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ANSI



Product range



1



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3



40



41



90



90R



92



120



121



130



130R



134



165



180



221



223



240



241



245



246



270



280



291



301



312



320



321A



321B



321C



330

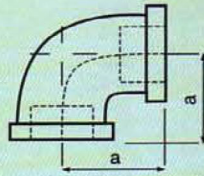


340



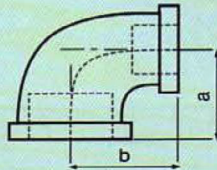
350

**FIG. 90
ELBOWS 90° (L. 90)**

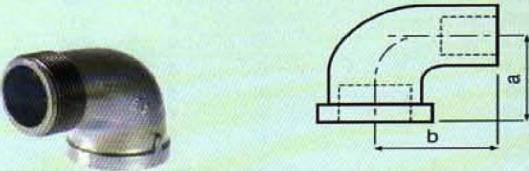
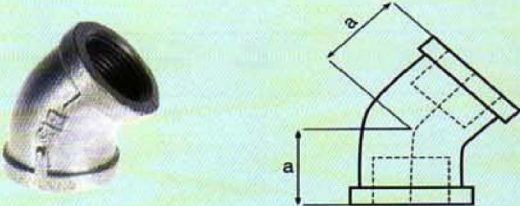
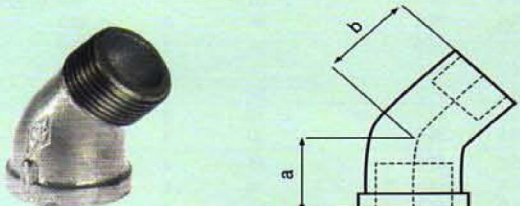
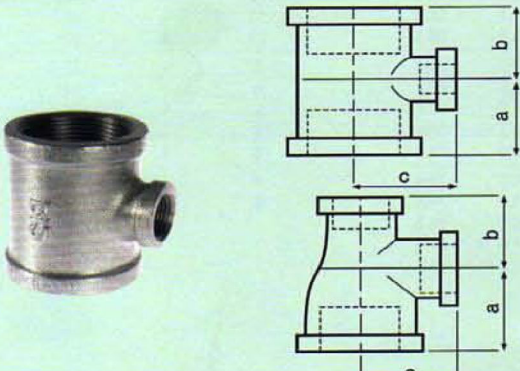


SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.
1/8	17.5			50	B12	600	19
1/4	20.6			35	B12	420	20
3/8	24.1			45	12	540	41
1/2	28.5			50	8	400	43
3/4	33.3			35	6	210	33
1	38.1			20	6	120	33
1-1/4	44.5			20	4	80	32
1-1/2	49.3			10	6	60	30
2	57.2			8	4	32	28
2-1/2	70.0			6	3	18	26
3	81.0			7	2	14	28
3-1/2	90.0					6	20
4	99.0					6	21
5	113.0					2	12
6	132.0					2	16

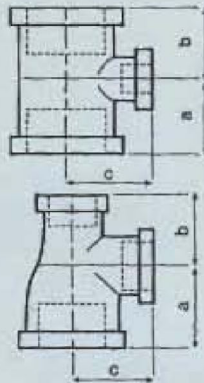
**FIG. 90R
RED. ELBOWS (RL)**



SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.
1/4x1/8	18.8	19.3		40	B12	480	22
3/8x1/8	20.5	21.6		70	12	840	46
3/8x1/4	22.4	22.9		60	12	720	47
1/2x1/8	22.0	23.4		40	12	480	39
1/2x1/4	24.6	24.9		40	12	480	41
1/2x3/8	26.4	26.2		50	8	400	38
3/4x1/8	24.1	26.0		50	8	400	44
3/4x1/4	26.7	27.4		40	8	320	41
3/4x3/8	28.5	28.7		25	12	300	40
3/4x1/2	30.5	31.0		30	8	240	35
1x1/8	26.2	29.7					
1x1/4	28.2	31.0		40	6	240	
1x3/8	30.0	32.3		40	6	240	43
1x1/2	32.0	35.5		30	6	180	36
1x3/4	34.8	36.8		25	6	150	35
1-1/4x3/8	32.8	36.6		80	2	160	44
1-1/4x1/2	34.0	38.9		35	4	140	40
1-1/4x3/4	36.8	41.2		15	8	120	37
1-1/4x1	40.1	42.4		10	8	80	28
1-1/2x3/8	33.8	39.0		30	4	120	40
1-1/2x1/2	35.8	42.2		25	4	100	33
1-1/2x3/4	38.6	44.5		15	6	90	42
1-1/2x1	41.9	45.7		10	8	80	34
1-1/2x1-1/4	46.2	47.8		15	4	60	29
2x1/2	37.3	43.4		15	4	60	30
2x3/4	40.6	50.0		10	6	60	31
2x1	43.5	50.5		14	4	56	32
2x1-1/4	48.3	53.3		10	4	40	27
2x1-1/2	51.3	54.9		10	4	40	29
2-1/2x3/4	43.8	59.4		10	4	40	36
2-1/2x1	47.5	60.2		8	4	32	31
2-1/2x1-1/4	51.8	62.2		8	3	24	25
2-1/2x1-1/2	54.9	63.8		8	3	24	28
2-1/2x2	60.7	66.0		8	3	24	30
3x1-1/2	57.9	71.0		5	4	20	29
3x2	64.0	73.4		6	3	18	26
3x2-1/2	71.9	75.9		8	2	16	31
4x2	69.0	88.5				12	28
4x2-1/2	81.0	91.0				8	24
4x3	83.8	91.4				9	29

FIG. 92 STREET ELBOWS 90° (SL 90)		SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.	
	1/8	17.5	25.4		60	B12	720	20		
	1/4	20.6	30.2		35	B12	420	19		
	3/8	24.1	36.6		40	12	480	34		
	1/2	28.5	41.2		60	6	360	39		
	3/4	33.3	48.0		35	6	210	33		
	1	38.1	54.4		30	4	120	33		
	1-1/4	44.5	62.2		25	3	75	31		
	1-1/2	49.3	68.3		9	6	54	29		
	2	57.2	82.8		10	3	30	26		
	2-1/2	70.0	98.0		9	2	18	29		
	3	81.0	114.6		7	2	14	34		
	4	99.0	144.5				6	25		
	5	113.0	174.2							
	6	132.0	204.0				2			
FIG. 120 ELBOWS 45° (L 45)		SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.	
	1/8	17.0			50	B12	600	18		
	1/4	18.5			30	B12	360	19		
	3/8	20.3			50	12	600	42		
	1/2	22.4			50	8	400	40		
	3/4	24.9			40	6	240	38		
	1	28.5			20	6	120	31		
	1-1/4	32.8			20	4	80	30		
	1-1/2	36.3			10	6	60	30		
	2	42.7			12	3	36	26		
	2-1/2	49.5			9	3	27	36		
	3	55.1			10	2	20	33		
	4	66.3					6	19		
	5	77.5					6	23		
	6	87.9					2	13		
FIG. 121 STREET ELBOWS 45° (SL 45)		SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.	
	1/8	17.0	21.0		70	B12	840	23		
	1/4	18.5	23.9		40	B12	480	22		
	3/8	20.3	26.2		50	12	600	42		
	1/2	22.4	29.2		75	6	450	38		
	3/4	24.9	32.8		40	6	240	36		
	1	28.5	37.3		25	6	150	33		
	1-1/4	32.8	43.4		10	8	80	27		
	1-1/2	36.3	47.8		10	6	60	28		
	2	42.7	56.4		12	3	36	27		
	2-1/2	49.5	65.3		12	2	24	32		
	3	55.1	76.2		9	2	18	36		
	4	66.3	94.0				7	25		
	FIG. 130R RED. TEES (RT)		SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.
		1/4x1/8	18.8	18.8	19.3	25	12	300	19	
3/8x1/8		20.6	20.6	21.6	40	12	480	37		
3/8x1/4		22.4	22.4	22.9	40	12	480	44		
1/2x1/4		22.8	22.8	23.8	30	12	360	40		
1/2x1/4		24.6	24.6	24.9	25	12	300	34		
1/2x3/8		26.4	26.4	26.2	45	6	270	39		
3/4x1/8		24.8	24.8	26.8	30	8	240	39		
3/4x1/4		26.7	26.7	27.4	25	8	200	36		
3/4x3/8		28.5	28.5	28.7	30	6	180	34		
3/4x1/2		30.5	30.5	31.0	30	6	180	36		
1x1/4		28.2	28.2	31.0	25	6	150	41		
1x3/8		30.0	30.0	32.3	20	6	120	33		
1x1/2		32.0	32.0	35.5	15	8	120	36		
1x3/4		34.8	34.8	36.8	25	4	100	33		
1-1/4x3/8	32.0	32.0	36.6							

**FIG. 130R
RED. TEES (RT)**



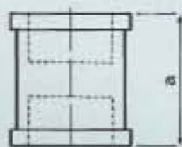
SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.
1-1/4x1/2	34.0	34.0	38.9	20	4	80	34
1-1/4x3/4	36.8	36.8	41.2	12	6	72	35
1-1/4x1	40.1	40.1	42.4	16	4	64	33
1-1/2x1/4	31.0	31.0	38.0	18	4	72	33
1-1/2x1/2	35.8	35.8	42.2	18	4	72	37
1-1/2x3/4	38.6	38.6	44.5	10	6	60	31
1-1/2x1	41.9	41.9	45.7	13	4	52	34
1-1/2x1-1/4	46.2	46.2	47.8	15	3	45	33
2x1/2	37.9	37.9	47.8	10	4	40	40
2x3/4	40.6	40.6	50.0	10	4	40	31
2x1	43.9	43.9	51.3	12	3	36	30
2x1-1/4	48.3	48.3	53.3	8	4	32	28
2x1-1/2	51.3	51.3	54.9	8	4	32	31
2-1/2x1/2	41.0	41.0	57.0	8	3	24	31
2-1/2x3/4	44.2	44.2	58.9	8	3	24	30
2-1/2x1	47.5	47.5	60.2	8	3	24	34
2-1/2x1-1/4	51.8	51.8	62.2	10	2	20	29
2-1/2x1-1/2	54.9	54.9	63.8	5	3	15	23
2-1/2x2	60.7	60.7	66.0	8	2	16	28
3x1/2	43.0	43.0	65.7	6	3	18	28
3x3/4	47.5	47.5	66.3	6	3	18	27
3x1	50.8	50.8	67.6	5	3	15	25
3x1-1/4	55.1	55.1	69.6	6	2	12	21
3x1-1/2	58.2	58.2	71.1	6	2	12	21
3x2	64.0	64.0	73.4	6	2	12	25
3x2-1/2	71.9	71.9	76.0	6	2	12	29
4x1/2	50.0	50.0	79.0			10	25
4x3/4	57.0	57.0	80.5			10	27
4x1	57.0	57.0	82.5			8	22
4x1-1/4	60.5	60.5	86.5			8	24
4x1-1/2	63.8	63.8	84.3			8	24
4x2	69.6	69.6	86.6			8	28
4x2-1/2	77.5	77.5	89.2			6	23
4x3	83.8	83.8	91.4			6	24
5x3	87.0	87.0	107.0			3	17
6x2	78.2	78.2	115.8			2	15
6x2-1/2	86.1	86.1	118.4			2	16
6x3	92.5	92.5	120.7			2	16
6x4	104.9	104.9	125.5			2	18
3/4x1/2x1/2	30.5	28.5	31.0	30	6	180	35
3/4x3/8x3/4	33.3	28.7	33.3	40	4	160	35
3/4x1/2x3/4	33.3	31.0	33.3	40	4	160	35
3/4x1/2x1	34.8	33.0	34.0	35	4	140	37
1x1/2x1/2	32.0	28.5	35.5	20	6	120	28
1x1/2x3/4	34.8	31.0	36.8	20	6	120	30
1x1/2x1	38.1	35.5	38.1	15	6	90	21
1x3/4x1/2	32.0	30.5	35.3	20	6	120	32
1x3/4x3/4	34.8	33.3	36.8	25	4	100	31
1x3/4x1	38.1	36.8	38.1	15	6	90	22
1-1/4x1/2x1/2	34.0	32.0	34.4	25	4	100	33
1-1/4x1/2x3/4	48.0	42.5	53.8	25	4	100	34
1-1/4x1/2x1	40.1	34.5	42.4	20	4	80	33
1-1/4x1/2x1-1/4	44.5	38.9	44.5	10	6	60	30
1-1/4x3/4x1/2	33.8	29.3	38.3	25	4	100	32
1-1/4x3/4x3/4	36.8	33.3	41.2	10	8	80	30
1-1/4x3/4x1	40.1	36.8	42.4	10	8	80	32
1-1/4x3/4x1-1/4	44.5	41.2	44.5	10	6	60	31
1-1/4x1x1/2	34.0	32.0	38.9	18	4	72	28
1-1/4x1x3/4	36.8	34.8	41.2	18	4	72	29
1-1/4x1x1	40.1	38.1	42.4	18	4	72	34
1-1/4x1x1-1/4	44.5	42.4	44.5	10	6	60	33
1-1/2x1/2x1/2	35.0	27.4	42.3	20	4	80	31
1-1/2x1/2x3/4	38.6	31.0	44.5	20	4	80	
1-1/2x1/2x1	41.0	32.8	45.5	18	4	72	31
1-1/2x1/2x1-1/4	49.3	42.2	47.8	15	4	60	
1-1/2x1/2x1-1/2	49.3	42.2	49.3	12	4	48	33
1-1/2x3/4x1/2	35.0	29.0	42.3	20	4	80	29
1-1/2x3/4x3/4	37.9	31.9	43.3	18	4	72	31
1-1/2x3/4x1	41.9	36.9	45.7	15	4	60	34
1-1/2x3/4x1-1/4	38.0	29.5	43.5	15	4	60	35
1-1/2x3/4x1-1/2	49.3	44.5	49.3	12	4	48	32
1-1/2x1x1/2	35.0	32.3	42.3	18	4	72	30

**FIG. 301
CAPS (CA)**



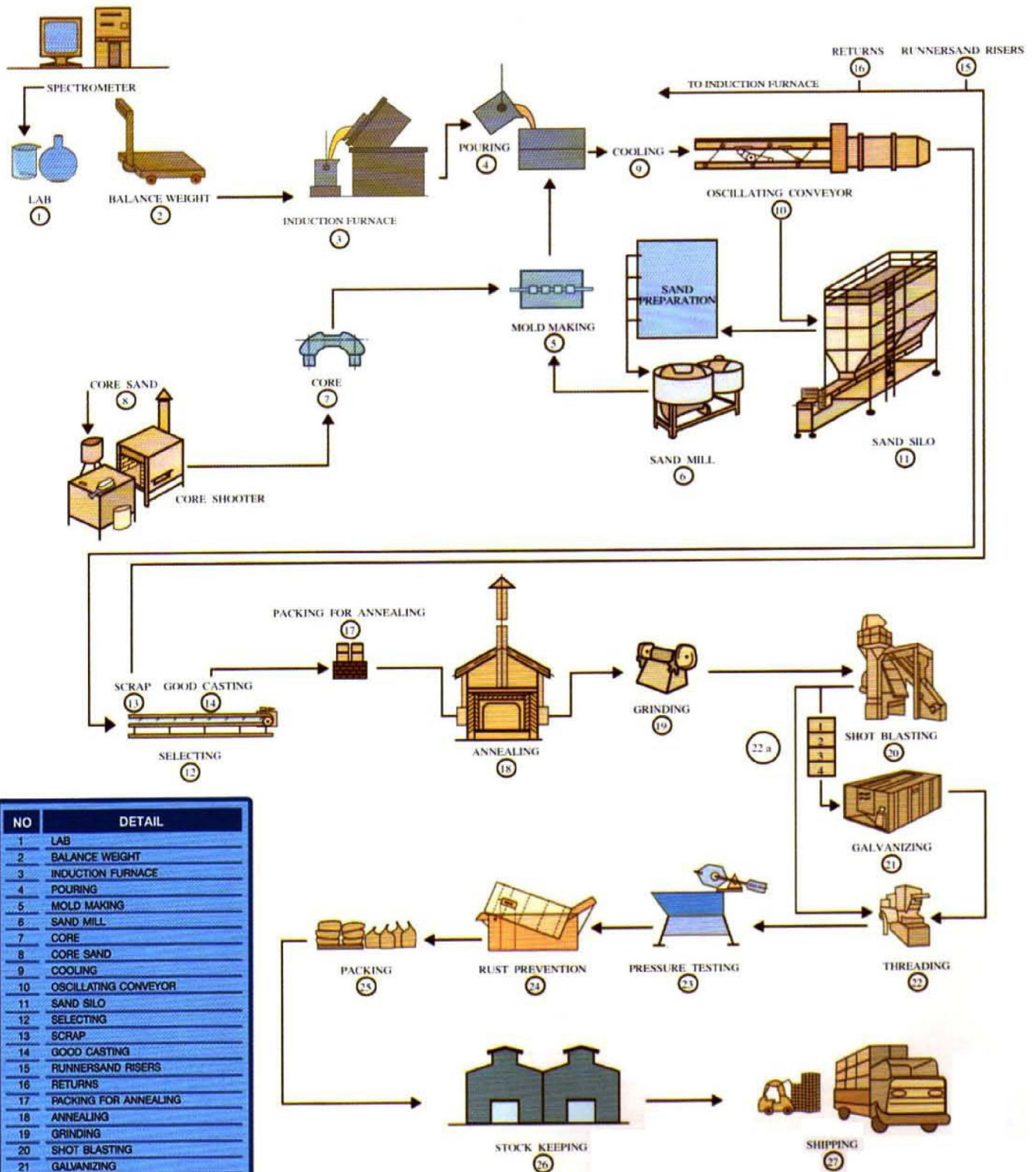
SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.
1/8	14.0			120	B12	1,440	25
1/4	15.0			80	B12	960	26
3/8	16.8			60	B12	720	32
1/2	22.2			75	12	900	54
3/4	24.6			40	12	480	44
1	29.5			35	8	280	46
1-1/4	32.5			25	8	200	48
1-1/2	33.8			25	6	150	47
2	36.8			18	6	108	44
2-1/2	43.2			28	2	56	44
3	45.7			21	2	42	41
4	52.8			7	3	21	36
5	58.9					19	45
6	64.8					11	38

**FIG. 270
COUPLINGS (SOCKETS) (S)**



SIZE (INCH)	a	b (mm.)	c	PCS/ INNER	QTY OF INNER	PCS/ MASTER	WT/ MASTER KGS.
1/8	24.4			70	B12	840	23
1/4	26.9			40	B12	480	21
3/8	29.5			50	12	600	36
1/2	34.0			40	12	480	40
3/4	39.0			50	6	300	38
1	42.4			25	6	150	31
1-1/4	49.0			16	8	128	38
1-1/2	54.6			18	4	72	28
2	64.3			12	4	48	28
2-1/2	73.2			8	4	32	35
3	80.8			8	3	24	30
4	93.7			7	2	14	30
6	106.0					2	9

BIS PIPE FITTING INDUSTRY PROCESS CHART FOR BLACKHEART MALLEABLE FITTINGS



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5	MOLD MAKING
6	SAND MILL
7	CORE
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11	SAND SILO
12	SELECTING
13	SCRAP
14	GOOD CASTING
15	RUNNERSAND RISERS
16	RETURNS
17	PACKING FOR ANNEALING
18	ANNEALING
19	GRINDING
20	SHOT BLASTING
21	GALVANIZING
22	THREADING
23	PRESSURE TESTING
24	RUST PREVENTION
25	PACKING
26	STOCK KEEPING
27	SHIPPING

AMERICAN STANDARD THREADS

Approved by American Standard Association ANSI B1.20.1-1983

Forms of American Standard Pipe Threads

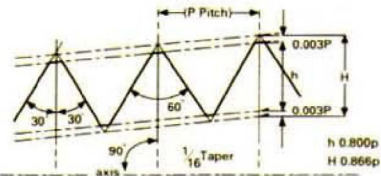


Fig. 4. (Taper)*
H = 0.8660 x p

$h = 0.8000 \times p$

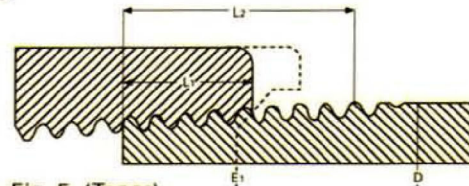


Fig. 5. (Taper)

$L_2 = (0.8D + 6.8) \frac{1}{n}$

*Straight Pipe Threads: the pitch, angle, and depth of thread are the same as the corresponding dimensions of the taper pipe threads

Table 2. Basic Dimensions

Nominal Pipe Size	Outside Diameter of Pipe	Threads per Inch	Pitch of Threads	Hand-Tight Engagement		Effective Thread Length External	Depth of Thread
				L ₁	E ₁		
	D	n	P	L ₁	E ₁	L ₂	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 1/2	0.08696	0.400	1.23863	0.6828	0.06957
1 1/4	1.660	11 1/2	0.08696	0.420	1.58338	0.7068	0.06957
1 1/2	1.900	11 1/2	0.08696	0.420	1.82234	0.7235	0.06957
2	2.375	11 1/2	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

British Engineering Standard Association Reports No. BS 21-1985

Forms of British Standard Pipe Threads

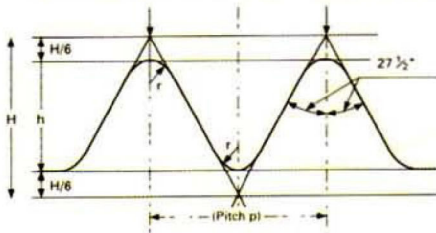


Fig. 1. (Parallel)
H = 0.960491 x p
h = 0.640327 x p
r = 0.137329 x p

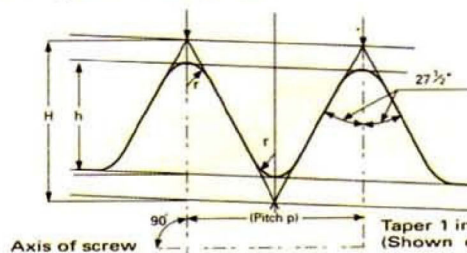


Fig. 2. (Taper)
H = 0.960237 x p
h = 0.640327 x p
r = 0.137278 x p

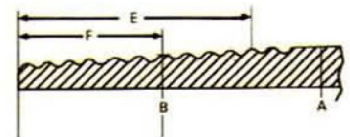


Fig. 3. (Taper)

Table 1. Basic Sizes

Nominal Bore of Pipe	Approximate Outside Diameter of Black Pipe	Number of Threads per Inch	Pitch	Depth of Thread	Diameter at Gauge Plane (Gauge Dia.)	Distance of Gauge Diameter from End (Gauge Length)	Length of Useful Thread
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



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