THAI MALLEABLE
IRON & STEEL CO., LTD

TM
ISO 9002

HIGH GRADE MALLEABLE IRON PIPE FITTINGS

HIGH GRADE (TM) MALLE

FIG. 102
Elbows, Banded, Equal
1/8"-8"

FIG. 112
Elbows, Banded, Reducing
1/4"-6"

FIG. 122
Elbows, 45°, Banded
1/8"-8"

FIG. 132
Street Elbows, Banded, Equal
1/8"-6"

FIG. 142
Street Elbows, Banded, Reducing
1/2"-2"

FIG. 152
Street Elbows, 45°, Banded,
1/8"-4"

FIG. 161
Side Outlet Elbows
1/4"-2"

FIG. 202
Tees, Banded, Equal
1/8"-8"

FIG. 212-a
Tees, Banded, Reducing on branch
1/4"-6"

FIG. 212-b
Tees, Banded, Red. on run, equal on branch 3/8"-4"

FIG. 212-c
Tees, Banded, Increasing on branch 1/4"-4"

FIG. 212-d
Tees, Banded, Reducing on run and branch 3/8"-3"

FIG. 222
Service Tees, Banded, Equal
1/4"-6"

FIG. 231
Side Outlet Tees
1/2"-2"

FIG. 242
45° Y-Branches, Banded, Equal
3/8"-4"

FIG. 302
Crosses, Banded, Equal
1/8"-6"

FIG. 312
Crosses, Banded, Reducing
1/2"-4"

FIG. 402
Sockets, Banded, with Ribs
1/8"-8"

FIG. 412
Sockets, Banded, Reducing, with Ribs
1/8"-6"

FIG. 421
Sockets, Full Thread, Plain, without Ribs
1/4"-6"

FIG. 432
Sockets, Banded, M&F
3/8"-2

FIG. 442
Sockets, Banded, Reducing, M&F
1/4"-2"

FIG. 452
Sockets, Banded, Reducing, Eccentric
1/2"-6"

FIG. 502
Caps, Banded
1/8"-8"

FIG. 600
Unions, Gasket Type, Flat Seat (without gasket) 1/8"-6"

FIG. 610
Unions, Gasket Type, Flat Seat, M&F (without gasket)
1/2"-2"

FIG. 620
Unions, Taper Seat, Iron to Iron
1/8"-6"

FIG. 630
Unions, Taper Seat, Iron to Iron, M&F
1/4"-3"

FIG. 640
Unions, Conical Joint, Brass to Iron Seat
1/8"-6"

FIG. 653
Union Elbows, Flat Seat
1/2"-2"

ABLE CAST IRON PIPE FITIINGS

FIG. 663
Union Elbows,
Flat Seat, M&F
1/2"-2"

FIG. 673
Union Elbows,
Taper Seat
3/8"-2"

FIG. 683
Union Elbows,
Taper Seat, M&F
3/8"-2"

FIG. 703
Short Bends,
Banded
1/2"-4"

FIG. 713
Short Bends,
M&F, Banded
1/2"-4"

FIG. 722
Long Sweep Bends,
Banded, 90°
1/2"-4"

FIG. 732
Long Sweep Bends,
Banded, 45°
1/2"-2"

FIG. 742
Long Sweep Bends,
Banded, 90°, M&F
1/2"-6"

FIG. 752
Long Sweep Bends,
Banded, 45°, M&F
1/2"-4"

FIG. 760
Long Sweep Bends,
Male
1/2"-2"

FIG. 900
Round Flanges,
without Bolt Hole
3/8"-6"

FIGs. 901 & 902
Round Flanges
(see footnote*)
3/8"-6"

FIGs. 903, 904 & 905
Circular Flanges
(see footnote**)I
3/8"-8"

FIG. 906
Floor Flanges
1/4"-2"/$_2$"

FIG. 907
Oval Flanges
1/2"-2"

FIG. 909
Gasket Type Flange
Unions, with Bolts
1/2"-6"

FIG. 910
Backnuts
1/8"-6"

FIG. 920
Bushings
1/4"-8"

FIG. 921
Inside Head Bushings
1"-8"

FIG. 930
Plugs
1/8"-8"

FIG. 931
Solid Plugs
1/8"-6"

FIG. 933
Slotted Head Plugs
4"-8"

FIG. 940
Hexagon Nipples,
Equal
1/8"-6"

FIG. 941
Hexagon Nipples,
Reducing
1/4"-4"

FIG. 942
Longscrew Sets
1/2"-6"

Appendix A-1
Compression
Couplings, Regular
Type 1/2"-4"

Appendix A-2
Compression
Couplings, Long
Type 1/2"-4"

NOTES:

* **FIG. 901:** Round flanges with bolt holes to Table D, BS10
FIG. 902: Round flanges with bolt holes to PN 16, BS4504

** **FIG. 903:** Circular flanges with bolt holes to PN 16, BS4504
FIG. 904: Circular flanges with bolt holes to PN 25, BS4504
FIG. 905: Circular flanges with bolt holes to PN 40, BS4504

HIGH GRADE PIPE FITTINGS

* TM fittings are made to ISO 49, BS 143 and 1256 or EN 10242 standards.

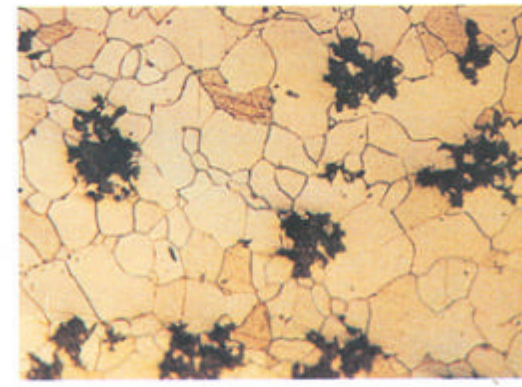
* Threads of TM fittings conform to either British (BS 21-1985)/ISO (7/1 W-1978) or Europe (EN 10226-1) depending upon customers' specifications.

* TM fittings are manufactured of black heart malleable iron which is melted and refined in electric induction furnaces, and annealed with extreme care.

* TM malleable iron has mechanical properties more superior than those specified by various international standards for pipe fittings (see the figures below).

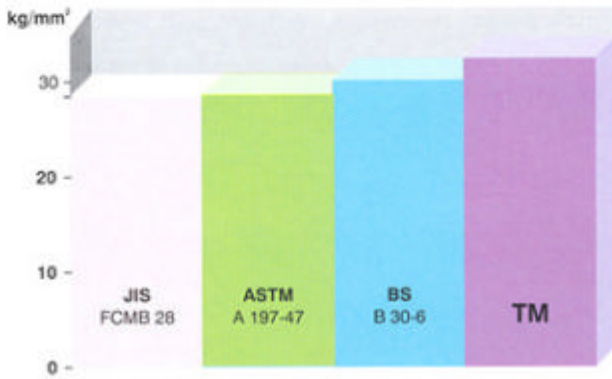
* TM fittings are available either galvanized or black. Galvanized fittings have average coating thickness of 86 micrometer or average coating weight of 610 g/m^2 or higher.

* TM fittings are suitable either to be used for steam, air, water, gas and oil pipes and for many other fluids.



Microstructure of TM Black Heart Malleable Cast Iron (x100)

Constituents of Internal Fluid	Maximum Working Pressure (kg/cm^2)
Steam, Air, Gas, and Oil at 300°C	10
Steam, Air, Gas, Oil and Water at 200°C	14
Water Non-Shock at 120°C	20



TENSILE STENGTH

ELONGATION

AMERICAN STANDARD THREADS Note: Table extracted from USAS B2.1-1968

Table 1.

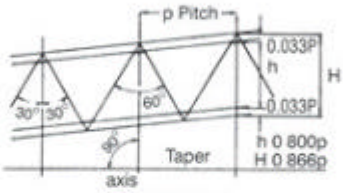


Fig. 4. (Taper)*
H = 0.8660 x p
h = 0.8000 x p

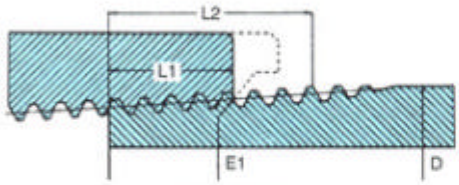


Fig. 5. (Taper)
L2 = (0.8D + 6.8)'/$_4$

*Straight Pipe Thread: the pitch, angle, and depth of thread are the same as the corresponding dimension of the taper pipe threads.

Table 1. Basic Dimensions — **Dimensions, in inch**

Nominal Bore of Pipe	Outside Diameter of Pipe	Threads Per Inch	Pitch of Thread	Hand-Tight Engagement		Effective Thread Length External	Depth of Thread
	D	n	P	L1	E1	L2	h
1/8"	0.405	27	0.03704	0.180	0.37476	0.2639	0.02963
1/4"	0.540	18	0.05556	0.200	0.48989	0.4018	0.04444
3/8"	0.675	18	0.05556	0.240	0.62701	0.4078	0.04444
1/2"	0.840	14	0.07143	0.320	0.77843	0.5337	0.05714
3/4"	1.050	14	0.07143	0.339	0.98887	0.5457	0.05714
1"	1.315	11'/$_2$	0.08696	0.400	1.23863	0.6828	0.06957
1 1/4"	1.660	11'/$_2$	0.08696	0.420	1.58338	0.7068	0.06957
1 1/2"	1.900	11'/$_2$	0.08696	0.420	1.82234	0.7235	0.06957
2"	2.375	11'/$_2$	0.08696	0.436	2.29627	0.7565	0.06957
2 1/2"	2.875	8	0.12500	0.682	2.76216	1.1375	0.10000
3"	3.500	8	0.12500	0.766	3.38850	1.2000	0.10000
3 1/2"	4.000	8	0.12500	0.821	3.88881	1.2500	0.10000
4"	4.500	8	0.12500	0.844	4.38712	1.3000	0.10000
5"	5.563	8	0.12500	0.937	5.44929	1.4063	0.10000
6"	6.625	8	0.12500	0.958	6.50597	1.5125	0.10000

BRITISH STANDARD THREADS Note: Table extracted from B2.1-1968

Table 2.

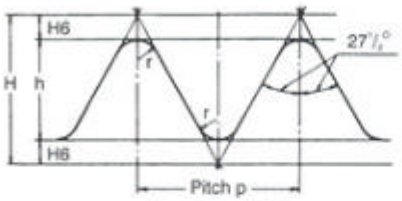


Fig. 1. (Parallel)
H = 0.960491 x p
h = 0.640327 x p
r = 0.137329 x p

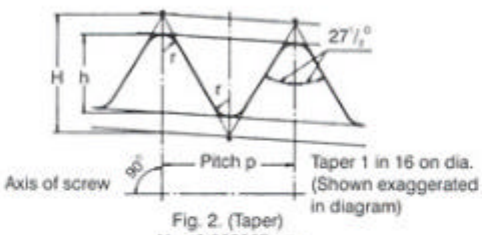


Fig. 2. (Taper)
H = 0.960237 x p
h = 0.640327 x p
r = 0.137278 x p

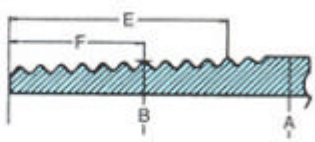


Fig. 3. (Taper)

Table 2. Basic Sizes — **Dimensions, in inch**

Nominal Bore of Pipe	Approximate Outside Diameter of Black Pipe	Number of Threads Per Inch	Pitch	Depth of Thread	Diameter of Gauge Plane (Gauge Dia.)	Distance of Gauge Diameter from End (Gauge Length)	Length of Useful Thread
	A		P	h	B	F	E
1/8"	0.400	28	0.03571	0.0229	0.383	0.1563	0.2545
1/4"	0.538	19	0.05263	0.0337	0.518	0.2367	0.3814
3/8"	0.676	19	0.05263	0.0337	0.656	0.2500	0.3947
1/2"	0.847	14	0.07143	0.0457	0.825	0.3214	0.5178
3/4"	1.063	14	0.07143	0.0457	1.041	0.3750	0.5714
1"	1.336	11	0.09091	0.0582	1.309	0.4091	0.6591
1 1/4"	1.677	11	0.09091	0.0582	1.650	0.5000	0.7500
1 1/2"	1.909	11	0.09091	0.0582	1.882	0.5000	0.7500
2"	2.381	11	0.09091	0.0582	2.347	0.6250	0.9204
2 1/2"	2.996	11	0.09091	0.0582	2.960	0.6875	1.0511
3"	3.499	11	0.09091	0.0582	3.460	0.8125	1.1761
3 1/2"	3.991	11	0.09091	0.0582	3.950	0.8750	1.2386
4"	4.494	11	0.09091	0.0582	4.450	1.0000	1.4091
5"	5.498	11	0.09091	0.0582	5.450	1.1250	1.5795
6"	6.501	11	0.09091	0.0582	6.450	1.1250	1.5795

ORDERING INFORMATION

The TM brand malleable iron pipe fittings are always ready for delivery to our customers. Please provide us the following information, when you order TM brand pipe fittings:

- Figure number, name and nominal size;
- Type of thread;
- Black or galvanized; and
- Quantity.

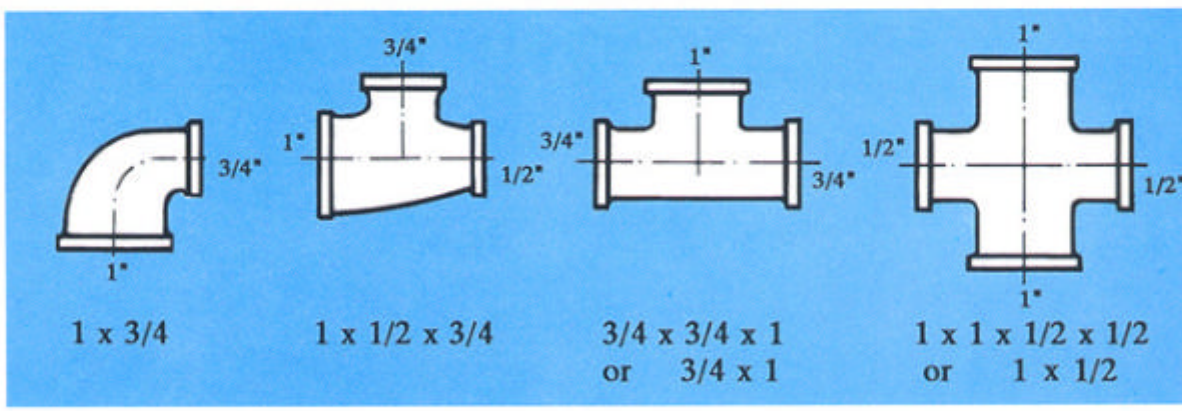
TM Malleable Iron Pipe Fittings

To avoid any confusion, the nominal size of different types of pipe fittings are designated as the following:

- Irrespective of the number of outlets, equal fittings (all outlets are of the same size) are referred to by that one size;

- For unequal fittings with two, three or four outlets:
* 2 outlets: the larger diameter comes first, and the smaller second;
* 3 outlets: the larger diameter of the two on the same line comes first, the smaller second and the remaining third;
* 4 outlets: the largest diameter comes first followed by the one on the same line, then the larger one of the remaining two and the last one fourth.

Please refer to the following figures as examples:



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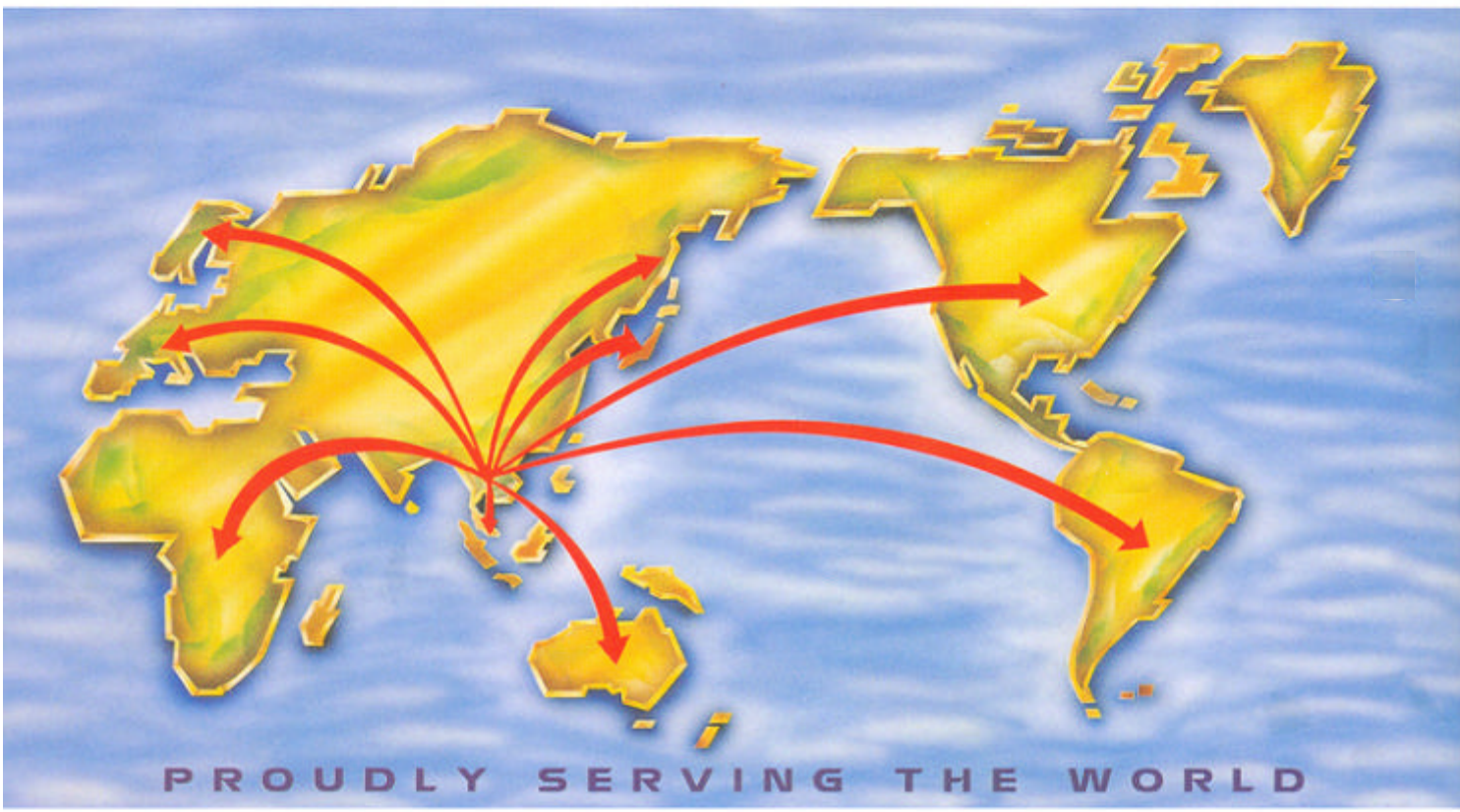

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