POLYETHYLENE
WASTEWATER PRESSURE
PIPES & FITTINGS

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Contents

OD-DN Conversion Tables

The Hong Kong Drainage Services Department (DSD) publishes a conversion table in PS Appendix, Clause 1.5, to ensure proper ID alignment when connecting Polyethylene pipes with other pipe materials in its pressure and drainage network.

PE pipe size is defined by its outside diameter (DN/OD for pipes and dn for fittings), whereas Ductile Iron and other pressure wastewater pipe materials are defined by their nominal Bore (DN). There are several standard OD sizes for PE pipes that are not included in the DSD conversion table, these are the common WSD water pipe sizes (DN/OD 90, 125, 180, 315). These sizes are not standard for DSD, however are sometimes used in sewer rising mains, where the engineer has to match head-loss and flow to an existing pump curve.

It should be noted that PE pipes internal dimension varies depending on the pipes wall thickness (PN / SDR Rating). The two columns on the left side of the table provide the official DSD PE OD to DN conversions, as given in DSD PS Appendix 5A, for both pressure and gravity drainage.

PE Nominal Size (DN/OD)/Nominal Outside Diameter (d_n) *(Outside diameter of PE Pipes/Fittings)*	**Equivalent Size in DN / ID** *(DSD nominated matching size DN)*
110	100
160	150
225	200
250	225
280	250
355	300
400	375
450	400
500	450
560	500
630	525
710	600
800	675
900	825
1000	900
1200	1050
1400	1200
1600	1350
1800	1650
2000	1800

Note: Larger sizes are not stipulated in Appendix 5A, but are available up to DN/OD 2800 in PN8 SDR21.

Pressure Pipes

M90SE is a black PE100 RC pipe with external twin stripes to identify the pipes application (Pressure Sewer or Stormwater) and light coloured internal layer to assist with CCTV inspection. The three elements of the pipe CCTV pipe are co-extruded to BS EN 12210-2, using PE100 RC compounds complying to BS EN 12201-1. The three elements of a CCTV pipe are the inner orange layer, identification stripes and the black pipe body. These produce a single homogeneous pipe, meaning the colour layer and stripes cannot be separated in any way once the pipe is extruded. M90SE pipe is supplied in sizes from DN100 (110mm OD) to DN 1350 (1600mm OD) using PE100 RC compounds as standard. PE100+ compounds (Non RC pipe) is only supplied if specially ordered as M90S pipe.

CCTV PIPE has an inner light orange colour layer which is 15% of the pipes wall thickness. Orange PE100 RC pipe grade material is typically used for the manufacturer of Gas pipes and it is supplied pre-coloured, ready to extrude by the compound manufacturer. DSD Appendix Clause 3.1 states compounds may not be pigmented or coloured by the pipe manufacturer. Factory pigmented compounds or using different grades or brands of PE presents a risk of incompatibility during extrusion, typically delamination of the layers, leading to structural wall failure in the pipe and ultimately premature pipe failure.

CCTV Colour layer - Because the Orange thickness is specified at 15% of the pipes wall thickness, the colour of the inner CCTV lining varies according to the diameter of the pipe. In small pipes DN100 (110 OD), the Orange colour is approx 1.0mm thick, it is more translucent against the black compound and appears lighter (more yellow) in colour. As the pipe size increases, the orange layer becomes thicker, translucency reduces, until it is bright orange. Full orange colour occurs in sizes of approximately DN300.

STRIPES are used to identify the pipes application (Pressure or Drainage, Sewer or Stormwater). The Hong Kong Drainage Services Department (DSD) uses the European colour coding system:

- Red Brown (RAL 8012) - indicates Sewerage use
- Fern Green (RAL 6025)- indicates Stormwater use
- Single stripes around the circumference of the pipe - indicate gravity drainage (non-pressure)
- Pairs of stripes around the circumference of the pipe - indicate rising main (pressure).

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Product fully complies with DSD PS

This mark is used to identify Mill-Pro products that meet the requirements of the Drainage Supplies Department PS Appendix 22.09. The use of this mark is not endorsed by the DSD and is not intended to infer approval by the DSD.

PIPE MANUFACTURING STANDARDS

All Mill-Pro pipes and fittings are manufactured in accordance with:

BS EN 12201-1 for Compounds,
BS EN 12201-2 for Pressure pipes
BS EN 12201-3 for Pressure fittings
Drainage Services Department Particular Specification Appendix 5A

Mill-Pro Pipes and fittings also comply with ISO 4427-1/2 and AS/NZS 4130 for pipe, AS/NZS 4131 for PE Compounds and AS/NZS 4129 for fittings, although not marked as such.

PIPE COMPOUNDS

M90S / M100S pipes are manufactured from a PE100+ association approved compound providing 1000 hrs slow crack growth performance. Since 2007 PE100+ compounds have been progressively superseded by PE100 RC (Resistant to Crack) compounds, which provide far superior performance and life. Mill-Pro only supplies M90S / M100S pipes by special order.

M90SE / M100SE Extreme pipes are manufactured ONLY using PE100 RC compounds for the pipe body, the CCTV layer and the stripes. PE100 RC compounds provide approximately 8 x greater slow crack growth resistance when compared to traditional PE100+ Compounds, for a negligible extra cost. All pipes supplied by Mill-Pro in Hong Kong are PE100 RC (M90SE / M100SE).

PE100 RC (Resistant to Crack) sometimes known as Extreme Stress Crack Resistant (ESCR) or High-Stress Crack Resistant (HSCR) compounds, are defined in the German publicly available standard: PAS 1075:2009-04. PE100 RC compounds are designed to provide lifelong resistance (>100 years) to traditional Slow Crack Growth (SCG) failures caused by rock impingement and point loading stress.

Designed for applications all commonly found in Hong Kong: Where sand bedding around the pipe is not used, where backfill material is ungraded and typically contains broken concrete or where secondary excavation (repeated excavation alongside the PE pipe, to access other services in close proximity) leaves the PE pipes without the required bedding around the pipe to prevent rocks or concrete point loading on the pipe surface.

List of manufacturers of PE100 RC compounds – *updated Q2 2021*

Below is the list of approved PE100 RC compounds produced by PE100 Plus manufacturers worldwide. If the proposed compound supplier is not on this list, the compound is NOT an approved PE100 RC compound. To comply with the DSD PS Appendix the compound supplier must be on this list.

Manufacturer	Compound Model / Datasheet	Colour	RAL Certification	Density (Compound)	MFI (190°/5.0kg)	OIT
Borealis	Boresafe HE3490LS-H	Black	RAL 9011	959 kg/m^3	0.25g/10min	>20 min@200°C
Borealis	Boresafe HE3492LS-H	Orange	RAL 2003	951 kg/m^3	0.27g/10min	>20 min@200°C
Borealis	Boresafe HE3497LS-H	Red Brown	RAL 8012	956 kg/m^3	0.3g/10min	-
Borouge	Boresafe HE3490LS-H	Black	RAL 9011	960 kg/m^3	0.25g/10min	≥20 min@210°C
Borouge	Boresafe HE3492LS-H	Orange	RAL 2003	951 kg/m^3	0.25g/10min	>20 min@200°C
Sabic	P6006RC Black	Black	-	959 kg/m^3	0.23g/10min	≥30 min@210°C
Total	XSC20 B	Black	-	958 kg/m^3	0.3g/10min	≥30 min@210°C
Total	XSC50 Orange	Orange	-	950 kg/m^3	0.3g/10min	≥30 min@210°C
LyondellBasell	Hostalen CRP100 RESIST CR Black	Black	RAL 9004	958 kg/m^3	0.23g/10min	≥30 min@210°C
LyondellBasell	Hostalen CRP100 RESIST CR Orange	Orange	RAL 1033	950 kg/m^3	0.27g/10min	≥30 min@210°C
LyondellBasell	Hostalen CRP100 RESIST S Brown	Red Brown	RAL 8023	958 kg/m^3	0.23g/10min	≥20 min@210°C
Ineos	Eltex TUB 121N6000	Black	-	959 kg/m^3	0.3g/10min	≥20 min@210°C
Ineos	Eltex TUB 125N6000	Orange	-	952 kg/m^3	0.3g/10min	≥20 min@210°C
Qenos	Alkadyne HCR193B	Black	-	959 kg/m^3	0.2g/10min	≥30 min@210°C

Mill-Pro uses only 100% virgin, Pre-Pigmented and Pre-Compounded raw materials, complying to BS EN 12201-1 for its pipe and fitting products.

Mill-Pro does not manufacture PE 80 pipe or use any recycled materials in the manufacture of any of our products, although our products are 100% end of life recyclable.

Mill-Pro E (Extreme) pipes are manufactured using only 100% virgin PE100 RC compounds. CCTV inner colour, black pipe body and all striping materials are all pre pigmented, certified PE100 RC compounds.

*Some manufacturers use non-compliant linear low-density striping compounds during pipe manufacture. These are not PE100 RC compounds. Incompatibility with the PE100 RC and couplers can lead to leaking along the stripe path when the pipes are joined using electrofusion couplers. Refer **here** for more information on these risks.*

M90SE Brown Twin Stripe / PN10 / SDR17 / Sewer pipes

M90SE Pipe – Two colour PE100 RC pipes, manufactured to BS EN 12201-2, with a 15% inner CCTV inspection assistance layer. Pairs of Red Brown striping, indicating a pressure Sewer application. Pipes are extruded using the same PE100 RC base compounds for the pipe body, inner CCTV colour and indication striping. This ensures a single homogeneous pipe is extruded, eliminating electrofusion leak issues associated with using non PE100 RC striping compounds.

M90S Pipes – Manufactured from PE100+ compound (Not using PE100 RC) are only manufactured by special order to the same dimensions given below.

Indication Striping – Pairs of PE100 RC Red Brown (RAL 8012) coloured stripes, indicating pressure Sewer.

Product code	DSD Equivalent Size	Nominal Outside Diameter (dn)	Mean Outside Diameter d_{em}		Maximum Out-of-roundness	SDR 17			Availability in Hong Kong
						Wall (e_m)	ID	Kg/m	
	DN	DN/OD	Min.	Max.	(ovality)	Mean	Mean	Mean	
P1Q54.102.110	DN 100	110	110	110.7	2.2	7.0	96.4	2.2	8-12 Weeks
P1Q54.102.125	Non Std Size	125	125	125.8	2.5	7.9	109.7	2.8	8-12 Weeks
P1Q54.102.140	Non Std Size	140	140	140.9	2.8	8.8	122.9	3.5	8-12 Weeks
P1Q54.102.160	DN 150	160	160	161.0	3.2	10.1	140.4	4.6	8-12 Weeks
P1Q54.102.180	Non Std Size	180	180	181.1	3.6	11.3	158.0	4.6	8-12 Weeks
P1Q54.102.200	Non Std Size	200	200	201.2	4.0	12.6	175.5	7.1	8-12 Weeks
P1Q54.102.225	DN 200	225	225	226.4	4.5	14.2	197.4	9.0	8-12 Weeks
P1Q54.102.250	DN 225	250	250	251.5	5.0	15.6	219.6	11.1	8-12 Weeks
P1Q54.102.280	DN 250	280	280	281.7	9.8	17.5	245.9	13.9	8-12 Weeks
P1Q54.102.315	Non Std Size	315	315	316.9	11.1	19.7	276.6	17.6	8-12 Weeks
P1Q54.102.355	DN 300	355	355	357.2	12.5	22.3	311.6	22.4	8-12 Weeks
P1Q54.102.400	DN 375	400	400	402.4	14.0	25.0	351.3	28.3	8-12 Weeks
P1Q54.102.450	DN 400	450	450	452.7	15.6	28.1	395.2	35.8	8-12 Weeks
P1Q54.102.500	DN 450	500	500	503.0	17.5	31.2	439.2	44.2	8-12 Weeks
P1Q54.102.560	DN 500	560	560	563.4	19.6	35.0	491.8	55.5	8-12 Weeks
P1Q54.102.630	DN 525	630	630	633.8	22.1	39.3	553.4	70.1	8-12 Weeks
P1Q54.102.710	DN 600	710	710	716.4	24.9	44.3	624.6	89.3	8-12 Weeks
P1Q54.102.800	DN 675	800	800	807.2	28.0	49.9	703.9	113.2	8-12 Weeks
P1Q54.102.900	DN 825	900	900	908.1	31.5	56.3	791.6	143.7	Contact us
P1Q54.102.1000	DN 900	1000	1000	1009.0	35.0	62.4	879.8	177.1	Contact us
P1Q54.102.1200	DN 1050	1200	1200	1210.8	42.0	74.2	1057.1	252.8	Contact us
P1Q54.102.1400	DN 1200	1400	1400	1412.6	49.0	86.6	1233.2	344.3	Contact us
P1Q54.102.1600	DN 1350	1600	1600	1614.4	56.0	98.9	1409.4	449.6	Contact us

Note:

1. Non Std Size are sizes that are not listed in the *DSD Appendix 5A conversion tables*. These sizes are typically only required when matching the PE pipe to an existing pump curve. These sizes are not stocked and subject to Minimum Order Quantities (Approx 400m), *Contact us* for more information.

2. Pressure Sewer pipes are not alwasy stocked, orders maybe subject to Minimum Order Quantities (approx 400m), *Contact us* for more information.

2. All pipes listed with product codes are supplied in straight 5.80m lengths, Contact us for custom lengths up to 11.8m.

Product fully complies with DSD PS

M90SE Green Twin Stripe / PN10 / SDR17 / Stormwater pipe

M90SE Pipe – Two-colour PE100 RC pipes, manufactured to BS EN 12201-2, with a 15% inner CCTV inspection assistance layer. Pairs of Fern green striping, indicating a pressure Stormwater application. Pipes are extruded using the same PE100 RC base compounds for the pipe body, inner CCTV colour and indication striping. This ensures a single homogeneous pipe is extruded, eliminating electrofusion leak issues associated with using non-PE100 RC striping compounds.

M90S Pipes – Manufactured from PE100+ compound (Not using PE100 RC) are only manufactured by special order to the same dimensions given below.

Indication Striping – Pairs of PE100 RC Fern Green (RAL 6025) coloured stripes indicating pressure Stormwater.

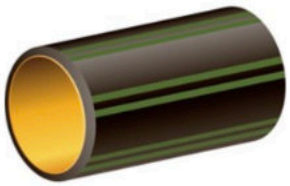
Product code	DSD Equivalent Size	Nominal Outside Diameter (dn)	Mean Outside Diameter d_{em}		Maximum Out-of-roundness	SDR 17			Availability in Hong Kong
						Wall (e_m)	ID	Kg/m	
	DN	DN/OD	Min.	Max.	(ovality)	Mean	Mean	Mean	
P1QG4.102.110	DN 100	110	110	110.7	2.2	7.0	96.4	2.2	8-12 Weeks
P1QG4.102.125	Non Std Size	125	125	125.8	2.5	7.9	109.7	2.8	8-12 Weeks
P1QG4.102.140	Non Std Size	140	140	140.9	2.8	8.8	122.9	3.5	8-12 Weeks
P1QG4.102.160	DN 150	160	160	161.0	3.2	10.1	140.4	4.6	8-12 Weeks
P1QG4.102.180	Non Std Size	180	180	181.1	3.6	11.3	158.0	4.6	8-12 Weeks
P1QG4.102.200	Non Std Size	200	200	201.2	4.0	12.6	175.5	7.1	8-12 Weeks
P1QG4.102.225	DN 200	225	225	226.4	4.5	14.2	197.4	9.0	8-12 Weeks
P1QG4.102.250	DN 225	250	250	251.5	5.0	15.6	219.6	11.1	8-12 Weeks
P1QG4.102.280	DN 250	280	280	281.7	9.8	17.5	245.9	13.9	8-12 Weeks
P1QG4.102.315	Non Std Size	315	315	316.9	11.1	19.7	276.6	17.6	8-12 Weeks
P1QG4.102.355	DN 300	355	355	357.2	12.5	22.3	311.6	22.4	8-12 Weeks
P1QG4.102.400	DN 375	400	400	402.4	14.0	25.0	351.3	28.3	8-12 Weeks
P1QG4.102.450	DN 400	450	450	452.7	15.6	28.1	395.2	35.8	8-12 Weeks
P1QG4.102.500	DN 450	500	500	503.0	17.5	31.2	439.2	44.2	8-12 Weeks
P1QG4.102.560	DN 500	560	560	563.4	19.6	35.0	491.8	55.5	8-12 Weeks
P1QG4.102.630	DN 525	630	630	633.8	22.1	39.3	553.4	70.1	8-12 Weeks
P1QG4.102.710	DN 600	710	710	716.4	24.9	44.3	624.6	89.3	8-12 Weeks
P1QG4.102.800	DN 675	800	800	807.2	28.0	49.9	703.9	113.2	8-12 Weeks
P1QG4.102.900	DN 825	900	900	908.1	31.5	56.3	791.6	143.7	Contact us
P1QG4.102.1000	DN 900	1000	1000	1009.0	35.0	62.4	879.8	177.1	Contact us
P1QG4.102.1200	DN 1050	1200	1200	1210.8	42.0	74.2	1057.1	252.8	Contact us
P1QG4.102.1400	DN 1200	1400	1400	1412.6	49.0	86.6	1233.2	344.3	Contact us
P1QG4.102.1600	DN 1350	1600	1600	1614.4	56.0	98.9	1409.4	449.6	Contact us

Note:

1. Non Std Size are sizes that are not listed in the *DSD Appendix 5A conversion tables*. These sizes are typically only required when matching the PE pipe to an existing pump curve. These sizes are not stocked and subject to Minimum Order Quantities (Approx 400m), *Contact us* for more information.

2. Pressure Stormwater pipes are not common, so orders are subject to Minimum Order Quantities (approx 400m), Contact us for more information.

3. All pipes listed with product codes are supplied in straight 5.80m lengths, Contact us for custom lengths up to 11.8m.



Product fully complies with DSD PS

M90SE Green / Brown Twin Stripe / Other PN / SDR Ratings

M90ES - PE100 RC Pipes available in other sizes and pressure ratings (Green or Brown Stripe)

Below is a wider range of M90ES pipe sizes and pressure ratings available from PN8 to PN25 that also comply with DSD Appendix 5A (for PN10 sizes see tables above) These pipes are manufactured using PE100 RC compounds as standard unless ordered otherwise.

In addition, non-standard pipe sizes of any OD and SDR within the ranges given below, can be manufactured for relining & rehabilitation work, contact us for more information on the supply of non-standard size relining pipes.

Stiffness Rating PE100					SN6			SN12			SN24			SN50			SN100			SN195			SN381		
Pressure Rating PE100					PN6.4			PN8			PN10			PN12.5			PN16			PN20			PN25		
Nominal Diameter		Diameter d_{em}		Maximum Out-of-roundness	SDR 26			SDR 21			SDR 17			SDR 13.6			SDR 11			SDR 9			SDR 7.4		
					e_m	d_i	Kg/m	e_m	d_i	Kg/m	e_m	d_i	Kg/m	e_m	d_i	Kg/m	e_m	d_i	Kg/m	e_m	d_i	Kg/m	e_m	d_i	Kg/m
DN	dn	Min.	Max.	(ovality)	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
90	90	90	90.6	1.8	3.8	82.8	1.0	4.6	81.1	1.2	5.8	78.8	1.5	7.1	76.1	1.8	8.7	72.9	2.1	10.7	68.9	2.6	13.0	64.3	3.0
100	110	110	110.7	2.2	4.6	101.2	1.5	5.7	99.1	1.8	7.0	96.4	2.2	8.6	93.2	2.6	10.6	89.3	3.2	13.0	84.4	3.8	16.0	78.5	4.5
-	125	125	125.8	2.5	5.1	115.2	1.8	6.4	112.7	2.3	7.9	109.7	2.8	9.8	105.9	3.4	12.1	101.3	4.1	14.8	95.9	4.9	18.1	89.3	5.8
-	140	140	140.9	2.8	5.8	129.0	2.3	7.1	126.3	2.9	8.8	122.9	3.5	10.9	118.7	4.3	13.4	113.7	5.1	16.6	107.4	6.2	20.3	100.0	7.3
150	160	160	161.0	3.2	6.6	147.3	3.1	8.2	144.2	3.7	10.1	140.4	4.6	12.5	135.6	5.6	15.4	129.7	6.7	18.9	122.8	8.0	23.1	114.4	9.5
-	180	180	181.1	3.6	7.3	166.0	3.8	9.1	162.4	4.7	11.3	158.0	5.8	14.1	152.5	7.1	17.3	146.0	8.5	21.2	138.2	10.2	25.9	128.8	12.1
-	200	200	201.2	4.0	8.2	184.3	4.7	10.2	180.3	5.8	12.6	175.5	7.1	15.5	169.6	8.6	19.2	162.2	10.5	23.6	153.4	12.6	28.8	143.1	14.9
200	225	225	226.4	4.5	9.1	207.5	5.9	11.4	202.9	7.4	14.2	197.4	9.0	17.5	190.7	11.0	21.6	182.5	13.3	26.5	172.8	15.9	32.4	160.9	18.9
225	250	250	251.5	5.0	10.2	230.5	7.4	12.6	225.7	9.0	15.6	219.6	11.1	19.4	212.0	13.5	23.9	203.0	16.3	29.4	192.1	19.6	36.0	178.8	23.3
250	280	280	281.7	9.8	11.3	258.3	9.2	14.2	252.6	11.4	17.5	245.9	13.9	21.7	237.5	16.9	26.8	227.4	20.5	33.0	215.0	24.6	40.3	200.3	29.2
-	315	315	316.9	11.1	12.8	290.4	11.7	15.8	284.4	14.3	19.7	276.6	17.6	24.5	267.1	21.5	30.1	255.8	25.9	37.1	241.9	31.1	45.2	225.6	36.9
300	355	355	357.2	12.5	14.4	327.4	14.8	17.8	320.5	18.1	22.3	311.6	22.4	27.5	301.1	27.2	33.9	288.3	32.9	41.7	272.8	39.5	51.0	254.1	46.9
375	400	400	402.4	14.0	16.2	368.9	18.7	20.2	360.9	23.1	25.0	351.3	28.3	31.0	339.3	34.5	38.2	324.8	41.8	47.0	307.2	50.2	57.4	286.4	59.5
400	450	450	452.7	15.6	18.2	415.1	23.7	22.7	406.1	29.3	28.1	395.2	35.8	34.9	381.7	43.7	43.0	365.4	52.9	52.8	345.8	63.4	64.7	322.1	75.4
450	500	500	503.0	17.5	20.2	461.2	29.2	25.2	451.2	36.1	31.2	439.2	44.2	38.7	424.1	54.0	47.8	406.0	65.3	58.7	384.2	78.3	-	-	-
500	560	560	563.4	19.6	22.6	516.6	36.6	28.1	505.5	45.2	35.0	491.8	55.5	43.4	475.0	67.7	53.4	454.9	81.8	65.7	430.3	98.2	-	-	-
525	630	630	633.8	22.1	25.4	581.1	46.4	31.6	568.8	57.1	39.3	553.4	70.1	48.7	534.5	85.6	60.2	511.6	103.7	73.9	484.1	124.3	-	-	-
600	710	710	716.4	24.9	28.7	655.9	59.1	35.7	641.9	72.8	44.3	624.6	89.3	54.9	603.4	108.9	67.8	577.6	131.9	83.35	546.5	158.2	-	-	-
700	800	800	807.2	28.0	32.2	739.2	74.9	40.1	723.4	92.3	49.9	703.9	113.2	61.8	680.0	138.2	76.3	651	167.3	93.85	615.9	200.8	-	-	-
800	900	900	908.1	31.5	36.2	831.7	94.7	45.1	813.9	116.8	56.3	791.6	143.7	69.6	764.85	175.0	85.85	732.35	211.7	-	-	-	-	-	-
900	1000	1000	1009.0	35.0	40.2	924.1	116.8	50.2	904.2	144.3	62.4	879.8	177.1	76.2	852.1	213.2	94.8	814.9	259.9	-	-	-	-	-	-
1000	1200	1200	1210.8	42.0	48.3	1108.9	168.3	60.2	1085.1	207.6	74.2	1057.1	252.8	92.7	1020	310.9	-	-	-	-	-	-	-	-	-
1200	1400	1400	1412.6	49.0	56.0	1294.4	227.7	70.1	1266.2	282.1	86.6	1233.2	344.3	108.1	1190.1	423.0	-	-	-	-	-	-	-	-	-
1400	1600	1600	1614.4	56.0	64.5	1478.3	299.7	80.1	1447.1	368.5	98.9	1409.4	449.6	123.55	1360.1	552.5	-	-	-	-	-	-	-	-	-
1600	1800	1800	1811.3	63.0	72.8	1660.2	380.0	89.5	1626.7	462.9	111.2	1583.4	567.7	-	-	-	-	-	-	-	-	-	-	-	-

Product fully complies with DSD PS

Friatec Electrofusion Couplers

Mill-Pro partners with FRIATEC, part of the Aliaxis Group, to offer the world's leading electrofusion (EF) couplers and fittings.

Founded in 1863, Friatec developed the world's first electrofusion couplers in 1979 for joining PE gas pipes. Friatec remains the world leader in electro-fusion fittings for water, wastewater and gas.

The Frialen product range has an outstanding reputation in Hong Kong since 2006. Friatec couplers have the lowest failures rates, both short and long term when compared to any other coupler available in Hong Kong, by a significant margin. A recent project in Hong Kong installed ~2000pcs of 400 OD couplers, less than 0.2% of the couplers failed during testing (failures due to either product or installation problems), this compares with our competitor's failure rates of up to 20%. These reliability rates save contractors significant cost.

From their world-class automated manufacturing facilities in Mannheim Germany, Friatec offers the worlds largest range of electrofusion fittings, tools, accessories and welding machines to provide a complete electro-fusion solution for joining PE Pipes and fittings.

A visual pop up fusion indicator confirms weld pressure and traceability bar codes are included for recording batch GIS and BIM records for each coupler installed. All couplers are sealed in individual plastic bags for protection on site.

Note: The pipe or spigot ends and the coupler must be prepared in accordance with the *general installation instructions* using a spigot *mechanical peeler*, *90% isopropyl alcohol wipes* and we recommend using the *Friamat fusion control unit* for logging the full range of weld data available.

Frialen UB11 Electrofusion couplers are made in Germany.

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

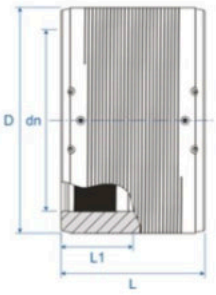
Product fully complies with **DSD PS**

This mark is used to identify Mill-Pro products that meet the requirements of the Drainage Supplies Department PS Appendix 22.09. The use of this mark is not endorsed by the DSD and is not intended to infer approval by the DSD.

Black Couplers / AM / PN10 / SDR17

Friatec's Frialen PE100 AM black couplers are suitable for fusing pipes from SDR17 to SDR26. AM couplers feature large insertion depth for pipe stability during fusion (no holding clamps required) and extra-wide fusion and cold zones for maximum melt containment. Exposed heating coils for direct heat transmission to the pipe and a small annular gap to ensure optimum joining pressure in the fusion zone.

Product Code	dn	D	L	L1	Availability in Hong Kong
P3314.200.110	110	130	160	80	Ex-Stock
P3314.200.125	125	146	160	80	8-12 Weeks
P3314.200.160	160	184	180	90	Ex-Stock
P3314.200.180	180	207	180	90	8-12 Weeks
P3314.200.200	200	236	180	90	Ex-Stock
P3314.200.225	225	263	200	100	Ex-Stock
P3314.200.250	250	282	220	110	Ex-Stock
P3314.200.280	280	316	220	110	Ex-Stock



Product fully complies with DSD PS

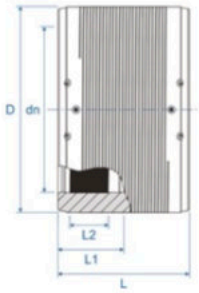
Black Couplers / UB / PN10 / SDR17

Friatec's Frialen PE100 UB17 black couplers are suitable for fusing pipes from SDR17 to SDR26. UB couplers feature large insertion depth for pipe stability during fusion (no holding clamps required) and extra-wide fusion and cold zones for maximum melt containment. Exposed heating coils for direct heat transmission to the pipe and a small annular gap to ensure optimum joining pressure in the fusion zone.

UB17 coupler sizes dn ≥ 560 include a barcode PREHEAT function to warm the pipe and coupler to help re-round oval pipes and close the fusion gap prior to welding. From dn ≥ 355 UB17's feature, permanent external reinforcement wound into the body of the coupler to ensure the coupler does not expand during the fusing process.

Note: Couplers that are not injection moulded and do not have external reinforcement are likely to expand during fusion. Coupler expansion increases the gap between the pipe and coupler, which reduces weld pressure in the joint. This leads to slow crack growth failure through the weld plane. Slow Crack Growth, by its name, is slow and occurs over time (1-5 years), well beyond the joint successfully passing hydrostatic testing on site. DSD Appendix 5A Clause 5.6.13, requires non-injection moulded couplers to have a suitable form of external reinforcement to prevent expansion applied to the coupler as parts of it's manufacture.

Product Code	dn	D	L	L1	L2	Availability in Hong Kong
P3314.100.315	315	356	280	140	72	Ex-Stock
P3314.100.355	355	400	290	145	70	Ex-Stock
P3314.100.400	400	450	300	150	78	Ex-Stock
P3314.100.450	450	506	320	160	87	8-12 Weeks
P3314.100.500	500	562	350	175	85	Ex-Stock
P3314.098.560	560	630	380	190	77	Ex-Stock
P3314.098.630	630	710	420	210	101	Ex-Stock
P3314.098.710	710	800	442	221	112	Ex-Stock
P3314.098.800	800	900	500	250	137	Ex-Stock
P3314.098.900	900	1024	500	250	110	8-12 Weeks
P3314.098.1000	1000	1130	610	305	129	8-12 Weeks
P3314.098.1200	1200	1356	670	335	155	8-12 Weeks



Product fully complies with DSD PS

Black Couplers / UB / PN16 / SDR11

Friatec's Frialen PE100 UB11 black couplers are suitable for fusing pipes from SDR11 to SDR17.6. UB couplers feature large insertion depth for pipe stability during fusion (no holding clamps required) and extra-wide fusion and cold zones for maximum melt containment. Exposed heating coils for direct heat transmission to the pipe and a small annular gap to ensure optimum joining pressure in the fusion zone.

UB11 coupler sizes dn ≥ 400 include a barcode PREHEAT function to warm the pipe and coupler to help re-round oval pipes and close the fusion gap prior to welding and permanent external reinforcement wound into the body of the coupler to ensure the coupler does not expand during the fusing process.

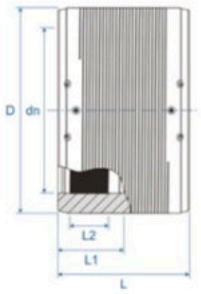
Note: *Couplers that are not injection moulded and do not have external reinforcement are likely to expand during fusion. Coupler expansion increases the gap between the pipe and coupler, which reduces weld pressure in the joint. This leads to slow crack growth failure through the weld plane. Slow Crack Growth, by its name, is slow and occurs over time (1-5 years), well beyond the joint successfully passing hydrostatic testing on site. DSD Appendix 5A Clause 5.6.13, requires non-injection moulded couplers to have a suitable form of external reinforcement to prevent expansion applied to the coupler as parts of it's manufacture.*

A visual pop up fusion indicator confirms weld pressure and traceability bar codes are included for recording batch GIS and BIM records for each coupler installed. All couplers are sealed in individual plastic bags for protection on site.

Note: The pipe or spigot ends and the coupler must be prepared in accordance with the *general installation instructions* using a *spigot mechanical peeler*, 90% *isopropyl alcohol wipes* and we recommend using the *Friamat fusion control unit* for logging the full range of weld data available.

Frialen UB11 Electrofusion couplers are made in Germany.

Product Code	dn	D	L	L1	L2	Availability in Hong Kong
P3316.100.180	180	220	210	105	63	8-12 Weeks
P3316.100.200	200	247	220	110	63	8-12 Weeks
P3316.100.225	225	277	236	118	71	8-12 Weeks
P3316.100.250	250	315	246	123	68	8-12 Weeks
P3316.100.280	280	347	285	142	56	Ex-Stock
P3316.100.315	315	390	300	150	78	Ex-Stock
P3316.100.355	355	445	300	150	68	Ex-Stock
P3316.098.400	400	500	320	160	90	Ex-Stock
P3316.098.450	450	560	340	170	79	Ex-Stock
P3316.098.500	500	630	360	180	80	8-12 Weeks
P3316.098.560	560	715	380	190	95	8-12 Weeks
P3316.098.630	630	810	420	210	101	8-12 Weeks
P3316.098.710	710	900	442	210	108	8-12 Weeks
P3316.098.800	800	1000	500	250	136	8-12 Weeks
P3316.098.900	900	1130	600	300	165	8-12 Weeks
P3316.098.1000	1000	1200	680	340	171	8-12 Weeks



Product fully complies with DSD PS

MB / UB / PN20 / SDR9

The Frialen PE100 SDR9 black coupler range is made up of a combination of MB and UB style couplers.

MB & UB couplers feature large insertion depths for pipe stability during fusion (no holding clamps required) and extra-wide fusion and cold zones for maximum melt containment. All couplers feature exposed heating coils for direct heat transmission to the pipe and a machined internal bore to ensure optimum joining pressure in the fusion zone.

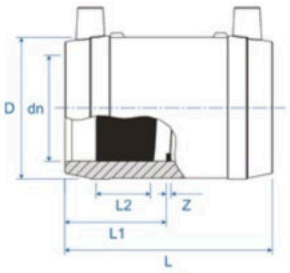
UB SDR9 couplers dn280 and above include a barcode PREHEAT function to warm the pipe and coupler before fusion. Preheat assists in closing the fusion gap between the pipe and coupler prior to welding. Couplers dn280 and above feature permanent external reinforcement wound into the body of the coupler to ensure the coupler does not expand during the fusing process.

A visual pop up fusion indicator confirms weld pressure and traceability bar codes are included for recording batch GIS and BIM records for each coupler installed. All couplers are sealed in individual plastic bags for protection on site. Frialen UB SDR9 Electrofusion couplers are made in Germany.

Product Code	dn	D	L	L1	L2	Z	Availability in Hong Kong
P3316.150.063	63	82	110	55	29	2	8-12 Weeks
P3318.100.090	90	117	138	69	41	-	8-12 Weeks
P3318.100.110	110	142	159	79	48	-	8-12 Weeks
P3318.100.125	125	160	172	86	46	-	8-12 Weeks
P3318.100.160	160	206	203	101	62	-	8-12 Weeks
P3318.100.180	180	225	210	105	63	-	Ex-Stock
P3318.100.200	200	250	224	112	67	-	8-12 Weeks
P3318.100.225	225	280	240	120	73	-	8-12 Weeks
P3318.100.250	250	315	246	123	68	-	8-12 Weeks
P3318.098.280	280	355	268	134	84	-	8-12 Weeks
P3318.098.315	315	400	285	142	79	-	8-12 Weeks
P3318.098.355	355	450	300	150	88	-	8-12 Weeks
P3317.098.400	400	500	320	160	90	-	8-12 Weeks
P3317.098.450	450	560	340	170	79	-	8-12 Weeks
P3317.098.500	500	630	360	180	85	-	8-12 Weeks
P3317.098.560	560	715	380	190	95	-	8-12 Weeks
P3317.098.630	630	810	420	210	101	-	8-12 Weeks

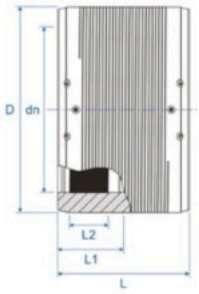
MB couplers ≤ dn63 and SDR9 Couplers dn90 to dn355 are fully rated for PN25 / SDR7.4 and can be used for PN20 applications.

MB Couplers dn25-dn63



Product fully complies with DSD PS

UB Couplers dn90-dn630



Product fully complies with DSD PS

Bends

A wide range of standard black elbows and segmented CCTV bends in any angle from 1° to 90°.

- **Moulded electrofusion elbows**: in standard angles, used for smaller diameter pipelines (≤ 315 OD) with a radius of r=0.5xOD
- **Moulded spigot elbows**: these come in standard angles ≤ 630 OD, with a radius of r=0.5xOD
- **Segmented bends**: factory-fabricated from CCTV or black Pipe, these are available in any size and angle with the minimum radius determined by the number of mitres, generally r=2.5xOD
- **Fabricated Elbows**: Where segmented bends cannot be used due to space constraints. A compact elbow machined from hollow bar with welded spigots, r=0.5xOD. Elbows are custom made in any size ≥ dn355 in any angle from 1° to 90°. Click here for more information.

Segmented Bends

Fabricated to BS EN 12201-3 Annex B.3, by cutting pipes on an angle (cut angle), rotating one cut end 180° and welding the angled segments together. Because the cut angle is >90° to the pipe axis, the cross-sectional area of the pipe bore increases as the angle increases. The greater the angle, the greater the internal cross-sectional area at the weld. The internal pressure is now acting on a greater internal cross-sectional area at the welded joint, but because the pipes wall thickness (SDR) remains unchanged, the thickness of the pipe is now insufficient to maintain the original pressure rating.

This segmented bend may need to be pressure de-rated. The de-rating depends on the cut angle, the greater the angle, the greater the internal cross-sectional area and the greater the de-ration required.

BS EN 12201-3 Table B.3		Single mitre	Two mitre	Three Mitre	Four Mitre	Five Mitre	Six Mitre
SDR17 90° Bend	Derating factor	Not permitted	Not permitted	0.8	0.8	0.8	1.0
	PN rating			PN8	PN8	PN8	PN10
SDR17 60° Bend	Derating factor	Not permitted	0.8	0.8	1.0	1.0	1.0
	PN rating		PN8	PN8	PN10	PN10	PN10
SDR17 45° Bend	Derating factor	Not permitted	0.8	1.0	1.0	1.0	1.0
	PN rating		PN8	PN10	PN10	PN10	PN10
SDR17 30° Bend	Derating factor	0.8	1.0	1.0	1.0	1.0	1.0
	PN rating	PN8	PN10	PN10	PN10	PN10	PN10
SDR17 22° Bend	Derating factor	0.8	1.0	1.0	1.0	1.0	1.0
	PN rating	PN8	PN10	PN10	PN10	PN10	PN10
SDR17 11° Bend	Derating factor	1.0	1.0	1.0	1.0	1.0	1.0
	PN rating	PN10	PN10	PN10	PN10	PN10	PN10

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Product fully complies with DSD PS

This mark is used to identify Mill-Pro products that meet the requirements of the Drainage Supplies Department PS Appendix 22.09. The use of this mark is not endorsed by the DSD and is not intended to infer approval by the DSD.

11° Segmented Spigot CCTV Bends / PN10 / SDR17

Twin Stripe

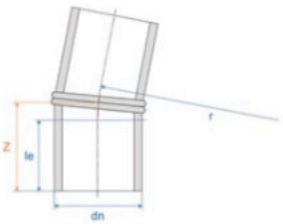
Manufactured from Mill-Pro M90SE PE100 RC SDR17 CCTV pipe and fabricated according to BS EN 12201-3, clause B.3, using butt weld techniques according to BS ISO 21307. They feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

Segmented bends are manufactured from a pipe, with cut angles ≤ 7.5° and therefore are not subject to pressure de-ration factor required in BS EN 12201 Clause B.3. Generally, the internal weld beads are removed where possible and external weld beads are not removed unless ordered otherwise.

Any bend angle from 0° to 15° can be custom manufactured, standard angle for a single mitre bend is 11° with a radius of 2.5 x OD, as given in the table below.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

PN10 SDR17 Twin Brown **Sewer**	PN10 SDR17 Twin Green **Stormwater**	dn	le	r = 2.5 dn	Z - 11° One mitre	Availability in Hong Kong
P5Q54.290.110	P5QG4.290.110	110	150	275	176	6-8 Weeks
P5Q54.290.160	P5QG4.290.160	160	150	400	189	6-8 Weeks
P5Q54.290.225	P5QG4.290.225	225	150	563	204	6-8 Weeks
P5Q54.290.250	P5QG4.290.250	250	250	625	310	6-8 Weeks
P5Q54.290.280	P5QG4.290.280	280	250	700	317	6-8 Weeks
P5Q54.290.355	P5QG4.290.355	355	300	888	385	6-8 Weeks
P5Q54.290.400	P5QG4.290.400	400	300	1000	396	6-8 Weeks
P5Q54.290.450	P5QG4.290.450	450	300	1125	408	6-8 Weeks
P5Q54.290.500	P5QG4.290.500	500	350	1250	470	6-8 Weeks
P5Q54.290.560	P5QG4.290.560	560	350	1400	485	6-8 Weeks
P5Q54.290.630	P5QG4.290.630	630	350	1575	502	6-8 Weeks
P5Q54.290.710	P5QG4.290.710	710	350	1775	521	6-8 Weeks
P5Q54.290.800	P5QG4.290.800	800	350	2000	543	6-8 Weeks
P5Q54.290.900	P5QG4.290.900	900	400	2250	617	Contact us
P5Q54.290.1000	P5QG4.290.1000	1000	400	2500	641	Contact us
P5Q54.290.1200	P5QG4.290.1200	1200	400	3000	689	Contact us
P5Q54.290.1400	P5QG4.290.1400	1400	550	3500	887	Contact us
P5Q54.290.1600	P5QG4.290.1600	1600	550	4000	935	Contact us
Larger sizes to dn2000 in PN ratings from PN4 to PN10 are available in M100E pipe, subject to pipe availability.						
Bends with brown or green twin stripes can only be supplied when also supplying the matching pipe.						
To transport large bore bends, these may need to be made in sections and joined on site.						



Product fully complies with DSD PS

22º Segmented Spigot CCTV Bends / PN10 / SDR17

Twin Stripe

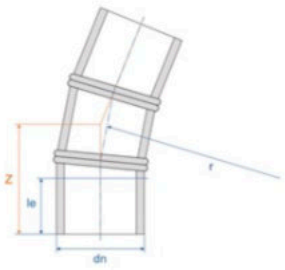
Manufactured from Mill-Pro M90SE PE100 RC SDR17 CCTV pipe and fabricated according to BS EN 12201-3, clause B.3, using butt weld techniques according to BS ISO 21307. They feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

Segmented bends are manufactured from a pipe, with cut angles ≤ 7.5º and therefore are not subject to pressure de-ration factor required in BS EN 12201 Clause B.3. Generally, the internal weld beads are removed where possible and external weld beads are not removed unless ordered otherwise.

Any bend angle from 16º to 30º can be custom manufactured, standard angle for a two mitre bend is 22º with a radius of 2.5 x OD, as given in the table below.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

PN10 SDR17 Twin Brown **Sewer**	PN10 SDR17 Twin Green **Stormwater**	dn	le	r = 2.5 dn	Z - 22º Two mitre	Availability in Hong Kong
P5Q54.285.110	P5QG4.285.110	110	150	275	203	6-8 Weeks
P5Q54.285.160	P5QG4.285.160	160	150	400	228	6-8 Weeks
P5Q54.285.225	P5QG4.285.225	225	150	563	259	6-8 Weeks
P5Q54.285.250	P5QG4.285.250	250	250	625	371	6-8 Weeks
P5Q54.285.280	P5QG4.285.280	280	250	700	386	6-8 Weeks
P5Q54.285.355	P5QG4.285.355	355	300	888	473	6-8 Weeks
P5Q54.285.400	P5QG4.285.400	400	300	1000	494	6-8 Weeks
P5Q54.285.450	P5QG4.285.450	450	300	1125	519	6-8 Weeks
P5Q54.285.500	P5QG4.285.500	500	350	1250	593	6-8 Weeks
P5Q54.285.560	P5QG4.285.560	560	350	1400	622	6-8 Weeks
P5Q54.285.630	P5QG4.285.630	630	350	1575	656	6-8 Weeks
P5Q54.285.710	P5QG4.285.710	710	350	1775	695	6-8 Weeks
P5Q54.285.800	P5QG4.285.800	800	350	2000	739	6-8 Weeks
P5Q54.285.900	P5QG4.285.900	900	400	2250	837	6-8 Weeks
P5Q54.285.1000	P5QG4.285.1000	1000	400	2500	886	6-8 Weeks
P5Q54.285.1200	P5QG4.285.1200	1200	400	3000	983	6-8 Weeks
P5Q54.285.1400	P5QG4.285.1400	1400	550	3500	1230	6-8 Weeks
P5Q54.285.1600	P5QG4.285.1600	1600	550	4000	1328	6-8 Weeks
Larger sizes to dn2000 in PN ratings from PN4 to PN10 are available in M100E pipe, subject to pipe availability.						
Bends with brown or green twin stripes can only be supplied when also supplying the matching pipe.						
To transport large bore bends, these may need to be made in sections and joined on site.						



Product fully complies with DSD PS

30º Segmented Spigot CCTV Bends / PN10 / SDR17

Twin Stripe

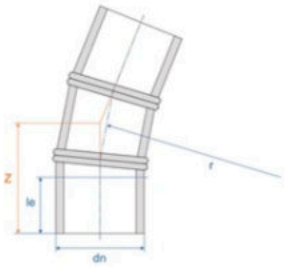
Manufactured from Mill-Pro M90SE PE100 RC SDR17 CCTV pipe and fabricated according to BS EN 12201-3, clause B.3, using butt weld techniques according to BS ISO 21307. They feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

Segmented bends are manufactured from a pipe, with cut angles ≤ 7.5º and therefore are not subject to pressure de-ration factor required in BS EN 12201 Clause B.3. Generally, the internal weld beads are removed where possible and external weld beads are not removed unless ordered otherwise.

Any bend angle from 16º to 30º can be custom manufactured, standard angle for a single mitre bend is 30º with a radius of 2.5 x OD, as given in the table below.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

SDR17 PN10 Twin Brown **Sewer**	SDR17 PN10 Twin Green **Stormwater**	dn	le	r = 2.5 dn	Z - 30º Two mitre	Availability in Hong Kong
P5Q54.286.110	P5QG4.286.110	110	150	275	224	6-8 Weeks
P5Q54.286.160	P5QG4.286.160	160	150	400	257	6-8 Weeks
P5Q54.286.225	P5QG4.286.225	225	150	563	301	6-8 Weeks
P5Q54.286.250	P5QG4.286.250	250	250	625	417	6-8 Weeks
P5Q54.286.280	P5QG4.286.280	280	250	700	438	6-8 Weeks
P5Q54.286.355	P5QG4.286.355	355	300	888	538	6-8 Weeks
P5Q54.286.400	P5QG4.286.400	400	300	1000	568	6-8 Weeks
P5Q54.286.450	P5QG4.286.450	450	300	1125	601	6-8 Weeks
P5Q54.286.500	P5QG4.286.500	500	350	1250	685	6-8 Weeks
P5Q54.286.560	P5QG4.286.560	560	350	1400	725	6-8 Weeks
P5Q54.286.630	P5QG4.286.630	630	350	1575	772	6-8 Weeks
P5Q54.286.710	P5QG4.286.710	710	350	1775	826	6-8 Weeks
P5Q54.286.800	P5QG4.286.800	800	350	2000	886	6-8 Weeks
P5Q54.286.900	P5QG4.286.900	900	400	2250	1003	6-8 Weeks
P5Q54.286.1000	P5QG4.286.1000	1000	400	2500	1070	6-8 Weeks
P5Q54.286.1200	P5QG4.286.1200	1200	400	3000	1204	6-8 Weeks
P5Q54.286.1400	P5QG4.286.1400	1400	550	3500	1488	6-8 Weeks
P5Q54.286.1600	P5QG4.286.1600	1600	550	4000	1622	6-8 Weeks
Larger sizes to dn2000 in PN ratings from PN4 to PN10 are available in M100E pipe, subject to pipe availability.						
Bends with brown or green twin stripes can only be supplied when also supplying the matching pipe.						
To transport large bore bends, these may need to be made in sections and joined on site.						



Product fully complies with DSD PS

45º Segmented Spigot CCTV Bends / PN10 / SDR17

Twin Stripe

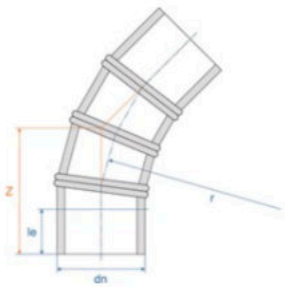
Manufactured from Mill-Pro M90SE PE100 RC SDR17 CCTV pipe and fabricated according to BS EN 12201-3, clause B.3, using butt weld techniques according to BS ISO 21307. They feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

Segmented bends are manufactured from a pipe, with cut angles ≤ 7.5º and therefore are not subject to pressure de-ration factor required in BS EN 12201 Clause B.3. Generally, the internal weld beads are removed where possible and external weld beads are not removed unless ordered otherwise.

Any bend angle from 31º to 45º can be custom manufactured, standard angle for a three mitre bend is 45º with a radius of 2.5 x OD, as given in the table below.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

PN10 SDR17 Twin Brown **Sewer**	PN10 SDR17 Twin Green **Stormwater**	dn	le	r = 2.5 dn	Z - 45º Three mitre	Availability in Hong Kong
P5Q54.287.110	P5QG4.287.110	110	150	275	264	6-8 weeks
P5Q54.287.160	P5QG4.287.160	160	150	400	316	6-8 weeks
P5Q54.287.225	P5QG4.287.225	225	150	563	383	6-8 weeks
P5Q54.287.250	P5QG4.287.250	250	250	625	509	6-8 weeks
P5Q54.287.280	P5QG4.287.280	280	250	700	540	6-8 weeks
P5Q54.287.355	P5QG4.287.355	355	300	888	668	6-8 weeks
P5Q54.287.400	P5QG4.287.400	400	300	1000	714	6-8 weeks
P5Q54.287.450	P5QG4.287.450	450	300	1125	766	6-8 weeks
P5Q54.287.500	P5QG4.287.500	500	350	1250	868	6-8 weeks
P5Q54.287.560	P5QG4.287.560	560	350	1400	930	6-8 weeks
P5Q54.287.630	P5QG4.287.630	630	350	1575	1002	6-8 weeks
P5Q54.287.710	P5QG4.287.710	710	350	1775	1085	6-8 weeks
P5Q54.287.800	P5QG4.287.800	800	350	2000	1178	6-8 weeks
P5Q54.287.900	P5QG4.287.900	900	400	2250	1332	6-8 weeks
P5Q54.287.1000	P5QG4.287.1000	1000	400	2500	1436	6-8 weeks
P5Q54.287.1200	P5QG4.287.1200	1200	400	3000	1643	6-8 weeks
P5Q54.287.1400	P5QG4.287.1400	1400	550	3500	2000	6-8 weeks
P5Q54.287.1600	P5QG4.287.1600	1600	550	4000	2207	6-8 weeks
Larger sizes to dn2000 in PN ratings from PN4 to PN10 are available in M100E pipe, subject to pipe availability.						
Bends with brown or green twin stripes can only be supplied when also supplying the matching pipe.						
To transport large bore bends, these may need to be made in sections and joined on site.						



Product fully complies with DSD PS

60º Segmented Spigot CCTV Bends / PN10 / SDR17

Twin Stripe

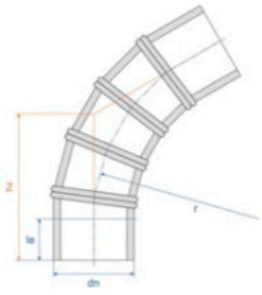
Manufactured from Mill-Pro M90SE PE100 RC SDR17 CCTV pipe and fabricated according to BS EN 12201-3, clause B.3, using butt weld techniques according to BS ISO 21307. They feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

Segmented bends are manufactured from a pipe, with cut angles ≤ 7.5º and therefore are not subject to pressure de-ration factor required in BS EN 12201 Clause B.3. Generally, the internal weld beads are removed where possible and external weld beads are not removed unless ordered otherwise.

Any bend angle from 46º to 60º can be custom manufactured, standard angle for a four mitre bend is 60º with a radius of 2.5 x OD, as given in the table below.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

PN10 SDR17 Twin Brown **Sewer**	PN10 SDR17 Twin Green **Stormwater**	dn	le	r = 2.5 dn	Z - 60º Four mitre	Availability in Hong Kong
P5Q54.288.110	P5QG4.288.110	110	150	275	309	6-8 weeks
P5Q54.288.125	P5QG4.288.125	125	150	313	330	6-8 weeks
P5Q54.288.160	P5QG4.288.160	160	150	400	381	6-8 weeks
P5Q54.288.225	P5QG4.288.225	225	150	563	475	6-8 weeks
P5Q54.288.250	P5QG4.288.250	250	250	625	611	6-8 weeks
P5Q54.288.280	P5QG4.288.280	280	250	700	654	6-8 weeks
P5Q54.288.355	P5QG4.288.355	355	300	888	812	6-8 weeks
P5Q54.288.400	P5QG4.288.400	400	300	1000	877	6-8 weeks
P5Q54.288.450	P5QG4.288.450	450	300	1125	950	6-8 weeks
P5Q54.288.500	P5QG4.288.500	500	350	1250	1072	6-8 weeks
P5Q54.288.560	P5QG4.288.560	560	350	1400	1158	6-8 weeks
P5Q54.288.630	P5QG4.288.630	630	350	1575	1259	6-8 weeks
P5Q54.288.710	P5QG4.288.710	710	350	1775	1375	6-8 weeks
P5Q54.288.800	P5QG4.288.800	800	350	2000	1505	6-8 weeks
P5Q54.288.900	P5QG4.288.900	900	400	2250	1699	6-8 weeks
P5Q54.288.1000	P5QG4.288.1000	1000	400	2500	1843	6-8 weeks
P5Q54.288.1200	P5QG4.288.1200	1200	400	3000	2132	6-8 weeks
P5Q54.288.1400	P5QG4.288.1400	1400	550	3500	2571	6-8 weeks
P5Q54.288.1600	P5QG4.288.1600	1600	550	4000	2859	6-8 weeks
Larger sizes to dn2000 in PN ratings from PN4 to PN10 are available in M100E pipe, subject to pipe availability. 60º Bends > dn1600 cannot be containerised as a complete bend.						
Bends with brown or green twin stripes can only be supplied when also supplying the matching pipe.						
To transport large bore bends, these may need to be made in sections and joined on site.						



Product fully complies with DSD PS

90º Segmented Spigot CCTV Bends / PN10 / SDR17

Twin Stripe

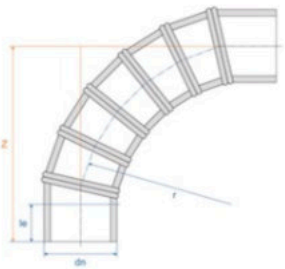
Manufactured from Mill-Pro M90SE PE100 RC SDR17 CCTV pipe and fabricated according to BS EN 12201-3, clause B.3, using butt weld techniques according to BS ISO 21307. They feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

Segmented bends are manufactured from a pipe, with cut angles ≤ 7.5º and therefore are not subject to pressure de-ration factor required in BS EN 12201 Clause B.3. Generally, the internal weld beads are removed where possible and external weld beads are not removed unless ordered otherwise.

Any bend angle from 76º to 90º can be custom manufactured, standard angle for a three mitre bend is 90º with a radius of 2.5xOD, as given in the table below.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

PN10 SDR17 Twin Brown **Sewer**	PN10 SDR17 Twin Green **Stormwater**	dn	le	r = 2.5 dn	Z - 90º Six mitre	Availability in Hong Kong
P5Q54.289.110	P5QG4.289.110	110	150	275	425	6-8 weeks
P5Q54.289.160	P5QG4.289.160	160	150	400	550	6-8 weeks
P5Q54.289.225	P5QG4.289.225	225	150	563	713	6-8 weeks
P5Q54.289.250	P5QG4.289.250	250	250	625	875	6-8 weeks
P5Q54.289.280	P5QG4.289.280	280	250	700	950	6-8 weeks
P5Q54.289.355	P5QG4.289.355	355	300	888	1188	6-8 weeks
P5Q54.289.400	P5QG4.289.400	400	300	1000	1300	6-8 weeks
P5Q54.289.450	P5QG4.289.450	450	300	1125	1425	6-8 weeks
P5Q54.289.500	P5QG4.289.500	500	350	1250	1600	6-8 weeks
P5Q54.289.560	P5QG4.289.560	560	350	1400	1750	6-8 weeks
P5Q54.289.630	P5QG4.289.630	630	350	1575	1925	6-8 weeks
P5Q54.289.710	P5QG4.289.710	710	350	1775	2125	6-8 weeks
P5Q54.289.800	P5QG4.289.800	800	350	2000	2350	6-8 weeks
P5Q54.289.900	P5QG4.289.900	900	400	2250	2650	6-8 weeks
P5Q54.289.1000	P5QG4.289.1000	1000	400	2500	2900	6-8 weeks
P5Q54.289.1200	P5QG4.289.1200	1200	400	3000	3400	6-8 weeks
P5Q54.289.1400	P5QG4.289.1400	1400	550	3500	4050	6-8 weeks
P5Q54.289.1600	P5QG4.289.1600	1600	550	4000	4550	6-8 weeks
Larger sizes to dn2000 in PN ratings from PN4 to PN10 are available in M100E pipe, subject to pipe availability. 90º Bends > dn1400 cannot be containerised as a complete bend.						
Bends with brown or green twin stripes can only be supplied when also supplying the matching pipe.						
To transport large bore bends, these may need to be made in sections and joined on site.						



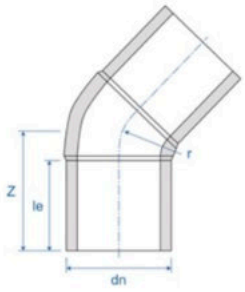
Product fully complies with DSD PS

Black 45º Injection Moulded Spigot Elbows / PN10 / SDR17

Mill-Pro supplies a small range of PE100+ Black Injection moulded spigot elbows. It should be noted in the table below fitting dimension 'le' marked with *** do not meet the required minimum spigot length** for use as long spigot fittings, given in BS EN 12201-3 Table 3, 'Tubular length'. These fittings DO meet the standard for use as a butt weld fittings and they meet all other requirements given in the standard.

All fittings given in the table below have **sufficient spigot length required for fusion using Friatec electrofusion couplers**. However, certification cannot currently be provided for the fittings compliance to BS EN 12201-3 when used as a long spigot elbow for electrofusion joining.

SDR17 PN10	SDR11 PN16	dn	le	r	z	Availability in Hong Kong
P5314.119.063	P5316.119.063	63	63	32	89	4-6 weeks
P5314.119.090	P5316.119.090	90	79	45	105	4-6 weeks
P5314.119.110	P5316.119.110	110	82	55	118	4-6 weeks
P5314.119.125	P5316.119.125	125	87	63	125	4-6 weeks
P5314.119.160	P5316.119.160	160	98	80	142	4-6 weeks
P5314.119.180	P5316.119.180	180	*100	90	120	4-6 weeks
P5314.119.200	P5316.119.200	200	112	100	162	4-6 weeks
P5314.119.225	P5316.119.225	225	115	113	155	4-6 weeks
P5314.119.250	P5316.119.250	250	129	125	190	4-6 weeks
P5314.119.280	P5316.119.280	280	148	140	230	4-6 weeks
P5314.119.315	P5316.119.315	315	150	158	240	4-6 weeks
P5314.119.355	P5316.119.355	355	164	178	270	4-6 weeks
P5314.119.400	P5316.119.400	400	*150	200	255	4-6 weeks
P5314.119.450	-	450	*170	225	290	4-6 weeks
P5314.119.500	-	500	*205	250	320	4-6 weeks
P5314.119.560	-	560	*200	280	345	4-6 weeks
P5314.119.630	-	630	*220	315	370	4-6 weeks
*Spigot lengths suitable for Mill-Pro supplied PN10 EF couplers but shorter than L2 in BSEN 12201-3 table 3						



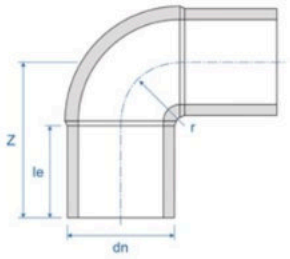
Black 90º Injection Moulded Spigot Elbows / PN10 / SDR17

Mill-Pro supplies a small range of PE100+ Black Injection moulded spigot elbows. It should be noted in the table below fitting dimension 'le' marked with *** do not meet the required minimum spigot length** for use as long spigot fittings, given in BS EN 12201-3 Table 3, 'Tubular length'. These fittings DO meet the standard for use as a butt weld fittings and they meet all other requirements given in the standard.

All fittings given in the table below have **sufficient spigot length required for fusion using Friatec electrofusion couplers**. However, certification cannot currently be provided for the fittings compliance to BS EN 12201-3 when used as a long spigot elbow for electrofusion joining.

SDR17 PN10	SDR11 PN16	dn	le	r	z	Availability in Hong Kong
P5314.115.063	P5316.115.063	63	63	32	98	4-6 weeks
P5314.115.090	P5316.115.090	90	79	45	132	4-6 weeks
P5314.115.110	P5316.115.110	110	82	55	143	4-6 weeks
P5314.115.125	P5316.115.125	125	100	63	158	4-6 weeks
P5314.115.140	P5316.115.140	140	*85	70	163	4-6 weeks
P5314.115.160	P5316.115.160	160	98	80	177	4-6 weeks
P5314.115.180	P5316.115.180	180	105	90	205	4-6 weeks
P5314.115.200	P5316.115.200	200	125	100	239	4-6 weeks
P5314.115.225	P5316.115.225	225	140	113	255	4-6 weeks
P5314.115.250	P5316.115.250	250	130	125	265	4-6 weeks
P5314.115.280	P5316.115.280	280	*130	140	282	4-6 weeks
P5314.115.315	P5316.115.315	315	150	158	340	4-6 weeks
P5314.115.355	P5316.115.355	355	*160	178	365	4-6 weeks
P5314.115.400	P5316.115.400	400	*145	200	378	4-6 weeks
P5314.115.450	-	450	*180	225	410	4-6 weeks
P5314.115.500	-	500	*210	250	460	4-6 weeks
P5314.115.560	-	560	*210	280	505	4-6 weeks
P5314.115.630	-	630	*210	315	544	4-6 weeks

*Spigot lengths suitable for Mill-Pro supplied PN10 EF couplers but shorter than L2 in BSEN 12201-3 table 3



Black 11° Fabricated Spigot Elbows

PN10-PN16 / SDR17-SDR11

Fabricated elbows are designed for applications where there is insufficient space for segmented bends to be used. Manufactured from black PE100+ compound, they feature long spigots for electrofusion or butt fusion joining on site. Any fabricated elbow angle from 1° to 45° can be manufactured. Tables below show standard 11° elbow with a radius of ~0.5xOD.

PN10 SDR17	PN16 SDR11	d1	le1	r	z1 - 11°	Availability in Hong Kong
P5314.76.355	P5316.76.355	355	200	177	309	14-16 weeks
P5314.76.400	P5316.76.400	400	300	200	411	14-16 weeks
P5314.76.450	P5316.76.450	450	300	225	413	14-16 weeks
P5314.76.500	P5316.76.500	500	300	250	426	14-16 weeks
P5314.76.560	P5316.76.560	560	300	280	451	14-16 weeks
P5314.76.630	P5316.76.630	630	300	315	460	14-16 weeks
P5314.76.710	P5316.76.710	710	500	355	662	14-16 weeks
P5314.76.800	P5316.76.800	800	500	400	663	14-16 weeks
P5314.76.900	P5316.76.900	900	500	450	732	14-16 weeks
P5314.76.1000	P5316.76.1000	1000	500	500	741	14-16 weeks
P5314.76.1200	-	1200	500	600	709	14-16 weeks
P5314.76.1400	-	1400	500	700	777	14-16 weeks

Custom fabricated elbows do not require pipe to manufacture. Individual elbows may be ordered in any angle.

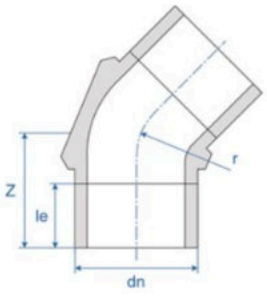
Black 22° Fabricated Spigot Elbows

PN10-PN16 / SDR17-SDR11

Fabricated elbows are designed for applications where there is insufficient space for segmented bends to be used. Manufactured from black PE100+ compound, they feature long spigots for electrofusion or butt fusion joining on site. Any fabricated elbow angle from 1° to 45° can be manufactured. Tables below show standard 22° elbow with a radius of ~0.5xOD.

PN10 SDR17	PN16 SDR11	d1	le1	r	z1 - 22°	Availability in Hong Kong
P5314.77.355	P5316.77.355	355	200	177	326	14-16 weeks
P5314.77.400	P5316.77.400	400	300	200	431	14-16 weeks
P5314.77.450	P5316.77.450	450	300	225	436	14-16 weeks
P5314.77.500	P5316.77.500	500	300	250	450	14-16 weeks
P5314.77.560	P5316.77.560	560	300	280	478	14-16 weeks
P5314.77.630	P5316.77.630	630	300	315	491	14-16 weeks
P5314.77.710	P5316.77.710	710	500	355	697	14-16 weeks
P5314.77.800	P5316.77.800	800	500	400	702	14-16 weeks
P5314.77.900	P5316.77.900	900	500	450	776	14-16 weeks
P5314.77.1000	P5316.77.1000	1000	500	500	790	14-16 weeks
P5314.77.1200	-	1200	500	600	768	14-16 weeks
P5314.77.1400	-	1400	500	700	846	14-16 weeks

Custom fabricated elbows do not require pipe to manufacture. Individual elbows may be ordered in any angle.



Black 30º Fabricated Spigot Elbows

PN10-PN16 / SDR17-SDR11

Fabricated elbows have a fitting body that is machined from black PE100+ hollow bar with the required reinforcement included in the design. They feature long spigots for electrofusion or butt fusion joining on site. Any fabricated elbow angle from 1º to 90º can be manufactured. Tables below show standard 30º elbow with a radius of ~0.5xOD for reference.

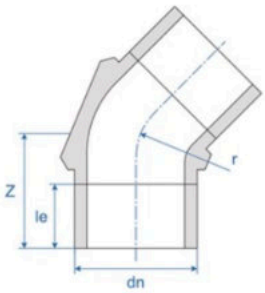
PN10 SDR17	PN16 SDR11	dn	le	r	z - 30º	Availability in Hong Kong
P5314.78.355	P5316.78.355	355	200	177	339	14-16 weeks
P5314.78.400	P5316.78.400	400	300	200	446	14-16 weeks
P5314.78.450	P5316.78.450	450	300	225	452	14-16 weeks
P5314.78.500	P5316.78.500	500	300	250	468	14-16 weeks
P5314.78.560	P5316.78.560	560	300	280	499	14-16 weeks
P5314.78.630	P5316.78.630	630	300	315	514	14-16 weeks
P5314.78.710	P5316.78.710	710	500	355	723	14-16 weeks
P5314.78.800	P5316.78.800	800	500	400	731	14-16 weeks
P5314.78.900	P5316.78.900	900	500	450	809	14-16 weeks
P5314.78.1000	P5316.78.1000	1000	500	500	827	14-16 weeks
P5314.78.1200	-	1200	500	600	812	14-16 weeks
P5314.78.1400	-	1400	500	700	898	14-16 weeks
Custom fabricated elbows do not require pipe to manufacture. Individual elbows may be ordered in any angle.						

Black 45º Fabricated Spigot Elbows

PN10-PN16 / SDR17-SDR11

Fabricated elbows are manufactured from black PE100+ compound. They feature long spigots for electrofusion or butt fusion joining on site. Any fabricated elbow angle from 1º to 45º can be manufactured. Tables below show standard 45º elbow with a radius of ~0.5xOD for reference.

PN10 SDR17	PN16 SDR11	d1	le1	r	z1 - 45º	Availability in Hong Kong
P5314.79.355	P5316.79.355	355	200	177	365	14-16 weeks
P5314.79.400	P5316.79.400	400	300	200	475	14-16 weeks
P5314.79.450	P5316.79.450	450	300	225	485	14-16 weeks
P5314.79.500	P5316.79.500	500	300	250	505	14-16 weeks
P5314.79.560	P5316.79.560	560	300	280	540	14-16 weeks
P5314.79.630	P5316.79.630	630	300	315	560	14-16 weeks
P5314.79.710	P5316.79.710	710	500	355	775	14-16 weeks
P5314.79.800	P5316.79.800	800	500	400	790	14-16 weeks
P5314.79.900	P5316.79.900	900	500	450	875	14-16 weeks
P5314.79.1000	P5316.79.1000	1000	500	500	900	14-16 weeks
P5314.79.1200	-	1200	500	600	900	14-16 weeks
P5314.79.1400	-	1400	500	700	1000	14-16 weeks
Custom fabricated elbows do not require pipe to manufacture. Individual elbows may be ordered in any angle.						



Black 60º Fabricated Spigot Elbows

PN10-PN16 / SDR17-SDR11

Fabricated elbows are manufactured from black PE100+ compound. They are manufactured by factory butt welding two 30º fabricated elbows together. They feature long spigots for electrofusion or butt fusion joining on site. Any fabricated elbow angle from 1º to 90º can be manufactured. Tables below shows dimensions for two 30º elbows factory butt welded together to give a 60º elbow with a radius of ~0.5xOD.

PN10 SDR17	PN16 SDR11	dn	le	r	z - 60º	Availability in Hong Kong
P5314.80.355	P5316.80.355	355	200	177	485	14-16 weeks
P5314.80.400	P5316.80.400	400	300	200	600	14-16 weeks
P5314.80.450	P5316.80.450	450	300	225	614	14-16 weeks
P5314.80.500	P5316.80.500	500	300	250	647	14-16 weeks
P5314.80.560	P5316.80.560	560	300	280	710	14-16 weeks
P5314.80.630	P5316.80.630	630	300	315	741	14-16 weeks
P5314.80.710	P5316.80.710	710	500	355	961	14-16 weeks
P5314.80.800	P5316.80.800	800	500	400	980	14-16 weeks
P5314.80.900	P5316.80.900	900	500	450	1137	14-16 weeks
P5314.80.1000	P5316.80.1000	1000	500	500	1174	14-16 weeks
P5314.80.1200	-	1200	500	600	1149	14-16 weeks
P5314.80.1400	-	1400	500	700	1324	14-16 weeks

Custom fabricated elbows do not require pipe to manufacture. Individual elbows may be ordered in any angle.

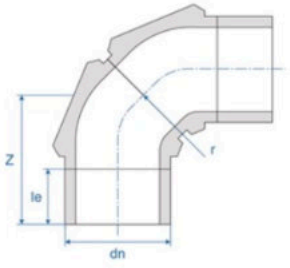
Black 90º Fabricated Spigot Elbows

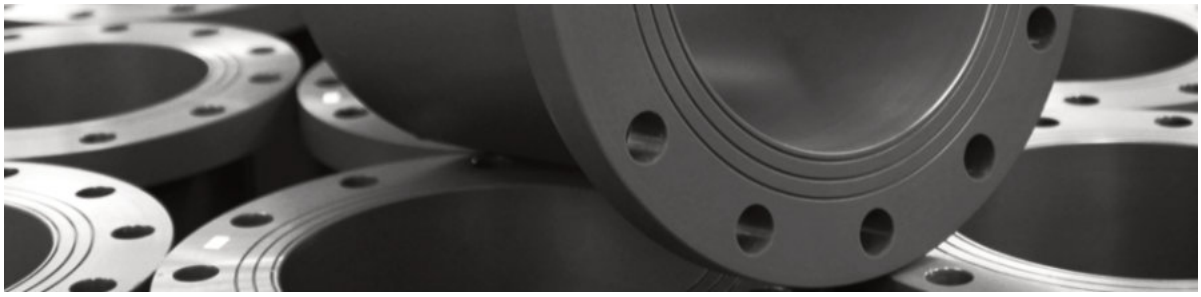
PN10-PN16 / SDR17-SDR11

Fabricated 90º elbows are manufactured by factory butt welding two 45º elbows together. Elbows are machined from black PE100+ compound. They feature long spigots for electrofusion or butt fusion joining on site. Any fabricated elbow angle from 1º to 45º can be manufactured. Tables below shows dimensions for two 45º elbows factory butt welded together to give a 90º elbow with a radius of ~0.5xOD.

PN10 SDR17	PN16 SDR11	d1	le1	r	z1 - 90º	Availability in Hong Kong
P5314.81.355	P5316.81.355	355	200	177	560	14-16 weeks
P5314.81.400	P5316.81.400	400	300	200	684	14-16 weeks
P5314.81.450	P5316.81.450	450	300	225	709	14-16 weeks
P5314.81.500	P5316.81.500	500	300	250	753	14-16 weeks
P5314.81.560	P5316.81.560	560	300	280	828	14-16 weeks
P5314.81.630	P5316.81.630	630	300	315	874	14-16 weeks
P5314.81.710	P5316.81.710	710	500	355	1111	14-16 weeks
P5314.81.800	P5316.81.800	800	500	400	1149	14-16 weeks
P5314.81.900	P5316.81.900	900	500	450	1327	14-16 weeks
P5314.81.1000	P5316.81.1000	1000	500	500	1386	14-16 weeks
P5314.81.1200	-	1200	500	600	1403	14-16 weeks
P5314.81.1400	-	1400	500	700	1620	14-16 weeks

Custom fabricated elbows do not require pipe to manufacture. Individual elbows may be ordered in any angle.





Flanged Connections

Mill-Pro supplies a full range of PE100 Flange Assemblies. A flange assembly is a standard PE flange or full-face PE flange (pictured above), complete with a matching loose steel backing flange, sold as a single assembly. Our full face flange assemblies are proprietary Mill-Pro designs, these have been type tested as required in BS EN 12201, therefore they only sold as matching sets.

Flange Assemblies are for connecting PE to PE or to other pipe materials via flanged joint. The flange size selection is a function of the PE pipes Inside Diameter (ID) and the nearest matching Flange DN of the Non PE fitting. When connecting PE pipes (≥ dn250) to another material (such as pump, valve or fittings), use a Full Face flange assembly and select the best fit based on the PE pipes SDR rating and the EN 1092 nominal flange DN based on the Table below. If connecting PE to PE via a flange joint, use a standard flange assembly. See Flange Selection table below.

Flange Adaptors are available from 90mm OD (DN80) to 2000mm OD (DN1800) in pressure ratings from PN4 to PN25. Loose backing flanges comply to BSEN 1092-1 PN16 drilling and ring thickness as standard. However, other drillings, pressure ratings and dimensions, such as ANSI, JIS, AS/NZS to match other equipment can also be supplied. Typical Loose backing flange materials are:

Fusion Bonded Epoxy (FBE) a Polymeric anti-corrosion (Barrier) coatings for buried applications. Mill-Pro's coatings are applied and tested in accordance with the UK Water Industry Standard WIS 4-52-01.

Stainless Steel for exposure in above ground, marine environments or submerged applications, click here for Stainless Steel grade recommendations depending on the application.

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Flange selection table

Select the best fit flange type for PE to DI or Steel flanges using the table below:

PE Nominal Size (DN/OD) / Outside Diameter (dn)	Equivalent Size in DN / ID	**Recommended BS EN 1092 Flange DN for PE Pipe** SDR / Pressure rating					
Outside diameter of PE pipes / fitting's	DSD nominated matching size DN	All Pipe to pipe	SDR21/PN8	SDR17/PN10	SDR13.6/PN12.5	SDR11/PN16	SDR9/PN20
90	80	80	80	80	80	80	65
110	100	100	100	100	100	100	80
160	150	150	150	150	150	150	150
225	200	200	200	200	200	200	200
250	225	250	250	200	200	200	200
280	250	250	250	250	250	250	200
355	300	350	300	300	300	300	300
400	375	400	350	350	350	350	300
450	400	450	400	400	400	350	350
500	450	500	450	450	450	400	400
560	500	600	500	500	500	450	450
630	525	600	600	600	500	500	500
710	600	700	600	600	600	600	600
800	675	800	700	700	700	700	600
900	825	900	800	800	800	700	-
1000	900	1000	900	900	900	800	-
1200	1050	1200	1000	1000	1000	-	-
1400	1200	1400	1200	1200	1200	-	-
1600	1350	1600	1400	1400	1400	-	-
1800	1650	1800	1600	1600	-	-	-
2000	1800	2000	1800	1800	-	-	-

Note 1. Recommended Flange DN is the best fit for matching the pipes ID when connecting equipment such as: valves, fittings & pumps etc. Use a *Full face Assembly* if indicated in *Orange* or use a *Standard Flange Assembly* if indicated in *Green*.

Note 2. Recommended Flange DN for connecting PE pipe to PE pipe using a flange joint, use a *Standard Flange Assembly*.

Note 3*: Full-face flange adaptor designs are proprietary. Each supplier has its own design. Hong Kong Drainage Services Department (DSD) Appendix 5A, Clause 5.10, specifies dimensional and testing requirements for flange adaptors, including the provision of Type Testing (TT) results for a suppliers design in accordance with BSEN 12201-3 Table 4: Hydrostatic strength test at 80° C for 1000 hours. The supply of such independent Type Tests is essential to demonstrate the supplier's Full Face design will perform leak-free long term.*

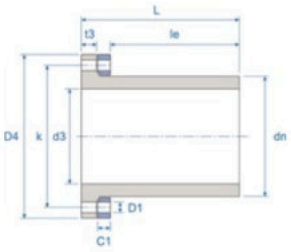
Note 4*: Fusion Bonded Epoxy (FBE) coating on loose backing rings is not recommended for prolonged direct UV exposure, due to the chalking effect occurring over time when epoxies are exposed to UV. We recommend stainless steel loos backing flanges.*

FLANGE ASSEMBLIES / FULL-FACE

Straight / PN10 / SDR17

with Flange EN1092 / PN16

Full Face Straight Flange Assembly Black **PN10 SDR17**						Backing Flange **EN1092 PN16**				
FBE Flange	**316SS Flange**	dn x DN	**dn**	d3	L	**DN**	k	D1	n	Availability in Hong Kong
P5314.FG.250200	P5314.FR.250200	250 x 200	250	219	325	200	295	22	12	6-8 weeks
P5314.FG.280250	P5314.FR.280250	280 x 250	280	245	330	250	355	26	12	6-8 weeks
P5314.FG.315250	P5314.FR.315250	315 x 250	315	276	360	250	355	26	12	6-8 weeks
P5314.FG.355300	P5314.FR.355300	355 x 300	355	311	395	300	410	26	12	6-8 weeks
P5314.FG.400350	P5314.FR.400350	400 x 350	400	350	415	350	470	26	16	6-8 weeks
P5314.FG.450400	P5314.FR.450400	450 x 400	450	394	450	400	525	30	16	6-8 weeks
P5314.FG.500450	P5314.FR.500450	500 x 450	500	438	500	450	585	30	20	6-8 weeks
P5314.FG.560500	P5314.FR.560500	560 x 500	560	490	530	500	650	33	20	6-8 weeks
Dimensions for (t3, le, D4 and C1) are available on request – *see drawing below.*										

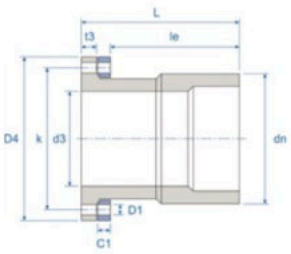


Product fully complies with DSD PS

Stepped / PN10 / SDR17

with Flange EN1092 / PN16

Full Face Stepped Flange Assembly Black **PN10 SDR17**						Backing Flange **EN1092 PN16**				
FBE Flange	**316SS Flange**	dn x DN	**dn**	d3	L	**DN**	k	D1	n	Availability in Hong Kong
P5314.EG.280200	P5314.ER.280200	280 x 200	280	220	350	200	295	22	12	6-8 weeks
P5314.EG.400300	P5314.ER.400300	400 x 300	400	313	450	300	410	26	12	6-8 weeks
P5314.EG.450350	P5314.ER.450350	450 x 350	450	360	450	350	470	26	16	6-8 weeks
P5314.EG.500400	P5314.ER.500400	500 x 400	500	402	500	400	525	30	16	6-8 weeks
P5314.EG.560450	P5314.ER.560450	560 x 450	560	454	550	450	585	30	20	6-8 weeks
P5314.EG.630500	P5314.ER.630500	630 x 500	630	508	600	500	650	33	20	6-8 weeks
P5314.EG.710600	P5314.ER.710600	710 x 600	710	608	670	600	770	36	20	6-8 weeks
P5314.EG.800600	P5314.ER.800600	800 x 600	800	608	700	600	770	36	20	6-8 weeks
P5314.EG.800700	P5314.ER.800700	800 x 700	800	673	750	700	840	36	24	6-8 weeks
Dimensions for (t3, le, D4 and C1) are available on request – *see drawing below.*										

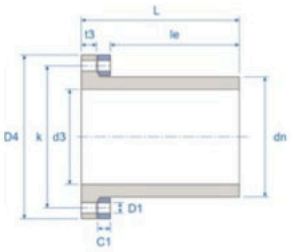


Product fully complies with DSD PS

Straight / PN16 / SDR11

with Flange EN1092 / PN16

Full Face Straight Flange Assembly Black **PN16 SDR11**						Backing Flange **EN1092 PN16**				
FBE Flange	**316SS Flange**	dn x DN	**dn**	d3	L	**DN**	k	D1	n	Availability in Hong Kong
P5316.FG.250200	P5316.FR.250200	250 x 200	250	202	325	200	295	22	12	6-8 weeks
P5316.FG.280250	P5316.FR.280250	280 x 250	280	229	330	250	355	26	12	6-8 weeks
P5316.FG.315250	P5316.FR.315250	315 x 250	315	255	360	250	355	26	12	6-8 weeks
P5316.FG.355300	P5316.FR.355300	355 x 300	355	287	395	300	410	26	12	6-8 weeks
P5316.FG.400350	P5316.FR.400350	400 x 350	400	324	415	350	470	26	16	6-8 weeks
P5316.FG.450400	P5316.FR.450400	450 x 400	450	364	450	400	525	30	16	6-8 weeks
P5316.FG.500450	P5316.FR.500450	500 x 450	500	405	500	450	585	30	20	6-8 weeks
P5316.FG.560500	P5316.FR.560500	560 x 500	560	453	530	500	650	33	20	6-8 weeks
Dimensions for (t3, le, D4 and C1) are available on request – *see drawing below.*										

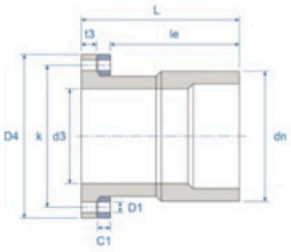


Product fully complies with DSD PS

Stepped / PN16 / SDR11

with Flange EN1092 / PN16

Full Face Stepped Flange Assembly Black **PN16 SDR11**						Backing Flange **EN1092 PN16**				
FBE Flange	**316SS Flange**	dn x DN	**dn**	d3	L	**DN**	k	D1	n	Availability in Hong Kong
P5316.EG.280200	P5316.ER.280200	280 x 200	280	204	350	200	295	22	12	6-8 weeks
P5316.EG.400300	P5316.ER.400300	400 x 300	400	290	450	300	410	26	12	6-8 weeks
P5316.EG.450350	P5316.ER.450350	450 x 350	450	334	450	350	470	26	16	6-8 weeks
P5316.EG.500400	P5316.ER.500400	500 x 400	500	373	500	400	525	30	16	6-8 weeks
P5316.EG.560450	P5316.ER.560450	560 x 450	560	421	550	450	585	30	20	6-8 weeks
P5316.EG.630500	P5316.ER.630500	630 x 500	630	471	600	500	650	33	20	6-8 weeks
P5316.EG.710600	P5316.ER.710600	710 x 600	710	564	670	600	770	36	20	6-8 weeks
P5316.EG.800600	P5316.ER.800600	800 x 600	800	564	700	600	770	36	20	6-8 weeks
P5316.EG.800700	P5316.ER.800700	800 x 700	800	624	750	700	840	36	24	6-8 weeks
Dimensions for (t3, le, D4 and C1) are available on request – *see drawing below.*										



Product fully complies with DSD PS

Flange Assembly / Standard / Long Spigot / PN10 / SDR17

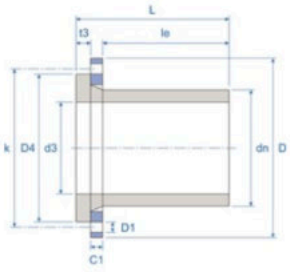
These flange adaptors are designed for making a flange connection between two PE pipes.

These assemblies do NOT comply with WSD PS Appendix 22.09 and they may not be suitable for connecting PE to other materials such as DI pipes, valves or fittings, as this may create an undesirable internal step at the interface between the PE and DI flange, explained here. For connecting PE pipe by flange joint to other flanged material (valve or fitting) use a Full-Face Assembly.

Standard flange adaptors complying to ISO 9624 in SDR 17 rated for PN10. Machined from PE100+ hollow bar, with an extra-long spigot to allow fastener removal once fused in place. Supplied with either a FBE coated loose mild steel or 316 Stainless Steel backing flange, complying to EN 1092-1 drilled PN16. FBE is 300um thick in accordance with WIS 4-52-01. Fasteners and gaskets not included.

NOTE: This flange adaptor is SDR17 so rated for PN10, however, the loose backing flange thickness and drilling is PN16. PN10 drilled backing rings for these assemblies are available on request.

Standard Flange Assembly Long Spigot Black **PN10 SDR17**						Loose Backing Flange **EN1092 PN16**				
FBE Flange	**316SS Flange**	dn x DN	**dn**	d3	L	**DN**	k	D1	n	Availability in Hong Kong
P5314.J6.063050	P5314.L6.063050	*63 x 50	63	55	100	50	125	18	4	6-8 weeks
P5314.J6.090080	P5314.L6.090080	*90 x 80	90	79	120	80	160	18	8	6-8 weeks
P5314.J6.110080	P5314.L6.110080	*110 x 80	110	96	130	80	160	18	8	6-8 weeks
P5314.J6.110100	P5314.L6.110100	*110 x 100	110	96	130	100	180	18	8	6-8 weeks
P5314.J6.125100	P5314.L6.125100	*125 x 100	125	110	155	100	180	18	8	6-8 weeks
P5314.J6.140125	P5314.L6.140125	*140 x 125	140	123	160	125	210	18	8	6-8 weeks
P5314.J6.160150	P5314.L6.160150	*160 x 150	160	140	160	150	240	22	8	6-8 weeks
P5314.J6.180150	P5314.L6.180150	*180 x 150	180	158	190	150	240	22	8	6-8 weeks
P5314.J6.200200	P5314.L6.200200	*200 x 200	200	175	180	200	295	22	12	6-8 weeks
P5314.J6.225200	P5314.L6.225200	*225 x 200	225	197	270	200	295	22	12	6-8 weeks
P5314.J6.250250	P5314.L6.250250	250 x 250	250	219	210	250	355	26	12	6-8 weeks
P5314.J6.280250	P5314.L6.280250	280 x 250	280	245	330	250	355	26	12	6-8 weeks
P5314.J6.315300	P5314.L6.315300	315 x 300	315	276	340	300	410	26	12	6-8 weeks
P5314.J6.355350	P5314.L6.355350	355 x 350	355	311	365	350	470	26	16	6-8 weeks
P5314.J6.400400	P5314.L6.400400	400 x 400	400	351	370	400	525	30	16	6-8 weeks
P5314.J6.450450	P5314.L6.450450	450 x 450	450	394	375	450	585	30	20	6-8 weeks
P5314.J6.500500	P5314.L6.500500	500 x 500	500	438	430	500	650	33	20	6-8 weeks
P5314.J6.560600	P5314.L6.560600	560 x 600	560	491	435	600	770	36	20	6-8 weeks
P5314.J6.630600	P5314.L6.630600	630 x 600	630	552	435	600	770	36	20	6-8 weeks
P5314.J6.710700	P5314.L6.710700	710 x 700	710	622	440	700	840	36	24	6-8 weeks
P5314.J6.800800	P5314.L6.800800	800 x 800	800	701	445	800	950	39	24	6-8 weeks
* Compliant to DSD standards for sizes dn 225 x DN200 and below. For sizes above dn 225 use Full-Face Assemblies.										
Dimensions for (t3, le, k, D4, D and C1) are available on request – *see drawing below.*										



Product fully complies with DSD PS

Air Valve Offtakes

There are many different configurations and connection methods possible when making air valve connections on PE pipelines. Typically reducing tees or saddles, the choice of which depends if they are being installed as part of the construction (reducing tee) or fitted after the pipeline has been constructed (saddles). WSD Appendix does not cover the use of saddles.

Modern Air Valves (Triple Function Air valves) provide the following three functions in a water supply pipeline:

Degassing – the continuous release of small quantities of air bubbles which are created during normal pipeline operation, due to pressure and temperature change.

Air release – the infrequent release of large quantities of air, typically as the pipeline is being filled.

Vacuum break – allowing atmospheric air back into the pipeline when it is being drained. This prevents the pipeline from collapsing under vacuum conditions and provides efficient draining of the pipeline.

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Product fully complies with DSD PS

This mark is used to identify Mill-Pro products that meet the requirements of the Drainage Supplies Department PS Appendix 22.09. The use of this mark is not endorsed by the DSD and is not intended to infer approval by the DSD.

Fabricated Air Valve Tees / Flanged Offtake

PN10-16 / SDR17-11

Fabricated Air Valve Tee's are manufactured by machining PE100+ hollow bar into a fitting body that includes external reinforcement, then welding CCTV pipe spigot ends and a flanged off-take tee to the fitting body, in accordance with BS ISO 21307.

Fabricated Air Valve Tee's feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability. Flanges are BS EN 1092-1 PN 16 rated regardless of the PE fittings rating.

Fabricated air valve tees are very compact (DN80 offtake on a DN1800 Main). Traditional tees do not offer such large step changes, so require reducers which take up height above the pipeline making their use impossible.

The off-take tee is fabricated using a PE flange adaptor and backing flange butt welded directly to the off-take spigot. The height of the off take is available at any height that is greater than dimension Z2 as given below.

SDR17 PN10	SDR11 PN16	dn1	DN Offtake	L	le1	Z1	Minimum Dimension Z2	Availability in Hong Kong
P5314.44.110050	P5316.44.110050	110	DN50 PN16	420	150	210	≥ 170	6-8 Weeks
P5314.44.110080	P5316.44.110080	110	DN80 PN16	445	150	223	≥ 170	6-8 Weeks
P5314.44.160080	P5316.44.160080	160	DN80 PN16	445	150	223	≥ 190	6-8 Weeks
P5314.44.160100	P5316.44.160100	160	DN100 PN16	480	150	240	≥ 200	6-8 Weeks
P5314.44.200080	P5316.44.200080	200	DN80 PN16	445	150	223	≥ 210	6-8 Weeks
P5314.44.200100	P5316.44.200100	200	DN100 PN16	480	150	240	≥ 220	6-8 Weeks
P5314.44.200150	P5316.44.200150	200	DN150 PN16	530	150	265	≥ 230	6-8 Weeks
P5314.44.225080	P5316.44.225080	225	DN80 PN16	445	150	223	≥ 220	6-8 Weeks
P5314.44.225100	P5316.44.225100	225	DN100 PN16	480	150	240	≥230	6-8 Weeks
P5314.44.225150	P5316.44.225150	225	DN150 PN16	530	150	265	≥ 240	6-8 Weeks
P5314.44.250080	P5316.44.250080	250	DN80 PN16	645	250	323	≥ 240	6-8 Weeks
P5314.44.250100	P5316.44.250100	250	DN100 PN16	680	250	340	≥ 250	6-8 Weeks
P5314.44.250150	P5316.44.250150	250	DN150 PN16	730	250	365	≥ 250	6-8 Weeks
P5314.44.280080	P5316.44.280080	280	DN80 PN16	660	250	330	≥ 260	6-8 Weeks
P5314.44.280100	P5316.44.280100	280	DN100 PN16	690	250	345	≥ 270	6-8 Weeks
P5314.44.280150	P5316.44.280150	280	DN150 PN16	740	250	370	≥270	6-8 Weeks
P5314.44.315080	P5316.44.315080	315	DN80 PN16	760	300	380	≥ 270	6-8 Weeks
P5314.44.315100	P5316.44.315100	315	DN100 PN16	790	300	395	≥ 280	6-8 Weeks
P5314.44.315150	P5316.44.315150	315	DN150 PN16	860	300	430	≥ 290	6-8 Weeks
P5314.44.355080	P5316.44.355080	355	DN80 PN16	760	300	380	≥ 290	6-8 Weeks
P5314.44.355100	P5316.44.355100	355	DN100 PN16	790	300	395	≥ 300	6-8 Weeks
P5314.44.355150	P5316.44.355150	355	DN150 PN16	840	300	420	≥ 310	6-8 Weeks
P5314.44.400080	P5316.44.400080	400	DN80 PN16	760	300	380	≥ 320	6-8 Weeks
P5314.44.400100	P5316.44.400100	400	DN100 PN16	790	300	395	≥ 330	6-8 Weeks
P5314.44.400150	P5316.44.400150	400	DN150 PN16	840	300	420	≥ 330	6-8 Weeks
P5314.44.450100	P5316.44.450100	450	DN100 PN16	790	300	395	≥ 350	6-8 Weeks
P5314.44.450150	P5316.44.450150	450	DN150 PN16	840	300	420	≥ 360	6-8 Weeks
P5314.44.500100	P5316.44.500100	500	DN100 PN16	890	350	445	≥ 380	6-8 Weeks
P5314.44.500150	P5316.44.500150	500	DN150 PN16	940	350	470	≥ 380	6-8 Weeks
P5314.44.560150	P5316.44.560150	560	DN150 PN16	940	350	470	≥ 410	6-8 Weeks
P5314.44.560200	P5316.44.560200	560	DN200 PN16	1000	350	500	≥ 440	6-8 Weeks
P5314.44.560250	P5316.44.560250	560	DN250 PN16	1060	350	530	≥ 450	6-8 Weeks
P5314.44.630100	P5316.44.630150	630	DN150 PN16	940	350	470	≥ 450	6-8 Weeks
P5314.44.630150	P5316.44.630200	630	DN200 PN16	1000	350	500	≥ 470	6-8 Weeks
P5314.44.630250	P5316.44.630250	630	DN250 PN16	1160	350	580	≥ 490	6-8 Weeks
P5314.44.710150	P5316.44.710150	710	DN150 PN16	980	350	490	≥ 490	6-8 Weeks
P5314.44.710200	P5316.44.710200	710	DN200 PN16	1045	350	523	≥ 520	6-8 Weeks
P5314.44.710250≥	P5316.44.710250	710	DN250 PN16	1100	350	550	≥ 530	6-8 Weeks
P5314.44.800150	P5316.44.800150	800	DN150 PN16	1000	350	500	≥ 540	6-8 Weeks
P5314.44.800200	P5316.44.800200	800	DN200 PN16	1065	350	533	≥ 560	6-8 Weeks
P5314.44.800250	P5316.44.800250	800	DN250 PN16	1120	350	560	≥ 580	6-8 Weeks
P5314.44.800300	P5316.44.800300	800	DN300 PN16	1155	350	578	≥ 580	6-8 Weeks
P5314.44.900150	P5316.44.900150	900	DN150 PN16	1120	400	560	≥ 590	6-8 Weeks
P5314.44.900200	P5316.44.900200	900	DN200 PN16	1185	400	593	≥ 610	6-8 Weeks
P5314.44.900250	P5316.44.900250	900	DN250 PN16	1240	400	620	≥ 630	6-8 Weeks
P5314.44.900300	P5316.44.900300	900	DN300 PN16	1275	400	638	≥ 630	6-8 Weeks
P5314.44.1000150	P5316.44.1000150	1000	DN150 PN16	1140	400	570	≥ 650	6-8 Weeks
P5314.44.1000200	P5316.44.1000200	1000	DN200 PN16	1205	400	603	≥670	6-8 Weeks

Continued on next page

Fabricated Air Valve Tees / Flanged Offtake

PN10-16 / SDR17-11

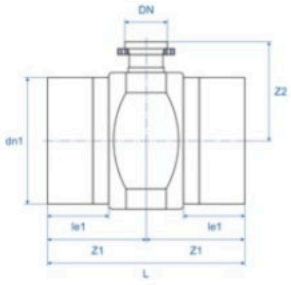
Continued...

SDR17 PN10	SDR11 PN16	dn1	DN Offtake	L	le1	Z1	Minimum Dimension Z2	Availability in Hong Kong
P5314.44.1000250	P5316.44.1000250	1000	DN250 PN16	1260	400	630	≥ 690	6-8 Weeks
P5314.44.1000300	P5316.44.1000300	1000	DN300 PN16	1295	400	648	≥ 690	6-8 Weeks
P5314.44.1000350≥	P5316.44.1000350	1000	DN350 PN16	1335	400	668	≥ 720	6-8 Weeks
P5314.44.1200150	Not Available	1200	DN150 PN16	1160	400	580	≥ 750	6-8 Weeks
P5314.44.1200200	Not Available	1200	DN200 PN16	1225	400	613	≥ 770	6-8 Weeks
P5314.44.1200250	Not Available	1200	DN250 PN16	1280	400	640	≥ 790	6-8 Weeks
P5314.44.1200300	Not Available	1200	DN300 PN16	1315	400	658	≥ 790	6-8 Weeks
P5314.44.1200350	Not Available	1200	DN350 PN16	1355	400	678	≥ 820	6-8 Weeks

Dimension Z2 is the minimum that can be fabricated, tees can be ordered with Z2 at any height greater than Z2 given above.
The table shows typical air valve size offtakes, Larger flanged DN200 offtakes are available *here*. for threaded DN50 BSP off takes use the spigot air valve tees below and combine with a *reducer* and *transition adaptor*.

Larger sizes up to dn2000 are available in PN10 / SDR 17 rating, dimensions on request.

Flanges BS EN 1092-1 PN16 drilling, FBE coated backing flanges are factory fitted, they can be rotatated, but cannot be removed. Other flange drillings avaialble on request.



Product fully complies with DSD PS

Fabricated Air Valve Tees / Spigot Offtake

PN10-16 / SDR17-11

As previous, however without the flanged offtake. A spigot offtake allows other many other connection options such as: Electrofusion of a DN50 BSP threaded transition adaptor, the fusion of a 90° elbow to plumb the air valves away from above the tee. This may be necessary where space above the pipeline prevents the direct connection of the air valve, or multiple smaller air valves are to be installed onto one outlet to improve air release reliability.

Designers should consider using Air Entrapment Tees for pipelines above DN350, these are a more common connection method for air valves in sewer rising mains.

SDR17 PN10	SDR11 PN16	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.44.110063	P5316.44.110063	110	63	420	150	150	210	255	6-8 Weeks
P5314.44.110090	P5316.44.110090	110	90	445	150	150	223	255	6-8 Weeks
P5314.41.160063	P5316.41.160063	160	63	420	150	150	210	255	6-8 Weeks
P5314.41.160090	P5316.41.160090	160	90	445	150	150	223	255	6-8 Weeks
P5314.41.160110	P5316.41.160110	160	110	465	150	150	233	255	6-8 Weeks
P5314.41.160125	P5316.41.160125	160	125	480	150	150	240	255	6-8 Weeks
P5314.41.200063	P5316.41.200063	200	63	420	150	150	210	275	6-8 Weeks
P5314.41.200090	P5316.41.200090	200	90	445	150	150	223	275	6-8 Weeks
P5314.41.200110	P5316.41.200110	200	110	470	150	150	235	275	6-8 Weeks
P5314.41.200125	P5316.41.200125	200	125	480	150	150	240	275	6-8 Weeks
P5314.41.200160	P5316.41.200160	200	160	530	150	150	265	280	6-8 Weeks
P5314.41.225063	P5316.41.225063	225	63	420	150	150	210	288	6-8 Weeks
P5314.41.225090	P5316.41.225090	225	90	445	150	150	223	288	6-8 Weeks
P5314.41.225110	P5316.41.225110	225	110	470	150	150	235	288	6-8 Weeks
P5314.41.225125	P5316.41.225125	225	125	480	150	150	240	288	6-8 Weeks
P5314.41.225160	P5316.41.225160	225	160	530	150	150	265	293	6-8 Weeks
P5314.41.250063	P5316.41.250063	250	63	620	250	150	310	300	6-8 Weeks
P5314.41.250090	P5316.41.250090	250	90	645	250	150	323	300	6-8 Weeks
P5314.41.250110	P5316.41.250110	250	110	670	250	150	335	300	6-8 Weeks
P5314.41.250125	P5316.41.250125	250	125	680	250	150	340	300	6-8 Weeks
P5314.41.250160	P5316.41.250160	250	160	730	250	150	365	305	6-8 Weeks
P5314.41.280063	P5316.41.280063	280	63	630	250	150	315	320	6-8 Weeks
P5314.41.280090	P5316.41.280090	280	90	660	250	150	330	320	6-8 Weeks
P5314.41.280110	P5316.41.280110	280	110	680	250	150	340	320	6-8 Weeks
P5314.41.280125	P5316.41.280125	280	125	690	250	150	345	320	6-8 Weeks
P5314.41.280160	P5316.41.280160	280	160	740	250	150	370	325	6-8 Weeks
P5314.41.315063	P5316.41.315063	315	63	730	300	150	365	338	6-8 Weeks
P5314.41.315090	P5316.41.315090	315	90	760	300	150	380	338	6-8 Weeks
P5314.41.315110	P5316.41.315110	315	110	780	300	150	390	338	6-8 Weeks
P5314.41.315125	P5316.41.315125	315	125	790	300	150	395	338	6-8 Weeks
P5314.41.315160	P5316.41.315160	315	160	840	300	150	420	343	6-8 Weeks
P5314.41.315180	P5316.41.315180	315	180	860	300	150	430	343	6-8 Weeks
P5314.41.355090	P5316.41.355090	355	90	760	300	150	380	358	6-8 Weeks
P5314.41.355110	P5316.41.355110	355	110	780	300	150	390	358	6-8 Weeks
P5314.41.355125	P5316.41.355125	355	125	790	300	150	395	358	6-8 Weeks
P5314.41.355160	P5316.41.355160	355	160	840	300	150	420	363	6-8 Weeks
P5314.41.400090	P5316.41.400090	400	90	760	300	150	380	380	6-8 Weeks
P5314.41.400110	P5316.41.400110	400	110	780	300	150	390	380	6-8 Weeks
P5314.41.400125	P5316.41.400125	400	125	790	300	150	395	380	6-8 Weeks
P5314.41.400160	P5316.41.400160	400	160	840	300	150	420	385	6-8 Weeks
P5314.41.450110	P5316.41.450110	450	110	780	300	150	390	405	6-8 Weeks
P5314.41.450125	P5316.41.450125	450	125	790	300	150	395	405	6-8 Weeks
P5314.41.450160	P5316.41.450160	450	160	840	300	150	420	410	6-8 Weeks
P5314.41.500125	P5316.41.500125	500	125	890	350	150	445	430	6-8 Weeks
P5314.41.500160	P5316.41.500160	500	160	940	350	150	470	435	6-8 Weeks
P5314.41.560160	P5316.41.560160	560	160	940	350	150	470	465	6-8 Weeks
P5314.41.560200	P5316.41.560200	560	200	980	350	150	490	465	6-8 Weeks
P5314.41.560225	P5316.41.560225	560	225	1000	350	150	500	465	6-8 Weeks
P5314.41.560250	P5316.41.560250	560	250	1030	350	250	515	565	6-8 Weeks
P5314.41.560280	P5316.41.560280	560	280	1060	350	250	530	565	6-8 Weeks
P5314.41.630160	P5316.41.630160	630	160	940	350	150	470	500	6-8 Weeks
P5314.41.630200	P5316.41.630200	630	200	980	350	150	490	500	6-8 Weeks
P5314.41.630225	P5316.41.630225	630	225	1000	350	150	500	500	6-8 Weeks
P5314.41.630250	P5316.41.630250	630	250	1030	350	250	515	600	6-8 Weeks
P5314.41.630280	P5316.41.630280	630	280	1160	350	250	580	600	6-8 Weeks

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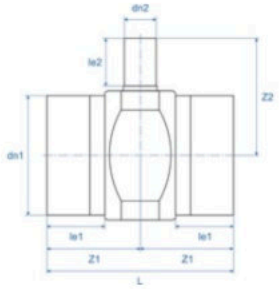
Fabricated Air Valve Tees / Spigot Offtake

PN10-16 / SDR17-11

Continued...

SDR17 PN10	SDR11 PN16	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.41.710160	P5316.41.710160	710	160	980	350	150	490	545	6-8 Weeks
P5314.41.710200	P5316.41.710200	710	200	1020	350	150	510	545	6-8 Weeks
P5314.41.710225	P5316.41.710225	710	225	1045	350	150	523	545	6-8 Weeks
P5314.41.710250	P5316.41.710250	710	250	1070	350	250	535	645	6-8 Weeks
P5314.41.710280	P5316.41.710280	710	280	1100	350	250	550	645	6-8 Weeks
P5314.41.800160	P5316.41.800160	800	160	1000	350	150	500	590	6-8 Weeks
P5314.41.800200	P5316.41.800200	800	200	1040	350	150	520	590	6-8 Weeks
P5314.41.800225	P5316.41.800225	800	225	1065	350	150	533	590	6-8 Weeks
P5314.41.800250	P5316.41.800250	800	250	1090	350	250	545	690	6-8 Weeks
P5314.41.800280	P5316.41.800280	800	280	1120	350	250	560	690	6-8 Weeks
P5314.41.800315	P5316.41.800315	800	315	455	-	300	-	-	6-8 Weeks
P5314.41.900160	P5316.41.900160	900	160	1120	400	150	560	640	6-8 Weeks
P5314.41.900200	P5316.41.900200	900	200	1160	400	150	580	640	6-8 Weeks
P5314.41.900225	P5316.41.900225	900	225	1185	400	150	593	640	6-8 Weeks
P5314.41.900250	P5316.41.900250	900	250	1210	400	250	605	740	6-8 Weeks
P5314.41.900280	P5316.41.900280	900	280	1240	400	250	620	740	6-8 Weeks
P5314.41.900315	P5316.41.900315	900	315	1275	400	300	638	790	6-8 Weeks
P5314.41.1000160	P5316.41.1000160	1000	160	1140	400	150	570	700	6-8 Weeks
P5314.41.1000200	P5316.41.1000200	1000	200	1180	400	150	590	700	6-8 Weeks
P5314.41.1000225	P5316.41.1000225	1000	225	1205	400	150	603	700	6-8 Weeks
P5314.41.1000250	P5316.41.1000250	1000	250	1230	400	250	615	800	6-8 Weeks
P5314.41.1000280	P5316.41.1000280	1000	280	1260	400	250	630	800	6-8 Weeks
P5314.41.1000315	P5316.41.1000315	1000	315	1295	400	300	648	850	6-8 Weeks
P5314.41.1000355	P5316.41.1000355	1000	355	1335	400	300	668	850	6-8 Weeks
P5314.41.1200160	Not Available	1200	160	1160	400	150	580	800	6-8 Weeks
P5314.41.1200200	Not Available	1200	200	1200	400	150	600	800	6-8 Weeks
P5314.41.1200225	Not Available	1200	225	1225	400	150	613	800	6-8 Weeks
P5314.41.1200250	Not Available	1200	250	1250	400	250	625	900	6-8 Weeks
P5314.41.1200280	Not Available	1200	280	1280	400	250	640	900	6-8 Weeks
P5314.41.1200315	Not Available	1200	315	1315	400	300	658	950	6-8 Weeks
P5314.41.1200355	Not Available	1200	355	1355	400	300	678	950	6-8 Weeks
Larger sizes up to dn2000 are available in PN10 / SDR17, dimensions Available on Request.									
Smaller size pipelines < dn355 would typically use *moulded air valve tees*.									



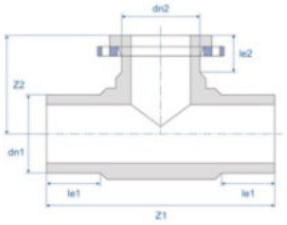
Product fully complies with DSD PS

Air Entrapment Tee / Flanged Offtake / Moulded

Fully pressure rated PE100+ fabricated assembly with long spigot ends for electrofusion on-site. Matched with a 316 Stainless Steel flanged blanking plate and a flanged or threaded reducing outlet for connection to the PE assembly with an O-Ring NBR seal. This fitting can be used for the direct connection of a sewer air valve onto the pipeline or attached to PE flange adaptor and 90º bend, allowing one or more air valves to be located in an alternate location on an air release/intake manifold.

The matching grade 316 Stainless steel flanged plate resists H2SO4 attack and provides a maintenance-free performance equivalent to the life of the PE pipe. The flange offtake size is configurable in various combinations to suit the application - Refer to the flange blanking plate table.

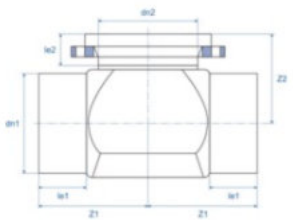
PN10 SDR17	PN16 SDR11	dn1	dn2	Z1	le	Z2	Availability in Hong Kong
P5314.C6.250250	P5316.C6.250250	250	250 FL 250 PN16	535	130	≥ 273	8-12 weeks
P5314.C6.280250	P5316.C6.280250	280	280 FL 250 PN16	602	139	≥ 292	8-12 weeks
P5314.C6.315300	P5316.C6.315300	315	315 FL 300 PN16	650	150	≥ 317	8-12 weeks
P5314.C6.355350	P5316.C6.355350	355	355 FL 350 PN16	722	168	≥ 376	8-12 weeks
P5314.C6.400400	P5316.C6.400400	400	400 FL 400 PN16	728	145	≥ 408	8-12 weeks
P5314.C6.450450	P5316.C6.450450	450	450 FL 450 PN16	890	195	≥ 443	8-12 weeks
P5314.C6.500500	Select from the table below	500	500 FL 500 PN16	1036	230	≥ 489	8-12 weeks
P5314.C6.560500	Select from the table below	560	560 FL 500 PN16	1085	230	≥ 541	8-12 weeks
P5314.C6.630600	Select from the table below	630	630 FL 600 PN16	1175	230	≥ 586	8-12 weeks
Z2 (height of off take flange) is shown as '≥ XXX' meaning this product can be custom ordered with a Z2 dimension equal to or greater than that given in this table.							
This assembly is combined with a 316SS flanged blanking plate selected from the table below. Includes seal and 316 (A4) stainless fastenings.							



Air Entrapment Tee / Flanged Offtake / Fabricated

As per Moulded using fabricated PE tees offering PN16 pressure ratings in larger sizes

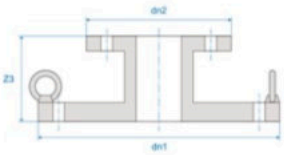
PN10 SDR17	PN16 SDR11	dn1	dn2	L	le	Z1	Z2	Availability in Hong Kong
P5314.44.355350	P5316.44.355350	355	355 FL 350 PN16	1045	300	523	≥ 376	8-12 weeks
P5314.44.400400	P5316.44.400400	400	400 FL 400 PN16	1100	300	550	≥ 408	8-12 weeks
P5314.44.450450	P5316.44.450450	450	450 FL 450 PN16	1160	300	580	≥ 443	8-12 weeks
P5314.44.500500	P5316.44.500500	500	500 FL 500 PN16	1310	350	655	≥ 489	8-12 weeks
P5314.44.560500	P5316.44.560500	560	560 FL 500 PN16	1380	350	690	≥ 541	8-12 weeks
P5314.44.630600	P5316.44.630600	630	630 FL 600 PN16	1450	350	725	≥ 586	8-12 weeks
P5314.44.710700	P5316.44.710700	710	710 FL 700 PN16	1530	350	765	≥ 675	8-12 weeks
P5314.44.800800	P5316.44.800800	800	800 FL 800 PN16	1660	350	830	≥ 743	8-12 weeks
P5314.44.900900	P5316.44.900900	900	900 FL 900 PN16	1860	400	930	≥ 815	8-12 weeks
P5314.44.10001000	P5316.44.10001000	1000	1000 FL 1000 PN16	1960	400	980	≥ 886	8-12 weeks
P5314.44.12001200	PN16 not available	1200	1200 FL 1200 PN16	2170	400	1085	≥ 1044	8-12 weeks
The above assembly is combined with a 316SS flanged blanking plate selected from the table below. Includes seal and 316 (A4) stainless fastenings.								
Larger sizes in SDR17 / PN10 available to DN1800.								
This assembly is combined with a 316SS flanged blanking plate selected from the table below. Includes seal and 316 (A4) stainless fastenings.								

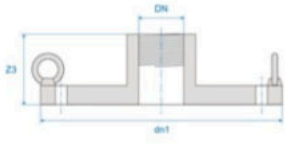


Air Entrapment Blanking Flange with Offtake / PN16

Fabricated from 316 Stainless steel complying to BS EN 10088-2 Grade 1.4401 or 1.4404. Both flanges are BS EN 1092-1 rated and drilled PN16 unless indicated as a 'BSP' threaded SS socket for DN 50 offtakes. All Flanges supplied with SS lifting hooks blind threaded into the flange.

Product Code	DN1 (Blanking Flange)	DN2 (off-take) Flanged unless stated as BSP	Z3	Availability in Hong Kong
P09S6.557.25088	250	50 BSP	109	8-12 Weeks
P09S6.G6.250080	250	80	114	8-12 Weeks
P09S6.G6.250100	250	100	126	8-12 Weeks
P09S6.557.30088	300	50 BSP	112	8-12 Weeks
P09S6.G6.300080	300	80	117	8-12 Weeks
P09S6.G6.300100	300	100	129	8-12 Weeks
P09S6.557.35088	350	50 BSP	115	8-12 Weeks
P09S6.G6.350080	350	80	120	8-12 Weeks
P09S6.G6.350100	350	100	132	8-12 Weeks
P09S6.557.40088	400	50 BSP	120	8-12 Weeks
P09S6.G6.400080	400	80	125	8-12 Weeks
P09S6.G6.400100	400	100	137	8-12 Weeks
P09S6.557.45088	450	50 BSP	122	8-12 Weeks
P09S6.G6.450080	450	80	127	8-12 Weeks
P09S6.G6.450100	450	100	139	8-12 Weeks
P09S6.557.50088	500	50 BSP	126	8-12 Weeks
P09S6.G6.500080	500	80	131	8-12 Weeks
P09S6.G6.500100	500	100	143	8-12 Weeks
P09S6.G6.600080	600	80	140	8-12 Weeks
P09S6.G6.600100	600	100	152	8-12 Weeks
P09S6.G6.710080	710	80	148	8-12 Weeks
P09S6.G6.710100	710	100	160	8-12 Weeks
P09S6.G6.710150	710	150	187	8-12 Weeks
P09S6.G6.800080	800	80	159	8-12 Weeks
P09S6.G6.800100	800	100	171	8-12 Weeks
P09S6.G6.800150	800	150	198	8-12 Weeks
P09S6.G6.800200	800	200	210	8-12 Weeks
P09S6.G6.900080	900	80	167	8-12 Weeks
P09S6.G6.900100	900	100	179	8-12 Weeks
P09S6.G6.900150	900	150	206	8-12 Weeks
P09S6.G6.900200	900	200	218	8-12 Weeks
P09S6.G6.1000080	1000	80	175	8-12 Weeks
P09S6.G6.1000100	1000	100	187	8-12 Weeks
P09S6.G6.1000150	1000	150	214	8-12 Weeks
P09S6.G6.1000200	1000	200	226	8-12 Weeks
P09S6.G6.1000250	1000	250	239	8-12 Weeks
P09S6.G6.1200080	1200	80	185	8-12 Weeks
P09S6.G6.1200100	1200	100	197	8-12 Weeks
P09S6.G6.1200150	1200	150	224	8-12 Weeks
P09S6.G6.1200200	1200	200	236	8-12 Weeks
P09S6.G6.1200250	1200	250	249	8-12 Weeks
P09S6.G6.1200300	1200	300	262	8-12 Weeks
The blanking flange is fabricated to order so any combination of flange and off-take is available, typical combinations are shown above.				





Black BSP EF Saddle VAM RG TL / PN16 / SDR11

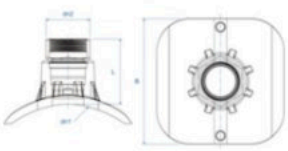
This Friatec valve tapping saddle includes an integrated Gunmetal threaded adaptor, typically used for attaching DN50 air valves via a threaded ball valve for isolation. Installation can be either during construction or post-construction when the pipeline is under normal operating pressure. If operational, the connection can be made 'live' using under pressure tapping equipment. This prevents the main having to be shut down during the installation process.

The VAM RG must be installed using a top-loading clamping unit, to apply and maintain force on the saddle during the fusing and cooling period. The Top Loading unit is available for rental.

Pressure test of the saddle after fusion is recommended, before drilling the tapping hole into the main pipe.

Saddle fittings allow for very compact Air Valve connections where space above the crown of the pipe is limited, they also allow the air valves to be installed at a later date after the high points in the pipeline have been established. The VAM RG TL can fit onto a wide range of pipe sizes from dn250 to dn560.

Product Code	dn1	dn2	L	B	Availability in Hong Kong
P3316.194.25056088	250 - 560	2" BSP	90	200	Ex-Stock



Black Spigot Saddle / SA UNI / PN16 / SDR11

The Friatec SA UNI electrofusion spigot saddles are typically used for attaching air valves via a flanged connection. The SA UNI can be installed during construction or post-construction when the pipeline is under normal operating pressure. Connections can be made 'live' using under pressure tapping equipment. This prevents the main having to be shut down during the installation process.

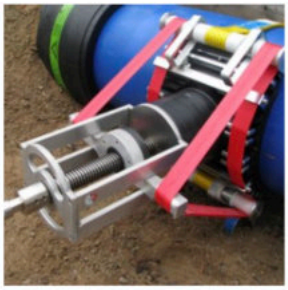
Pressure test of the saddle after fusion is recommended, before drilling the tapping hole into the main pipe via integrated pressure nozzle and pressure test adaptor - FWDPA.

Assembly is conducted using the FRIATOOLS clamping unit UNITOP. Tapping in the unpressurised condition can be achieved using the correct size hole saw.

The transition to the flange for connecting the isolations valve and air valve assembly is made using a standard Coupler and Flange adaptor onto the saddles spigot outlet.

NOTE: The pipe surface must be prepared in accordance with the general installation instructions using a mechanical saddle peeler, 90% Isopropyl alcohol wipes and we recommend using the Friamat fusion control unit to achieve correct preheating and logging the full range of weld data available.

Product Code	dn1	dn2	L1	L2	le	Z	da	Availability in Hong Kong
P3316.187.250-28090	250-280	90	260	279	79	130	66	8-12 weeks
P3316.187.250-280125	250-280	125	260	279	87	146	94	8-12 weeks
P3316.187.315-40090	315-400	90	280	279	79	130	66	8-12 weeks
P3316.187.315-400125	315-400	125	280	279	87	146	94	8-12 weeks
P3316.187.450-80090	450-800	90	307	279	79	130	66	8-12 weeks
P3316.187.450-800125	450-800	125	307	279	87	146	94	8-12 weeks
Larger DN150 (DN/OD 160) saddle offtakes with a DN150 / 160 OD flange adaptor are available on request.								



Tees & Offtakes

Mill-Pro offers a wide range of injection moulded and fabricated tee pieces in both Blue and Black including:

- Injection Moulded Electrofusion Tees
- Injection Moulded Spigot Tees
- Electrofusion Saddles
- Fabricated Tees.

Injection moulded Electrofusion Tees are used for smaller diameter pipelines (≤ 315 OD). Moulded in a single shot and in both equal and reducing offtakes. They do not contain angled butt welds and do not require de-ration.

Injection moulded Spigot Tees are moulded in a single shot and are available in sizes up to dn 630 in equal and reducing offtakes. They do not contain angled butt welds and do not require de-ration.

Electrofusion Saddles are ideal for smaller diameter takeoffs in larger size mains where cutting in a Tee causes significant disruption and cost. Saddles can be used to conduct live cut-ins to existing pipelines and install air valves in locations where clearance above the pipe crown is limited.

Fabricated Tees in sizes from dn355 are manufactured by CNC machining a 'Fitting Body' from extruded hollow PE bar then pipe spigots are factory butt-welded on. The required tee reinforcement is incorporated directly into the fitting body during machining, therefore they do not require de-ration (see Fig.1 below). Any custom tee design can be made in any size, including reducing, scour and angled off takes. Fabricated tees are ideal for use in valve and pump chambers, where unique one-off components can be manufactured, eliminating Ductile Iron fittings to reduce long term maintenance.

Note: The specifications for fabrication and type testing for the supply of fabricated fittings to ensure their performance, are given in the Hong Kong Drainage Services Department, Appendix 5A, Clause 5.5.7.

Segmented Tees *are prohibited in the Hong Kong Drainage Supplies Department (DSD) network.* DSD Appendix 5A, Clause 5.5.6 prohibits the use of segmented tees. A segmented Tee is manufactured by cutting PE pipe at a 45º angle and butt welding the pipe segments together (described in BS EN 12201-3 Annex B5). Refer fabricated bends Fig.2 for a more detailed explanation of de-ration). According to BS EN 12210-3 Annex A, Figure B.4 A segmented Tee fabricated from PN10 pipe must have a de-rating factor of 0.6x (60%) applied to the original pipes PN rating, so a PN10 Segmented Tee is derated to PN6. This makes a segmented tee, fabricated from PN10 pipe, unusable in a PN10 rising main.

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Product fully complies with **DSD PS**

This mark is used to identify Mill-Pro products that meet the requirements of the Drainage Supplies Department PS Appendix 22.09. The use of this mark is not endorsed by the DSD and is not intended to infer approval by the DSD.

Black Spigot Equal Tee Fabricated

Fabricated Tee's are manufactured by machining PE100+ hollow bar into a fitting body and welding on spigot ends in according with BS ISO 21307. Fabricated Tee's feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability. All Tee's are sealed in individual plastic bags for protection on site.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

PN10 SDR17	PN16 SDR11	PN20 SDR9	PN25 SDR7.4	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.40.110	P5316.40.110	P5317.40.110	P5318.40.110	110	110	525	150	180	263	290	6-8 Weeks
P5314.40.160	P5316.40.160	P5317.40.160	P5318.40.160	160	160	525	150	180	263	290	6-8 Weeks
P5314.40.180	P5316.40.180	P5317.40.180	P5318.40.180	180	180	545	150	220	273	340	6-8 Weeks
P5314.40.200	P5316.40.200	P5317.40.200	P5318.40.200	200	200	575	150	220	288	355	6-8 Weeks
P5314.40.225	P5316.40.225	P5317.40.225	P5318.40.225	225	225	600	150	220	300	368	6-8 Weeks
P5314.40.250	P5316.40.250	P5317.40.250	P5318.40.250	250	250	830	250	220	415	380	6-8 Weeks
P5314.40.280	P5316.40.280	P5317.40.280	P5318.40.280	280	280	890	250	220	345	400	6-8 Weeks
P5314.40.315	P5316.40.315	P5317.40.315	P5318.40.315	315	315	1005	300	220	503	418	6-8 Weeks
P5314.40.355	P5316.40.355	P5317.40.355	P5318.40.355	355	355	1045	300	280	523	498	6-8 Weeks
P5314.40.400	P5316.40.400	P5317.40.400	P5318.40.400	400	400	1100	300	280	550	525	6-8 Weeks
P5314.40.450	P5316.40.450	P5317.40.450	P5318.40.450	450	450	1160	300	280	580	555	6-8 Weeks
P5314.40.500	P5316.40.500	P5317.40.500	-	500	500	1310	350	320	655	620	6-8 Weeks
P5314.40.560	P5316.40.560	P5317.40.560	-	560	560	1380	350	320	690	655	6-8 Weeks
P5314.40.630	P5316.40.630	P5317.40.630	-	630	630	1450	350	320	725	690	6-8 Weeks
P5314.40.710	P5316.40.710	P5317.40.710	-	710	710	1530	350	400	765	810	12-14 weeks
P5314.40.800	P5316.40.800	P5317.40.800	-	800	800	1660	350	400	830	875	12-14 weeks
P5314.40.900	P5316.40.900	-	-	900	900	1860	400	500	930	1020	12-14 weeks
P5314.40.1000	P5316.40.1000	-	-	1000	1000	1960	400	500	980	1070	12-14 weeks
P5314.40.1200	-	-	-	1200	1200	2170	400	600	1085	1270	12-14 weeks
P2314.40.1400	-	-	-	1400	1400	Available on request					Contact us
P2314.40.1600	-	-	-	1600	1600	Available on request					Contact us
P2314.40.1800	-	-	-	1800	1800	Available on request					Contact us
P2314.40.2000	-	-	-	2000	2000	Available on request					Contact us

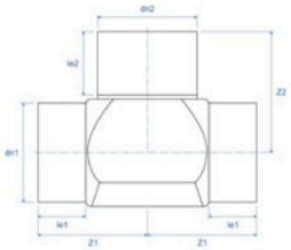
Larger sizes up to dn2000 are available in SDR17 / PN10 rating, dimensions on request.

Fully complies with DSD Appendix 5A, Clause 5.5.7.

dn1000 tees are available in SDR11 / PN16 rating, dimensions on request.

For smaller sizes use *Electrofusion Tees above.*

dn800 is the largest size pipe available in SDR9 / PN20 and therefore is also the largest tee size available.



Product fully complies with DSD PS

Black Reducing Tees / Fabricated

Fabricated Tee's are manufactured by machining PE100+ hollow bar into a fitting body and welding on spigot ends in according with BS ISO 21307. Fabricated Tee's feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

NOTE: The spigot ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

PN10 SDR17	PN16 SDR11	PN20 SDR9	PN25 SDR7.4	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.41.110063	P5316.41.110063	P5317.41.110063	P5318.41.110063	110	63	420	150	180	210	285	6-8 Weeks
P5314.41.110090	P5316.41.110090	P5317.41.110090	P5318.41.110090	110	90	445	150	180	223	285	6-8 Weeks
P5314.41.160063	P5316.41.160063	P5317.41.160063	P5318.41.160063	160	63	420	150	180	210	285	6-8 Weeks
P5314.41.160090	P5316.41.160090	P5317.41.160090	P5318.41.160090	160	90	445	150	180	223	285	6-8 Weeks
P5314.41.160110	P5316.41.160110	P5317.41.160110	P5318.41.160110	160	110	465	150	180	233	285	6-8 Weeks
P5314.41.160125	P5316.41.160125	P5317.41.160125	P5318.41.160125	160	125	480	150	180	240	285	6-8 Weeks
P5314.41.180063	P5316.41.180063	P5317.41.180063	P5318.41.180063	180	63	420	150	180	210	295	6-8 Weeks
P5314.41.180090	P5316.41.180090	P5317.41.180090	P5318.41.180090	180	90	450	150	180	225	295	6-8 Weeks
P5314.41.180110	P5316.41.180110	P5317.41.180110	P5318.41.180110	180	110	465	150	180	233	295	6-8 Weeks
P5314.41.180125	P5316.41.180125	P5317.41.180125	P5318.41.180125	180	125	480	150	180	240	295	6-8 Weeks
P5314.41.180160	P5316.41.180160	P5317.41.180160	P5318.41.180160	180	160	530	150	180	265	300	6-8 Weeks
P5314.41.200063	P5316.41.200063	P5317.41.200063	P5318.41.200063	200	63	420	150	180	210	305	6-8 Weeks
P5314.41.200090	P5316.41.200090	P5317.41.200090	P5318.41.200090	200	90	445	150	180	223	305	6-8 Weeks
P5314.41.200110	P5316.41.200110	P5317.41.200110	P5318.41.200110	200	110	470	150	180	235	305	6-8 Weeks
P5314.41.200125	P5316.41.200125	P5317.41.200125	P5318.41.200125	200	125	480	150	180	240	305	6-8 Weeks
P5314.41.200160	P5316.41.200160	P5317.41.200160	P5318.41.200160	200	160	530	150	180	265	310	6-8 Weeks
P5314.41.200180	P5316.41.200180	P5317.41.200180	P5318.41.200180	200	180	550	150	220	275	350	6-8 Weeks
P5314.41.225063	P5316.41.225063	P5317.41.225063	P5318.41.225063	225	63	420	150	180	210	318	6-8 Weeks
P5314.41.225090	P5316.41.225090	P5317.41.225090	P5318.41.225090	225	90	445	150	180	223	318	6-8 Weeks
P5314.41.225110	P5316.41.225110	P5317.41.225110	P5318.41.225110	225	110	470	150	180	235	318	6-8 Weeks
P5314.41.225125	P5316.41.225125	P5317.41.225125	P5318.41.225125	225	125	480	150	180	240	318	6-8 Weeks
P5314.41.225160	P5316.41.225160	P5317.41.225160	P5318.41.225160	225	160	530	150	180	265	323	6-8 Weeks
P5314.41.225180	P5316.41.225180	P5317.41.225180	P5318.41.225180	225	180	550	150	220	275	363	6-8 Weeks
P5314.41.225200	P5316.41.225200	P5317.41.225200	P5318.41.225200	225	200	570	150	220	285	363	6-8 Weeks
P5314.41.250063	P5316.41.250063	P5317.41.250063	P5318.41.250063	250	63	620	250	180	310	330	6-8 Weeks
P5314.41.250090	P5316.41.250090	P5317.41.250090	P5318.41.250090	250	90	645	250	180	323	330	6-8 Weeks
P5314.41.250110	P5316.41.250110	P5317.41.250110	P5318.41.250110	250	110	670	250	180	335	330	6-8 Weeks
P5314.41.250125	P5316.41.250125	P5317.41.250125	P5318.41.250125	250	125	680	250	180	340	330	6-8 Weeks
P5314.41.250160	P5316.41.250160	P5317.41.250160	P5318.41.250160	250	160	730	250	180	365	335	6-8 Weeks
P5314.41.250180	P5316.41.250180	P5317.41.250180	P5318.41.250180	250	180	750	250	220	375	375	6-8 Weeks
P5314.41.250200	P5316.41.250200	P5317.41.250200	P5318.41.250200	250	200	770	250	220	385	375	6-8 Weeks
P5314.41.250225	P5316.41.250225	P5317.41.250225	P5318.41.250225	250	225	790	250	220	395	375	6-8 Weeks
P5314.41.280063	P5316.41.280063	P5317.41.280063	P5318.41.280063	280	63	630	250	180	315	350	6-8 Weeks
P5314.41.280090	P5316.41.280090	P5317.41.280090	P5318.41.280090	280	90	660	250	180	330	350	6-8 Weeks
P5314.41.280110	P5316.41.280110	P5317.41.280110	P5318.41.280110	280	110	680	250	180	340	350	6-8 Weeks
P5314.41.280125	P5316.41.280125	P5317.41.280125	P5318.41.280125	280	125	690	250	180	345	350	6-8 Weeks
P5314.41.280160	P5316.41.280160	P5317.41.280160	P5318.41.280160	280	160	740	250	180	370	355	6-8 Weeks
P5314.41.280180	P5316.41.280180	P5317.41.280180	P5318.41.280180	280	180	760	250	220	380	395	6-8 Weeks
P5314.41.280200	P5316.41.280200	P5317.41.280200	P5318.41.280200	280	200	780	250	220	390	395	6-8 Weeks
P5314.41.280225	P5316.41.280225	P5317.41.280225	P5318.41.280225	280	225	790	250	220	395	395	6-8 Weeks
P5314.41.280250	P5316.41.280250	P5317.41.280250	P5318.41.280250	280	250	830	250	220	415	395	6-8 Weeks
P5314.41.315063	P5316.41.315063	P5317.41.315063	P5318.41.315063	315	63	730	300	180	365	368	6-8 Weeks
P5314.41.315090	P5316.41.315090	P5317.41.315090	P5318.41.315090	315	90	760	300	180	380	368	6-8 Weeks
P5314.41.315110	P5316.41.315110	P5317.41.315110	P5318.41.315110	315	110	780	300	180	390	368	6-8 Weeks
P5314.41.315125	P5316.41.315125	P5317.41.315125	P5318.41.315125	315	125	790	300	180	395	368	6-8 Weeks
P5314.41.315160	P5316.41.315160	P5317.41.315160	P5318.41.315160	315	160	840	300	180	420	373	6-8 Weeks
P5314.41.315180	P5316.41.315180	P5317.41.315180	P5318.41.315180	315	180	860	300	220	430	413	6-8 Weeks
P5314.41.315200	P5316.41.315200	P5317.41.315200	P5318.41.315200	315	200	880	300	220	440	413	6-8 Weeks
P5314.41.315225	P5316.41.315225	P5317.41.315225	P5318.41.315225	315	225	890	300	220	445	413	6-8 Weeks
P5314.41.315250	P5316.41.315250	P5317.41.315250	P5318.41.315250	315	250	930	300	220	465	413	6-8 Weeks
P5314.41.315280	P5316.41.315280	P5317.41.315280	P5318.41.315280	315	280	960	300	220	480	413	6-8 Weeks

Continued on next page

Black Reducing Tees / Fabricated

Continued...

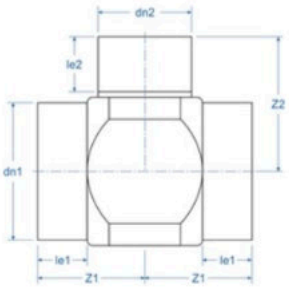
PN10 SDR17	PN16 SDR11	PN20 SDR9	PN25 SDR7.4	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.41.355090	P5316.41.355090	P5317.41.355090	P5318.41.355090	355	90	760	300	180	380	388	6-8 Weeks
P5314.41.355110	P5316.41.355110	P5317.41.110780	P5318.41.355110	355	110	780	300	180	390	388	6-8 Weeks
P5314.41.355125	P5316.41.355125	P5317.41.355125	P5318.41.355125	355	125	790	300	180	395	388	6-8 Weeks
P5314.41.355160	P5316.41.355160	P5317.41.355160	P5318.41.355160	355	160	840	300	180	420	393	6-8 Weeks
P5314.41.355180	P5316.41.355180	P5317.41.355180	P5318.41.355180	355	180	860	300	220	430	433	6-8 Weeks
P5314.41.355200	P5316.41.355200	P5317.41.355200	P5318.41.355200	355	200	880	300	220	440	433	6-8 Weeks
P5314.41.355225	P5316.41.355225	P5317.41.355225	P5318.41.355225	355	225	900	300	220	450	433	6-8 Weeks
P5314.41.355250	P5316.41.355250	P5317.41.355250	P5318.41.355250	355	250	930	300	220	465	433	6-8 Weeks
P5314.41.355280	P5316.41.355280	P5317.41.355280	P5318.41.355280	355	280	960	300	220	480	433	6-8 Weeks
P5314.41.355315	P5316.41.355315	P5317.41.355315	P5318.41.355315	355	315	990	300	220	495	433	6-8 Weeks
P5314.41.400090	P5316.41.400090	P5317.41.400090	P5318.41.400090	400	90	760	300	180	380	410	6-8 Weeks
P5314.41.400110	P5316.41.400110	P5317.41.400110	P5318.41.400110	400	110	780	300	180	390	410	6-8 Weeks
P5314.41.400125	P5316.41.400125	P5317.41.400125	P5318.41.400125	400	125	790	300	180	395	410	6-8 Weeks
P5314.41.400160	P5316.41.400160	P5317.41.400160	P5318.41.400160	400	160	840	300	180	420	415	6-8 Weeks
P5314.41.400180	P5316.41.400180	P5317.41.400180	P5318.41.400180	400	180	860	300	220	430	455	6-8 Weeks
P5314.41.400200	P5316.41.400200	P5317.41.400200	P5318.41.400200	400	200	880	300	220	440	455	6-8 Weeks
P5314.41.400225	P5316.41.400225	P5317.41.400225	P5318.41.400225	400	225	900	300	220	450	455	6-8 Weeks
P5314.41.400250	P5316.41.400250	P5317.41.400250	P5318.41.400250	400	250	930	300	220	465	455	6-8 Weeks
P5314.41.400280	P5316.41.400280	P5317.41.400280	P5318.41.400280	400	280	960	300	220	480	455	6-8 Weeks
P5314.41.400315	P5316.41.400315	P5317.41.400315	P5318.41.400315	400	315	1000	300	220	500	455	6-8 Weeks
P5314.41.400355	P5316.41.400355	P5317.41.400355	P5318.41.400355	400	355	1030	300	280	515	515	6-8 Weeks
P5314.41.450110	P5316.41.450110	P5317.41.450110	P5318.41.450110	450	110	780	300	180	390	435	6-8 Weeks
P5314.41.450125	P5316.41.450125	P5317.41.450125	P5318.41.450125	450	125	790	300	180	395	435	6-8 Weeks
P5314.41.450160	P5316.41.450160	P5317.41.450160	P5318.41.450160	450	160	840	300	180	420	440	6-8 Weeks
P5314.41.450180	P5316.41.450180	P5317.41.450180	P5318.41.450180	450	180	860	300	220	430	480	6-8 Weeks
P5314.41.450200	P5316.41.450200	P5317.41.450200	P5318.41.450200	450	200	880	300	220	440	480	6-8 Weeks
P5314.41.450225	P5316.41.450225	P5317.41.450225	P5318.41.450225	450	225	910	300	220	455	480	6-8 Weeks
P5314.41.450250	P5316.41.450250	P5317.41.450250	P5318.41.450250	450	250	930	300	220	465	480	6-8 Weeks
P5314.41.450280	P5316.41.450280	P5317.41.450280	P5318.41.450280	450	280	960	300	220	480	480	6-8 Weeks
P5314.41.450315	P5316.41.450315	P5317.41.450315	P5318.41.450315	450	315	990	300	220	495	480	6-8 Weeks
P5314.41.450355	P5316.41.450355	P5317.41.450355	P5318.41.450355	450	355	1030	300	280	515	540	6-8 Weeks
P5314.41.450400	P5316.41.450400	P5317.41.450400	P5318.41.450400	450	400	1090	300	280	545	545	6-8 Weeks
P5314.41.500125	P5316.41.500125	P5317.41.500125	-	500	125	890	350	180	445	460	6-8 Weeks
P5314.41.500160	P5316.41.500160	P5317.41.500160	-	500	160	940	350	180	470	465	6-8 Weeks
P5314.41.500180	P5316.41.500180	P5317.41.500180	-	500	180	960	350	220	480	505	6-8 Weeks
P5314.41.500200	P5316.41.500200	P5317.41.500200	-	500	200	980	350	220	490	505	6-8 Weeks
P5314.41.500225	P5316.41.500225	P5317.41.500225	-	500	225	1010	350	220	505	505	6-8 Weeks
P5314.41.500250	P5316.41.500250	P5317.41.500250	-	500	250	1030	350	220	515	505	6-8 Weeks
P5314.41.500280	P5316.41.500280	P5317.41.500280	-	500	280	1060	350	220	530	505	6-8 Weeks
P5314.41.500315	P5316.41.500315	P5317.41.500315	-	500	315	1100	350	220	550	505	6-8 Weeks
P5314.41.500355	P5316.41.500355	P5317.41.500355	-	500	355	1140	350	280	570	565	6-8 Weeks
P5314.41.560160	P5316.41.560160	P5317.41.560160	-	560	160	940	350	180	470	495	6-8 Weeks
P5314.41.560180	P5316.41.560180	P5317.41.560180	-	560	180	960	350	220	480	535	6-8 Weeks
P5314.41.560200	P5316.41.560200	P5317.41.560200	-	560	200	980	350	220	490	535	6-8 Weeks
P5314.41.560225	P5316.41.560225	P5317.41.560225	-	560	225	1000	350	220	500	535	6-8 Weeks
P5314.41.560250	P5316.41.560250	P5317.41.560250	-	560	250	1030	350	220	515	535	6-8 Weeks
P5314.41.560280	P5316.41.560280	P5317.41.560280	-	560	280	1060	350	220	530	535	6-8 Weeks
P5314.41.560315	P5316.41.560315	P5317.41.560315	-	560	315	1090	350	220	545	535	6-8 Weeks
P5314.41.630160	P5316.41.630160	P5317.41.630160	-	630	160	940	350	180	470	530	6-8 Weeks
P5314.41.630180	P5316.41.630180	P5317.41.630180	-	630	180	960	350	220	480	570	6-8 Weeks
P5314.41.630200	P5316.41.630200	P5317.41.630200	-	630	200	980	350	220	490	570	6-8 Weeks
P5314.41.630225	P5316.41.630225	P5317.41.630225	-	630	225	1000	350	220	500	570	6-8 Weeks

Continued on next page

Black Reducing Tees / Fabricated

Continued...

PN10 SDR17	PN16 SDR11	PN20 SDR9	PN25 SDR7.4	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.41.630250	P5316.41.630250	P5317.41.630250	-	630	250	1030	350	220	515	570	6-8 Weeks
P5314.41.630280	P5316.41.630280	P5317.41.630280	-	630	280	1160	350	220	580	570	6-8 Weeks
P5314.41.630315	P5316.41.630315	P5317.41.630315	-	630	315	1090	350	220	545	570	6-8 Weeks
P5314.41.630355	P5316.41.630355	P5317.41.630355	-	630	355	1130	350	280	565	630	6-8 Weeks
P5314.41.630400	P5316.41.630400	P5317.41.630400	-	630	400	1190	350	280	595	635	6-8 Weeks
P5314.41.	P5316.41.	P5317.41.		710	≤ 560	Available on request					Contact us
P5314.41.	P5316.41.	P5317.41.	-	800	≤ 630	Available on request					Contact us
P5314.41.	P5316.41.	-	-	900	≤ 710	Available on request					Contact us
P5314.41.	P5316.41.	-	-	1000	≤ 800	Available on request					Contact us
P5314.41.	-	-	-	1200	≤ 900	Available on request					Contact us
P5314.41.	-	-	-	1400	≤ 1000	Available on request					Contact us
P5314.41.	-	-	-	1600	≤ 1200	Available on request					Contact us
P5314.41.	-	-	-	1800	≤ 1400	Available on request					Contact us
P5314.41.	-	-	-	2000	≤ 1600	Available on request					Contact us
Larger sizes up to dn2000 with offtakes from dn180 to dn1800 are available in SDR 17 / PN10 / rating. Dimensions on request.											
Larger sizes up to dn1000 with offtakes from dn180 to dn900 are available in SDR11 / PN16 rating. Dimensions on request.											
Larger sizes up to dn800 with offtakes from dn180 to dn700 are available inSDR9 / PN20 rating. Dimensions on request.											
These tees fully comply with DSD Appendix 5A, Clause 5.5.7.											



Product fully complies with DSD PS

Level Invert (Scour/Drain) Fabricated Tee

Fabricated Scour or Drain Tee's are designed to be located at the low points in rising mains to completely drain the line to facilitate inspection and cleaning. The advantages of level invert offtakes are they eliminate the need to excavate significantly below the pipeline in a chamber reducing construction costs. Manufactured by machining PE100+ hollow bar into a fitting body and welding on spigot ends in according with BS ISO 21307. Fabricated Tee's feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

PN10 SDR17	PN16 SDR11	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.42.160063	P5316.42.160063	160	63	435	150	180	218	285	6-8 Weeks
P5314.42.160090	P5316.42.160090	160	90	455	150	180	228	285	6-8 Weeks
P5314.42.200063	P5316.42.200063	200	63	460	150	180	230	310	6-8 Weeks
P5314.42.200090	P5316.42.200090	200	90	480	150	180	240	310	6-8 Weeks
P5314.42.200110	P5314.42.200110	200	110	490	150	180	245	310	6-8 Weeks
P5314.42.225063	P5316.42.225063	225	63	460	150	180	230	323	6-8 Weeks
P5314.42.225090	P5316.42.225090	225	90	480	150	180	240	323	6-8 Weeks
P5314.42.225110	P5316.42.225110	225	110	500	150	180	250	323	6-8 Weeks
P5314.42.250063	P5316.42.250063	250	63	670	250	180	335	335	6-8 Weeks
P5314.42.250090	P5316.42.250090	250	90	690	250	180	345	335	6-8 Weeks
P5314.42.250110	P5316.42.250110	250	110	700	250	180	350	335	6-8 Weeks
P5314.42.250125	P5316.42.250125	250	125	710	250	180	355	335	6-8 Weeks
P5314.42.280063	P5316.42.280063	280	63	690	250	180	345	355	6-8 Weeks
P5314.42.280090	P5316.42.280090	280	90	710	250	180	355	355	6-8 Weeks
P5314.42.280110	P5316.42.280110	280	110	720	250	180	360	355	6-8 Weeks
P5314.42.280125	P5316.42.280125	280	125	730	250	180	365	355	6-8 Weeks
P5314.42.315063	P5316.42.315063	315	63	790	300	180	395	373	6-8 Weeks
P5314.42.315090	P5316.42.315090	315	90	810	300	180	405	373	6-8 Weeks
P5314.42.315110	P5316.42.315110	315	110	830	300	180	415	373	6-8 Weeks
P5314.42.315125	P5316.42.315125	315	125	840	300	180	420	373	6-8 Weeks
P5314.42.315160	P5316.42.315160	315	160	870	300	180	435	378	6-8 Weeks
P5314.42.355090	P5316.42.355090	355	90	830	300	180	415	393	6-8 Weeks
P5314.42.355110	P5316.42.355110	355	110	840	300	180	420	393	6-8 Weeks
P5314.42.355125	P5316.42.355125	355	125	850	300	180	425	393	6-8 Weeks
P5314.42.355160	P5316.42.355160	355	160	880	300	180	440	398	6-8 Weeks
P5314.42.355180	P5316.42.355180	355	180	900	300	220	450	438	6-8 Weeks
P5314.42.400090	P5316.42.400090	400	90	840	300	180	420	415	6-8 Weeks
P5314.42.400110	P5316.42.400110	400	110	850	300	180	425	415	6-8 Weeks
P5314.42.400125	P5316.42.400125	400	125	860	300	180	430	415	6-8 Weeks
P5314.42.400160	P5316.42.400160	400	160	900	300	180	450	420	6-8 Weeks
P5314.42.400180	P5316.42.400180	400	180	910	300	220	455	460	6-8 Weeks
P5314.42.400200	P5316.42.400200	400	200	920	300	220	460	460	6-8 Weeks
P5314.42.450110	P5316.42.450110	450	110	870	300	180	435	445	6-8 Weeks
P5314.42.450125	P5316.42.450125	450	125	880	300	180	440	445	6-8 Weeks
P5314.42.450160	P5316.42.450160	450	160	920	300	180	460	450	6-8 Weeks
P5314.42.450180	P5316.42.450180	450	180	940	300	220	470	490	6-8 Weeks
P5314.42.450200	P5316.42.450200	450	200	950	300	220	475	490	6-8 Weeks
P5314.42.450225	P5316.42.450225	450	225	960	300	220	480	490	6-8 Weeks
P5314.42.500125	P5316.42.500125	500	125	1000	350	180	500	470	6-8 Weeks
P5314.42.500160	P5316.42.500160	500	160	1030	350	180	515	475	6-8 Weeks
P5314.42.500180	P5316.42.500180	500	180	1050	350	220	525	515	6-8 Weeks
P5314.42.500200	P5316.42.500200	500	200	1060	350	220	530	515	6-8 Weeks
P5314.42.500225	P5316.42.500225	500	225	1080	350	220	540	515	6-8 Weeks
P5314.42.500250	P5316.42.500250	500	250	1110	350	220	555	515	6-8 Weeks
P5314.42.560160	P5316.42.560160	560	160	1050	350	180	525	505	6-8 Weeks
P5314.42.560180	P5316.42.560180	560	180	1060	350	220	530	545	6-8 Weeks
P5314.42.560200	P5316.42.560200	560	200	1080	350	220	540	545	6-8 Weeks
P5314.42.560225	P5316.42.560225	560	225	1090	350	220	545	545	6-8 Weeks
P5314.42.560250	P5316.42.560250	560	250	1110	350	220	555	545	6-8 Weeks
P5314.42.560280	P5316.42.560280	560	280	1130	350	220	565	545	6-8 Weeks
P5314.42.630160	P5316.42.630160	630	160	1080	350	180	540	545	6-8 Weeks
P5314.42.630180	P5316.42.630180	630	180	1090	350	220	545	585	6-8 Weeks
P5314.42.630200	P5316.42.630200	630	200	1100	350	220	550	585	6-8 Weeks
P5314.42.630225	P5316.42.630225	630	225	1120	350	220	560	585	6-8 Weeks
P5314.42.630250	P5316.42.630250	630	250	1140	350	220	570	585	6-8 Weeks
P5314.42.630280	P5316.42.630280	630	280	1160	350	220	580	585	6-8 Weeks
P5314.42.630315	P5316.42.630315	630	315	1190	350	220	595	585	6-8 Weeks

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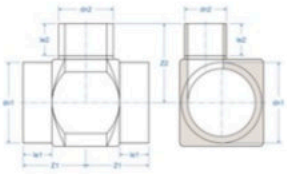
Level Invert (Scour/Drain) Fabricated Tee

Continued...

PN10 SDR17	PN16 SDR11	dn1	dn2	L	le1	le2	Z1	Z2	Availability in Hong Kong
P5314.42.	P5316.42.	710	≤ 355						Contact us
P5314.42.	P5316.42.	800	≤ 400						Contact us
P5314.42.	P5316.42.	900	≤ 450						Contact us
P5314.42.	P5316.42.	1000	≤ 500						Contact us
P5314.42.	-	1200	≤ 630			Available on request			Contact us
P5314.42.	-	1400	≤ 710						Contact us
P5314.42.	-	1600	≤ 800						Contact us
P5314.42.	-	1800	≤ 900						Contact us
P5314.42.	-	2000	≤ 1000						Contact us
Fully complies with DSD Appendix 5A, Clause 5.5.7.									



Product fully complies with DSD PS

45º Branch Reducing Fabricated Tee

Fabricated angled Branch Tee's have a centric intake for merging multiple rising main flows into a single rising main. The key features of the design are to minimise turbulence and maintain flow velocities with minimal head loss through the fitting.

These fittings are fully pressure rated by using increased wall thickness on the angles offtake to overcome de-ration of the angled intake weld. Manufactured by machining PE100+ hollow bar into a fitting body and welding on spigot ends in according with BS ISO 21307. Fabricated Tee's feature long spigots for electrofusion or butt fusion joining and 1D and 2D bar code stickers for complete product traceability.

PN10 SDR17	PN16 SDR11	dn1	dn2	L	le1	le2	Z1	Z2	Z3	Availability in Hong Kong
P5314.43.250063	P5316.43.250063	250	63	681	200	70	488	372	193	12-14 weeks
P5314.43.250090	P5316.43.250090	250	90	731	200	80	513	404	218	12-14 weeks
P5314.43.250110	P5316.43.250110	250	110	751	200	90	523	457	228	12-14 weeks
P5314.43.250125	P5316.43.250125	250	125	775	200	100	535	469	240	12-14 weeks
P5314.43.250160	P5316.43.250160	250	160	841	200	110	573	496	268	12-14 weeks
P5314.43.250180	P5316.43.250180	250	180	871	200	110	588	516	283	12-14 weeks
P5314.43.250200	P5316.43.250200	250	200	905	200	200	605	674	300	12-14 weeks
P5314.43.250225	P5316.43.250225	250	225	941	200	200	623	691	318	12-14 weeks
P5314.43.250250	P5316.43.250250	250	250	981	200	200	643	726	338	12-14 weeks
P5314.43.280063	P5316.43.280063	280	63	681	200	70	503	393	178	12-14 weeks
P5314.43.280090	P5316.43.280090	280	90	731	200	80	528	425	203	12-14 weeks
P5314.43.280110	P5316.43.280110	280	110	751	200	90	538	478	213	12-14 weeks
P5314.43.280125	P5316.43.280125	280	125	775	200	100	550	490	225	12-14 weeks
P5314.43.280160	P5316.43.280160	280	160	841	200	110	588	517	253	12-14 weeks
P5314.43.280180	P5316.43.280180	280	180	871	200	110	603	537	268	12-14 weeks
P5314.43.280200	P5316.43.280200	280	200	905	200	200	620	695	285	12-14 weeks
P5314.43.280225	P5316.43.280225	280	225	941	200	200	638	712	303	12-14 weeks
P5314.43.280250	P5316.43.280250	280	250	981	200	200	658	747	323	12-14 weeks
P5314.43.280280	P5316.43.280280	280	280	1031	200	200	683	780	348	12-14 weeks
P5314.43.315090	P5316.43.315090	315	90	770	200	80	565	450	205	12-14 weeks
P5314.43.315110	P5316.43.315110	315	110	790	200	90	575	503	215	12-14 weeks
P5314.43.315125	P5316.43.315125	315	125	816	200	100	588	515	228	12-14 weeks
P5314.43.315160	P5316.43.315160	315	160	880	200	110	625	542	255	12-14 weeks
P5314.43.315180	P5316.43.315180	315	180	910	200	110	640	562	270	12-14 weeks
P5314.43.315200	P5316.43.315200	315	200	946	200	200	658	720	288	12-14 weeks
P5314.43.315225	P5316.43.315225	315	225	980	200	200	675	737	305	12-14 weeks
P5314.43.315250	P5316.43.315250	315	250	1020	200	200	695	772	325	12-14 weeks
P5314.43.315280	P5316.43.315280	315	280	1070	200	200	720	805	350	12-14 weeks
P5314.43.315315	P5316.43.315315	315	315	1130	200	200	750	835	380	12-14 weeks
P5314.43.355090	P5316.43.355090	355	90	770	200	80	585	478	185	12-14 weeks
P5314.43.355110	P5316.43.355110	355	110	790	200	90	595	531	195	12-14 weeks
P5314.43.355125	P5316.43.355125	355	125	816	200	100	608	543	208	12-14 weeks
P5314.43.355160	P5316.43.355160	355	160	880	200	110	645	571	235	12-14 weeks
P5314.43.355180	P5316.43.355180	355	180	910	200	110	660	591	250	12-14 weeks
P5314.43.355200	P5316.43.355200	355	200	946	200	200	678	748	268	12-14 weeks
P5314.43.355225	P5316.43.355225	355	225	980	200	200	695	766	285	12-14 weeks
P5314.43.355250	P5316.43.355250	355	250	1070	200	200	765	836	305	12-14 weeks
P5314.43.355280	P5316.43.355280	355	280	1120	200	200	790	868	330	12-14 weeks
P5314.43.355315	P5316.43.355315	355	315	1180	200	200	820	898	360	12-14 weeks
P5314.43.355355	P5316.43.355355	355	355	1220	200	200	830	892	390	12-14 weeks
P5314.43.400090	P5316.43.400090	400	90	971	300	80	708	510	263	12-14 weeks
P5314.43.400110	P5316.43.400110	400	110	991	300	90	718	563	273	12-14 weeks
P5314.43.400125	P5316.43.400125	400	125	1015	300	100	730	575	285	12-14 weeks
P5314.43.400160	P5316.43.400160	400	160	1081	300	110	768	602	313	12-14 weeks
P5314.43.400180	P5316.43.400180	400	180	1111	300	110	783	622	328	12-14 weeks
P5314.43.400200	P5316.43.400200	400	200	1145	300	200	800	780	345	12-14 weeks
P5314.43.400225	P5316.43.400225	400	225	1181	300	200	818	797	363	12-14 weeks
P5314.43.400250	P5316.43.400250	400	250	1221	300	200	838	832	383	12-14 weeks
P5314.43.400280	P5316.43.400280	400	280	1271	300	200	863	865	408	12-14 weeks
P5314.43.400315	P5316.43.400315	400	315	1331	300	200	893	895	438	12-14 weeks
P5314.43.400355	P5316.43.400355	400	355	1421	300	200	953	924	468	12-14 weeks
P5314.43.400400	P5316.43.400400	400	400	1491	300	300	988	1069	503	12-14 weeks
P5314.43.450125	P5316.43.450125	450	125	1015	300	100	755	611	260	12-14 weeks
P5314.43.450160	P5316.43.450160	450	160	1081	300	110	793	638	288	12-14 weeks
P5314.43.450180	P5316.43.450180	450	180	1111	300	110	808	658	303	12-14 weeks
P5314.43.450200	P5316.43.450200	450	200	1145	300	200	825	815	320	12-14 weeks

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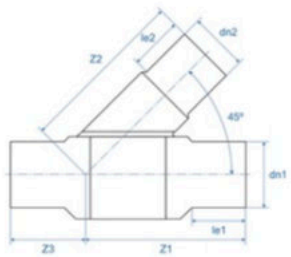
45º Branch Reducing Fabricated Tee

Continued...

PN10 SDR17	PN16 SDR11	dn1	dn2	L	le1	le2	Z1	Z2	Z3	Availability in Hong Kong
P5314.43.450225	P5316.43.450225	450	225	1181	300	200	843	833	338	12-14 weeks
P5314.43.450250	P5316.43.450250	450	250	1221	300	200	863	868	358	12-14 weeks
P5314.43.450280	P5316.43.450280	450	280	1271	300	200	888	900	383	12-14 weeks
P5314.43.450315	P5316.43.450315	450	315	1331	300	200	918	930	413	12-14 weeks
P5314.43.450355	P5316.43.450355	450	355	1421	300	200	978	959	443	12-14 weeks
P5314.43.450400	P5316.43.450400	450	400	1491	300	300	1013	1104	478	12-14 weeks
P5314.43.450450	P5316.43.450450	450	450	1561	300	300	1048	1159	513	12-14 weeks
P5314.43.500110	P5316.43.500110	500	110	991	300	90	768	633	223	12-14 weeks
P5314.43.500125	P5316.43.500125	500	125	1015	300	100	780	646	235	12-14 weeks
P5314.43.500160	P5316.43.500160	500	160	1081	300	110	818	673	263	12-14 weeks
P5314.43.500180	P5316.43.500180	500	180	1111	300	110	833	693	278	12-14 weeks
P5314.43.500200	P5316.43.500200	500	200	1145	300	200	850	851	295	12-14 weeks
P5314.43.500225	P5316.43.500225	500	225	1181	300	200	868	868	313	12-14 weeks
P5314.43.500250	P5316.43.500250	500	250	1221	300	200	888	903	333	12-14 weeks
P5314.43.500280	P5316.43.500280	500	280	1271	300	200	913	936	358	12-14 weeks
P5314.43.500315	P5316.43.500315	500	315	1331	300	200	943	966	388	12-14 weeks
P5314.43.500355	P5316.43.500355	500	355	1441	300	200	1023	1008	418	12-14 weeks
P5314.43.500400	P5316.43.500400	500	400	1511	300	300	1058	1153	453	12-14 weeks
P5314.43.500450	P5316.43.500450	500	450	1581	300	300	1093	1208	488	12-14 weeks
P5314.43.500500	P5316.43.500500	500	500	1671	300	300	1138	1248	533	12-14 weeks
P5314.43.560160	P5316.43.560160	560	160	1081	300	110	848	715	233	12-14 weeks
P5314.43.560180	P5316.43.560180	560	180	1111	300	110	863	735	248	12-14 weeks
P5314.43.560200	P5316.43.560200	560	200	1145	300	200	880	893	265	12-14 weeks
P5314.43.560225	P5316.43.560225	560	225	1181	300	200	898	910	283	12-14 weeks
P5314.43.560250	P5316.43.560250	560	250	1221	300	200	918	945	303	12-14 weeks
P5314.43.560280	P5316.43.560280	560	280	1271	300	200	943	978	328	12-14 weeks
P5314.43.560315	P5316.43.560315	560	315	1331	300	200	973	1008	358	12-14 weeks
P5314.43.560355	P5316.43.560355	560	355	1441	300	200	1053	1051	388	12-14 weeks
P5314.43.560400	P5316.43.560400	560	400	1511	300	300	1088	1196	423	12-14 weeks
P5314.43.560450	P5316.43.560450	560	450	1546	300	300	1123	1196	423	12-14 weeks
P5314.43.560500	P5316.43.560500	560	500	1671	300	300	1168	1291	503	12-14 weeks
P5314.43.560560	P5316.43.560560	560	560	1751	300	300	1198	1342	553	12-14 weeks
P5314.43.630180	P5316.43.630180	630	180	1111	300	110	898	785	213	12-14 weeks
P5314.43.630200	P5316.43.630200	630	200	1145	300	200	915	942	230	12-14 weeks
P5314.43.630225	P5316.43.630225	630	225	1181	300	200	933	960	248	12-14 weeks
P5314.43.630250	P5316.43.630250	630	250	1221	300	200	953	995	268	12-14 weeks
P5314.43.630280	P5316.43.630280	630	280	1271	300	200	978	1027	293	12-14 weeks
P5314.43.630315	P5316.43.630315	630	315	1331	300	200	1008	1057	323	12-14 weeks
P5314.43.630355	P5316.43.630355	630	355	1421	300	200	1068	1086	353	12-14 weeks
P5314.43.630400	P5316.43.630400	630	400	1491	300	300	1103	1231	388	12-14 weeks
P5314.43.630450	P5316.43.630450	630	450	1581	300	300	1158	1300	423	12-14 weeks
P5314.43.630500	P5316.43.630500	630	500	1671	300	300	1203	1340	468	12-14 weeks
P5314.43.630560	P5316.43.630560	630	560	1771	300	300	1253	1405	518	12-14 weeks
P5314.43.630630	P5316.43.630630	630	630	1861	300	300	1288	1451	573	12-14 weeks
P5314.43.	P5316.43.	710	≤ 710							Contact us
P5314.43.	P5316.43.	800	≤ 800							Contact us
P5314.43.	P5316.43.	900	≤ 900							Contact us
P5314.43.	P5316.43.	1000	≤ 1000							Contact us
P5314.43.	-	1200	≤ 1200			Available on request				Contact us
P5314.43.	-	1400	≤ 1400							Contact us
P5314.43.	-	1600	≤ 1600							Contact us
P5314.43.	-	1800	≤ 1800							Contact us
P5314.43.	-	2000	≤ 2000							Contact us



REINERT-RITZ

Restraint

End Restraint of Polyethylene Pipes in both pressure and non-pressure applications is essential. Unlike other pipe materials such as PVC or Ductile Iron, PE is an 'End to End' system meaning the various forces (stress) are distributed in theory to the 'ends' of the pipeline. In reality, a large part of the stress is absorbed into the ground due to soil pressure acting on the pipeline, however, unlike other pipe materials that have rubber ring sockets and require anchor blocks, the local forces in PE are designed to be re-distributed and balanced throughout the pipeline, due to the continuous nature of the jointing system.

PE is a viscoelastic material, meaning it exhibits both viscous and elastic characteristics when undergoing deformation or stress. Due to the viscous characteristic, the ends of a polyethylene pipe must be physically anchored to prevent them from moving. Anchoring pipe to pipe is achieved by fusion (electrofusion or butt fusion) at each joint or by mechanical connection such as a flanged Adaptor, threaded joint or a Type 1 Joint. These joint methods maintain the pipelines mechanical continuity, over which the stresses are transferred along the length pipeline.

Stress in a PE pipeline is typically generated by one or more of the following operating conditions:

- **Internal operating pressure** (creates loads on the ends of the pipes and at changes in direction)
- **External ground loading** (soil weight & traffic loads try to ovalise the pipe)
- **Thermal change** (Pipe installed at 50°, cools to ground temp 15° is trying to shorten itself 6.5mm for every meter of pipe installed)
- **Ground settlement** (reclaimed land settlement - a slow extension of the pipeline between fixed points)
- **Ground movement** (landslides - significant tension between fixed points due to the pipe pulling through the soil)

When PE pipe undergoes stress from one or more of the events above and the pipe is maintained in that condition (the pipe ends are sufficiently anchored), the stress developed in the pipe wall decays gradually with time. The decrease in stress under constant strain is called 'stress relaxation'. Given enough time, the stress level between the two fixed points approaches equilibrium along the pipeline, this state is maintained as long as the continuity of the joints and pipe anchoring is maintained.

However, once that equilibrium is changed, (an anchored end is released for example) the pipe will gradually attempt to return to its original manufactured dimensions. The extent of the pipes recovery will depend upon the magnitude of the applied stress, the length of time over which the initial stress was applied and the properties of the PE.

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Product fully complies with DSD PS

This mark is used to identify Mill-Pro products that meet the requirements of the Drainage Supplies Department PS Appendix 22.09. The use of this mark is not endorsed by the DSD and is not intended to infer approval by the DSD.

PUDDLE FLANGES

PE Puddle flanges perform the same as Ductile Iron (DI) Puddle Flanges. Designed for encasement in concrete, where PE passes through a structure (typically a concrete wall). Because PE is an 'end to end system' a PE puddle flange must withstand loads that exceed the ultimate tensile strength of the pipe, meaning Pipe fails first in a tensile pull to failure.

Mill-Pro puddle flanges are either injection moulded in PE100+ or machined from a single piece of extruded PE100+ hollow bar. They contain no welds or joints in the puddle area. (between the tapered sections).

In reclaimed land (for which PE is perfectly suited to), designers should consider to total force applied to a concrete structure, by the pipe pulling on the structure as it sinks with the settling ground. Click here for a more detailed presentation on settlement loadings.

Unlike DI, PE will not naturally form a leak-free seal when embedded into concrete. PE expands when surrounded by mass concrete, due to the increase in temperature of curing concrete. Once the concrete cools, the PE reverts to its original size leaving a small gap between the PE and the concrete, this gap allows waste or ground water to pass into or out of the structure.

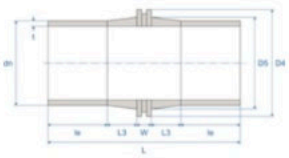
Hydrophilic vulcanised expansive rubber sealing rings are fitted to a groove in the puddles ring. The Hydrophilic ring expands >600% when exposed to moisture. Rings are supplied as standard and comply with ASTM D471. They must be kept dry in until they are embedded in concrete.

NOTE: This product is not suitable for making pressure connections such as the base of a reservoir. Hydrophilic sealing rings are a water stop, not a pressure seal. They are designed to expand into the surrounding structure and provide a barrier to groundwater ingress or egress typically found in chambers or structures, a few meters below ground level.

Puddle Flange Restraint / LS / PN10 / SDR17

Available with optional Waterstop

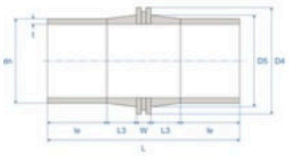
non-Waterstop	with Waterstop	dn	t	W	D5	D4	L3	le	L	Availability in Hong Kong
P5314.138.110	P5314.938.110	110	6.6	20	125	138	50	150	420	6-8 weeks
P5314.138.125	P5314.938.125	125	7.4	20	132	157	50	150	420	6-8 weeks
P5314.138.140	P5314.938.140	140	8.3	20	155	175	50	150	420	6-8 weeks
P5314.138.160	P5314.938.160	160	9.5	20	175	200	50	150	420	6-8 weeks
P5314.138.180	P5314.938.180	180	10.7	20	195	225	50	150	420	6-8 weeks
P5314.138.200	P5314.938.200	200	11.9	20	232	250	50	150	420	6-8 weeks
P5314.138.225	P5314.938.225	225	13.4	20	235	282	50	150	420	6-8 weeks
P5314.138.250	P5314.938.250	250	14.8	20	285	313	50	250	620	6-8 weeks
P5314.138.280	P5314.938.280	280	16.6	21	291	350	50	250	621	6-8 weeks
P5314.138.315	P5314.938.315	315	18.7	24	335	394	50	300	724	6-8 weeks
P5314.138.355	P5314.938.355	355	21.1	27	373	444	54	300	735	6-8 weeks
P5314.138.400	P5314.938.400	400	23.7	30	427	500	60	300	750	6-8 weeks
P5314.138.450	P5314.938.450	450	26.7	34	470	563	68	300	770	6-8 weeks
P5314.138.500	P5314.938.500	500	29.7	37	530	625	74	350	885	6-8 weeks
P5314.138.560	P5314.938.560	560	33.2	42	585	700	84	350	910	6-8 weeks
P5314.138.630	P5314.938.630	630	37.4	47	642	788	94	350	935	6-8 weeks
P5314.138.710	P5314.938.710	710	42.1	53	737	888	106	350	965	6-8 weeks
P5314.138.800	P5314.938.800	800	47.4	59	840	1000	118	350	995	6-8 weeks



Puddle Flange Restraint / LS / PN16 / SDR11

Available with optional Waterstop

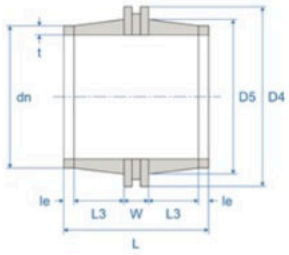
non-Waterstop	with Waterstop	dn	t	W	D5	D4	L3	le	L	Availability in Hong Kong
P5316.138.110	P5316.938.110	110	10.0	20	125	138	50	150	420	6-8 weeks
P5316.138.125	P5316.938.125	125	11.4	20	132	157	50	150	420	6-8 weeks
P5316.138.140	P5316.938.140	140	12.7	20	155	175	50	150	420	6-8 weeks
P5316.138.160	P5316.938.160	160	14.6	20	175	200	50	150	420	6-8 weeks
P5316.138.180	P5316.938.180	180	16.4	21	195	225	50	150	421	6-8 weeks
P5316.138.200	P5316.938.200	200	18.2	23	232	250	50	150	423	6-8 weeks
P5316.138.225	P5316.938.225	225	20.5	26	235	282	50	150	426	6-8 weeks
P5316.138.250	P5316.938.250	250	22.7	29	285	313	50	250	629	6-8 weeks
P5316.138.280	P5316.938.280	280	25.4	32	291	350	50	250	632	6-8 weeks
P5316.138.315	P5316.938.315	315	28.6	36	335	394	50	300	736	6-8 weeks
P5316.138.355	P5316.938.355	355	32.2	41	373	444	54	300	749	6-8 weeks
P5316.138.400	P5316.938.400	400	36.3	46	427	500	60	300	766	6-8 weeks
P5316.138.450	P5316.938.450	450	40.9	52	470	563	68	300	788	6-8 weeks
P5316.138.500	P5316.938.500	500	54.4	68	530	625	74	350	916	6-8 weeks
P5316.138.560	P5316.938.560	560	50.8	64	585	700	84	350	932	6-8 weeks
P5316.138.630	P5316.938.630	630	57.2	72	642	788	94	350	960	6-8 weeks
P5316.138.710	P5316.938.710	710	64.5	81	737	888	106	350	993	6-8 weeks
P5316.138.800	P5316.938.800	800	72.6	91	840	1000	118	350	1027	6-8 weeks



Puddle Flange Restraint / BF / PN10 / SDR17

Available with optional Waterstop

non-Waterstop	with Waterstop	dn	t	W	D5	D4	L3	le	L	Availability in Hong Kong
P2314.138.900	P2314.938.900	900	53.3	67	944	1045	134	100	535	6-8 weeks
P2314.138.1000	P2314.938.1000	1000	59.3	74	1047	1161	148	100	570	6-8 weeks
P2314.138.1200	P2314.938.1200	1200	71.1	89	1245	1393	178	100	645	6-8 weeks
Above OD 800 joints are supplied with fusion weld ends for factory joining to pipe, long spigots available on request.										



Puddle Flange Restraint / BF / PN16 / SDR11

Available with optional Waterstop

non-Waterstop	with Waterstop	dn	t	W	D5	D4	L3	le	L	Availability in Hong Kong
P2316.138.900	P2316.938.900	900	81.7	103	944	1045	134	100	571	6-8 weeks
P2314.138.900	P2314.938.900	1000	90.8	114	1047	1161	148	100	610	6-8 weeks
Above OD 800 joints are supplied with fusion weld ends for factory joining to pipe, long spigots available on request.										

Puddle Flange Restraint / BF / PN8 / SDR21

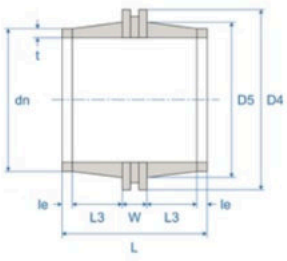
Available with optional Waterstop

non-Waterstop	with Waterstop	dn	t	W	D5	D4	L3	le	L	Availability in Hong Kong
P2313.138.1300	P2313.938.1300	1300	62.1	78	1340	1474	156	100	590	6-8 weeks
P2313.138.1400	P2313.938.1400	1400	66.7	84	1445	1587	168	100	620	6-8 weeks
P2313.138.1600	P2313.938.1600	1600	76.2	96	1650	1813	192	100	680	6-8 weeks
Above OD 800 joints are supplied with fusion weld ends for factory joining to pipe, long spigots available on request.										

Puddle Flange Restraint / BF / PN6.4 / SDR26

Available with optional Waterstop

non-Waterstop	with Waterstop	dn	t	W	D5	D4	L3	le	L	Availability in Hong Kong
P2312.138.1800	P2312.938.1800	1800	68.8	86	1855	1998	174	100	634	6-8 weeks
P2312.138.2000	P2312.938.2000	2000	76.4	96	2060	2220	194	100	684	6-8 weeks
Above OD 800 Joints are supplied with fusion weld ends for factory joining to pipe, long spigots available on request										



Friatec FIXBLOC

Used where axial thrust, thermal and tensile forces must be absorbed into a structure to anchor the PE pipe. For example, pipe rehabilitation where the PE exits and enters the host pipe or replacement of a valve inside a chamber, where the PE pipe ends were not anchored in the walls using puddle flanges.

Product Code	dn	L	H	h1	B	Availability in Hong Kong
P3310.040.1601600	160-1600	220	40	45	60	8-12 weeks

Specialty Fittings

Polyethylene has incredible fabrication flexibility, it can be machined, extruded, injection moulded and welded into any shape: any fitting which can be imagined, can be manufactured. This section contains a wide range of specialty PE products used in water supply applications.

Polyethylene provides far more flexibility than Ductile Iron which is restricted to casting shapes, making a single product is expensive and DI cannot be reliably welded. Steel offers more ability to create custom solutions, however it suffers corrosion-related failures.

Factory fabrication of complex design solutions are possible, below are some examples of the amazing flexibility of polyethylene in pressure water systems. Contact us to discuss design possibilities for custom fabricated pressure fittings up to DN1800 and PN25 pressure ratings.

REINERT-RITZ

Examples of complex PE projects designed in full pressure class ratings by **Reinert Ritz**.

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Product fully complies with DSD PS

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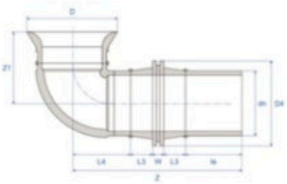
Polyethylene Discharge Assemblies / PE100+ / PN10-PN16 / SDR17-11

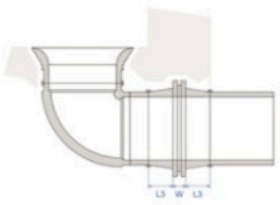
Factory fabricated from PE100+ standard fittings, manufactured to order based on client dimensions, supplied complete with a hydrophilic sealing ring to ensure water tightness once cast in place.

Dimensions L4, Z, Z1 & le given in the table below as the shortest possible lengths that can be fabricated. Longer lengths are available at time of order to suit the client's chamber design and wall thickness.

Dimension 'le' should be outside of the chamber wall to provide sufficient length to connect the puddle to the pipe using an electrofusion coupler.

Pipe Size	Bellmouth OD	Puddle thickness	Puddle OD	Taper	Long Spigot	Min. Dimension	Min. Dimension	Height
dn	D	W	D4	L3	le	L4	Z	Z1
110	146	20	AoR	AoR	≥150	≥233	≥503	≥171
160	213	20	AoR	AoR	≥150	≥267	≥537	≥238
200	266	20	AoR	AoR	≥150	≥293	≥563	≥292
225	299	20	AoR	AoR	≥150	≥310	≥580	≥323
250	332	20	AoR	AoR	≥250	≥326	≥696	≥355
280	373	21	AoR	AoR	≥250	≥346	≥717	≥402
355	473	27	AoR	AoR	≥300	≥389	≥824	≥497
400	532	30	AoR	AoR	≥300	≥411	≥861	≥546
450	599	34	AoR	AoR	≥300	≥435	≥905	≥521
500	666	37	AoR	AoR	≥350	≥461	≥996	≥565
560	746	42	AoR	AoR	≥350	≥488	≥1048	≥619
630	839	47	AoR	AoR	≥350	≥522	≥1107	≥681
Larger sizes up to 2000 OD are available, Contact us for design drawings.								
AoR Dimensions are Available on Request								
When designing the discharge chamber, dimensions L4, Z, Z1 & le can be manufactured any length, but not less than the dimensions given in the table above.								





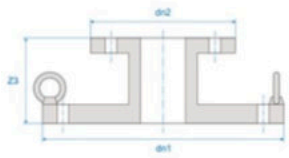
Concrete embedment design should encase L3+W+L3 as a minimum

Air Entrapment Blanking Flange with Offtake / PN16

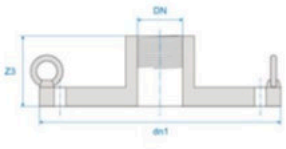
Fabricated from 316 Stainless steel complying to BS EN 10088-2 Grade 1.4401 or 1.4404. Both flanges are BS EN 1092-1 rated and drilled PN16 unless indicated as a 'BSP' threaded SS socket for DN 50 offtakes. All Flanges supplied with SS lifting hooks blind threaded into the flange.

Product Code	DN1 (Blanking Flange)	DN2 (off-take) Flanged unless stated as BSP	Z3	Availability in Hong Kong
P09S6.557.25088	250	50 BSP	109	8-12 Weeks
P09S6.G6.250080	250	80	114	8-12 Weeks
P09S6.G6.250100	250	100	126	8-12 Weeks
P09S6.557.30088	300	50 BSP	112	8-12 Weeks
P09S6.G6.300080	300	80	117	8-12 Weeks
P09S6.G6.300100	300	100	129	8-12 Weeks
P09S6.557.35088	350	50 BSP	115	8-12 Weeks
P09S6.G6.350080	350	80	120	8-12 Weeks
P09S6.G6.350100	350	100	132	8-12 Weeks
P09S6.557.40088	400	50 BSP	120	8-12 Weeks
P09S6.G6.400080	400	80	125	8-12 Weeks
P09S6.G6.400100	400	100	137	8-12 Weeks
P09S6.557.45088	450	50 BSP	122	8-12 Weeks
P09S6.G6.450080	450	80	127	8-12 Weeks
P09S6.G6.450100	450	100	139	8-12 Weeks
P09S6.557.50088	500	50 BSP	126	8-12 Weeks
P09S6.G6.500080	500	80	131	8-12 Weeks
P09S6.G6.500100	500	100	143	8-12 Weeks
P09S6.G6.600080	600	80	140	8-12 Weeks
P09S6.G6.600100	600	100	152	8-12 Weeks
P09S6.G6.710080	710	80	148	8-12 Weeks
P09S6.G6.710100	710	100	160	8-12 Weeks
P09S6.G6.710150	710	150	187	8-12 Weeks
P09S6.G6.800080	800	80	159	8-12 Weeks
P09S6.G6.800100	800	100	171	8-12 Weeks
P09S6.G6.800150	800	150	198	8-12 Weeks
P09S6.G6.800200	800	200	210	8-12 Weeks
P09S6.G6.900080	900	80	167	8-12 Weeks
P09S6.G6.900100	900	100	179	8-12 Weeks
P09S6.G6.900150	900	150	206	8-12 Weeks
P09S6.G6.900200	900	200	218	8-12 Weeks
P09S6.G6.1000080	1000	80	175	8-12 Weeks
P09S6.G6.1000100	1000	100	187	8-12 Weeks
P09S6.G6.1000150	1000	150	214	8-12 Weeks
P09S6.G6.1000200	1000	200	226	8-12 Weeks
P09S6.G6.1000250	1000	250	239	8-12 Weeks
P09S6.G6.1200080	1200	80	185	8-12 Weeks
P09S6.G6.1200100	1200	100	197	8-12 Weeks
P09S6.G6.1200150	1200	150	224	8-12 Weeks
P09S6.G6.1200200	1200	200	236	8-12 Weeks
P09S6.G6.1200250	1200	250	249	8-12 Weeks
P09S6.G6.1200300	1200	300	262	8-12 Weeks

The blanking flange is fabricated to order so any combination of flange and off-take is available, typical combinations are shown above.



Fabricated 316 Stainless Steel Air Entrapment Flange with flanged outlet and lifting eyes



Fabricated 316 Stainless Steel Air Entrapment Flange with 2" BSP outlet and lifting eyes

PE100 PN 4 Rated CCTV Inspection Hatch

with SDR17 Spigot ends

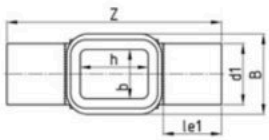
Machined from PE100+Hollow bar with EPDM seal and Galvanised Steel external reinforced top plate (not exposed to the media). Can be ordered with any SDR spigot ends to match the connecting pipe.

Product code	d1	le1	b	h	B	Z
P531E.180.250	250	250	200	350	415	1096
P531E.180.280	280	250	220	350	415	1096
P531E.180.315	315	250	250	350	415	1096
P531E.180.355	355	200	280	400	467	1180
P531E.180.400	400	300	320	498	600	1270
P531E.180.450	450	300	360	498	600	1270
P531E.180.500	500	300	400	498	693	1315
P531E.180.560	560	300	450	498	693	1315
P531E.180.630	630	300	500	660	834	1620
P531E.180.710	710	500	720	1000	1116	3555

Designed for use on pressure systems with an operating pressure up to PN4. Connects to pipes SDR 26-17 with a maximum operating pressure (MOP) of 4Bar and Maximum instantaneous surge pressure of 10Bar.

Alternate SDR spigot ends and any of the stated options above can be added at order placement.

Larger sizes can be manufactured to order, contact us for dimensions.



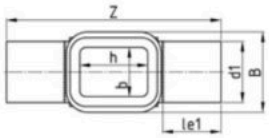
Product fully complies with DSD PS

PE100 PN 16 Rated CCTV Inspection Hatch

with SDR11 or SDR17 Spigot ends

Machined from PE100+Hollow bar with EPDM seals, Galvanised Steel external reinforced top plate and and 316 SS body straps (not exposed to the media). Can be ordered with any SDR spigot ends to match the connecting pipe.

SDR17	SDR11	d1	le1	b	h	B	Z
P5314.180.250	P5316.180.250	250	250	200	350	415	1096
P5314.180.280	P5316.180.280	280	250	220	350	415	1096
P5314.180.315	P5316.180.315	315	250	250	350	415	1096
P5314.180.355	P5316.180.355	355	200	280	400	467	1180
P5314.180.400	P5316.180.400	400	300	320	498	600	1270
P5314.180.450	P5316.180.450	450	300	360	498	600	1270
P5314.180.500	P5316.180.500	500	300	400	498	693	1315
P5314.180.560	P5316.180.560	560	300	450	498	693	1315
P5314.180.630	P5316.180.630	630	300	500	660	834	1620
P5314.180.710	P5316.180.710	710	500	720	1000	1116	3555
Designed for use on systems with an operating pressure of PN6.4 to PN16 with a maximum operating pressure of 16Bar and Maximum instantaneous surge pressure of 36Bar.							
Spigot ends of any SDR and any of the stated options above can be added at order placement							
Larger and smaller sizes can be manufactured to order, contact us for dimensions.							



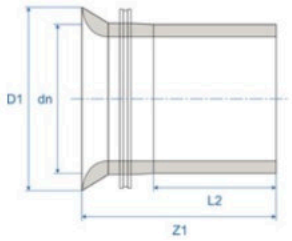
Product fully complies with DSD PS

Black Bellmouth / Long Spigot / PN10 / SDR17

Mill-Pro's fabricated Black PE100+ long spigot Bellmouth fittings are designed for embedment in concrete to replace traditional ductile Iron bellmouth discharge fittings and connect directly by electrofusion to the incoming our outgoing PE pipe. They feature a full tensile strength puddle flange, complete with an integrated waterstop Hydrophilic sealing ring to ensure watertight encasement.

Can be factory fabricated with elbows or other fittings into the required compact design for complete encasement.

Product Code	dn	ID mean	D1	L2	Z1	Availability in Hong Kong
P531E.065.110	110	96	144	150	294	6-8 weeks
P531E.065.160	160	140	210	150	305	6-8 weeks
P531E.065.200	200	175	263	150	314	6-8 weeks
P531E.065.225	225	197	295	150	319	6-8 weeks
P531E.065.250	250	219	328	250	425	6-8 weeks
P531E.065.280	280	245	368	250	432	6-8 weeks
P531E.065.315	315	276	386	300	479	6-8 weeks
P531E.065.355	355	311	435	300	493	6-8 weeks
P531E.065.400	400	350	490	300	510	6-8 weeks
P531E.065.450	450	394	552	300	531	6-8 weeks
P531E.065.500	500	438	613	350	599	6-8 weeks
P531E.065.560	560	490	687	350	624	6-8 weeks
P531E.065.630	630	552	773	350	651	6-8 weeks
P531E.065.710	710	622	871	350	683	6-8 weeks
P531E.065.800	800	701	981	350	717	6-8 weeks
P531E.065.900	900	788	1104	400	809	6-8 weeks
P531E.065.1000	1000	876	1227	400	847	6-8 weeks
Available in PN10 / SDR17 in sizes up to dn630						
Bellmouth fittings are not designed for horizontal encasement into the base reservoir walls where significant head may be applied to the waterstop hydrophilic seal. In such applications contact us for alternate designs.						



Type B / Rigid Manhole Connector / Single Spigot / SDR17 / Long

The Type-B rigid manhole connector Single Spigot is designed to be cast flush against the internal chamber wall. Installed up against the internal formwork during chamber construction with the outlet approximately between 80-100° to the chamber wall.

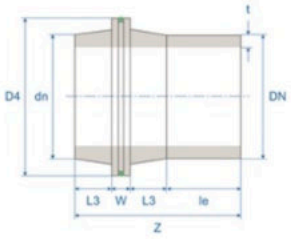
Machined from PE100 hollow bar, this fitting includes a hydrophilic sealing ring in the outer edge of the puddle, sealed for exposure on site. Supplied in Long Spigot (LS) design for electrofusion joining on site and sizes DN800 and above are supplied for butt welding.

Product Code	Pipe OD	Connection size	Wall thickness	Puddle thickness	Puddle OD	Taper	Spigot length	Length	Availability in Hong Kong
SDR17 SN24	dn	DN	t	W	D4	L3	le	Z	
P531E.143.110	110	100	6.6	20	138	50	150	270	6-8 weeks
P531E.143.160	160	150	9.5	20	200	50	150	270	6-8 weeks
P531E.143.200	200	175	11.9	20	250	50	150	270	6-8 weeks
P531E.143.225	225	200	13.4	20	282	50	150	270	6-8 weeks
P531E.143.250	250	225	14.8	20	313	50	250	370	Ex-stock
P531E.143.280	280	250	16.6	21	350	50	250	371	6-8 weeks
P531E.143.355	355	300	21.1	27	444	54	300	435	Ex-stock
P531E.143.400	400	375	23.7	30	500	60	300	450	6-8 weeks
P531E.143.450	450	400	26.7	34	563	68	300	470	6-8 weeks
P531E.143.500	500	560	29.7	37	625	74	350	535	6-8 weeks
P531E.143.560	560	500	33.2	42	700	84	350	560	6-8 weeks
P531E.143.630	630	525	37.4	47	788	94	350	585	6-8 weeks
P531E.143.710	710	600	42.1	53	888	106	350	615	6-8 weeks
P531E.143.800	800	675	47.4	59	1000	118	350	645	6-8 weeks
				*SDR21					
				**SDR26					

Type B / Rigid Manhole Connector / Single Spigot / Butt Fusion

Product Code	Pipe OD	Connection size	Wall thickness	Puddle thickness	Puddle OD	Taper	Spigot length	Length	Availability in Hong Kong
SDR17 SN24	dn	DN	t	W	D4	L3	le	Z	
P231E.143.900	900	825	53.3	67	1045	134	100	435	6-8 weeks
P231E.143.1000	1000	900	59.3	74	1161	148	100	470	6-8 weeks
P231E.143.1200	1200	1050	71.1	89	1393	178	100	545	6-8 weeks
P231D.143.1300	1300	1200	62.1*	78	1474	156	100	490	6-8 weeks
P231D.143.1400	1400	1300	66.7*	84	1587	168	100	520	6-8 weeks
P231D.143.1600	1600	1350	76.2*	96	1813	192	100	580	6-8 weeks
P231C.143.1800	1800	1650	68.8**	87	1998	174	100	535	6-8 weeks
P231C.143.2000	2000	1800	76.4**	96	2220	194	100	584	6-8 weeks
				*SDR21					
				**SDR26					

Note: Hydrophilic sealing ring is not fitted in the picture below.



Product fully complies with DSD PS

Reducers

Mill-Pro offers a wide range of reducers for various application including:

- **Moulded Electrofusion reducers**: Injection moulded in PE100 RC compounds, offering standard reductions in smaller diameter pipes up to dn225.
- **Fabricated / Moulded Spigot Concentric reducers**: Either injection moulded or machined from hollow PE100+ bar in any size combination required up to dn2000.
- **Fabricated Eccentric reducers**: Eccentric reducers are designed to maintain the pipelines level invert. This maintains flow at the bottom of the pipe and prevents sediment from forming at the size change. Commonly used where velocities are low, Eccentric reducers are machined from hollow PE100+ bar in any size combination required.

Standard dimension tables for typical reducers are given below, these are limited to two size reduction, however, fabricated reducers provide the opportunity for large step changes, stepping down several pipe sizes in a single reducer. This can be beneficial where a large reduction needs to take place with limited space, for example, dn355 to dn110 where space prohibits the connection of four standard reducers in a line with couplers to make the diameter change.

Step reducers are machined from extruded hollow bar to accommodate step-change over a short distance. All variants of reducers are not listed in the tables but are manufactured to order on request. Available in black and single piece orders, contact us for special requirements.

FRIATEC

Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Product fully complies with DSD PS

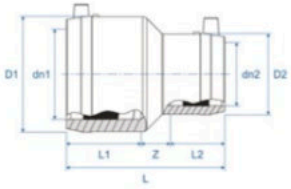
This mark is used to identify Mill-Pro products that meet the requirements of the Drainage Supplies Department PS Appendix 22.09. The use of this mark is not endorsed by the DSD and is not intended to infer approval by the DSD.

Black Concentric Electrofusion Reducer / MR / PN16 / SDR11

Frialen PE100 RC Injection moulded electrofusion reducers are suitable for fusing pipes from SDR11 to SDR17.6 Electrofusion sockets feature all the same performance benefits found in black couplers. All reducers are sealed in individual plastic bags for protection on site.

NOTE: The pipe and socket ends must be prepared in accordance with the general installation instructions using a spigot mechanical peeler, 90% Isopropyl alcohol wipes.

Product Code	dn1	dn2	D1	D2	L	L1	L2	Z	Availability in Hong Kong
P3316.14.063050	63	50	82	68	125	55	48	22	8-12 weeks
P3316.14.090050	90	50	117	68	160	69	49	42	8-12 weeks
P3316.14.090063	90	63	117	82	160	69	55	36	8-12 weeks
P3316.14.110063	110	63	142	82	160	79	55	26	8-12 weeks
P3316.14.110090	110	90	140	115	180	79	69	32	8-12 weeks
P3316.14.125090	125	90	155	115	200	86	69	45	8-12 weeks
P3316.14.125110	125	110	157	137	202	95	70	37	8-12 weeks
P3316.14.160110	160	110	201	140	230	98	79	53	8-12 weeks
P3316.14.180125	180	125	214	155	275	108	74	93	8-12 weeks
P3316.14.225160	225	160	282	203	270	110	98	62	8-12 weeks



Product fully complies with DSD PS

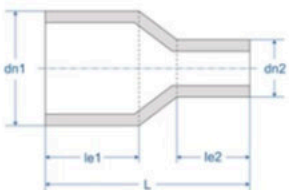
Black Concentric Standard Spigot Reducers

Mill-Pro PE100 black spigot concentric reducers are either injection moulded or machined from extruded hollow bar with factory butt-welded spigots for electrofusion joining in larger sizes. Standard sizes are shown below, however, fabricated reducers can be any size and this allows for significant reductions to be made in any size up to dn1000 in SDR11 and dn2000 in SDR 17. All reducers feature 1D and 2D bar code stickers for complete product traceability and are sealed in individual plastic bags for protection on site.

Listed below are standard reductions, however, we manufacture reductions in any combination of dn1 & dn2.

PN10 SDR17	PN16 SDR11	dn1	dn2	le1	le2	Z	Availability in Hong Kong
P5314.14.090063	P5316.14.090063	90	63	88	70	175	4-6 weeks
P5314.14.110063	P5316.14.110063	110	63	110	75	195	4-6 weeks
P5314.14.110090	P5316.14.110090	110	90	100	79	195	4-6 weeks
P5314.14.125063	P5316.14.125063	125	63	105	75	195	4-6 weeks
P5314.14.125090	P5316.14.125090	125	90	105	79	195	4-6 weeks
P5314.14.125110	P5316.14.125110	125	110	105	82	200	4-6 weeks
P5314.14.160063	P5316.14.160063	160	63	115	72	218	4-6 weeks
P5314.14.160090	P5316.14.160090	160	90	102	79	220	4-6 weeks
P5314.14.160110	P5316.14.160110	160	110	110	82	216	4-6 weeks
P5314.14.160125	P5316.14.160125	160	125	110	87	215	4-6 weeks
P5314.14.180063	P5316.14.180063	180	63	110	70	235	4-6 weeks
P5314.14.180090	P5316.14.180090	180	90	105	79	240	4-6 weeks
P5314.14.180110	P5316.14.180110	180	110	105	82	227	4-6 weeks
P5314.14.180125	P5316.14.180125	180	125	105	87	240	4-6 weeks
P5314.14.180160	P5316.14.180160	180	160	105	98	235	4-6 weeks
P5314.14.200063	P5316.14.200063	200	63	130	77	260	4-6 weeks
P5314.14.200090	P5316.14.200090	200	90	130	85	268	4-6 weeks
P5314.14.200110	P5316.14.200110	200	110	130	88	260	4-6 weeks
P5314.14.200125	P5316.14.200125	200	125	130	92	265	4-6 weeks
P5314.14.200160	P5316.14.200160	200	160	130	105	268	4-6 weeks
P5314.14.200180	P5316.14.200180	200	180	125	124	265	4-6 weeks
P5314.14.225110	P5316.14.225110	225	110	138	115	285	4-6 weeks
P5314.14.225125	P5316.14.225125	225	125	138	120	285	4-6 weeks
P5314.14.225160	P5316.14.225160	225	160	138	120	285	4-6 weeks
P5314.14.225200	P5316.14.225200	225	200	138	120	285	4-6 weeks
P5314.14.250110	P5316.14.250110	250	110	129	105	280	4-6 weeks
P5314.14.250125	P5316.14.250125	250	125	135	100	310	4-6 weeks
P5314.14.250160	P5316.14.250160	250	160	129	115	280	4-6 weeks
P5314.14.250180	P5316.14.250180	250	180	135	110	287	4-6 weeks
P5314.14.250200	P5316.14.250200	250	200	129	115	275	4-6 weeks
P5314.14.250225	P5316.14.250225	250	225	129	135	315	4-6 weeks
P5314.14.315160	P5316.14.315160	315	160	150	115	310	4-6 weeks
P5314.14.315200	P5316.14.315200	315	200	150	120	310	4-6 weeks
P5314.14.315225	P5316.14.315225	315	225	150	125	310	4-6 weeks
P5314.14.315250	P5316.14.315250	315	250	150	130	310	4-6 weeks
P5314.14.315280	P5316.14.315280	315	280	150	145	315	4-6 weeks
P5314.14.355250	P5316.14.355250	355	250	170	125	320	4-6 weeks
P5314.14.355315	P5316.14.355315	355	315	165	140	325	4-6 weeks

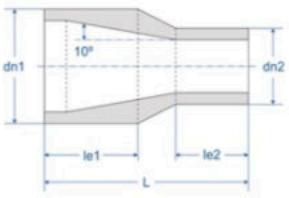
Any reducer can be fabricated, only standard reductions are shown. For large step changes and special one-off reducers, *contact us* for dimensions.



Product fully complies with DSD PS

Black Concentric Spigot Reducers / 10º

PN10 SDR17	PN16 SDR11	dn1	dn2	le1	le2	Z	Availability in Hong Kong
P5314.17.075063	P5316.17.075063	75	63	70	63	139	4-6 weeks
P5314.17.090063	P5316.17.090063	90	63	79	63	160	4-6 weeks
P5314.17.090075	P5316.17.090075	90	75	79	70	157	4-6 weeks
P5314.17.110075	P5316.17.110075	110	75	82	70	190	4-6 weeks
P5314.17.110090	P5316.17.110090	110	90	82	79	171	4-6 weeks
P5314.17.125075	P5316.17.125075	125	75	87	70	233	4-6 weeks
P5314.17.125090	P5316.17.125090	125	90	87	79	202	4-6 weeks
P5314.17.160090	P5316.17.160090	160	90	98	79	294	4-6 weeks
P5314.17.160110	P5316.17.160110	160	110	98	82	249	4-6 weeks
P5314.17.160125	P5316.17.160125	160	125	98	87	215	4-6 weeks
P5314.17.180090	P5316.17.180090	180	90	105	79	349	4-6 weeks
P5314.17.180110	P5316.17.180110	180	110	105	82	304	4-6 weeks
P5314.17.180125	P5316.17.180125	180	125	105	87	270	4-6 weeks
P5314.17.200110	P5316.17.200110	200	110	112	82	359	4-6 weeks
P5314.17.200125	P5316.17.200125	200	125	112	87	325	4-6 weeks
P5314.17.200160	P5316.17.200160	200	160	112	98	251	4-6 weeks
P5314.17.200180	P5316.17.200180	200	180	112	105	227	4-6 weeks
P5314.17.225110	P5316.17.225110	225	110	120	82	424	4-6 weeks
P5314.17.225125	P5316.17.225125	225	125	120	87	389	4-6 weeks
P5314.17.225160	P5316.17.225160	225	160	120	98	315	4-6 weeks
P5314.17.225180	P5316.17.225180	225	180	120	105	271	4-6 weeks
P5314.17.225200	P5316.17.225200	225	200	120	112	245	4-6 weeks
P5314.17.250160	P5316.17.250160	250	160	130	98	382	4-6 weeks
P5314.17.250180	P5316.17.250180	250	180	130	105	338	4-6 weeks
P5314.17.250200	P5316.17.250200	250	200	130	112	294	4-6 weeks
P5314.17.250225	P5316.17.250225	250	225	130	120	263	4-6 weeks
P5314.17.280160	P5316.17.280160	280	160	139	98	471	4-6 weeks
P5314.17.280180	P5316.17.280180	280	180	139	105	427	4-6 weeks
P5314.17.280200	P5316.17.280200	280	200	139	112	383	4-6 weeks
P5314.17.280225	P5316.17.280225	280	225	139	120	332	4-6 weeks
P5314.17.280250	P5316.17.280250	280	250	139	130	284	4-6 weeks
P5314.17.315200	P5316.17.315200	315	200	150	112	471	4-6 weeks
P5314.17.315225	P5316.17.315225	315	225	150	120	419	4-6 weeks
P5314.17.315250	P5316.17.315250	315	250	150	130	367	4-6 weeks
P5314.17.315280	P5316.17.315280	315	280	150	139	307	4-6 weeks

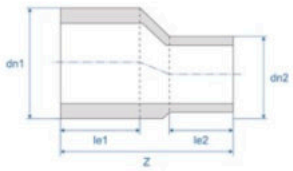


Black Fabricated Eccentric Reducers / PN16-10 / SDR17-11

Mill-Pro PE100+ black spigot eccentric reducers are either injection moulded or machined from extruded hollow bar with factory butt-welded spigots for electrofusion joining in larger sizes. Standard sizes are shown below, however, fabricated reducers can be any size and this allows for significant reductions to be made in any size up to dn2000. All reducers feature 1D and 2D bar code stickers for complete product traceability and are sealed in individual plastic bags for protection on site.

Listed below are standard reductions, however, we manufacture reductions in any combination of dn1 & dn2.

PN10 SDR17	PN16 SDR11	dn1	dn2	le1	le2	Z	Availability in Hong Kong
P5314.12.110090	P5316.12.110090	110	90	150	150	320	4-6 weeks
P5314.12.200160	P5316.12.200160	200	160	200	150	390	4-6 weeks
P5314.12.225200	P5316.12.225200	225	200	200	200	425	4-6 weeks
P5314.12.250200	P5316.12.250200	250	200	200	200	450	4-6 weeks
P5314.12.250225	P5316.12.250225	250	225	200	200	425	4-6 weeks
P5314.12.280225	P5316.12.280225	280	225	200	200	455	4-6 weeks
P5314.12.280250	P5316.12.280250	280	250	200	200	430	4-6 weeks
P5314.12.315250	P5316.12.315250	315	250	200	200	465	4-6 weeks
P5314.12.315280	P5316.12.315280	315	280	200	200	435	4-6 weeks
P5314.12.355280	P5316.12.355280	355	280	300	200	575	4-6 weeks
P5314.12.355315	P5316.12.355315	355	315	300	200	540	4-6 weeks
P5314.12.400315	P5316.12.400315	400	315	300	200	585	4-6 weeks
P5314.12.400355	P5316.12.400355	400	355	300	300	645	4-6 weeks
P5314.12.450355	P5316.12.450355	450	355	400	300	795	4-6 weeks
P5314.12.450400	P5316.12.450400	450	400	400	300	750	4-6 weeks
P5314.12.500400	P5316.12.500400	500	400	400	300	800	4-6 weeks
P5314.12.500450	P5316.12.500450	500	450	400	400	850	4-6 weeks
P5314.12.560450	P5316.12.560450	560	450	600	400	1110	4-6 weeks
P5314.12.560500	P5316.12.560500	560	500	600	400	1060	4-6 weeks
P5314.12.630500	P5316.12.630500	630	500	600	400	1130	4-6 weeks
P5314.12.630560	P5316.12.630560	630	560	600	600	1270	4-6 weeks
Any reducer can be fabricated. For large step changes and special one-off reducers, *contact us*.							



Product specifications and dimensions are subject to change without notice.
For the latest information refer to our website: www.millpro.com.hk or contact our sales team.

Odour Abatement Device

OAD (Odour Abatement Devices), also know as **Odour Control Device** or **Odour Management Device**. These are Polyethylene inserts with Activated Charcoal filter cartridges. They drop inside standard Hong Kong 600mm Square or split manhole frame (DS 1077 A) to absorb foul gas (H2S) that is released from gravity drainage or Air valves during the operation of sewerage rising mains.

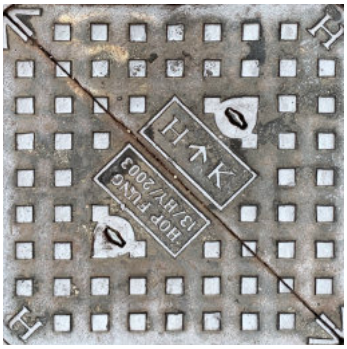
As the foul gas in the chamber builds up, it is forced past the valve and through the cartridge filter, before exiting to Atmosphere out the manhole cover. The replaceable cartridge is filled with a special activated carbon which absorbs the smell associated with H2S gas.

The Mill-Pro OAD is designed with the following features to maximise cartridge life:

- **Rain Guard** – to protect the Activated Carbon from being saturated by surface water leaking past the chamber lid.
- **High Pressure bypass valve** – vents large quantities of Air (filling the pipeline) to atmosphere so as to not damage the media.
- **Expansion Bag** – absorbs pressure changes inside the chamber to reduce media saturation
- **Media protection valve** – prevents the activated Charcoal from being continually depleted due to constant gas exposure.

Without the expansion bellows and the media protection valve the foul gases in the chamber saturate the media in the cartridge after a short period of time and render it ineffective. These features preserve the absorbent ability of the media providing an typical annual replacement cycle, rather than after just a few months.

Mill-Pro is the official Hong Kong agent for **MOE** (Manhole Odor Eliminator).



MOE (Manhole Odour Eliminator)

The Manhole Odor Eliminator is an innovative solution to control the unpleasant smells that rise from sewer vents, grease traps, and manholes. Underground sewer systems let foul and potentially toxic gases pass through manholes into public areas. This can lead to nuisance complaints and even health and safety concerns. However, most activated carbon air filtration systems are expensive to maintain and can't effectively manage the changing airflow typical of sewer systems.

The MOE™ is a unique system that fits under the manhole cover. This includes an insert, carbon filter cartridge and bladder. The bladder buffers the fluctuations of sewer gas so that the odor absorbent carbon only has to treat the peak gas flow. This reduces the need to change out the carbon filter saving cost and time consuming services.

Standard Filters

Standard filter cartridges for the Manhole Odor Eliminator contain activated carbon based filter media. Other media can be installed depending on what odor causing gasses are present in the manhole.

Color Indicating Media

Hydrogen Sulfide (H2S) detecting media is available for the Manhole Odor Eliminator. This media changes color depending on the concentration of H2S it has been exposed with. Examining the media when changing the filter cartridge helps set the maintenance schedule to maximize filter life.

Bladder replacement

A bladder buffers the fluctuating pressures in the manhole. Here a cutaway demo MOE™ is being test fit. The yellow bladder is visible below the carbon filter.

Support Funnel

A Manhole Odor Eliminator is being installed with a stainless steel support funnel. Plastic support funnels are also used depending on the size and style of the manhole.

millpro.com.hk

HONG KONG

info@millpro.com.hk

phone +852 2543 6200
office Room 2102, 21/F Tai Yip Building,
141 Thomson Road, Wan Chai, **HK SAR**

NEW ZEALAND

info@millpro.co.nz

phone +64 6 836 7919
post PO Box 7014 Taradale, **Napier** 4141