PLAINTIFF'S EXHIBIT

CRA-61

CRANE

NET PRICE SCHEDULE FF5
NOVEMBER 10, 1958

FORGED STEEL FLANGES

This Net Price Schedule cancels:

Net Prices on Forged Steel Flanges in
Net Price Schedule FF4 dated October 27, 1958

List prices on Forged Steel Flanges,
Pages 294 and 295, Catalog No. 53.

Table on "Boring of Welding Neck Flanges",
Page 298, Catalog No. 53.

CATALOG NUMBER 53

CRANE CO.

836 S. Michigan Avenue Chicago 5, Illinois

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Printed in U. S. A.

Materials

Flanges

Forged Steel Flanges are Crane Carbon Steel, and are furnished faced, drilled, and spot faced.

Flanges in the 300-pound and higher pressure classes, made of Crane No. 4 Carbon-Molybdenum or Crane No. 5 Chrome-Molybdenum Forged Steel, can be furnished especially to order; prices on application.

Extra Charges For Special Features

Flanges

Heat Treating: When so ordered, 150 and 300-Pound Forged Carbon Steel Flanges can be furnished heat treated (normalized or annealed) to conform to ASTM Specification A-105; prices on request.

Galvanizing: Price on application.

For other extra charges on Forged Steel Flanges, refer to pages 12 to 14 of this price schedule.

Forged Steel Flanges

150-Pound Pressure Class

(With 1/16-inch Raised Face)*

Size of Pipe Inches	Outside Diameter of Flange Inches	Straight					Concentric Reducing†	
		No. 568 Welding Neck*	No. 556 Screwed	No. 554 Slip-On Welding	No. 572 Cranelap	No. 556½ Blind	No. 558½ Screwed	No. 554½ Slip-On Welding
½	3½	$ 3.53	$ 2.32	$ 1.93	$ 2.32	$ 3.23		
¾	3⅞	3.53	2.32	1.93	2.32	3.23	$ 5.45	$ 4.68
1	4¼	3.53	2.32	1.93	2.32	3.23	5.45	4.68
1¼	4⅝	3.53	2.60	2.19	2.60	3.23	6.23	5.20
1½	5	3.53	2.85	2.46	2.85	3.23	6.76	5.97
2	6	3.53	3.23	2.71	3.23	3.50	7.28	6.23
2½	7	4.25	3.75	3.23	3.75	4.15	8.32	7.28
3	7½	4.81	4.41	3.75	4.41	4.93	9.62	8.32
3½	8½	6.53	5.97	4.93	5.97	6.76	12.49	10.92
4	9	6.53	5.97	4.93	5.97	6.76	12.49	10.92
5	10	10.22	9.10	7.80	9.10	10.67	18.47	16.65
6	11	10.22	9.10	7.80	9.10	10.67	18.47	16.65
8	13½	18.95	14.15	12.21	14.15	17.63	33.84	29.21
10	16	26.68	19.37	16.71	19.37	24.29	46.00	39.91
12	19	43.55	30.08	28.93	30.08	34.13	57.87	50.05
14	21	68.44	55.52	50.95	68.44	63.11		97.35
16	23½	86.62	69.21	63.50	86.62	73.38		121.71
18	25	115.38		86.70	115.38	104.59	On app.	152.13
20	27½	151.79	On app.	103.82	151.79	125.51		182.57
24	32	199.14		166.21	199.14	189.04		256.75

*Refer to pages 12, 13, and 14 for borings on Welding Neck Flanges and for special facings on all flanges except Cranelap.

†Prices apply to all reductions; the outside diameter governs the price. For prices on Concentric Reducing Welding Neck, Eccentric Reducing Screwed and Eccentric Reducing Slip-On Welding Flanges, refer to page 13.

300-Pound Pressure Class

(With 1/16-inch Raised Face)*

Size of Pipe Inches	Outside Diameter of Flange Inches	Straight					Concentric Reducing†	
		No. 296E Welding Neck*	No. 291E Screwed	No. 294E Slip-On Welding	No. 496E Cranelap	No. 297E Blind	No. 292E Screwed	No. 290E Slip-On Welding
½	3¾	$ 4.69	$ 3.37	$ 2.79	$ 3.37	$ 4.92		
¾	4⅝	4.69	3.37	2.79	3.37	4.92	$ 7.16	$ 6.15
1	4⅞	4.69	3.37	2.79	3.37	4.92	7.16	6.15
1¼	5¼	4.69	3.74	3.17	3.74	4.92	8.20	6.84
1½	6⅛	4.69	4.12	3.56	4.12	4.92	8.89	7.85
2	6½	4.69	4.40	3.93	4.40	5.32	9.58	8.20
2½	7½	5.62	5.44	4.69	5.44	6.31	10.94	9.58
3	8¼	6.38	5.81	5.25	5.81	7.50	12.66	10.94
3½	9	10.33	8.64	7.14	8.64	12.24	16.42	14.37
4	10	10.33	8.64	7.14	8.64	12.24	16.42	14.37
5	11	17.96	15.41	13.53	15.41	21.74	33.20	29.08
6	12½	17.96	15.41	13.53	15.41	21.74	33.20	29.08
8	15	27.85	22.56	21.35	22.56	32.06	54.77	47.16
10	17½	39.00	30.51	29.25	35.10	44.37	74.94	64.28
12	20½	68.73	52.65	50.15	61.85	63.71	93.96	80.65
14	23	123.13		103.38	123.13	119.53		149.42
16	25½	156.60		129.10	156.60	139.26		187.46
18	28	208.60	On app.	175.72	208.60	197.24	On app.	234.74
20	30½	274.36		212.18	274.36	239.10		282.56
24	36	359.83		337.71	359.83	353.21		396.67

*Refer to pages 12, 13, and 14 for borings on Welding Neck Flanges and for special facings on all flanges except Cranelap.

†Prices apply to all reductions; the outside diameter governs the price. For prices on Concentric Reducing Welding Neck, Eccentric Reducing Screwed, and Eccentric Reducing Slip-On Welding Flanges, refer to page 13.

Forged Steel Flanges

400-Pound Pressure Class

(With ¼-inch Male or 3/16-inch Female Face)*

Size of Pipe Inches	Outside Diameter of Flange Inches	Straight					Concentric Reducing†	
		No. 656E Welding Neck*	No. 651E Screwed	No. 694E Slip-On Welding	No. 664E Cranelap	No. 657E Blind	No. 658E Screwed	No. 693E Slip-On Welding
4	10	$24.70	$16.86	$15.39	$16.86	$18.90	$29.31	$26.84
5	11	35.94	26.93	24.55	26.93	30.81	47.18	39.91
6	12½	35.94	26.93	24.55	26.93	30.81	47.18	39.91
8	15	46.54	31.98	29.16	31.98	43.57	60.68	48.98
10	17½	65.57	On	36.85	65.57	60.17	82.85	70.10
12	20½	101.55	app.	57.40	101.55	78.85	119.34	108.42
14	23	154.38		114.59	154.33	139.59		189.18
16	25½	195.88		143.24	195.88	175.00		236.50
18	28	261.20	On app.	191.93	261.20	232.70	On app.	320.56
20	30½	328.39		230.31	328.39	279.25		384.69
24	36	451.19		368.55	451.19	388.14		541.42

*Refer to pages 12, 13, and 14 for borings on Welding Neck Flanges and for special facings on all flanges except Cranelap.

†Prices apply to all reductions; the outside diameter governs the price. For prices on Concentric Reducing Welding Neck, Eccentric Reducing Screwed, and Eccentric Reducing Slip-On Welding Flanges, refer to page 13.

600-Pound Pressure Class

(With ¼-inch Male or 3/16-inch Female Face)*

Size of Pipe Inches	Outside Diameter of Flange Inches	Straight					Concentric Reducing†	
		No. 855E Welding Neck*	No. 856E Screwed	No. 854E Slip-On Welding	No. 862E Cranelap	No. 858E Blind	No. 857E Screwed	No. 853E Slip-On Welding
½	3¾	$10.75	$ 5.12	$ 4.62	$ 5.12	$ 5.98		
¾	4⅝	10.75	5.12	4.62	5.12	5.98	$ 9.00	$ 8.19
1	4⅞	10.75	5.36	4.88	5.36	5.98	9.00	8.19
1¼	5¼	10.75	5.85	5.36	5.85	6.44	10.23	9.42
1½	6⅛	10.75	6.34	5.85	6.34	6.67	11.46	10.23
2	6½	10.75	7.32	6.34	7.32	6.90	11.87	11.06
2½	7½	12.71	8.30	7.32	8.30	8.29	13.92	12.70
3	8¼	15.15	10.25	9.28	10.25	9.67	15.97	14.33
3½	9	23.47	16.13	14.67	16.13	17.98	27.87	25.41
4	10¾	25.91	17.61	16.13	17.61	19.82	30.74	28.28
5	13	41.57	29.34	26.89	29.34	32.28	57.40	52.47
6	14	41.57	29.34	26.89	29.34	32.28	57.40	52.47
8	16½	59.19	43.04	39.62	43.04	47.50	83.24	76.26
10	20	90.51	On	61.64	90.51	73.80	129.99	118.91
12	22	123.29	app.	84.64	123.29	89.03	155.82	142.70
14	23¾	171.64		144.47	171.64	151.32		213.01
16	27	232.33		192.45	232.33	201.22		283.69
18	29¼	284.36	On app.	240.43	284.36	251.69	On app.	354.86
20	32	343.89		288.98	343.89	302.13		425.55
24	37	506.90		433.49	506.90	453.47		638.08

*Refer to pages 12, 13, and 14 for borings on Welding Neck Flanges and for special facings on all flanges except Cranelap.

†Prices apply to all reductions; the outside diameter governs the price. For prices on Concentric Reducing Welding Neck, Eccentric Reducing Screwed, and Eccentric Reducing Slip-On Welding Flanges, refer to page 13.

Forged Steel Flanges

900-Pound Pressure Class

(With ¼-inch Male or 3/16-inch Female Face)*

Size of Pipe Inches	Outside Diameter of Flange Inches	Straight					Concentric Reducing†	
		No. 1265E Welding Neck*	No. 1266E Screwed	No. 1294E Slip-On Welding	No. 1262E Cranelap	No. 1267E Blind	No. 1263E Screwed	No. 1295E Slip-On Welding
3	9½	$18.91	$17.28	$15.67	$17.28	$18.91	$28.63	$25.93
4	11½	31.88	29.18	26.47	29.18	31.88	46.47	41.61
5	13¾	61.83	56.20	50.80	56.20	61.83	97.83	88.10
6	15	61.83	56.20	50.80	56.20	61.83	97.83	88.10
8	18½	103.71		97.40	103.71	104.27	150.12	134.08
10	21½	146.68	On app.	128.35	146.68	147.82	219.46	197.12
12	24	196.54		174.20	196.54	197.12	292.25	263.01
14	25¼	381.66		277.92	381.66	277.35		371.90
16	27¾	472.76		335.23	472.76	338.09		450.99
18	31	630.36	On app.	472.76	630.36	475.07	On app.	633.81
20	33¾	790.83		581.66	790.83	582.22		777.06
24	41	1432.68		1088.83	1432.68	1096.85		1462.47

*Refer to pages 12, 13, and 14 for borings on Welding Neck Flanges and for special facings on all flanges except Cranelap.

†Prices apply to all reductions; the outside diameter governs the price. For prices on Concentric Reducing Welding Neck, Eccentric Reducing Screwed, and Eccentric Reducing Slip-On Welding Flanges, refer to page 13.

1500-Pound Pressure Class

(With ¼-inch Male or 3/16-inch Female Face)*

Size of Pipe Inches	Outside Diameter of Flange Inches	Straight					Concentric Reducing†	
		No. 1565E Welding Neck*	No. 1556E Screwed	No. 1594E Slip-On Welding	No. 1562E Cranelap	No. 1557E Blind	No. 1558E Screwed	No. 1595E Slip-On Welding
½	4¾	$14.58	$ 8.37	$ 7.55	$ 8.37	$ 9.17		
¾	5⅛	14.58	8.37	7.55	8.37	9.17	$12.96	$11.87
1	5⅞	14.58	8.37	7.55	8.37	9.17	12.96	11.87
1¼	6¼	14.58	8.37	7.55	8.37	9.17	12.96	11.87
1½	7	14.58	9.72	8.63	9.72	10.25	15.39	14.03
2	8½	14.58	13.50	11.87	13.50	14.58	20.52	18.91
2½	9⅝	18.91	17.28	15.67	17.28	18.91	28.63	25.93
3	10½	24.85	22.70	20.52	20.52	24.85	35.66	32.42
4	12¼	38.91	35.66	32.42	32.42	38.91	56.75	51.88
5	14¾	87.03	85.94	78.37	78.37	87.03	124.33	114.05
6	15½	87.03	85.94	78.37	78.37	87.03	124.33	114.05
8	19	152.42		126.63	126.63	152.42	220.05	202.84
10	23	295.11	On	210.30	295.11	295.11	354.72	325.48
12	26½	442.40	app.	316.88	442.40	442.40	502.56	460.73
14	29½	On app.		On app.	On app.	On app.	On app.	On app.

*Refer to pages 12, 13, and 14 for borings on Welding Neck Flanges and for special facings on all flanges except Cranelap.

†Prices apply to all reductions; the outside diameter governs the price. For prices on Concentric Reducing Welding Neck, Eccentric Reducing Screwed, and Eccentric Reducing Slip-On Welding Flanges, refer to page 13.

Forged Steel Flanges

300-Pound Pressure Class

(With Female, Tongue, Groove, or Ring Type Joint Face)

Size of Pipe Inches	Outside Diameter of Flange Inches	Straight					Concentric Reducing†	
		No. 296E Welding Neck*	No. 291E Screwed	No. 294E Slip-On Welding	No. 496E Cranelap	No. 297E Blind	No. 292E Screwed	No. 290E Slip-On Welding
½	3¾	$14.95	$ 9.32	$ 8.82		$10.18		
¾	4⅝	14.95	9.32	8.82		10.18	$13.20	$12.39
1	4⅞	14.95	9.56	9.08		10.18	13.20	12.39
1¼	5¼	14.95	10.05	9.56		10.64	14.43	13.62
1½	6⅛	14.95	10.54	10.05		10.64	15.66	14.43
2	6½	14.95	11.52	10.54		10.64	16.07	15.26
2½	7½	16.91	12.50	11.52		12.49	18.12	16.90
3	8¼	19.35	14.45	13.48		13.87	20.17	18.53
3½	9	29.17	21.83	20.37		23.68	33.57	31.11
4	10	29.17	21.83	20.37		23.68	33.57	31.11
5	11	37.77	30.08	28.02		34.77	47.57	41.14
6	12½	37.77	30.08	28.02		34.77	47.57	41.14
8	15	49.29	37.00	34.42		46.68	61.88	53.73
10	17½	68.26	46.21	43.13		63.60	83.65	72.50
12	20½	102.61	68.26	63.13		81.98	117.86	108.43
14	23	168.41		120.76		156.62		187.32
16	25½	198.04		150.65		180.49		234.39
18	28	275.11	On app.	197.22		255.85	On app.	312.09
20	30½	336.24		233.93		305.06		372.30
24	36	437.37		362.80		384.23		517.30

*Refer to pages 12, 13, and 14 for borings on Welding Neck Flanges.

†Prices apply to all reductions; the outside diameter governs the price. For prices on Concentric Reducing Welding Neck, Eccentric Reducing Screwed, and Eccentric Reducing Slip-On Welding Flanges, refer to page 13.

Extra Charges on Forged Steel Flanges
are Shown on the Following Pages.

Forged Steel Flanges

Extra Charges

Special Facings*

Nominal Size of Flange Inches		½ to 24
Large Female** Large Tongue** Small Tongue** Large Groove** Small Groove** Ring Joint**	150-Pound	Regular 300-POUND flange price PLUS net extras below.
	300-Pound	See page 10 for net prices on flanges complete.
Large Tongue** Small Tongue** Large Groove** Small Groove** Ring Joint**	400-Pound 600-Pound 900-Pound 1500-Pound	ADD net extras below to net prices of regular flanges.
Male Face†	150-Pound	Same price as 300-POUND flanges with 1/16-inch raised face.
	300-Pound	DEDUCT net prices below from net prices of FEMALE FACE flanges on page 10.
Plain (Flat) Face††	150-Pound 300-Pound	No extra charge.
Plain (Flat) Face 1/16-inch Raised Face†	400-Pound 600-Pound 900-Pound 1500-Pound	ADD 15% to prices of regular flanges with ¼-inch male face.

Net Extras for Special Facings

Nominal Size of Flange Inches	½ to 3	3½	4	5	6	8	10	12	14	16	18	20	24
Extra Charge	$4.20	$5.70	$5.70	$6.00	$6.00	$8.30	$10.35	$12.40	$17.90	$22.35	$25.00	$27.60	$32.20

*Applies to straight sizes; however, on reducing flanges the extra charges are the same as on straight size flanges having equivalent outside diameters.

**Furnished with smooth finish.

†Furnished with concentric grooves (serrated), approximately 32 per inch. A smooth finish will be furnished, if specified, without additional charge.

††Furnished with a modified serrated form facing, approximately 32 serrations per inch.

Special Reducing Flanges — All Pressure Classes

Nominal Size Inches	¾ to 12	14 and 16	18	20 and 24
Concentric Welding Neck	3 times straight size	2½ times straight size	2¼ times straight size	2 times straight size
Eccentric Screwed Eccentric Slip-On	Double the price of regular reducing flanges, all sizes.			

Bores on Welding Neck Flanges

Regular Practice

Nominal Size Inches	½ to 2½	3 and 3½	4 to 12	14 to 24
150-Pound	Standard Pipe (Heaviest weight on 8, 10, and 12-inch)			O.D. Pipe, ⅜-inch thick
300-Pound				
400-Pound			Extra Strong Pipe	O.D. Pipe, ½-inch thick
600-Pound	Extra Strong Pipe			Orders must specify
900-Pound		Orders must specify		
1500-Pound	Orders must specify			

Furnished Without Extra Charge

Nominal Size Inches	12 and smaller	14 and larger
150-Pound	Schedule 40, Extra Strong, or Schedule 80 Pipe	Any bore not smaller than 1-inch less than the nominal pipe size
300-Pound		
400-Pound	Standard, Schedules 40 or 80	Any bore not smaller than 1½-inch less than the nominal pipe size
600-Pound		
900-Pound	Any bore not smaller than minimum	Any bore not smaller than minimum
1500-Pound		

Furnished at 25% Extra Charge

All 150, 300, 400, and 600-Pound Welding Neck Flanges bored other than indicated in the foregoing but not less than the minimum bores listed in the table on page 14.

Bores Smaller Than Minimum

Flanges 12-inch and smaller—Use price of next higher pressure class that will provide the bore required and add 20% for turning and facing.
Flanges 14-inch and larger—Price on application.

Forged Steel Flanges

Minimum Bores on Welding Neck Flanges and Inside Diameters of Pipe in Inches

Size of Pipe Inches	Smallest diameter to which Welding Neck Flanges can be bored						Inside Diameter of Pipe (Included for convenient reference)											
	150 Lb.	300 Lb.	400 Lb.	600 Lb.	900 Lb.	1500 Lb.	"S"	"X"	"XX"	A.S.A. Schedule Numbers								
										10	20	30	40	60	80	100	120	140	160
½	*	*	...	*	...	*	.622	.546	.252				.622		.546				.466
¾	*	*	...	*	...	*	.824	.742	.434				.824		.742				.614
1	*	*	...	*	...	*	1.049	.957	.599				1.049		.957				.815
1¼	*	*	...	*	...	*	1.380	1.278	.896				1.380		1.278				1.160
1½	*	*	...	*	...	*	1.610	1.500	1.100				1.610		1.500				1.338
2	1.50	1.81	...	1.53	...	*	2.067	1.939	1.503				2.067		1.939				1.689
2½	2.21	2.21	...	2.21	...	*	2.469	2.323	1.771				2.469		2.323				2.125
3	2.80	2.80	...	2.21	2.21	2.15	3.068	2.900	2.300				3.068		2.900				2.626
3½	3.30	3.34	...	3.34	...	...	3.548	3.364					3.548		3.364				
4	3.78	3.75	3.75	3.37	3.12	3.09	4.026	3.826	3.152				4.026		3.826		3.626		3.438
5	4.75	4.75	4.75	4.31	4.00	3.93	5.047	4.813	4.063				5.047		4.813		4.563		4.313
6	5.71	5.65	5.65	4.78	4.78	4.78	6.065	5.761	4.897				6.065		5.761		5.501		5.189
8	7.59	7.40	7.40	6.81	6.81	6.81	7.981	7.625	6.875		8.125	8.071	7.981	7.813	7.625	7.439	7.189	7.001	6.813
10	9.43	9.43	9.43	9.00	8.34	8.15	10.020	9.750			10.250	10.136	10.020	9.750	9.564	9.314	9.064	8.750	8.500
12	11.34	11.25	11.25	10.62	10.12	10.12	12.000	11.750			12.250	12.090	11.938	11.626	11.376	11.064	10.750	10.500	10.126
14	12.78	12.71	12.71	12.50	12.50	...	13.250	13.000		13.500	13.376	13.250	13.126	12.814	12.500	12.126	11.814	11.500	11.188
16	14.71	14.69	14.50	14.19	14.50	...	15.250	15.000		15.500	15.376	15.250	15.000	14.688	14.314	13.938	13.564	13.126	12.814
18	17.00	16.88	16.50	16.50	16.50	...	17.250	17.000		17.500	17.376	17.126	16.876	16.500	16.125	15.688	15.250	14.876	14.438
20	19.00	18.81	18.50	18.37	18.50	...	19.250	19.000		19.500	19.250	19.000	18.814	18.376	17.938	17.438	17.000	16.500	16.064
24	23.00	22.88	22.50	22.50	22.50	...	23.250	23.000		23.500	23.250	22.876	22.626	22.064	21.564	20.938	20.376	19.876	19.314

"S" indicates Standard Pipe (heaviest weight on 8, 10, and 12-inch sizes and ⅜-inch thick O.D. Pipe on 14-inch and larger).

"X" indicates Extra Strong Pipe (½-inch thick O.D. Pipe on sizes 14-inch and larger).

"XX" indicates Double Extra Strong Pipe.

*These flanges are forged solid.

CRANE

VALVES
FITTINGS
PIPE

FABRICATED
PIPING

FF
3746