

Ultimate Plumbing Solutions that Last a Lifetime

HOTO不锈钢喉管系统。您终生的最佳管喉方案。



*for private
circulation only*



A Steely Commitment to Quality

Established in January 1994, HOTO Stainless Steel Industries Sdn. Bhd. is Malaysia's foremost manufacturer of stainless steel ornamental tubes and water pipes. A name that stands for quality and excellence, HOTO is an abbreviation for the Japanese word "Hosho Tokyuhin" which means "assurance of excellent quality". This is a reflection of our company's commitment in producing quality stainless steel tubes and pipes that meet international standards and specifications.

At HOTO, we believe in working closely with our clients to provide them with products and services of unsurpassed quality. It is this high level of commitment that has earned us the MS ISO 9001:2008 Certification for Quality Assurance in Production, Installation and Servicing, and has also helped us stand in good stead in keeping our customers' trust and loyalty, both domestic and international. HOTO Stainless Steel Industries Sdn. Bhd is a UEM Builders Group Company.

Why Choose Hoto Stainless Steel Plumbing?

When it comes to potable water supplies, particularly in large institutional, commercial and residential buildings, there are many good reasons to consider stainless steel plumbing.

The many advantages of stainless steel plumbing include:

- Low maintenance costs and other life-cycle costing advantages
- Does not demand water treatment chemicals, except for bacterial control
- Pipe work is unaffected by high water flow rates
- Able to sustain the full range of potable waters, including soft waters, a feature that is viable in large buildings
- Very good corrosion resistance, hence there is no danger of contamination of drinking water supplies
- Strong yet ductile
- Non-toxic
- Manufactured from a high proportion of recycled material and is 100% recyclable
- Suitable for hot water usage
- Looks good after installation

At HOTO, we provide a full range of joining methods and fittings, where the stainless steel tubing can be manipulated to suit the requirements of our clients.



Komitmen Teguh Terhadap Kualiti

HOTO Stainless Steel Industries Sdn. Bhd. yang ditubuhkan pada bulan Januari 1994 adalah pengeluar tiub hiasan dan paip air keluli tahan karat yang terulung di Malaysia. Sebuah nama yang melambangkan kualiti dan kecemerlangan, HOTO merupakan singkatan perkataan Jepun "Hosho Tokyuhin" yang bermaksud "jaminan kualiti yang cemerlang". Inilah lambang komitmen syarikat kami dalam mengeluarkan tiub keluli tahan karat dan paip berkualiti yang memenuhi piawaian dan spesifikasi antarabangsa.

Di HOTO, kami sentiasa berpegang kepada falsafah bekerja seiring dengan pelanggan bagi menyediakan produk dan perkhidmatan yang berkualiti yang tiada tara kepada mereka. Tahap komitmen yang tinggi inilah yang telah membolehkan kami mencapai Piawaian MS ISO 9001:2008 untuk Jaminan Kualiti dalam Pengeluaran, Pemasangan dan Servis, serta telah berjaya mengukuhkan kedudukan kami dalam mengekalkan kepercayaan dan kesetiaan para pelanggan kami, baik di peringkat tempatan mahupun antarabangsa.

HOTO Stainless Steel Industries Sdn. Bhd. merupakan syarikat kumpulan UEM Builders

Mengapa Memilih Sistem Paip Keluli Tahan Karat Hoto?

Keluli tahan karat harus mendapat pertimbangan wajar terutamanya jika ia melibatkan bekalan air boleh diminum, terutamanya bagi bangunan-bangunan besar institusi, komersil dan kediaman.

Kelebihan-kelebihan sistem paip keluli tahan karat Hoto termasuk:

- Kos penyelenggaraan rendah serta pelbagai kelebihan kitaran hidup yang lain
- Tidak memerlukan bahan kimia rawatan air, kecuali untuk kawalan bakteria
- Kerja-kerja paip lain tidak tergugat oleh kadar aliran air yang tinggi
- Berupaya menahan pelbagai jenis air boleh diminum, termasuk air lembut, suatu ciri yang berdaya maju dalam bangunan-bangunan besar
- Ketahanan pengakisan yang amat baik, oleh itu tiada bahaya pencemaran daripada bekalan air minuman
- Teguh namun tetap mulur
- Tiada toksik
- Dihasilkan daripada kandungan bahan kitar semula yang tinggi dan 100% boleh dikitar semula
- Sesuai untuk kegunaan air panas
- Kelihatan menarik selepas pemasangan

Di HOTO, kami menyediakan rangkaian penuh kaedah penyambungan dan pemasangan, di mana tiub keluli tahan karat tersebut boleh dibentuk mengikut keperluan para pelanggan kami.

钢铁般的品质承诺

HOTO Stainless Steel Industries Sdn. Bhd. 于1994年1月成立, 是马来西亚首屈一指的不锈钢管和水管制造商。HOTO 源自于日文“Hosho Tokyuhin”, 寓意“超卓品质的保证”, 反映我们公司产品符合国际标准规格, 也代表我们出产优质不锈钢管和水管的坚决承诺。

本公司HOTO以顾客为优先, 坚信与顾客保持紧密合作以提供无与伦比的产品和素质服务为企业理念。凭着这崇高的信念, 我们已成功在制造, 安装及服务领域荣获 MS ISO 9001:2008 认证证书, 也获得了国内及海外顾客的信赖与支持。HOTO Stainless Steel Industries Sdn. Bhd 是来自 UEM Builders Group Company。

为何选择HOTO不锈钢喉管?

在大型建筑物供应饮用水方面, 尤其是机构、商业或住宅区, 采用不锈钢管的好处可说是多不胜数。

不锈钢管众多好处包括:

- 维修费低、具备使用周期费用低的优势
- 细菌防治以外, 无需使用化学物品处理水质
- 喉管不受水量高低影响
- 能负荷所有饮用水 (包括轻水), 也适用于大型建筑
- 良好的防锈材料, 不会污染饮用水供
- 坚固, 可塑性强
- 无毒
- 采用高成分可再循环材料制造, 可再循环率100%
- 安装整齐美观
- 热水器适用

本公司提供完整的装置及接合方法, 显得不锈钢容易处理, 能据顾客需求改造。



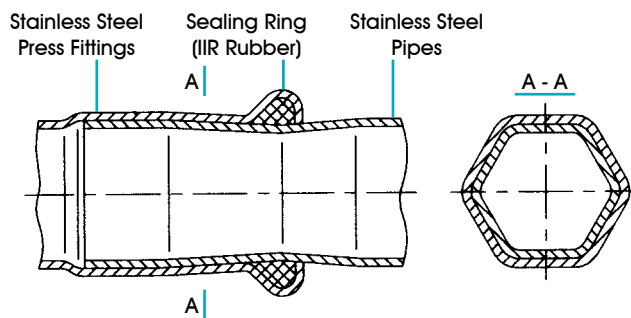
The Basic Principle Of Press Fitting

Prinsip Asas Pemasangan Jenis Tekan 压力装配的基本原理

The stainless steel press-fit fitting has a special profile which consists of ends with U-shaped grooves and O-shaped seal rings. During the process of connecting pipes, the stainless steel water pipe that needs to be connected is inserted into the press-fit fitting and then sealed up by the compress-seizing method with a special pressing tool. Hence, the press-fitting and pipe end that is to be fitted are compressed together to form a hexagonal shape that gives the structure sufficient strength for fitting. As the sealing ring has been compressed, this structure also has excellent seal properties.

Pemasangan jenis tekan untuk keluli tahan karat mempunyai profil khas yang terdiri daripada hujung dengan alur berbentuk-U dan gelang kedap berbentuk-O). Semasa proses penyambungan paip, paip air keluli tahan karat yang disambungkan itu dimasukkan ke dalam pemasangan tekan. Kemudian di kedap dengan mengikat secara mampat dengan menggunakan bersama-sama peralatan pemasangan bagi membuat bentuk heksagon supaya dapat memberikan kekuatan yang mencukupi untuk pemasangan. Oleh sebab gelang kedap telah dimampatkan, struktur ini juga memiliki sifat kedapan yang cemerlang.

不锈钢压力装配的特定组合涵盖了U形槽口及O形封环。连接喉管过程中，需要被接驳的不锈钢水管将被插入压力装配，接着其压缩捆扎将引用特别的压力工具来封密。这样一来，压力装配的部分和被装配的水管末端将一起被压缩成六角形，这样不但能供应钢管良好的封密，也能确保结构在安装过程时所需的稳定性。



Product Sample - Our Type Of Stainless Steel Pipes

Contoh Produk – Jenis Paip Keluli Tahan Karat Kami 产品样本 – 本公司提供的不锈钢管系列

BSEN-10312 : 2002 and JIS G 3448 : 2004 Stainless Steel Water Pipes or equivalents are widely used in developed countries. The advantages, as mentioned, include better hygiene, durability, low maintenance and economical when taking into account the cost of its lifecycle. Installation costs can be rather competitive. Stainless steel tubing is compatible with both stainless steel and copper-based alloy fittings. It delivers the best results when used with stainless steel press-fit fittings, and is especially suitable when concealed in concrete or when used for underground laywork.

BSEN -10312 : 2002 dan JIS G 3448 : 2004 Paip Air Keluli Tahan Karat, atau yang bersamaan dengannya, digunakan secara meluas di negara-negara maju. Kelebihannya sepertimana yang dinyatakan meliputi tahap kebersihan yang lebih baik, ketahanan, penyelenggaraan yang rendah serta faedah ekonomi jika mengambil kira kos kitaran hidupnya. Kos pemasangannya agak setanding. Tiub keluli tahan karat adalah serasi dengan keluli tahan karat dan pemasangan aloi yang berasaskan tembaga. Ia memberikan hasil terbaik apabila digunakan dengan pemasangan keluli tahan karat pasang tekan, dan amat sesuai apabila tersembunyi di dalam konkrit atau apabila digunakan untuk kerja-kerja pemasangan bawah tanah.

BSEN-10312:2002 and JIS G 3448:2004 stainless steel pipes or equivalent pipes in advanced countries have been widely adopted. As previously mentioned, its advantages include hygiene, durability, low maintenance and use cycle cost on more economic benefits. Besides, its installation cost in the market is also very competitive. Stainless steel pipes not only can be used with stainless steel fittings, but also can be used with copper alloy fittings. Although so, its product matching with stainless steel pressure fixed fittings is complementary, especially suitable for hidden in concrete or underground laying.



Size Range

Jenis saiz 体积范围

Standard: BSEN-10312:2002

Size / Designation	Outside Diameter	Nominal Thickness	Approx No. of Metres per 1000 Kilos	Approx No. of Kilo Per Metre Run
15 mm	14.940 / 15.045 mm	0.6 mm	4479	0.223
22mm	21.950 / 22.055 mm	0.7 mm	2630	0.380
28 mm	27.950 / 28.055 mm	0.8 mm	1816	0.551
35 mm	34.965 / 35.070 mm	1.0 mm	1167	0.857
42 mm	41.965 / 42.070 mm	1.1 mm	885	1.130
54 mm	52.930 / 54.070 mm	1.2 mm	631	1.585

Standard: JIS G 3448:2004

Size / Designation	Outside Diameter	Nominal Thickness	Approx No. of Metres per 1000 Kilos	Approx No. of Kilo Per Metre Run
30	34.0 mm	1.2 mm	1020	0.980
40	42.7 mm	1.2 mm	806	1.241
50	48.6 mm	1.2 mm	706	1.417
60	60.5mm	1.5 mm	453	2.205

Chemical Composition

Komposisi Kimia 化学成分

The stainless steel from which domestic water tubing is manufactured is type 304 in BS 1449, Part 2 having the following composition:

Keluli tahan karat yang menghasilkan tiub air domestik adalah jenis 304 dalam BS 1449, Bahagian 2 mempunyai komposisi seperti berikut:

国内水管采用的不锈钢管是以 304 的 BS1449 型制造，其第二组合成份如下：

C (% max)	Si (% max)	Mn (% max)	Ni (%)	Cr (%)	S (% max)	P (% max)
0.06	1.00	2.00	8.00 - 11.00	17.50 - 19.00	0.03	0.045

Physical & Mechanical Properties

Sifat fizikal & Mekanikal 物理及机械性能

Grade	Specific Gravity	Thermal Conductivity (c.g.s. Units)	Coefficient of Thermal Expansion	Tensile Strength (min)	Elongation on 50mm (min)	Young's Modulus of Elasticity
BSEN-10312:2002	7.91	at 20°C 0.035	16.3 x 10 ⁻⁶ per °C	510 N/mm ²	30%	at 20°C 200 KN/mm ²
		at 100°C 0.038	17.7 x 10 ⁻⁶ per °C			at 100°C 192.5 KN/mm ²

Installation Procedure

Tatacara Pemasangan 安装程序

Line marking

Put an insertion mark on the pipe using a marker. This is a very important step.

Menanda garisan

Buat tanda pemasangan pada paip dengan pena penanda. Ini adalah langkah yang amat penting.

标线

用标示笔做出插入记号。这个步骤非常重要。



Insert pipe until it stops

Insert the pipe into the joint to its full end, until the line mark reaches the joint end. The pipe shall not be inserted axially. Then, turn it slightly to prevent spiral extrusion. In case of insertion difficulty, check for remaining burrs or that the pipe is not oval shaped. Replace the pipe if the shape is deformed. Apply only water for lubrication and not oil nor grease.

Masukkan paip hingga ia berhenti

Masukkan paip ke dalam sambungan hingga masuk ke hujungnya, sehingga tanda garisan menyentuh hujung sambungan. Paip tersebut tidak boleh dimasukkan secara paksaan. Seterusnya, putarkan ia sedikit untuk mencegah penyempitan pilin. Sekiranya berlaku kesukaran memasukkannya, periksa gerigi yang mungkin masih ada ataupun kemungkinan paip tidak berbentuk bujur. Gantikan paip jika bentuknya cacat. Untuk tujuan pellinciran, gunakan air sahaja dan bukannya minyak atau gris.

把喉管插入至底

把喉管完全插入接榫，直到标线到达接榫末端。注意：喉管不能顺轴向插入。插入时，稍微转动钢管以避免旋转时钢管被挤压。若难以插入，请检查钢管是否有毛口或喉管是否已变形。若已变形，请更换喉管。请只用水作润滑用途，而不是油或润滑油。



Pressing

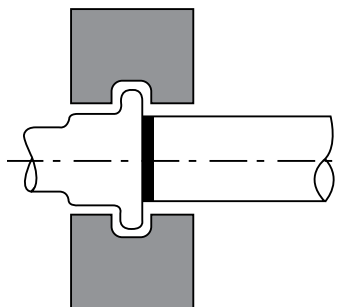
Set the curled portion of the joint to the gutter of the jaw. Start pressing until both sides of the jaw touch and a slight shock of the motor is felt. Use only HOTO approved tools.

Menekan

Pasangkan bahagian ikal sambungan kepada talang rahang. Mula menekan hingga kedua-dua bahagian rahang bertemu dan sedikit kejutan dapat dirasai pada motor. Hanya gunakan peralatan HOTO yang diluluskan.

施压

把接榫末端部位固定在钳的槽口，然后开始按压直到钳的两端已接触。这时你也应该感觉到马达稍微震动。请使用HOTO批准的工具。



Checking

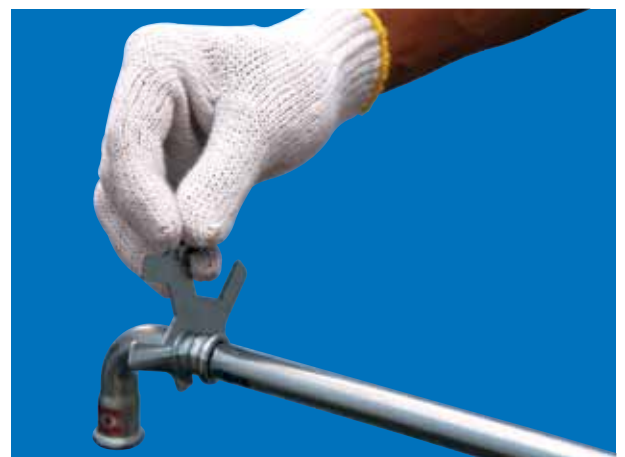
After pressing, apply the hexagonal gauge to the hexagonal portion of the joint and check if installation is done properly. If the gauge is not inserted properly, check tools and press again.

Memeriksa

Selepas menekan, pasang tolok heksagon pada bahagian heksagon sambungan dan periksa jika pemasangan dibuat dengan betul. Sekiranya tolok tidak dimasukkan dengan betul, periksa peralatan dan tekan sekali lagi.

检查步骤

按压后，在接榫的六方形部位使用六方形量器以便检查安装过程是否正确。若量器插的不正确，请检查其工具，然后再按压一次。



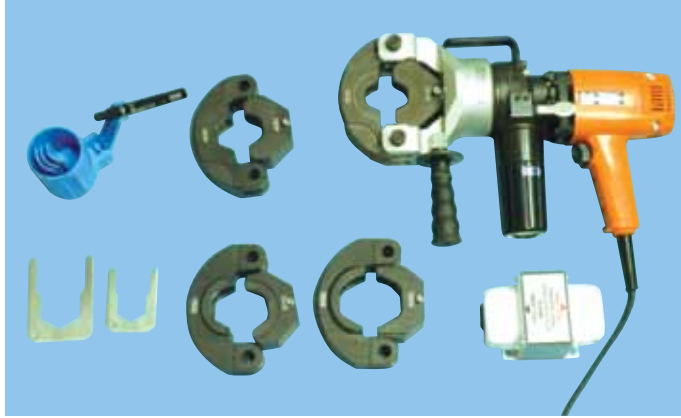
Tools & Equipment

Perkakas & Peralatan 工具及配件

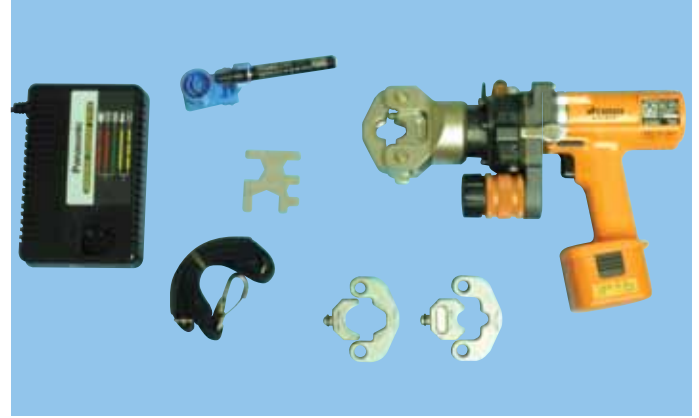
The HOTO Press Fitting Tool is a handy clicking machine that is easy and convenient to use. This rechargeable tool is best used for various stainless steel pipework and installations.

Peralatan Pemasangan Penekan HOTO adalah mesin klik yang senang dan mudah digunakan. Peralatan cas semula ini amat sesuai digunakan untuk pelbagai kerja paip dan pemasangan keluli tahan karat.

充电式的HOTO压缩装置工具轻便易用，是进行各种不锈钢喉管安装工作的好帮手。



BPD-05 for Size 30, 40, 50, 60



BPD-03R for Size 15, 22, 28

Quality Test

Ujian Kualiti 品质测试



Tensile Test

Drawing blocking power is measured using the Amsler universal testing machine. 0.2MPa (2.0kgf / cm²) of air pressure is applied into the enclosed pipe by a pump.

Penarikan kuasa sekatan diukur menggunakan mesin ujian semesta Amsler. Sebanyak 0.2MPa (2.0kgf / cm²) tekanan udara dimasukkan ke dalam paip yang disediakan dengan menggunakan sebuah pam.

采用Amsler测试机测量拉伸力。用泵把0.2MPa (2.0kgf / cm²) 气压注入附备管内。



Bending Water Pressure Test

2.5 MPa of air pressure is injected and the maximum bending degree is measured using the Amsler universal bending machine.

Tekanan udara sebanyak 2.5MPa dimasukkan dan darjah lenturan maksimum diukur dengan menggunakan mesin lenturansemesta Amsler.

注入2.5MPa 的气压，然后采用 Amsler 测试机测量其最高弯曲度。



Cyclic Internal Pressure Test

Cyclic pressure is applied 10,000 times. No leaks or problems were noted.

Tekanan berkitar dikenakan sebanyak 10,000 kali. Tiada kebocoran atau masalah dikesan.

注入10,000 倍环状压力。没有发现任何泄漏或问题。



Vibration Test

A vibration flexion is repeated one million times using a vibration testing machine. No leaks or problems were noted.

Fleksi getaran diulang sebanyak sejuta kali menggunakan sebuah mesin ujian getaran. Tiada kebocoran atau masalah dikesan.

以震动测试机重复百万次的震动测试。没有发现任何泄漏或问题。



Corrosion Test

A testing solution consisting of 200+20mg/litre of Cl and distilled water is prepared according to JIS K8150 (sodium chloride reagent).

Larutan ujian yang terdiri daripada 200+20mg/liter Cl dan air suling disediakan mengikut kaedah JIS K8150 (reagen sodium klorida).

据JIS K8150（氯化钠剂）的一项溶液测试准备包含了200+20毫克/公升的Cl及蒸馏水的溶液测试。

Application In General Usage

Aplikasi Dalam Kegunaan Umum 一般用法

HOTO is an integral provider for many prestigious building, commercial, residential and community projects that demand stainless steel tubes and pipes of the highest quality.

Indeed the quality of HOTO stainless steel is proven and used across a wide spectrum of industry and community-based developments in many developed countries.

HOTO merupakan pembekal penting kepada pelbagai bangunan yang berprestij, projek-projek komersil, kediaman dan komuniti yang memerlukan tiub keluli tahan karat berkualiti terbaik.

Sesungguhnya kualiti keluli tahan karat HOTO telah terbukti dan digunakan secara meluas dalam pelbagai industri serta pembangunan yang berasaskan komuniti di kebanyakan negara-negara maju.

目前，HOTO是许多建筑工程的综合供应商，顾客包括了商业、住宅及社区建筑公司。HOTO不锈钢品质已获得验证，也已被广泛地使用于许多先进国家工业及社区发展计划内。



Communication Pipes

Paip Komunikasi

通信管道



Internal Plumbing (Pipes install at ceiling)

Pemasangan paip di siling

内部管道（管道安装在天花板）



Internal Plumbing (Hot and Cold Water)

Internal Plumbing (Air Panas dan Sejuk)

内部水管（冷和热水）



Pipes connection from Booster Pump

Paip sambungan daripada Pam Booster

连接增压泵的管道



Pipes Connection at Water filter tank

Sambungan paip pada tangki air filter

连接滤池的管道



Riser Pipes for High Building

Paip Riser Untuk Bangunan Tinggi

高层建筑管道冒口

Projects References

Rujukan Projek 项目的引用



Commercial Komersil 商业



Residential, Apartment & Condominiums

Harta Bertanah

住宅, 公寓和共管



Hospital

Hospital

医院

Certifications and Approval

Pensijilan dan Kelulusan 认证书 和 批准



SIRIM - Product Certification Licence for JIS G 3448 : 2004
 SIRIM - Product Certification Licence for BS EN 10312:2002
 SIRIM - ISO 9001 : 2008
 IKRAM QA CERTIFICATION – Product Certificate of Conformity

NO. SIJIL PENDAFTARAN : SPAN/KP/A/00736-2010,
 SPAN/KP/A/00084-2008 & SPAN/KP/A/00085-2008

HOTO Pipe Fittings

Pemasangan Paip HOTO

HOTO 水管装配

Standard : SAS 322 : 2003



S



RS



LS



90E & 90CE



R90E



45E



R45E



S(M)



S(F)



90E(M)



90E(F)



ASF



AEF



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E(F)



E(F)-WS



E(F)-WR



T(F)-WR



C



LS90



LS45



US



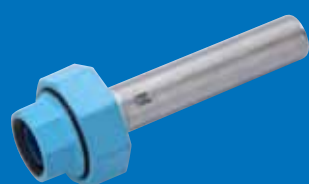
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UH 40°C & 85°C



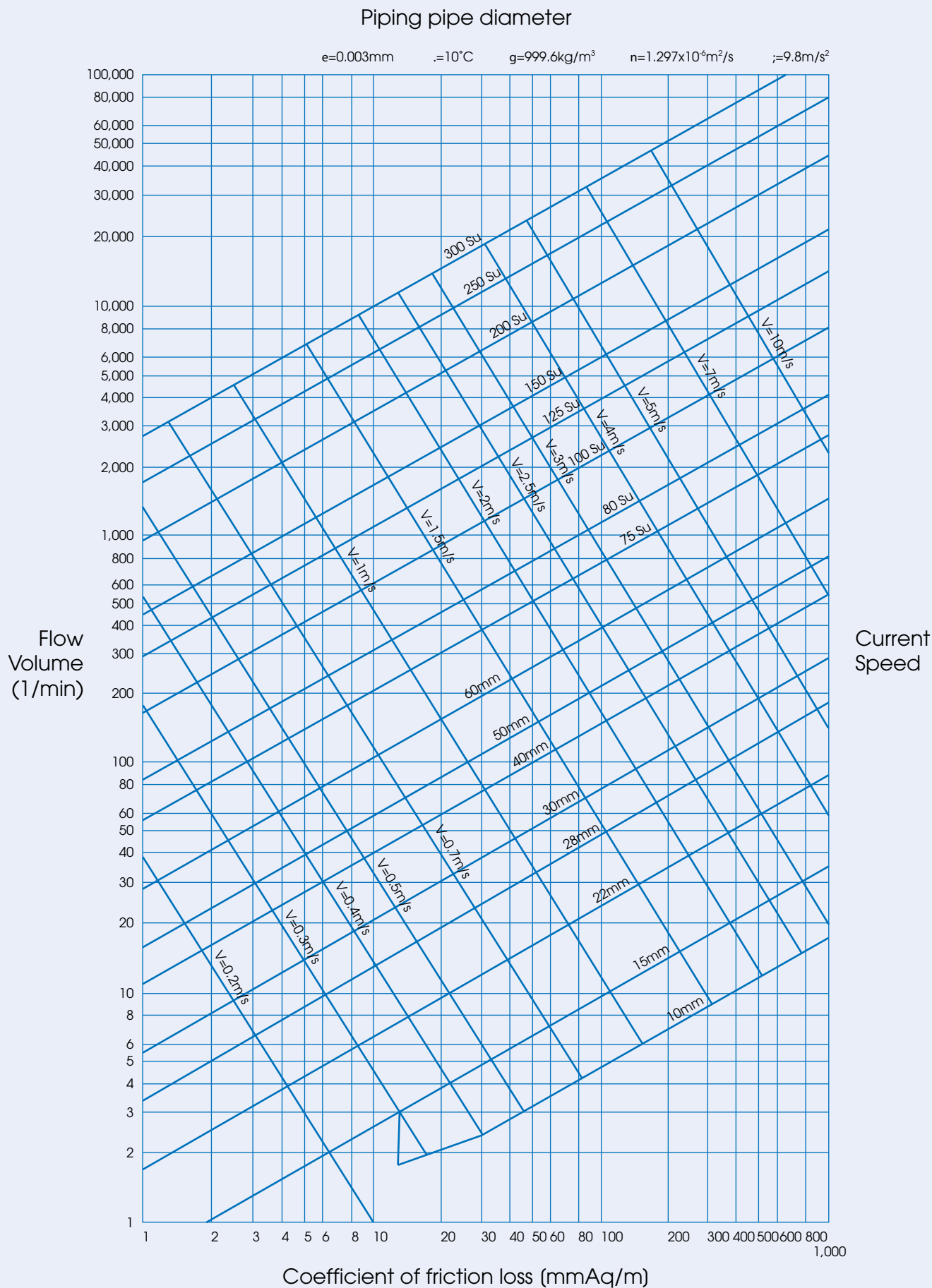
IUG



SP



SF(T)

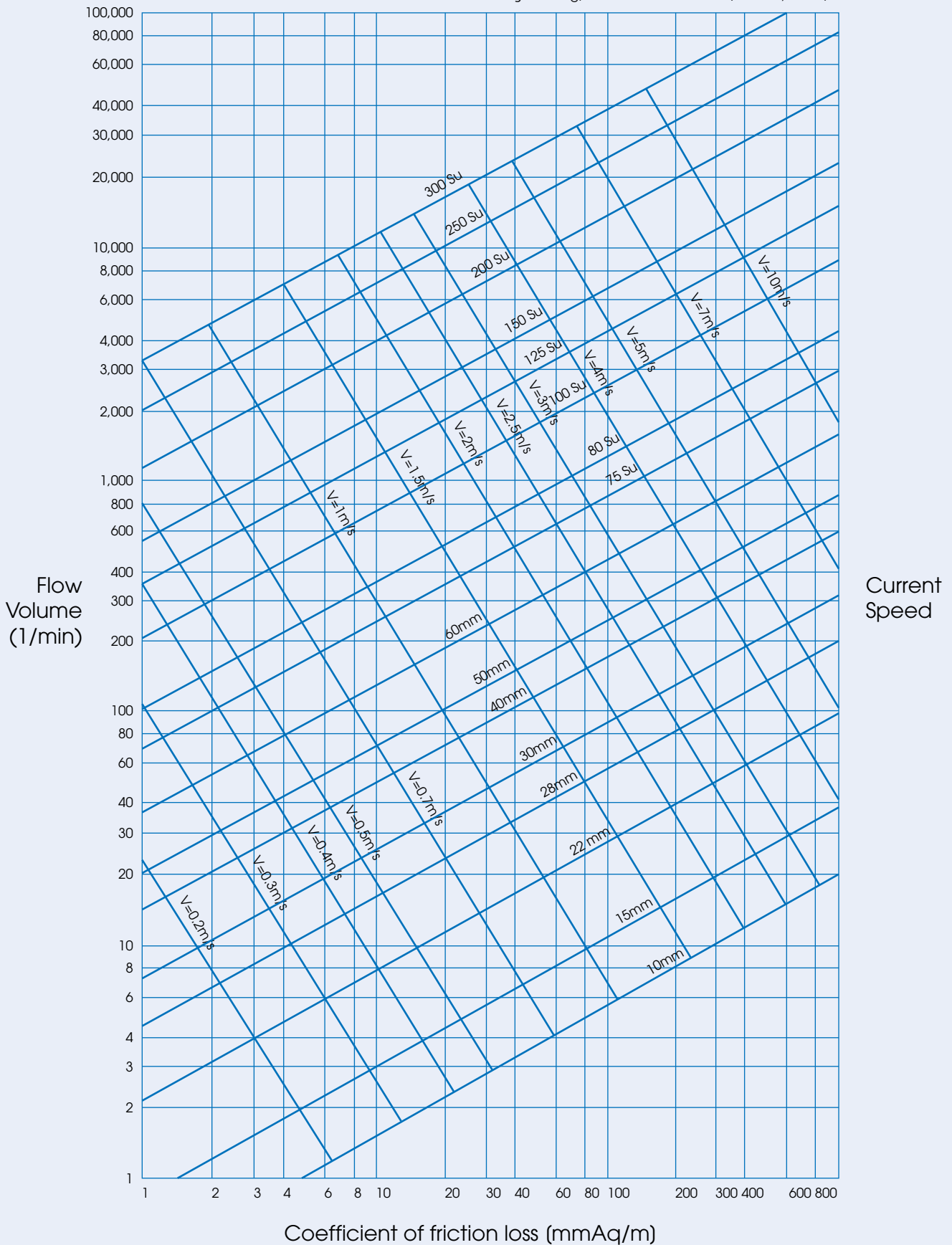


Frictional Loss Head

Carta Kehilangan Geseran 摩阻水头损失

For Architectonics

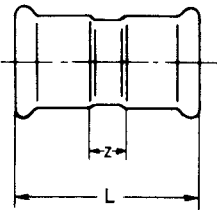
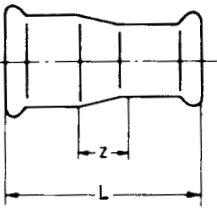
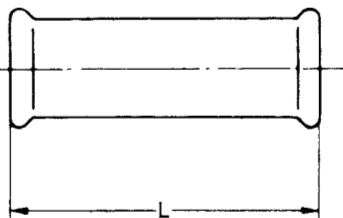
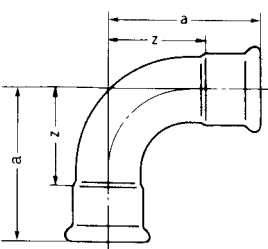
$e=0.003\text{mm}$ $t=80^{\circ}\text{C}$ $\rho=999.6\text{kg/m}^3$ $n=0.362\times 10^{-4}\text{m}^2/\text{s}$ $\gamma=9.8\text{m/s}^2$



Flow volume diagram of General plumbing stainless steel pipe (80°C)

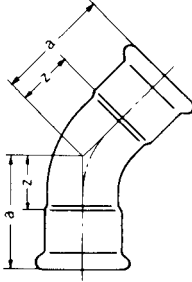
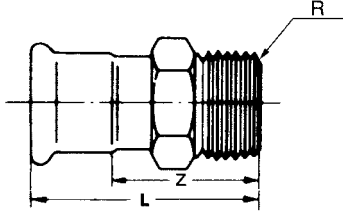
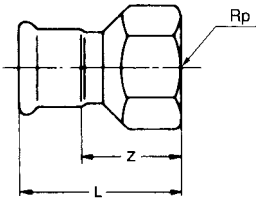
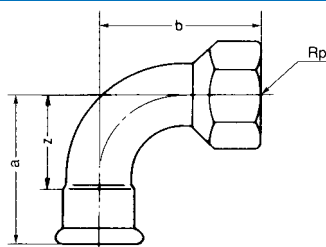
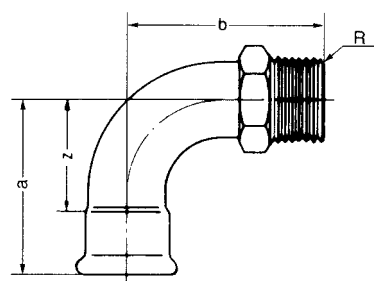
Specifications

Speksifikasi 规格

S	Code	Nominal dia. (mm)		L	z
	011500	15		53	11
	012200	22		60	12
	012800	28		60	12
	013000	30		100	22
	014000	40		116	22
	015000	50		126	22
	016000	60		154	26
RS	Code	Nominal dia. (mm)		L	z
	022215	22 X 15		60	15
	022813	28 X 15		75	30
	022822	28 X 22		64	16
	023028	30 X 28		90	27
	023022	30 X 22		103	40
	023015	30 X 15		105	45
	024030	40 X 30		122	36
	024028	40 X 28		121	50
	024022	40 X 22		121	50
	024015	40 X 15		123	55
	025040	50 X 40		133	34
	025030	50 X 30		146	55
	025028	50 X 28		131	55
	025022	50 X 22		131	55
	025015	50 X 15		133	60
	026050	60 X 50		157	41
	026040	60 X 40		176	65
	026030	60 X 30		168	65
	026028	60 X 28		153	65
	026022	60 X 22		153	65
	026015	60 X 15		155	70
LS	Code	Nominal dia. (mm)		L	
	161500	15		116	
	162200	22		129	
	162800	28		129	
	163000	30		100	
	164000	40		116	
	165000	50		126	
	166000	60		154	
90E, 90CE & R90E	Code	Nominal dia. (mm)		a	z
	351500	15		41	20
	352200	22		50	26
	352800	28		54	30
	033000	30		91	52
	034000	40		110	63
	035000	50		122	70
	036000	60		150	86
	042215-1	22 X 15	22	59	35
			15	48	27

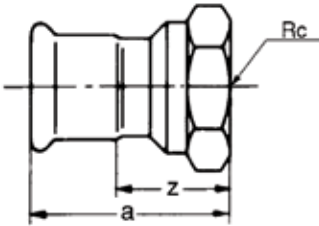
Specifications

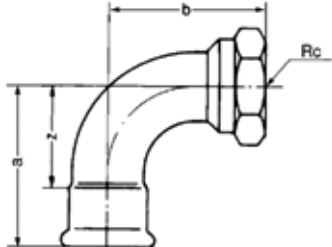
Speksifikasi 规格

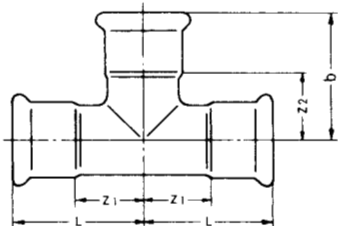
45E & R45E	Code	Nominal dia. (mm)		a	z	
	071500	15		36	15	
	072200	22		42	18	
	072800	28		46	22	
	073000	30		66	27	
	074000	40		78	32	
	075000	50		87	35	
	076000	60		109	45	
	082215-1	22 x 15	22	48	24	
		15	36	15		
S(M)	Code	Nominal dia. (mm)		L	z	
	101501	15 X 1/2		57	36	
	102201	22 X 1/2		61	37	
	102202	22 X 3/4		64	40	
	102803	28 x 1		68	44	
	103003	30 X 1		87	48	
	103004	30 X 1 1/4		104	65	
	104004	40 X 1 1/4		98	51	
	104005	40 X 1 1/2		112	65	
	105005	50 X 1 1/2		105	53	
	105006	50 X 2		128	76	
	106006	60 X 2		125	61	
	106007	60 X 2 1/2		202	138	
S(F)	Code	Nominal dia. (mm)		L	z	
	091501	15 x 1/2		53	32	
	092202	22 x 3/4		59	35	
	092201	22 x 1/2		57	33	
	092803	28 x 1		62	38	
	092802	28 x 3/4		65	41	
	092801	28 x 1/2		63	39	
90E(F)	Code	Nominal dia. (mm)		a	b	z
	111501	15 x 1/2		48	48	27
	112202	22 x 3/4		58	57	34
	112201	22 x 1/2		58	55	34
	112803	28 x 1		66	67	42
90E(M)	Code	Nominal dia. (mm)		a	b	z
	121501	15 X 1/2		48	52	27
	122202	22 X 3/4		58	62	34
	122201	22 X 1/2		58	62	34
	122803	28 X 1		66	73	42
	123003	30 X 1		91	78	52
	124004	40 X 1 1/4		110	92	63
	125005	50 X 1 1/2		122	101	70
	126006	60 X 2		150	121	86

Specifications

Speksifikasi 规格

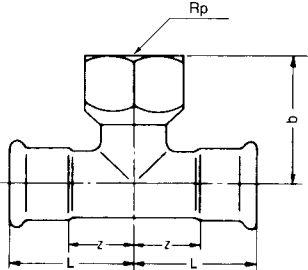
ASF	Code	Nominal dia. (mm)	a	z
	301501	15 X 1/2	48	27
	302202	22 X 3/4	54	30
	302201	22 X 1/2	59	35
	304005	28 X 1	57	33
	303003	30 X 1	76	37
	303004	30 X 1 1/4	92	53
	304004	40 X 1 1/4	86	39
	304005	40 X 1 1/2	98	51
	305005	50 X 1 1/2	91	39
	305006	50 X 2	112	60
	306006	60 X 2	109	45

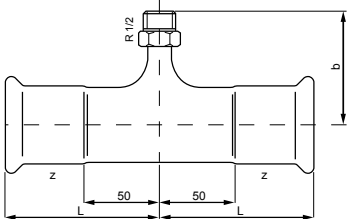
AEF	Code	Nominal dia. (mm)	a	b	z
	291501	15 X 1/2	48	43	27
	292202	22 X 3/4	58	52	34
	292803	28 X	66	62	42
	293003	30 X 1	91	67	52
	294004	40 X 1 1/4	110	80	63
	295005	50 X 1 1/2	122	87	70
	296006	60 X 2	150	105	86

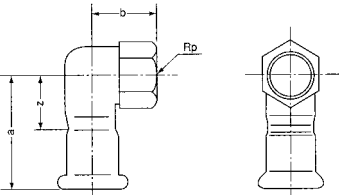
T & R90T	Code	Nominal dia. (mm)	L	b	z1	z2
	051500	15	38	38	17	17
	052200	22	46	46	22	22
	062215	22 X 15	46	42	22	21
	052800	28	51	51	27	27
	062822	28 X 22	51	51	27	27
	062815	28 X 15	51	53	27	32
	053000	30	99	99	60	60
	063028	30 X 28	99	70	60	46
	063022	30 X 22	99	70	70	46
	063015	30 X 15	99	67	60	46
	054000	40	107	107	60	60
	064030	40 X 30	107	99	60	60
	064028	40 X 28	107	72	60	48
	064022	40 X 22	107	72	60	48
	064015	40 X 15	107	69	60	48
	055000	50	102	102	50	50
	065040	50 X 40	102	107	50	60
	065030	50 X 30	102	109	50	70
	065028	50 X 28	102	82	50	58
	065022	50 X 22	102	76	50	52
	065015	50 X 15	102	73	50	52
	056000	60	127	127	63	63
	066050	60 X 50	127	112	63	60
	066040	60 X 40	127	117	63	70
	066030	60 X 30	127	109	63	70
	066028	60 X 28	117	84	53	60
	066022	60 X 22	117	84	53	60
	066015	60 X 15	117	81	53	60

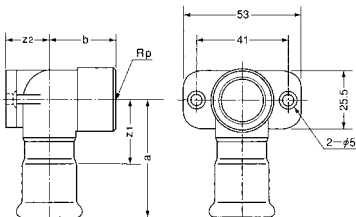
Specifications

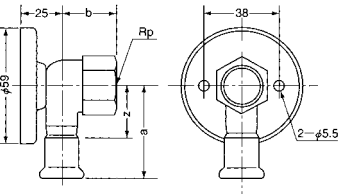
Speksifikasi 规格

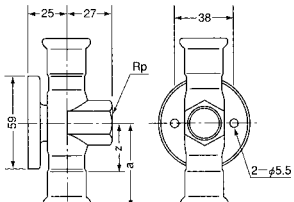
T(F)	Code	Nominal dia. (mm)	L	b	z
	131501	15 X 1/2	38	41	17
	132202	22 X 3/4	46	47	22
	132201	22 X 1/2	46	45	22
	132803	28 X 1	51	54	27
	132802	28 X 3/4	51	52	27
	132803	28 X 1/2	51	50	27
	133001	30 X 1/2	99	64	60
	134001	40 X 1/2	107	66	60
	135001	50 X 1/2	102	70	50
	136001	60 X 1/2	117	78	53

T(M)	Code	Nominal dia. (mm)	L	b	z
	365001	50 X 1/2	102	75	50

E(F)	Code	Nominal dia. (mm)	a	b	z
	141501	15 x 1/2	48	15	27
	142202	22 x 3/4	57	35	33
	142201	22 x 1/2	52	30	28

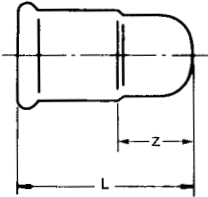
E(F)-WS	Code	Nominal dia. (mm)	a	b	z1	z2
	201501	15 x 1/2	48	27	27	16
	202201	22 x 1/2	52	30	28	20

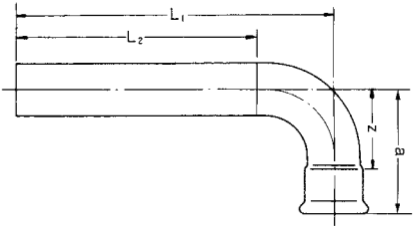
E(F)-WR	Code	Nominal dia. (mm)	a	b	z
	211501	15 x 1/2	48	27	27
	212202	22 x 3/4	57	35	33
	212201	22 x 1/2	52	30	28

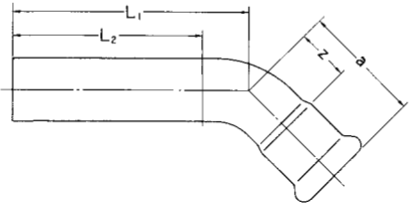
T(F)-WR	Code	Nominal dia. (mm)	a	z
	221501	15 x 1/2	57	36
	222201	22 x 1/2	55	31

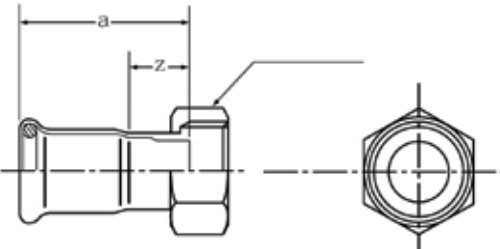
Specifications

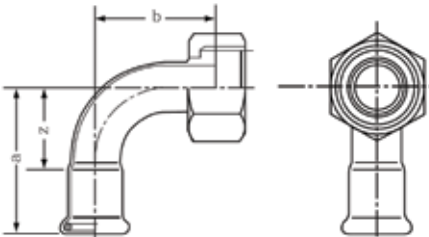
Speksifikasi 规格

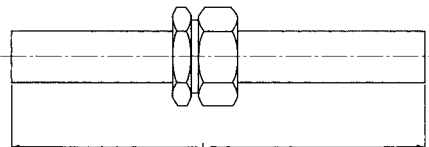
C	Code	Nominal dia. (mm)	a	L
	151500	15	31	10
	152200	22	42	18
	152800	28	44	20
	153000	30	66	27
	154000	40	78	31
	155000	50	86	34
	156000	60	103	39

LS90	Code	Nominal dia. (mm)	a	z	L1	L2
	171500	15	48	27	120	100
	172200	22	58	34	127	100
	172800	28	66	42	135	100
	173000	30	91	52	241	200
	174000	40	110	63	252	200
	175000	50	122	70	259	200
	176000	60	150	86	273	200

LS45	Code	Nominal dia. (mm)	a	z	L1	L2
	181500	15	36	15	113	100
	182200	22	42	18	116	100
	182800	28	46	22	120	100
	183000	30	66	27	216	200
	184000	40	78	31	220	200
	185000	50	87	35	224	200
	186000	60	109	45	232	200

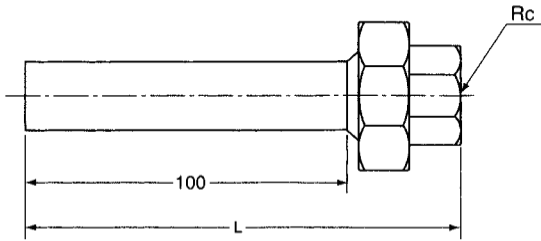
US	Code	Nominal dia. (mm)	a	z
	311501	15 X 1/2	38	17
	311502	15 X 3/4	40	19
	312201	22 X 1/2	49	25
	312202	22 X 3/4	51	27

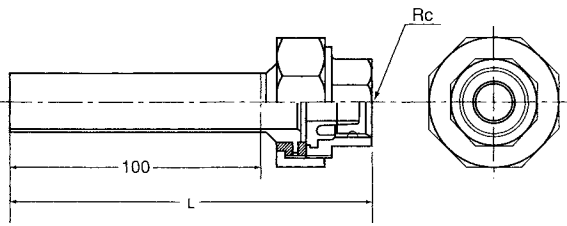
90U	Code	Nominal dia. (mm)	a	b	z
	321501	15 X 1/2	48	36	27
	321502	15 X 3/4	48	38	27
	322501	22 X 1/2	58	58	34
	322502	22 X 3/4	58	60	34

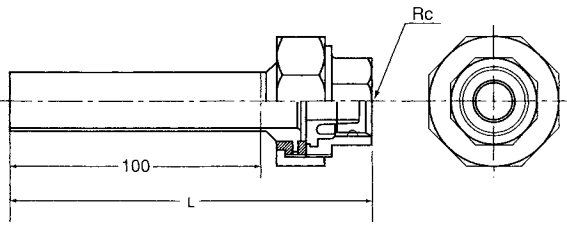
UI	Code	Nominal dia. (mm)	L
	271500	15	164
	272200	22	184
	272800	28	204

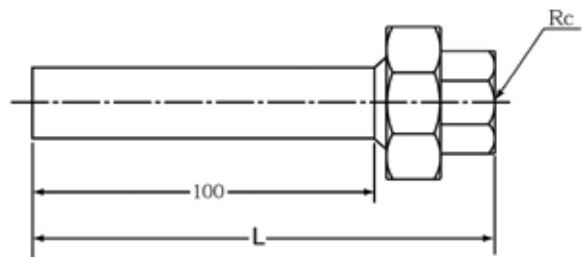
Specifications

Speksifikasi 规格

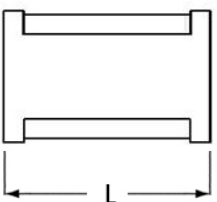
UII	Code	Nominal dia. (mm)	L
	251501	15 X 1/2	139
	252202	22 x 3/4	143
	252803	28 x 1	148

UH40°C - Connection to GI	Code	Nominal dia. (mm)	L
	261501	15 x 1/2	138
	262202	22 x 3/4	142
	262803	28 x 1	146

UH85°C - Connection to Copper	Code	Nominal dia. (mm)	L
	281501	15 x 1/2	138
	282202	22 x 3/4	142
	282803	28 x 1	146

IUG	Code	Nominal dia. (mm)	L
	251501	15 X 1/2	138
	252202	22 X 3/4	142
	252803	28 X 1	146

SP	Code	Nominal dia. (mm)	L
	371501	15	105
	371502	15	127
	371503	15	152

SF(T)	Code	Nominal dia. (mm)	L
	381500	15	32
	382200	22	32
	382800	28	32



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