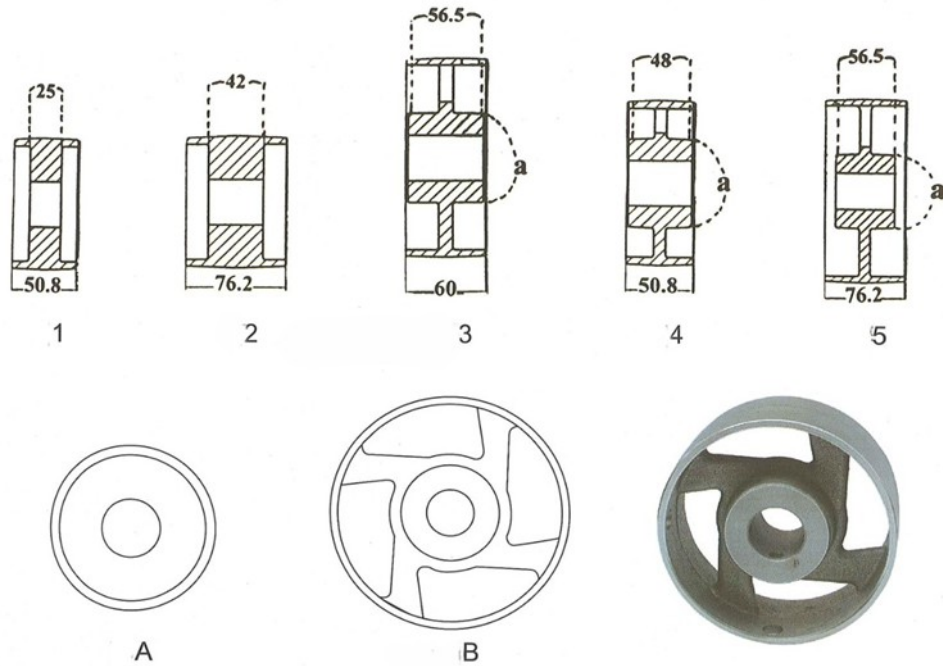




CAST IRON PULLEYS



FLAT BELT PULLEY



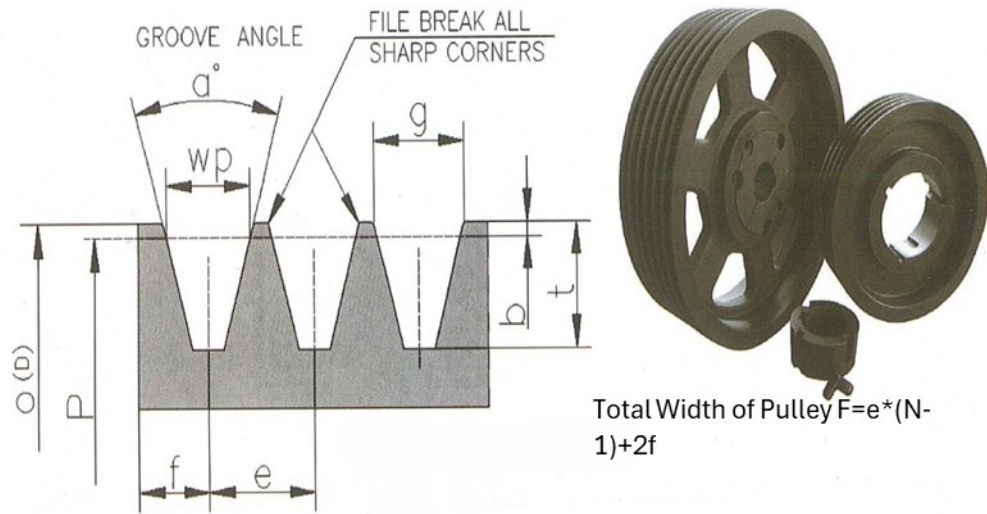
FLAT BELT PULLEY						
SPECIFICATION	Figure Number			Dimensions (mm)		
	2" 50.8 MM		3" 76.2 MM		60MM	
WIDTH/DIAMETER						
4"	1	A	2	A		35
5"	4	B	5	B		69
6"	4	B	5	B	3	69
7"	4	B	5	B		72
8"	4	B	5	B		76
9"	4	B	5	B		80
10"	4	B	5	B		84

OUR FLAT BELT PULLEYS/SHEAVES ARE MADE OF GRADED CAST IRON, THE SURFACE IS MACHINED. THEY ARE PROVEN TO BE STRONG AND DURABLE.

OUR FLAT BELT PULLEYS ARE USED IN TRANSMISSION SYSTEMS THAT ARE DRIVEN BY FLAT BELTS, TYPICALLY HIGH-SPEED, LOW-POWER APPLICATIONS IN TEXTILES, PAPER MAKING, AND OFFICE MACHINERY



PULLEY STANDARD



(mm)

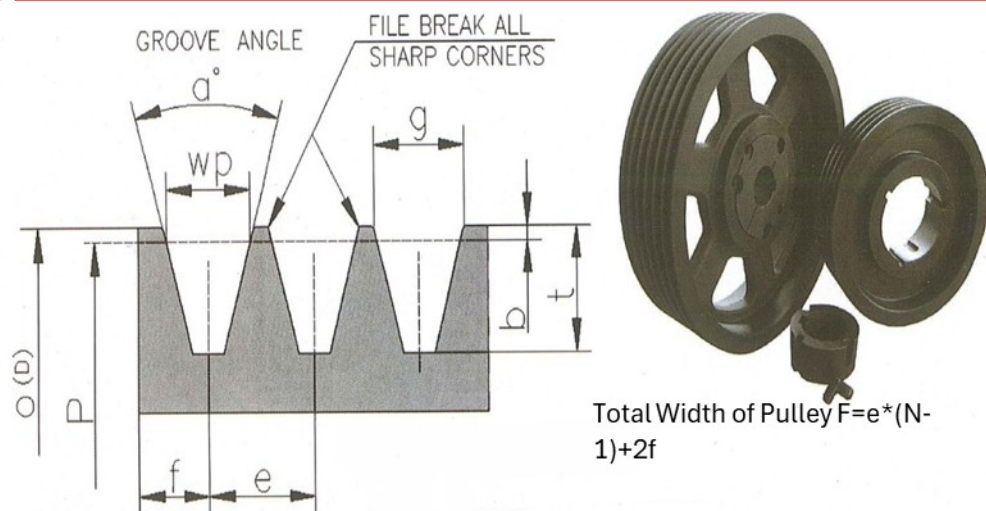
Strait Hole Pulley	g	t	e	f	D	a°
A	12.12 ± 0.18	11	15 ± 0.2	10	≤ 90	$34^\circ \pm 0.5^\circ$
		12.5			90-125	$36^\circ \pm 0.5^\circ$
					≥ 125	$38^\circ \pm 0.5^\circ$
B	16.07 ± 0.21	13.5	19 ± 0.2	12.5	≤ 101.6	$34^\circ \pm 0.5^\circ$
					101.6-160	$36^\circ \pm 0.5^\circ$
		15			160-200	$38^\circ \pm 0.5^\circ$
C	21.452 ± 0.27	19	25.5 ± 0.2	17	≤ 250	$34^\circ \pm 0.5^\circ$
					250-315	$36^\circ \pm 0.5^\circ$
					≥ 315	$38^\circ \pm 0.5^\circ$

(Inch)

American Standard Pulley	g	B	t	e	f	P	a°
3V	0.35	0.025	0.35	0.407	0.344	< 3.5	$34^\circ \pm 0.5^\circ$
						3.5~6	$38^\circ \pm 0.5^\circ$
						6.01~12	$40^\circ \pm 0.5^\circ$
						> 12	$42^\circ \pm 0.5^\circ$
5V	0.6	0.05	0.6	0.688	0.5	< 10.1	$38^\circ \pm 0.5^\circ$
						10.1~16	$40^\circ \pm 0.5^\circ$
						< 16	$42^\circ \pm 0.5^\circ$
8V	1	0.1	0.1	1.125	0.75	< 16	$38^\circ \pm 0.5^\circ$
						16~22.4	$40^\circ \pm 0.5^\circ$
						< 22.4	$42^\circ \pm 0.5^\circ$



PULLEY STANDARD

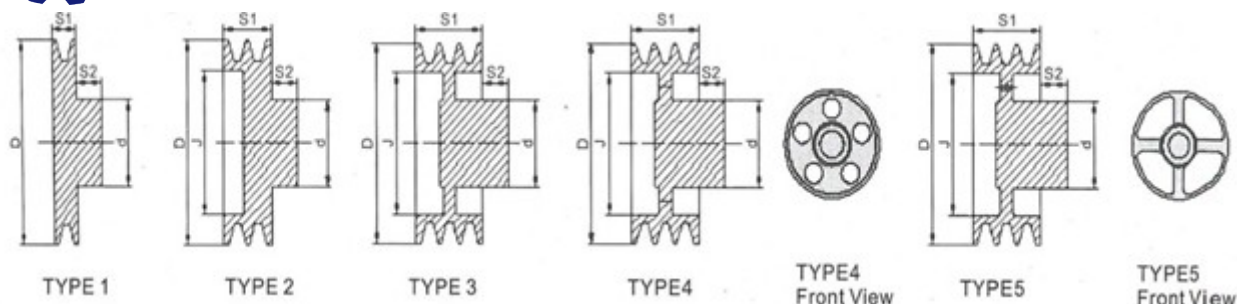


(mm)

European Standard Pulley	g	wp	b	t	e	f	P	a°
SPZ	$9.7^{+0.1}_{-0}$	8.5	2.0	$11.0^{+0.6}_{-0}$	12 ± 0.2	8 ± 0.3	≤ 80 > 80	$34^\circ \pm 0.5^\circ$ $38^\circ \pm 0.5^\circ$
SPA	$12.7^{+0.1}_{-0}$	11.0	2.8	$13.8^{+0.6}_{-0}$	15 ± 0.2	10 ± 0.3	≤ 118 > 118	$34^\circ \pm 0.5^\circ$ $38^\circ \pm 0.5^\circ$
SPB	$16.3^{+0.1}_{-0}$	14.0	3.5	$17.5^{+0.6}_{-0}$	19 ± 0.2	12.5 ± 0.3	≤ 190 > 190	$34^\circ \pm 0.5^\circ$ $38^\circ \pm 0.5^\circ$
SPC	$22.0^{+0.1}_{-0}$	19.0	4.8	$23.8^{+0.6}_{-0}$	25.5 ± 0.2	17 ± 0.3	≤ 315 > 315	$34^\circ \pm 0.5^\circ$ $38^\circ \pm 0.5^\circ$



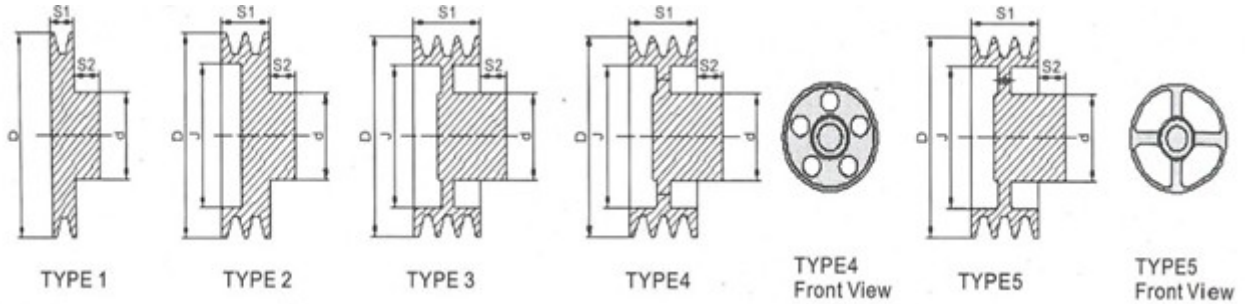
SIMPLE CAST IRON PULLEY



Specification: Outer Diameter	A Type 1 Groove						Specification: Outer Diameter	A Type 2 Groove					
	TYPE	D	d	J	S1	S2		TYPE	D	d	J	S1	S2
2"	1	50.8	39		20	20	2"	1	50.8	40		35	18
2 1/2"	1	63.5	45		20	20	2 1/2"	1	63.5	50		35	18
3"	1	76.2	50		20	20	3"	1	76.2	54		35	20
3 1/2"	1	88.9	50		20	20	3 1/2"	2	88.9	60	54.9	35	20
4"	2	101.6	50	67.6	20	20	4"	2	101.6	63	67.6	35	20
4 1/2"	2	114.3	60	80.3	20	20	4 1/2"	2	114.3	63	80.3	35	20
5"	2	127	60	93	20	20	5"	2	127	63	93	35	20
5 1/2"	2	139.7	65	105.7	20	20	5 1/2"	2	139.7	68	105.7	35	20
6"	3	152.4	65	118.4	20	20	6"	3	152.4	68	118.4	35	20
6 1/2"	3	165.1	65	131.1	20	20	6 1/2"	3	165.1	68	131.1	35	20
7"	3	177.8	65	143.8	20	20	7"	3	177.8	68	143.8	35	20
8"	4	203.2	65	169.2	20	20	7 1/2"	3	190.5	68	156.5	35	20
9"	4	228.6	66	194.6	20	20	8"	3	203.2	73	169.2	35	20
10"	4	254	66	220	20	20	9"	4	228.6	73	194.6	35	20
11"	4	279.4	66	245.4	20	20	10"	4	254	84	220	35	20
12"	4	304.8	68	270.8	20	20	11"	4	279.4	84	243.4	35	20
13"	5	330.2	68	294.2	20	20	12"	4	304.8	84	268.8	35	20
14"	5	355.6	68	319.6	20	20	13"	5	330.2	84	294.2	35	20
15"	5	381	80	345	20	20	14"	5	355.6	84	319.6	35	20
16"	5	406.4	80	370.4	20	20	15"	5	381	84	345	35	20
18"	5	457.2	80	421.2	20	20	16"	5	406.4	84	370.4	35	20
20"	5	508	80	472	20	20	18"	5	457.2	95	421.2	35	20
22"	5	558.8	85	522.8	20	20	20"	5	508	95	472	35	20
24"	5	609.6	85	573.6	20	20	22"	5	558.8	95	522.8	35	20
26"	5	660.4	85	624.4	20	20	24"	5	609.6	95	573.6	35	20
28"	5	711.2	85	675.2	20	20	26"	5	660.4	95	624.4	35	20
30"	5	762	85	726	20	20	28"	5	711.2	95	675.2	35	20
							30"	5	762	95	726	35	20



SIMPLE CAST IRON PULLEY

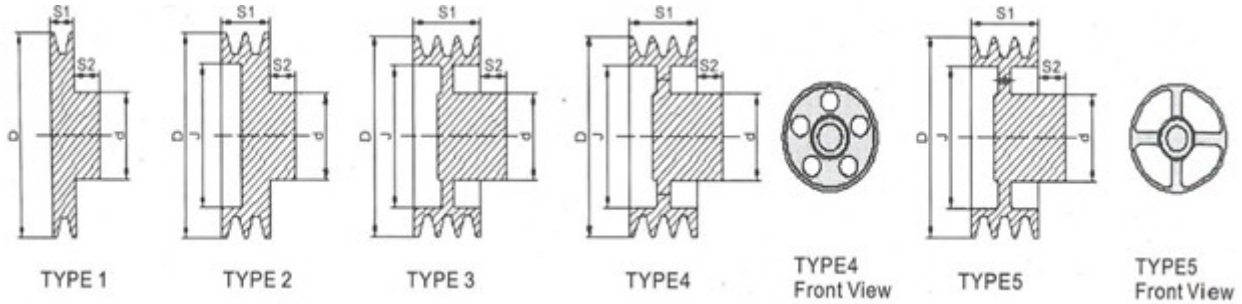


Specification: Outer Diameter	A Type 3 Groove						Specification: Outer Diameter	A Type 4 Groove					
	TYPE	D	d	J	S1	S2		TYPE	D	d	J	S1	S2
2"	1	50.8	50		52	20	2"						
2 1/2"	1	63.5	50		52	20	2 1/2"						
3"	2	76.2	60	42.2	52	20	3"	2	76.2	55	42.2	65	20
3 1/2"	2	88.9	60	54.9	52	20	3 1/2"	2	88.9	64	54.9	65	20
4"	2	101.6	70	67.6	52	20	4"	2	101.6	68	67.6	65	20
4 1/2"	2	114.3	74	80.3	52	20	4 1/2"	2	114.3	78	80.3	65	20
5"	2	127	78	93	52	20	5"	2	127	78	93	65	20
5 1/2"	2	139.7	78	105.7	52	20	5 1/2"	2	139.7	78	105.7	65	20
6"	3	152.4	78	118.4	52	20	6"	2	152.4	78	118.4	65	20
6 1/2"	3	165.1	78	131.1	52	20	6 1/2"	2	165.1	90	131.1	65	20
7"	3	177.8	78	143.8	52	20	7"	3	177.8	90	143.8	65	20
8"	3	203.2	80	169.2	52	20	8"	4	203.2	90	169.2	65	20
9"	4	228.6	83	194.6	52	20	9"	4	228.6	90	194.6	65	20
10"	4	254	90	220	52	20	10"	4	254	100	220	65	20
11"	4	279.4	90	243.4	52	20	11"	4	279.4	100	243.4	65	20
12"	4	304.8	90	268.8	52	20	12"	4	304.8	100	268.8	65	20
13"	5	330.2	95	294.2	52	20	13"	5	330.2	105	294.2	65	20
14"	5	355.6	95	319.6	52	20	14"	5	355.6	105	319.6	65	20
15"	5	381	95	345	52	20	15"	5	381	105	345	65	20
16"	5	406.4	100	370.4	52	20	16"	5	406.4	110	370.4	65	20
18"	5	457.2	100	421.2	52	20	18"	5	457.2	110	421.2	65	20
20"	5	508.8	100	472	52	20	20"	5	508	110	472	65	20
22"	5	558.8	105	522.8	52	20	22"	5	558.8	115	522.8	65	20
24"	5	609.6	105	573.6	52	20	24"	5	609.6	115	573.6	65	20
26"	5	660.4	105	624.4	52	20	26"	5	660.4	115	624.4	65	20
28"	5	711.2	110	675.2	52	20	28"	5	711.2	120	675.2	65	20
30"	5	762	110	726	52	20	30"	5	762	120	726	65	20

Units:mm



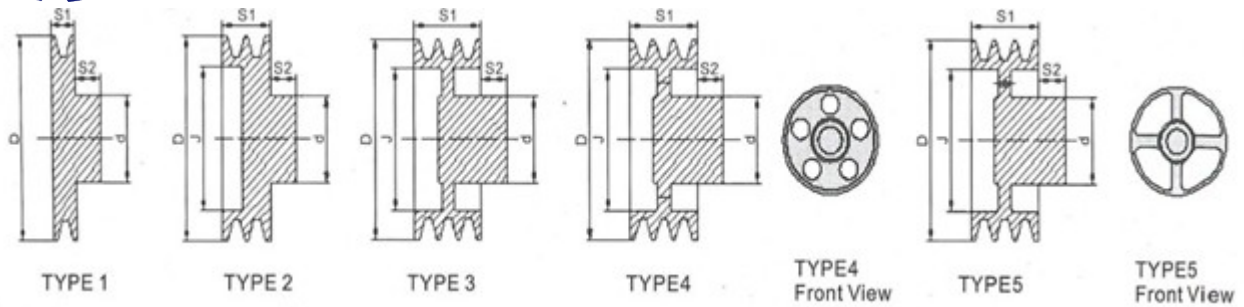
SIMPLE CAST IRON PULLEY



Specification: Outer Diameter	B Type 1 Groove						Specification: Outer Diameter	B Type 2 Groove					
	TYPE	D	d	J	S1	S2		TYPE	D	d	J	S1	S2
2"	1	50.8	39		25	20	2"	1	50.8	40		44	20
2 1/2"	1	63.5	45		25	20	2 1/2"	1	63.5	50		44	20
3"	1	76.2	50		25	20	3"	1	76.2	56		44	20
3 1/2"	1	88.9	60		25	20	3 1/2"	2	88.9	60	48.9	44	20
4"	2	101.6	60	61.6	25	20	4"	2	101.6	63	61.6	44	20
4 1/2"	2	114.3	60	74.3	25	20	4 1/2"	2	114.3	63	74.3	44	20
5"	2	124	60	87	25	20	5"	2	127	68	87	44	20
5 1/2"	2	139.7	65	99.7	25	20	5 1/2"	2	139.7	68	99.7	44	20
6"	2	152.4	65	112.4	25	20	6"	2	152.4	73	112.4	44	20
6 1/2"	2	165.1	65	125.1	25	20	6 1/2"	2	165.1	73	125.1	44	20
7"	3	177.8	65	137.8	25	20	7"	3	177.8	73	137.8	44	20
8"	3	203.2	65	163.2	25	20	7 1/2"	4	190.5	73	150.5	44	20
9"	4	228.6	66	188.6	25	20	8"	3	203.2	74	163.2	44	20
10"	4	254	66	214	25	20	8 1/2"	4	215.9	74	175.9	44	20
11"	4	279.4	66	239.4	25	20	9"	4	228.6	74	188.6	44	20
12"	4	304.8	68	264.8	25	20	10"	4	254	84	214	44	20
13"	5	330.2	70	286.2	25	20	11"	4	279.4	84	239.4	44	20
14"	5	355.6	70	311.6	25	20	12"	4	304.8	84	258.8	44	20
15"	5	381	80	337	25	20	13"	5	330.2	84	284.2	44	20
16"	5	406.4	80	362.4	25	20	14"	5	355.6	84	309.6	44	20
18"	5	457.2	85	413.2	25	20	15"	5	381	84	335	44	20
20"	5	508	85	464	25	20	16"	5	406.4	90	360.4	44	20
22"	5	558.8	95	514.8	25	20	18"	5	457.2	95	411.2	44	20
24"	5	609.6	95	565.6	25	20	20"	5	508	100	462	44	20
26"	5	660.4	95	616.4	25	20	22"	5	558.8	100	512.8	44	20
28"	5	711.2	100	667.2	25	20	24"	5	609.6	100	563.6	44	20
30"	5	762	100	718	25	20	26"	5	660.4	100	614.4	44	20
							28"	5	711.2	105	665.2	44	20
							30"	5	762	105	716	44	20



SIMPLE CAST IRON PULLEY

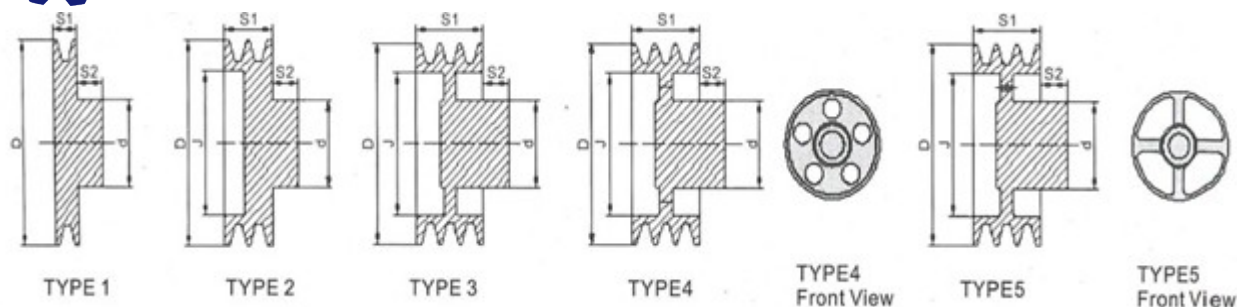


Specification: Outer Diameter	B Type 3 Groove						Specification: Outer Diameter	B Type 4 Groove					
	TYPE	D	d	J	S1	S2		TYPE	D	d	J	S1	S2
2"						63	20	2"					
2 1/2"						63	20	2 1/2"					
3"	2	76.2	60	36.2	63	20	3"	2	76.2	60	36.2	82	20
3 1/2"	2	88.9	70	48.9	63	20	3 1/2"	2	88.9	70	48.9	82	20
4"	2	101.6	70	61.6	63	20	4"	2	101.6	70	61.6	82	20
4 1/2"	2	114.3	74	74.3	63	20	4 1/2"	2	114.3	82	74.3	82	20
5"	2	127	78	87	63	20	5"	2	127	82	87	82	20
5 1/2"	2	139.7	78	99.7	63	20	5 1/2"	2	139.7	88	99.7	82	20
6"	2	152.4	78	112.4	63	20	6"	2	152.4	88	112.4	82	20
6 1/2"	3	165.1	80	125.1	63	20	6 1/2"	2	165.1	90	125.1	82	20
7"	3	177.8	80	137.8	63	20	7"	3	177.8	90	137.8	82	20
7 1/2"	3	190.5	80	150.5	63	20	7 1/2"	3	190.5	90	150.5	82	20
8"	3	203.2	80	163.2	63	20	8"	3	203.2	90	159.2	82	20
8 1/2"	4	215.9	80	175.9	63	20	8 1/2"	4	215.9	95	171.9	82	20
9"	4	228.6	83	188.6	63	20	9"	4	228.6	90	184.6	82	20
10"	4	254	90	214	63	20	10"	4	254	100	210	82	20
11"	4	279.4	90	239.4	63	20	11"	4	279.4	100	235.4	82	20
12"	4	304.8	90	264.8	63	20	12"	4	304.8	100	260.8	82	20
13"	5	330.2	90	286.2	63	20	13"	5	330.2	100	286.2	82	20
14"	5	355.6	90	309.6	63	20	14"	5	355.6	100	309.6	82	20
15"	5	381	95	335	63	20	15"	5	381	110	335	82	20
16"	5	406.4	95	360.4	63	20	16"	5	406.4	115	360.4	82	20
18"	5	457.2	100	411.2	63	20	18"	5	457.2	115	411.2	82	20
20"	5	508	110	462	63	20	20"	5	508	115	462	82	20
22"	5	558.8	120	512.8	63	20	22"	5	558.8	130	512.8	82	20
24"	5	609.6	120	563.6	63	20	24"	5	609.6	130	563.6	82	20
26"	5	660.4	125	614.4	63	20	26"	5	660.4	135	614.4	82	20
28"	5	711.2	125	665.2	63	20	28"	5	711.2	135	665.2	82	20
30"	5	762	130	716	63	20	30"	5	762	135	716	82	20

Units:mm



SIMPLE CAST IRON PULLEY

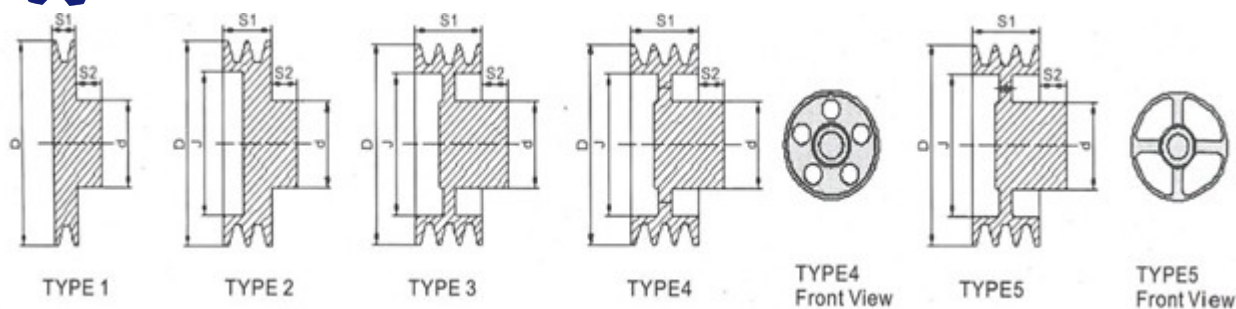


Specification: Outer Diameter	B Type 5 Groove						Specification: Outer Diameter	B Type 6 Groove					
	TYPE	D	d	J	S1	S2		TYPE	D	d	J	S1	S2
2"							2"						
2 ¹ / ₂ "							2 ¹ / ₂ "						
3"	2	76.2	60	36.2	101	20	3"						
3 ¹ / ₂ "	2	88.9	70	48.9	101	20	3 ¹ / ₂ "	2	88.9	70	48.9	120	20
4"	2	101.6	75	61.6	101	20	4"	2	101.6	80	61.6	120	20
4 ¹ / ₂ "	2	114.3	85	74.3	101	20	4 ¹ / ₂ "	2	114.3	90	74.3	120	20
5"	2	127	85	87	101	20	5"	2	127	90	87	120	20
5 ¹ / ₂ "	2	139.7	95	99.7	101	20	5 ¹ / ₂ "	2	139.7	100	99.7	120	20
6"	2	152.4	95	112.4	101	20	6"	2	152.4	100	112.4	120	20
6 ¹ / ₂ "	2	165.1	95	125.1	101	20	6 ¹ / ₂ "	2	165.1	110	125.1	120	20
7"	2	177.8	95	137.8	101	20	7"	2	177.8	110	137.8	120	20
8"	3	203.2	95	163.2	101	20	8"	2	203.2	110	159.2	120	20
9"	4	228.6	105	184.6	101	20	9"	3	228.6	110	184.6	120	20
10"	4	254	105	210	101	20	10"	4	254	110	210	120	20
11"	4	279.4	110	235.4	101	20	11"	4	279.4	120	235.4	120	20
12"	4	304.8	110	260.8	101	20	12"	4	304.8	120	260.8	120	20
13"	5	330.2	110	286.2	101	20	13"	5	330.2	120	286.2	120	20
14"	5	355.6	110	309.6	101	20	14"	5	355.6	120	309.6	120	20
15"	5	381	115	335	101	20	15"	5	381	125	335	120	20
16"	5	406.4	115	360.4	101	20	16"	5	406.4	125	360.4	120	20
18"	5	457.2	120	411.2	101	20	18"	5	457.2	130	411.2	120	20
20"	5	508	120	462	101	20	20"	5	508	130	462	120	20
22"	5	558.8	135	512.8	101	20	22"	5	558.8	135	512.8	120	20
24"	5	609.6	135	563.6	101	20	24"	5	609.6	135	563.6	120	20
26"	5	660.4	140	614.4	101	20	26"	5	660.4	145	614.4	120	20
28"	5	711.2	140	665.2	101	20	28"	5	711.2	145	665.2	120	20
30"	5	762	140	716	101	20	30"	5	762	145	716	120	20

Units:mm



SIMPLE CAST IRON PULLEY

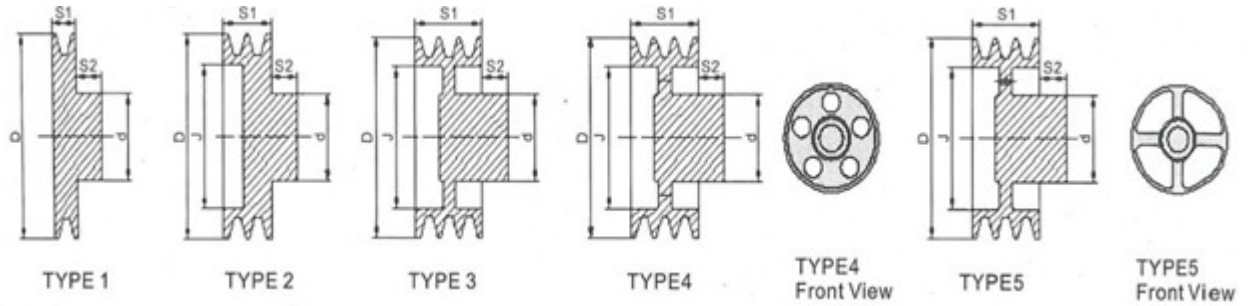


Specification: Outer Diameter	C Type 2 Groove					
	TYPE	D	d	J	S1	S2
2"						
2 ¹ / ₂ "						
3"						
3 ¹ / ₂ "						
4"	2	101.6	75	41.6	59.5	20
4 ¹ / ₂ "	2	114.3	80	54.3	59.5	20
5"	2	127	85	67	59.5	20
5 ¹ / ₂ "	2	139.7	85	79.7	59.5	20
6"	2	152.4	90	92.4	59.5	20
6 ¹ / ₂ "	2	165.1	90	105.1	59.5	20
7"	2	177.8	90	117.8	59.5	20
8"	3	203.2	90	143.2	59.5	20
9"	3	228.6	90	168.6	59.5	20
10"	4	254	95	194	59.5	20
11"	4	279.4	95	219.4	59.5	20
12"	4	304.8	100	244.8	59.5	20
13"	5	330.2	105	270.2	59.5	20
14"	5	355.6	105	295.6	59.5	20
15"	5	381	105	321	59.5	20
16"	5	406.4	105	346.4	59.5	20
18"	5	457.2	105	397.2	59.5	20
20"	5	508	115	448	59.5	20
22"	5	558.8	115	498.8	59.5	20
24"	5	609.6	115	549.6	59.5	20
26"	5	660.4	125	600.4	59.5	20
28"	5	711.2	125	651.2	59.5	20
30"	5	762	125	702	59.5	20

Units:mm



SIMPLE CAST IRON PULLEY

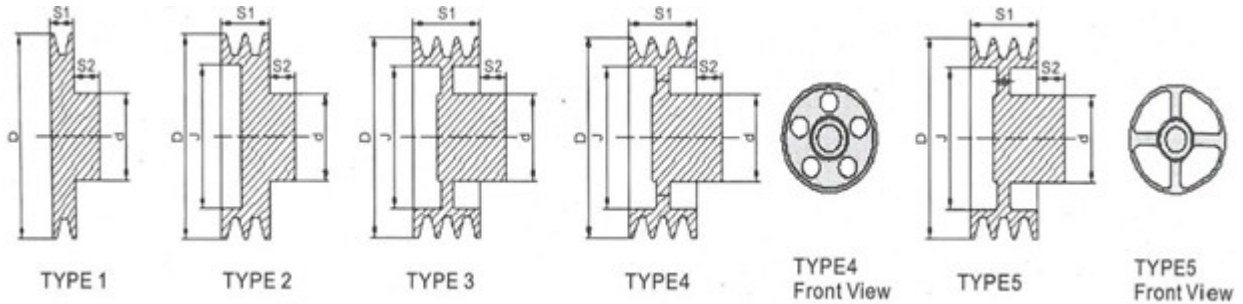


Specification: Outer Diameter	C Type 3 Groove						Specification: Outer Diameter	C Type 4 Groove					
	TYPE	D	d	J	S1	S2		TYPE	D	d	J	S1	S2
2"							2"						
2 1/2"							2 1/2"						
3"	2	76.2	80	16.2	85	20	3"	2	76.2	80	16.2	110.5	20
3 1/2"	2	88.9	80	28.9	85	20	3 1/2"	2	88.9	80	28.9	110.5	20
4"	2	101.6	85	41.6	85	20	4"	2	101.6	85	41.6	110.5	20
4 1/2"	2	114.3	90	54.3	85	20	4 1/2"	2	114.3	95	54.3	110.5	20
5"	2	127	90	67	85	20	5"	2	127	95	67	110.5	20
5 1/2"	2	139.7	95	79.7	85	20	5 1/2"	2	139.7	95	79.7	110.5	20
6"	2	152.4	95	92.4	85	20	6"	2	152.4	95	92.4	110.5	20
6 1/2"	2	165.1	95	105.1	85	20	6 1/2"	2	165.1	95	105.1	110.5	20
7"	2	177.8	95	117.8	85	20	7"	2	177.8	95	117.8	110.5	20
8"	3	203.2	95	143.2	85	20	8"	3	203.2	105	147.2	110.5	20
9"	3	228.6	95	168.6	85	20	9"	3	228.6	110	172.6	110.5	20
10"	4	254	100	194	85	20	10"	3	254	110	194	110.5	20
11"	4	279.4	100	219.4	85	20	11"	4	279.4	110	219.4	110.5	20
12"	4	304.8	105	244.8	85	20	12"	4	304.8	110	244.8	110.5	20
13"	5	330.2	110	270.2	85	20	13"	5	330.2	115	270.2	110.5	20
14"	5	355.6	110	295.6	85	20	14"	5	355.6	115	295.6	110.5	20
15"	5	381	110	321	85	20	15"	5	381	120	321	110.5	20
16"	5	406.4	110	346.4	85	20	16"	5	406.4	120	346.4	110.5	20
18"	5	457.2	110	397.2	85	20	18"	5	457.2	130	397.2	110.5	20
20"	5	508	120	448	85	20	20"	5	508	130	448	110.5	20
22"	5	558.8	120	498.8	85	20	22"	5	558.8	135	498.8	110.5	20
24"	5	609.6	120	549.6	85	20	24"	5	609.6	140	549.6	110.5	20
26"	5	660.4	130	600.4	85	20	26"	5	660.4	140	600.4	110.5	20
28"	5	711.2	130	651.2	85	20	28"	5	711.2	145	651.2	110.5	20
30"	5	762	130	702	85	20	30"	5	762	145	702	110.5	20

Units:mm



SIMPLE CAST IRON PULLEY



Specification: Outer Diameter	CType 5 Groove						Specification: Outer Diameter	CType 6 Groove					
	TYPE	D	d	J	S1	S2		TYPE	D	d	J	S1	S2
2"							2"						
2 ¹ / ₂ "							2 ¹ / ₂ "						
3"							3"						
3 ¹ / ₂ "	2	88.9	85	28.9	136	20	3 ¹ / ₂ "						
4"	2	101.6	85	41.6	136	20	4"						
4 ¹ / ₂ "	2	114.3	90	54.3	136	20	4 ¹ / ₂ "	2	114.3	95	54.3	161.5	20
5"	2	127	100	67	136	20	5"	2	127	100	67	161.5	20
5 ¹ / ₂ "	2	139.7	100	79.7	136	20	5 ¹ / ₂ "	2	139.7	100	79.7	161.5	20
6"	2	152.4	100	92.4	136	20	6"	2	152.4	110	92.4	161.5	20
6 ¹ / ₂ "	2	165.1	100	105.1	136	20	6 ¹ / ₂ "	2	165.1	110	105.1	161.5	20
7"	2	177.8	115	117.8	136	20	7"	2	177.8	120	117.8	161.5	20
8"	2	203.2	115	143.2	136	20	8"	2	203.2	120	143.2	161.5	20
9"	2	228.6	115	168.6	136	20	9"	2	228.6	120	168.6	161.5	20
10"	3	254	115	194	136	20	10"	3	254	120	194	161.5	20
11"	4	279.4	115	219.4	136	20	11"	4	279.4	120	219.4	161.5	20
12"	4	304.8	115	244.8	136	20	12"	4	304.8	120	244.8	161.5	20
13"	5	330.2	120	270.2	136	20	13"	5	330.2	125	270.2	161.5	20
14"	5	355.6	120	295.6	136	20	14"	5	355.6	125	295.6	161.5	20
15"	5	381	125	321	136	20	15"	5	381	130	321	161.5	20
16"	5	406.4	125	346.4	136	20	16"	5	406.4	135	346.4	161.5	20
18"	5	457.2	135	397.2	136	20	18"	5	457.2	135	397.2	161.5	20
20"	5	508	135	448	136	20	20"	5	508	135	448	161.5	20
22"	5	558.8	140	498.8	136	20	22"	5	558.8	145	498.9	161.5	20
24"	5	609.6	145	549.6	136	20	24"	5	609.6	150	549.6	161.5	20
26"	5	660.4	145	600.4	136	20	26"	5	660.4	150	600.4	161.5	20
28"	5	711.2	150	651.2	136	20	28"	5	711.2	160	651.2	161.5	20
30"	5	762	150	702	136	20	30"	5	762	160	702	161.5	20

Units:mm