



for JIS & KS

ISO9001 certified fitting
and valve Manufacturer

Bite Type Tube Fittings

Catalog No. 02-2
November, 2001.

Lloyd's Register
TA
TYPE APPROVED

LR Type Approval Certificate

This is to certify that the undernoted product has been tested with satisfactory results in accordance with the relevant requirements of the LR Type Approval System.

This certificate is issued to:

PRODUCER DK Tech Co., Ltd.
PLACE OF PRODUCTION 568-17, Kwobop-dong, Sasang-gu, Pusan, 617-060 Korea
DESCRIPTION Carbon steel and stainless steel single compression type tube fittings, inch and metric sizes
TYPE DK Bite Type Fitting
APPLICATION High pressure tube connections for use in marine, offshore and industrial piping systems with hydraulic system fluids, fuel oil, lubricating oil, fresh water, salt water, sanitary, gas, steam and condensate.
DESIGN CODE LR Rules and Regulations for the Classification of Ships, Part 5, Chapter 12
JIS B 2351 - 1990: 25 MPa bite type tube fittings for hydraulic use

RATING	Imperial Tubing- Tube O.D. (inches)		Nominal pressure ratings (kg/cm ²)	
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400
	1/2"	3/4"	300	400

Certificate No. 01/10048
Issue Date 28 June 2001
Expiry Date 27 June 2006
Sheet 1 of 2

N. Terashita
N. Terashita

Lloyd's Register
Lloyd's Register of Shipping
71 Fenchurch Street, London EC3M 4BS

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TYPE APPROVED

RATING (Continued)	Metric Tubing Tube O.D.(mm)		Nominal pressure ratings (kg/cm ²)	
	8	10	300	400
	8	10	300	400
	10	12	300	400
	12	14	300	400
	14	16	300	400
	16	18	300	400
	18	20	300	400
	20	22	300	400
	22	24	300	400
	24	26	300	400
	26	28	300	400
	28	30	300	400
	30	32	300	400
	32	34	300	400
	34	36	300	400
	36	38	300	400
	38	40	300	400
	40	42	300	400

Pressure-temperature ratings - see the producer's catalogue

OTHER CONDITIONS

- The fittings are to be installed in accordance with the manufacturer's instructions.
- Attention is drawn to Section 3.6 of IMO MSC/Circular 851 - Guidelines on Engine-Room Oil Fuel Systems which describes that compression couplings require careful attention to tightening procedures and torques to avoid leaks or damage to the pipe when subjected to overtightening and they should not be used in the fuel supply line of the (oil engine) injection pumps and spill systems.

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should supply LR of any modification or change to the equipment in order to obtain a valid certificate."

The attached Design Approval Document No. 01/70048 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No. 01/10048
Issue Date 28 June 2001
Expiry Date 27 June 2006
Sheet 2 of 2

N. Terashita
N. Terashita

Lloyd's Register
Lloyd's Register of Shipping
71 Fenchurch Street, London EC3M 4BS

Type Approval Certificate Germanischer Lloyd

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No. 40 505 - 01 HH
Company Dk Tech Co., Ltd.
568-17 Kwobop-dong, Sasang-gu
Pusan 617-060, Korea

Product Description PIPE UNIONS
Type Dk-Lok TUBE FITTINGS

Environmental Category None

Technical Data / Range of Application

Material	Stainless Steel
Elastomer seals:	NBR FPM PTFE
Temperature range [°C]	+40 to 100 -20 to 200 +40 to 240
Nominal pressure PN [bar]	According to page 2 of this certificate

RANGE OF APPLICATION

- Piping systems on ships and other structures classed by Germanischer Lloyd.
- Max. allowable working pressure acc. to temperature de-rating factors specified in the catalogue no. 01-2.
- The selection of the pipe unions for the corresponding service and the right installation are to be in accordance with the instructions of the manufacturer.

LIMITATIONS

- Pipe unions with elastomer seals are not approved within machinery spaces for the use in fuel-, lubricating-, hydraulic oil, sea water and bilge piping systems.
- Threaded bulkhead pipe unions are not approved through watertight bulkheads.

Test Standard Regulations for the Performance of Type Tests, Part 6-Test Requirements for Mechanical Components and Equipment.

Documents Test reports of tests carried out from 11.04.01 to 18.05.01
Catalogue No. 01-2

Valid until 2006-06-26
Page 1 of 2
File No. K.G.05
Hamburg, 2001-06-27

Type Approval Symbol **GL**

D. Rogmann
D. Rogmann

A. Markus
A. Markus

Germanischer Lloyd
This certificate is based on the basis of "Regulations for the Performance of Type Tests, Part 6, Procedure".

DNV

DET NORSKE VERITAS TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. P-10779
This Certificate consists of 4 pages

This is to certify that the
Pipe Couplings, Bite and Compression Type

with type designations
DK-LOK: DU, DUR, DLU, DTU, DBU, DMC-N, DMC-R, DMC-G, DOM, DBMC, DLMA, DLMB, DRMT, DBTM, DFC, DGC, DBFC, DLF, DRFT, DR, DBR, DAM, DAF, DFO, DBFU, DFA, DWC, DLW, DSWC, DLSW, DPA, DCA, DN, DFF, DFB

Manufactured by
DK Tech Co., Ltd.
Pusan, Korea, Republic of

is found to comply with
Det Norske Veritas' Rules for Classification of Ships and Mobile Offshore Units
Det Norske Veritas' Standards for Certification 2.9 No. 102

Application
May be used for: hydraulic oil, fuel and lube oil (not high-pressure fuel oil injection), compressed air, steam and condensate, fresh and sea water, sanitary systems
Temperature range: -20°C to 300°C
Norm. working press.: Dep. on size and temp., see cert.
Sizes: 6, 8, 10 and 12mm, 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4"

Place and date
Harvik, 2000-08-08
for DET NORSKE VERITAS AS
Kjell Folge
Head of Section

DNV
DNV Pusan District Office

This Certificate is valid until
2004-12-31
Kristian Lindlof
Kristian Lindlof
Surveyor

Notes: This Certificate is subject to terms and conditions thereof. Any significant change in design or construction may render this Certificate invalid.
The product designer shall ensure that the product is designed and constructed in accordance with the rules and standards referred to in this certificate. The holder shall ensure that the product is used in accordance with the rules and standards referred to in this certificate.

DET NORSKE VERITAS AS • VERTASVEIEN 1, 1322 HØVIK, NORWAY • TEL: (+47) 67 57 00 00 • FAX: (+47) 67 57 00 11
Form No. 25 006 Issue: January 98 Page 1 of 4

Bite Type Tube Fittings



01-BK21882-PDA
CERTIFICATE NUMBER

27 MAR. 2001
DATE

Pusan
ABS TECHNICAL OFFICE

CERTIFICATE OF Product Design Assessment

This is to Certify **DK TECH CO., LTD.**
(COMPANY)

that a representative of this Bureau did, at the request of the above noted Company, assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate; and it will remain valid for the years from the date of issue or until the Rules or specifications used in the assessment are revised (whichever occurs first).

PRODUCT: **DK-LOK & BITE TYPE FITTINGS**
 Model: **SEE PDA/ Listing Format**
 ABS Rule: **4-6-2/5.5.6 of the 2001 Rules**
 OTHER STANDARD: **JIS B2351**

AMERICAN BUREAU OF SHIPPING

(Signature)
Yun Kang Sang

NOTE: This certificate is valid only when used in accordance with the Rules, Codes, Standards or other criteria of American Bureau of Shipping. It is not a warranty, nor does it constitute an endorsement of the product or the manufacturer. The certificate is issued on the condition that the holder will indemnify and hold the Bureau harmless from all claims and damages, including reasonable attorneys' fees, arising out of or from the use of this certificate, whether or not such use is in accordance with the Rules, Codes, Standards or other criteria of American Bureau of Shipping.



CERTIFICATE NUMBER 01-BK55619-X

PLANT LOCATION PUSAN, KOREA
PORT OFFICE PUSAN, KOREA

CERTIFICATE OF Product Type Approval

This is to Certify **DK TECH CO., LTD.**

that a representative of this Bureau did, at the request of the Company, attend their facilities on the date and location noted above, in order to carry out survey of the facilities and associated quality procedures. The facility is considered capable of manufacturing a product which meets the designated standards. The product listed on the Attachment is eligible to be placed on this Bureau's **List of Type Approved Products**, subject to annual facility surveys by a representative of this Bureau and renewal of this Certificate after five (5) years.


PRODUCT DESCRIPTION: **TUBE FITTING**

ISSUE DATE: **13 APRIL 2001** EXPIRATION DATE: **13 APRIL 2006**

SURVEYOR'S SIGNATURE: *(Signature)*
YONG SOO YOON

FIRST ANNUAL ENDORSEMENT: _____
 SECOND ANNUAL ENDORSEMENT: _____
 THIRD ANNUAL ENDORSEMENT: _____
 FOURTH ANNUAL ENDORSEMENT: _____

NOTE: This certificate is valid only when used in accordance with the Rules, Codes, Standards or other criteria of American Bureau of Shipping. It is not a warranty, nor does it constitute an endorsement of the product or the manufacturer. The certificate is issued on the condition that the holder will indemnify and hold the Bureau harmless from all claims and damages, including reasonable attorneys' fees, arising out of or from the use of this certificate, whether or not such use is in accordance with the Rules, Codes, Standards or other criteria of American Bureau of Shipping.



Certificate of Registration

This Certificate of Registration attests to the organization's conformance to the standard and the scope of activities indicated below:

SUPPLIER: **DK Tech Company, Ltd.
568-17, Kwebup-Dong,
Sasang-Gu
Busan, 617-060
Korea**

STANDARD: **ISO 9001 : 2000**

SCOPE: **Design and manufacturing of fittings, valves and machined parts including related services**

AUTHORIZED: **July 28, 2002**
EXPIRES: **July 28, 2005**
CERTIFICATE NUMBER: **GQC 244**

(Signatures)
 Vice President, Conformity Assessment: _____
 Chairman, Committee on ASME ISO 9000 Registration: _____
 Managing Director, Conformity Assessment: _____

The American Society of Mechanical Engineers

The ASME ISO 9000 Registration Program is Accredited by The American National Accreditation Program for Registrars of Quality Systems (ANAB-IRIS) and the Dutch Council for Accreditation (DCA)

QUALITY SYSTEM CERTIFICATE

This certificate accredits the named company as having their quality system program verified for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The accreditation granted by this certificate is subject to the provisions of the agreement set forth in the application. Any material produced under this certificate will have been manufactured strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY: **DK TECH COMPANY, LTD.
568-17, KWEBUP-DONG
SASANG-GU, BUSAN 617-060
SOUTH KOREA**

SCOPE: **MATERIAL ORGANIZATION MANUFACTURING AND SUPPLYING FERROUS & NONFERROUS MATERIAL AT THE ABOVE LOCATION INCLUDING QUALIFICATION OF NONACCREDITED MATERIAL ORGANIZATIONS, UTILIZATION OF UNQUALIFIED SOURCE MATERIAL, AND APPROVAL AND CONTROL OF SUPPLIERS**

AUTHORIZED: **JUNE 14, 2002**
EXPIRES: **JUNE 14, 2005**
CERTIFICATE NUMBER: **QSC-590**

(Signature)
CHAIRMAN OF THE BOILER AND PRESSURE VESSEL COMMITTEE

(Signature)
DIRECTOR, ACCREDITATION AND CERTIFICATION

The American Society of Mechanical Engineers

Bite Type Tube Fittings

DK Bite Type Tube Fitting is manufactured to JIS B2351 & KS B1535 under strict ISO 9001 procedure and Type approved by DNV - Norway.

Standard of DK Bite Type Fitting

Bite type fitting consists of three parts : Body, Sleeve and Nut, and is designed to work over medium and heavy wall tubing. See Fig-1

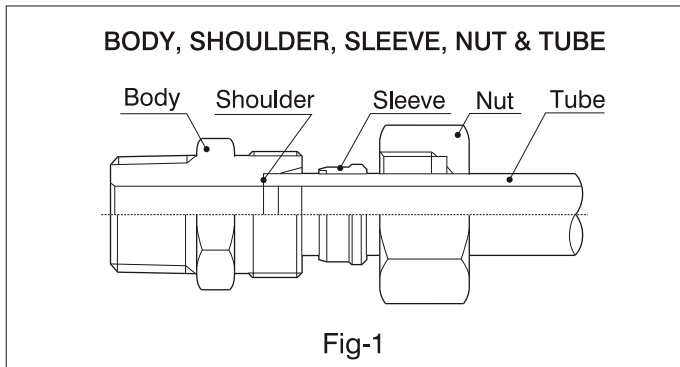


Fig-1

When tightening nut, sleeve is driven forward on the tube then bites the tube with the edge of sleeve. this is how sealing is achieved and results in internal ridge inside the tube. See Fig-2

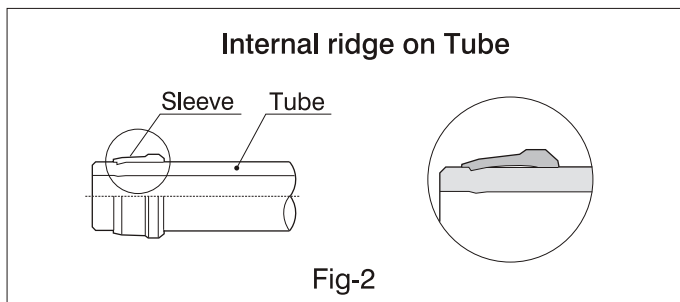


Fig-2

Typical Raw Material List

Parts	Carbon Steel	Stainless Steel	Brass
Forged Body	JIS G4051 S20C-S48C	SUS316-SUS304	JIS H3250 C3771
Bar stock Body	JIS G4051 S20C-S48C	SUS316-SUS304	JIS H3250 C3604
Cold Formed Nut	JIS G4051 S10C-S20C	SUS316-SUS304	
Bar stock Nut	JIS G4051 S20C-S48C	SUS316-SUS304	JIS H3250 C3604
Sleeve	JIS G4051 S10C	SUS316-SUS304	JIS H3250 C3604

Fitting Material Pressure Ranges

(Kg f/cm²)

O.D (mm)	4-5	6-22	25-28	30-38	40-50
C.steel & S.Steel	500	400	350	250	210
Brass	250	210	170	150	120

Pressure is rated at ambient temperature.

Allowable working temperature

1. For fitting materials

Material	Temperature
Steel	-40°C to 120°C (DIN 3859)
Brass	-60°C to 175°C
Stainless Steel	-60°C to 400°C (DIN 17440)

Note : temperature limits can greatly depend on the medium.

2.For Elastomer seals

Material	Temperature
NBR (e.g. Perbunan [®])	-35°C to 100°C
FPM (e.g. Viton [®])	-25°C to 200°C
PTEF (e.g. Teflon [®])	-60°C to 240°C

Note : When seal is used in the fitting,compare allowable working temperature between seal and fitting material and apply the lowest temperature

Pressure reduction with temperature

Following pressure reduction is applicable to the rating in the fitting material pressure range for the elevated temperatures.

Materials of fittings	Temperature Range	Reduction of pressure
Steel	-40°C to 120°C	-
Brass	-60°C to 175°C	30%
Stainless Steel	-60°C to 20°C	-
Stainless Steel	50°C	4%
Stainless Steel	100°C	11%
Stainless Steel	200°C	20%
Stainless Steel	300°C	29%
Stainless Steel	400°C	33%

Using the same tube material as fitting is essential for the same pressure reduction, thermal compatibility and corrosion resistance.

Surface protection

DK Steel Bite type fittings are galvanized and yellow or black passivated as standard.

All weldable fittings are phosphated.

Chrome plated on Brass Bite type fitting is available.

Tubing Selection

*Carbon Steel :

Seamless, welded, fully annealed and redrawn tube suitable for bending with maximum hardness Rockwell B72

*Stainless Steel :

Seamless, welded, fully annealed and redrawn tube suitable for bending with maximum hardness Rockwell B90

*Copper :

For seamless coils, soft or light annealed, maximum hardness Rockwell F55.

For straight lengths, light drawn and general purpose, maximum hardness 60 on Rockwell 30T scale.

Note : Do not bend a tube placed in the fittings. This may cause leakage.

Assembly Instructions

Preparing the tube

Tube and Bite type tube fitting are an intrinsic part of a tube system, therefore Dk strongly advises you to take care in handling the tube in order to have the pressure-tight system.

1. Cut the tube square
2. Deburr inside and outside tube end

Tube Bending

Keeping a certain length of tubing straight from fitting shoulder to the starting point of tube bend prevents the deformed section at a bend entering the fitting. This will ensure safety system.

1. Minimum straight length of tube from the starting point of tube bend to the tube end may be 3 times height of the nut

Assembly Instructions

Step 1. Cut the tube at right angle with a reliable tube cutter and de-burr inside and outside tube end with a deburring tool.

Step 2. Set a nut and sleeve on the tube. Make sure the sleeve and the nut are facing the fitting.

Step 3. Lubricate fitting threads and sleeve. Insert tube end into fitting body until it is firmly seated on bottom (fitting shoulder) and hand-tighten the nut

Step 4. Tighten nut 1-1/2 turns with a wrench by holding fitting body with a back up wrench. Marking the nut may be necessary for counting the number of turn.

Note : In case of thin wall tubing make-up, more than 1-1/2 turns may be required.

Checking up the Bite condition

To ensure pressure-tight connection, all Dk Bite type fittings must be disassembled prior to service to check up if small ridge inside the tube is completely formed around front edge of sleeve. Otherwise tighten slightly more to have it.

Sleeve may rotate on the tube that doesn't mean wrong installation. The sleeve shall be refitted once the nut is retightened.

Note : In case you see no ridge formed on the tube, this would be possibly resulted from not fully bottomed tube or not fully tightened nut. In heavy wall tubing, though you may not see the ridge, the pressure-tight seal is made as far as the sleeve firmly bites the tube and is constrained axially.

One of Dk Bite Type Fitting benefits is reusable many times. Further to check up the bite condition, you need to know how to do reassembly.

Reassembly Instructions

Fitting can be used many times. To ensure this, parts must be clean and free of defects.

Step 1. Insert the tube into fitting body until sleeve seats firmly in the fitting and hand-tighten the nut.

Step 2. Tighten the nut with a wrench by holding the fitting body with a backup wrench until a sharp rise in torque is felt.
Further tighten the nut 1/4 to 1/2 turn.

Now the reassembly is complete and ready to service.

In most cases, leakage problem occurs :

1. When the tube is not fully bottomed
2. When the nut is not tightened enough
3. When the tube is of scratches or oval

If you still face a leakage problem even if you went through above 1 to 3, it may be the problem of extremely hard tube which is not suitable for bending.

Note : Steel sleeve is not supposed to be loose back and forth beyond bite point whereas Stainless sleeve could possibly move back and forth due to its more spring-like characteristics.

Safe Component Selection

The selection of component for any applications, system design must be considered to ensure safe performance.

Component function, material compatibility, component ratings, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. Dk Tech accepts no liability for any improper installation, operation and maintenance.

Note : All the information here are not for design purpose just reference only and the accuracy of information here is not liability of our company.

Ordering Information

Fittings ends and configuration are identified by symbolized letters and the series of numbers.

Example : B MC 06 - 02 R - C
 ① ② ③ ④ ⑤ ⑥

- ① DK Bite Type Fitting designated as B
- ② Name of Fittings : See products Index
- ③ Tube O.D. : See Tube and Pipe O.D. Designator
- ④ Pipe Threads : See Pipe Thread Designator
- ⑤ Pipe Thread Symbols : See Pipe Thread Symbol Designator
- ⑥ Material : See Fitting Material Designator

③ Tube and Pipe O.D. Designator

Metric Tube	O.D	4	6	8	10	12.....30.....50			
	Designation	04	06	08	10	12.....30.....50			
SCH. Pipe	Nominal Dia.	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
	O.D	10.5	13.8	17.3	21.7	27.2	34.0	42.7	48.6
	Designation	06A	08A	10A	15A	20A	25A	32A	40A

④ Pipe Thread Designator

Thread	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
Designation	01	02	03	04	06	08	10	12	16

⑤ Pipe Thread Symbol Designator

Type	Symbol	Specification
Taper Threads	R	JIS B 0203 (PT), ISO 7/1
	N	ANSI B1.20.1 (NPT)
Parallel Threads	G	JIS B0202 (PF), ISO 228/1

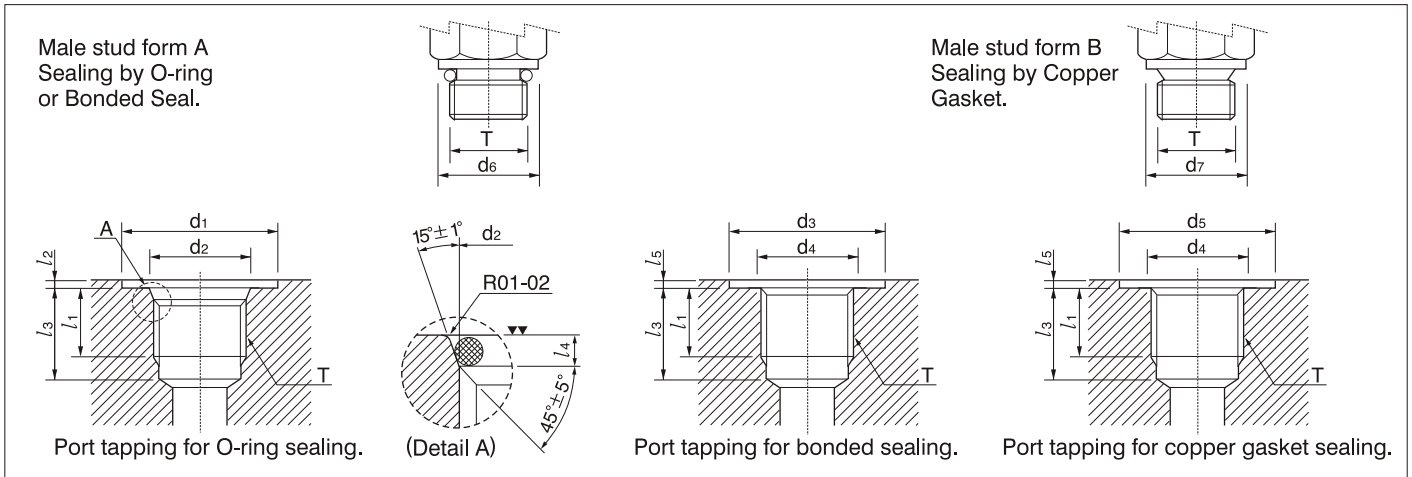
⑥ Fitting Material Designator

Fitting Material	S.S316	S.S304	C.Steel	Brass
Identifier	S	4	C	B

Custom designs

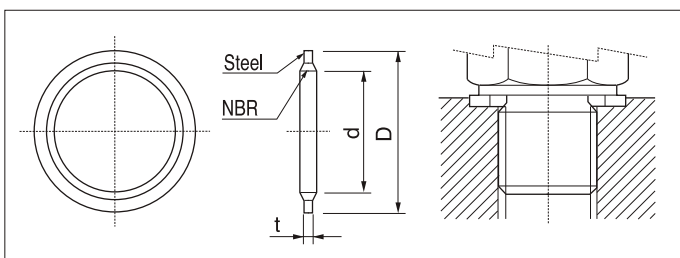
Custom designs are welcome to help our customer go round a problem. You may therefore no longer need to redesign or increase the cost of your installation by being with us next to you.

Male Stud form and Sealing to JIS B2351



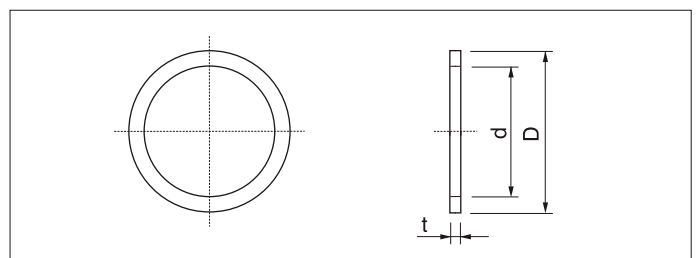
T	d1	d2 ^{+0.1} ₀	d3 ^{+0.3} ₀	Max d4	d5 ^{+0.3} ₀	d6	d7	Min l1	Max l2	Min l3	l4 ^{+0.4} ₀	l5	Suitable Seal		
													O-Ring	Bonded Seal	Copper Gasket
PF 1/8	18	11.6	17.4	9.7	18.2	14	14	10	1	15	2	1	P 8	BBG-01	BCG-01
PF 1/4	24	15.6	20.9	13.1	22.2	19	18	14	1.5	20	2.5	1	P11	BBG-02	BCG-02
PF 3/8	28	18.6	24.4	16.6	26.2	22	21.5	14	2	20	2.5	1	P14	BBG-03	BCG-03
PF 1/2	34	22.6	29.4	20.9	32.2	27	25.5	17	2.5	25	2.5	1	P18	BBG-04	BCG-04
PF 3/4	45	29.8	34.9	26.4	38.2	36	31.5	19	2.5	27	3.5	1	P24	BBG-06	BCG-06
PF 1	51	35.8	41.9	33.2	42.3	41	38	22	2.5	31	3.5	1	P29	BBG-08	BCG-08
PF 1-1/4	62	44.8	50.9	41.9	53.3	50	48.5	24	2.5	33	3.5	1	P38	BBG-10	BCG-10
PF 1-1/2	68	50.8	57.4	47.8	60.3	55	53.5	25	2.5	34	3.5	1	P44	BBG-12	BCG-12
PF 2	76	67.2	69.4	59.6	72.3	75	66	29	2.5	38	3.5	1	P56	BBG-16	BCG-16

Bonded Seal



PART No.	Male Thread	d	D	t
BBG-01	PF 1/8	9.9	17	2
BBG-02	PF 1/4	13.3	20.5	2
BBG-03	PF 3/8	16.8	24	2
BBG-04	PF 1/2	21.1	29	2
BBG-06	PF 3/4	26.6	34.5	2
BBG-08	PF 1	33.4	41.5	2.3
BBG-10	PF 1-1/4	42.1	50.5	2.3
BBG-12	PF 1-1/2	48.0	57	2.3
BBG-16	PF 2	59.8	69	2.3

Copper Gasket



PART No	Male Thread	d	D	t
BCG-01	PF 1/8	10	18	2
BCG-02	PF 1/4	14	22	2
BCG-03	PF 3/8	17	26	2
BCG-04	PF 1/2	22	32	2
BCG-06	PF 3/4	27	38	2
BCG-08	PF 1	34	42	2
BCG-10	PF 1-1/4	43	53	2
BCG-12	PF 1-1/2	49	60	2
BCG-16	PF 2	61	72	2