336 | Desde 20mm hasta 63mm |



Herramientas

Tijera cortatubo

| Código | Milímetros (mm) | Pulgadas (") |
|--------|-----------------|--------------|
| 200214 | Hasta 32 | Hasta 1 |
| 200216 | Hasta 40 | Hasta 1 1/4 |
| 200215 | Hasta 63 | Hasta 2 |



Dados

| Código | Descripción | Dimensiones |
|--------|---------------------|-------------|
| 200092 | (M-H) 20 con ranura | 20 |
| 200093 | (M-H) 25 con ranura | 25 |
| 200094 | (M-H) 32 | 32 |
| 200095 | (M-H) 40 | 40 |
| 200096 | (M-H) 50 | 50 |
| 200097 | (M-H) 63 | 63 |
| 200098 | (M-H) 75 | 75 |
| 200099 | (M-H) 90 | 90 |
| 200091 | (M-H) 110 | 110 |



Dado de reparación

| Código | Descripción | Dimensiones |
|--------|--|-------------|
| 200107 | Dados para reparación de perforaciones | 8 mm |



Dados para monturas de derivación



| Código | Descripción | Dimensiones |
|--------|-------------|-------------|
| 200102 | Dados | 63 x 20/25 |
| 200103 | Dados | 75 x 20/25 |
| 200105 | Dados | 90 x 20/25 |
| 200100 | Dados | 110 x 20/25 |
| 200104 | Dados | 75 x 32 |
| 200106 | Dados | 90 x 32 |
| 200281 | Dados | 110 x 25 |
| 200101 | Dados | 110 x 32 |

Tapón de reparación



| Código | Descripción | Dimensiones |
|--------|---------------|-------------|
| 200280 | Tapón de PP-R | 8 mm |

Mecha para Montura/Perforador



| Código | Descripción | Dimensiones |
|--------|--------------------------|-------------|
| 200334 | Perforador para monturas | 20/25 |
| 200333 | Perforador para monturas | 32 |

Tapón para prueba



| Código | milímetros | Pulgadas (") |
|--------|------------|--------------|
| 200332 | 20 | 1/2 |
| 200331 | 25 | 3/4 |
| 200330 | 32 | 1 |

Conector plástico Macho



| Código | milímetros | Pulgadas (") |
|--------|------------|--------------|
| 200088 | 20 | 1/2 |
| 200089 | 25 | 3/4 |
| 200090 | 32 | 1 |

Referencias: peso de las conexiones en gramos; dimensiones en mm.