

TORQUE FORCE

OEM-DEDICATED COMPONENT SUPPLIER

CABLE DRUM AND TORSION SPRING MANUAL



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INTRODUCTION

Introducing our new Torque Force Reference Guide

At Canimex, we work closely with our customers to continually develop and deliver leading-edge solutions to facilitate optimized performance. This useful Guide is a practical and convenient reference containing all the necessary technical support information needed for finely tuned garage door counterbalancing. Such a comprehensive listing of data, schematics and specifications is just a small example of our ongoing commitment to service and excellence.

Customized for installers of sectional garage doors, this manual contains specific guidelines on the most efficient, accurate and trouble-free methods of calculation for today's garage door installations, including the revolutionary new "plug & play" Canimex Counterbalance Calculation. From choosing the best drum for your specific needs to selecting the best plug and spring wire diameter to counterbalance the system, the Canimex Torque Force Reference Guide... guides you through it.

Canimex: The Driving Force in Innovation

Founded in 1969, Canimex began as a distributor of mechanical power transmission components and industrial supplies for the manufacture of snowmobiles and the agricultural machinery industry. Today, Canimex's Torque Force division is recognized as a world-class dedicated OEM supplier, committed to delivering a broad range of specialized, high-value hardware components to access system manufacturers.

As a flexible, solution-driven provider, we benefit from an internal and worldwide manufacturing network, unmatched production capabilities and a quality assurance program that is second to none. Leveraging our considerable engineering and design expertise, we have the capabilities to rapidly custom-design and deliver highly innovative, cost-competitive products to meet both the immediate and future needs of our OEM customers.

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COMMON DEFINITIONS

The following terms are those most commonly used in the industry.

Torque:	Twisting force on an axis measured in lb-in. (Nm).
IPPT:	Inch Pound Per Turn: torque delivered by a spring for each turn wound.
MIP:	Maximum Inch Pound: maximum torque that can be delivered by a spring for a determined number of cycles.
Moment Arm:	Distance between Cable Center and Shaft Center.
HMA:	High Moment Arm: maximum moment arm on a drum for a given cable.
LMA:	Low Moment Arm: minimum moment arm on a drum for a given cable. (in this manual HMA and LMA are always given for the maximum cable diameter for a drum)
Multiplier:	Ratio between HMA and number of turns on the spring.
Active Coils:	The number of working coils in a spring.
Dead Coils:	The number of coils rendered inactive by the spring plugs.
Divider:	Constant to calculate the length of the spring.
Pitch Factor:	Factor to calculate the multiplier of an installation with a pitch.
Zero Balance Point:	Maximum percentage of the weight off-balanced during door opening operation

COMMON INFORMATIONS ON DRUMS AND PLUGS

- Canimex controls the physical specifications of its screws. Only use the set screws provided by Canimex.
- All Torque Force drums must be used with a minimum of 1/2 turn of Inactive Wrapping.
- Unless otherwise specified, the torque applied on set screws must never exceed 300 lb-in. (34Nm).
- Upon request, Torque Force drums can be supplied with an exclusive adjustable cable anchoring feature.
- Canimex strictly forbids the alteration of its products. If you have a special application or special needs, please contact Canimex Engineering for guidance.
- Canimex plugs and drums meet DASMA 102 standard.
- Canimex plugs and drums meet DASMA 103 standard.
- Canimex plugs and drums meet EN12604.
- Canimex plugs and drums are made of Die-Cast Aluminum.
- The data in this manual was exact at the edition of the document. For updated physical specifications, please refer to the latest FCUO drawings.
- All products in this guide are controlled Canimex designs. Specifications may be updated without notice.

TORQUE FORCE DRUM CLASSIFICATIONS

Drums are classified as per function of their use. Table below shows all Torque Force drums in their particular category.

STANDARD-LIFT													
DRUM		TOTAL WRAPPING		HMA		LMA		MAX. LOAD PER DRUM		MAX. CABLE DIA.		MAX. DOOR HEIGHT	
Imperial	Metric	in.	mm	in.	mm	in.	mm	lb	kg	in.	mm	in.	mm
D300-112	M76-2860	118	2986	1.563	39,60	1.563	39,60	350	160	1/8	3	113	2861
D300-144	M76-3670	150	3794	1.563	39,60	1.563	39,60	350	160	1/8	3	145	3670
D400-96	M102-2400	106	2677	2.275	57,68	2.063	52,30	265	120	1/8	3	98	2490
D400-123	M102-3125	132	3348	2.293	58,26	2.078	52,80	375	170	5/32	4	125	3165
D400-144	M102-3670	155	3944	2.293	58,26	2.078	52,80	375	170	5/32	4	148	3761
D525-216	M134-5500	240	6115	2.936	74,69	2.719	69,18	750	340	3/16	5	231	5881
D800-384	M203-9750	402	10209	4.313	109,38	4.125	104,60	1100	500	1/4	6	389	9866

HIGH-LIFT											
DRUM		CABLE CAPACITY OF FLAT		LMA		MAX. LOAD PER DRUM		WIRE DIA.		MAX. HIGH LIFT	
Imperial	Metric	in.	mm	in.	mm	lb	kg	in.	mm	in.	mm
D400-54	M102-1375	121	3069	2.078	52,80	275	125	5/32	4	54	1376
D525-54	M134-1375	179	4564	2.719	69,18	500	227	3/16	5	54	1384
D575-120	M146-3050	145	3678	2.969	75,53	500	227	3/16	5	118	2996
D6375-164	M162-4165	229	5803	3.313	83,96	800	363	1/4	6	164	4156
D800-120	M203-3050	266	6737	4.125	104,60	1100	500	1/4	6	119	3028

Maximum door height = Amount of high lift + Capacity of Flat portion

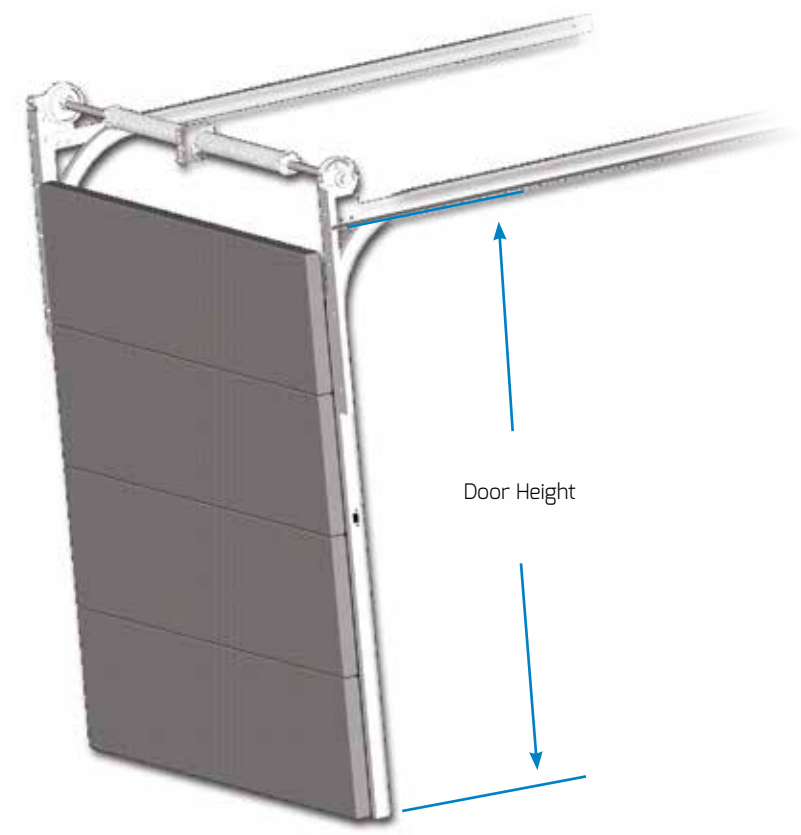
Door height - high lift must not exceed capacity of flat portion

VERTICAL-LIFT										
DRUM		MAX. DOOR HEIGHT		LMA		MAX. LOAD PER DRUM		WIRE DIA.		NUMBER OF TURNS
Imperial	Metric	in.	mm	in.	mm	lb	kg	in.	mm	Turns
D850-132	M216-3350	129	3297	1.344	34,25	425	193	3/16	5	8
D1100-216	M280-5500	218	5558	1.344	34,25	660	300	3/16	5	11
D1350-336	M340-8500	331	8401	1.375	34,75	1100	500	1/4	6	14

Note: Always use drums with at least 1/2 turn of inactive wrapping.

STANDARD-LIFT DRUMS

STANDARD-LIFT DOOR



FORMULAS

$$\text{Turns} = \frac{\text{HMA}}{\text{Multiplier}}$$

FOR STANDARD TRACK

$$\text{Open weight} = \frac{\text{Radius} + 2}{\text{Height}} \times \text{Weight}$$

FOR LOW HEADROOM

$$\text{Open Weight} = \frac{9}{\text{Height}} \times \text{Weight}$$

FOR PITCHED TRACK

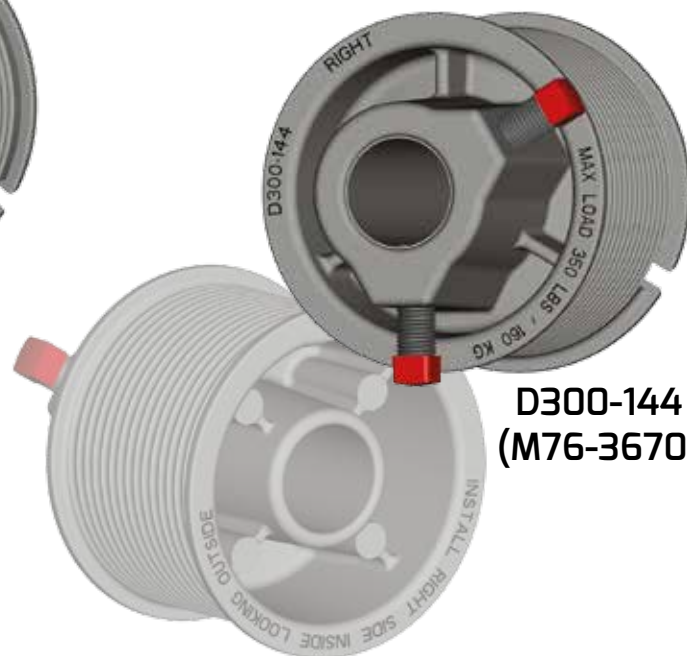
$$\text{Open Weight} = \left[\frac{17" + (\text{height}-17") \sin (\text{track angle})}{\text{Height}} \right] \times \text{Weight}$$

STANDARD-LIFT DRUMS

**D300-112
(M76-2860)**



**D300-144
(M76-3670)**



**D400-96
(M102-2400)**



**D400-96 W/KW
(M102-2400)**



The above illustrations are for reference only. Canimex can change the design of drums without notice.

**D400-144
(M102-3360)**



**D525-216
(M134-5500)**



**D400-123
(M102-3125)**



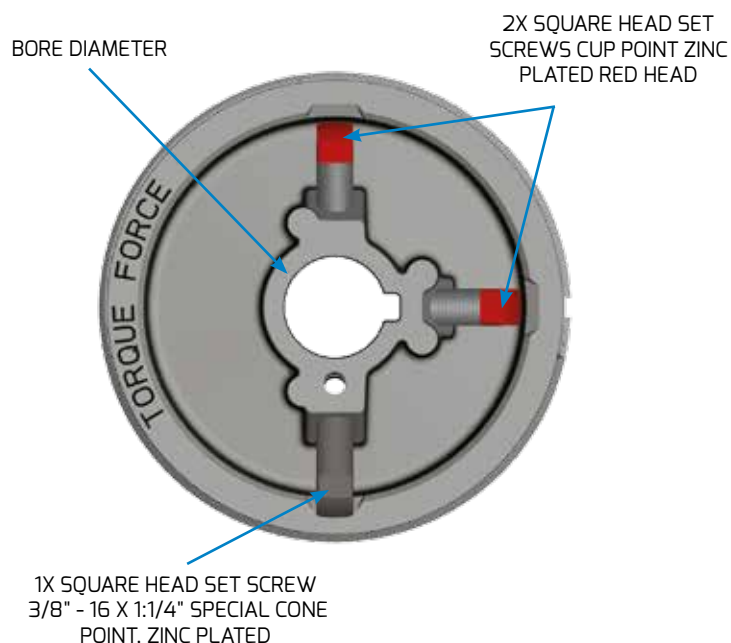
**D800-384
(M203-9750)**



The above illustrations are for reference only. Canimex can change the design of drums without notice.

PHYSICAL SPECIFICATIONS ON STANDARD-LIFT DRUMS (IMPERIAL)

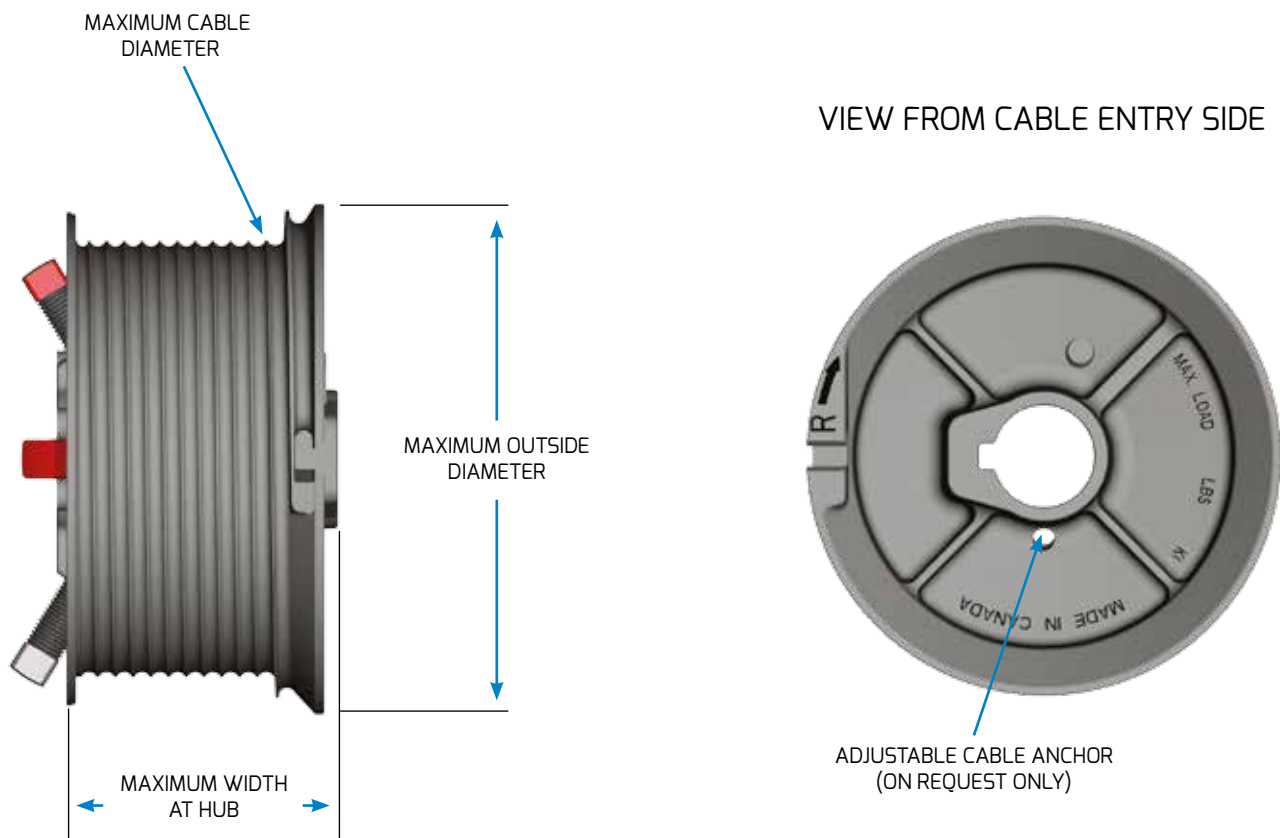
VIEW FROM SET SCREW SIDE



DRUM NAME	INACTIVE WRAPPING	DIMENSIONS						
STANDARD-LIFT	NUMBER OF INACTIVE WRAPPING TURNS	BORE DIAMETER	BORE DIAMETER	MAXIMUM OUTSIDE DIAMETER	MAXIMUM WIDTH AT HUB	MAXIMUM CABLE DIAMETER	HIGH MOMENT ARM	FLAT MOMENT ARM
	Turns	1 in.	1 1/4 in.	in.	in.	in.	in.	in.
D300-112	1/2	X	N/A	3.31	2.83	1/8	1.563	1.563
D300-114	1/2	X	N/A	3.37	3.36	1/8	1.563	1.563
D400-96	1/2	X	N/A	4.79	1.64	1/8	2.275	2.063
D400-96 W/KW	1/2	X	N/A	4.79	1.64	1/8	2.275	2.063
D400-123	1/2	X	N/A	4.99	2.34	5/32	2.293	2.078
D400-144	1/2	X	N/A	4.99	2.63	5/32	2.293	2.078
D525-216	1/2	X	X	6.00	3.62	3/16	2.936	2.719
D800-384	1/2	X	X	9.00	5.26	1/4	4.313	4.125

PLEASE NOTE:

- Consult the Common Informations on Drums and Plugs section for the general notice.
- All data relates to Maximum Cable Diameter.
- All these drums must be used with a minimum of 1/2 turn of Inactive Wrapping for safety reasons.
- Cable end anchoring to the drum must meet Dasma 102.



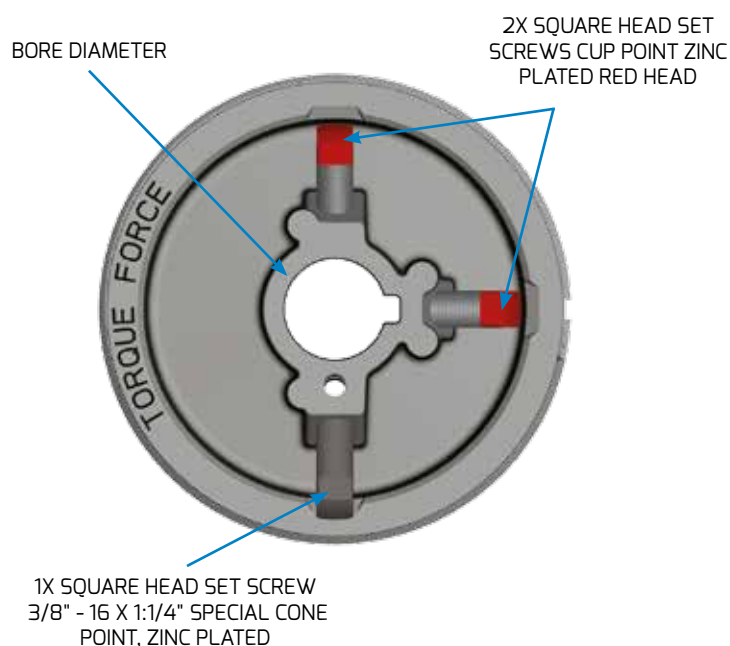
WRAPPING				MISCELLANEOUS			CABLE LENGHT RULE ⁽¹⁾	
MAXIMUM DOOR HEIGHT	CIRCUM. OF FLAT PORTION	CABLE CAPACITY OF FLAT	TOTAL CABLE CAPACITY	MAXIMUM WEIGHT PER DRUM	APPROX. SHIPPING WEIGHT (WITH TWO SET SCREWS)	SQUARE HEAD SET SCREW IF PRE-INST.	DISTANCE TO ADD FOR BUTTONS ON CABLE	DISTANCE TO ADD FOR ADJUSTABLE CABLE ANCHOR
in.	in.	in.	in.	lb	lb	in.	in.	in.
113	9.82	112.9	117.8	350	0.82	3/8-16x1	5	N/A
145	9.82	144.8	149.7	350	1.05	3/8-16x1	5	N/A
98	12.96	77.7	105.5	265	0.51	3/8-16x1	8	N/A
98	12.96	77.7	105.5	265	0.56	3/8-16x1	8	14
125	13.06	113.6	131.8	375	0.83	3/8-16x1:1/4	8	14
148	13.06	137.1	155.2	375	0.98	3/8-16x1:1/4	8	14
231	17.08	217.8	240.4	750	1.75	3/8-16x1:1/4	10	18
389	25.92	376.0	402.6	1100	8.35	3/8-16x1:1/2	14	29

(1) Distance from cable attachment point on the door to shaft center line + "value on table".

- Recommended seating torque on set screws: 240 lb-in.
- Maximum torque on set screws: 300 lb-in except for third set screw anchoring where the maximum torque is 180 lb-in.
- IPPT: Multiplier X Door Weight.
- Drums must be assembled on a torsion shaft that meets Dasma 102. If drums are used with a solid shaft, a 3:3/4" bent key or 3" straight key must be assembled on the set screw side of the drum. Please refer to canimex drawing 20772-P1, 20994-P1 and 24657-P2 for shaft specifications and to technical document DT-020 for key insertion.
- Data for reference only. Please consult the FCUO drawing for the latest specifications.

PHYSICAL SPECIFICATIONS ON STANDARD-LIFT DRUMS (METRIC)

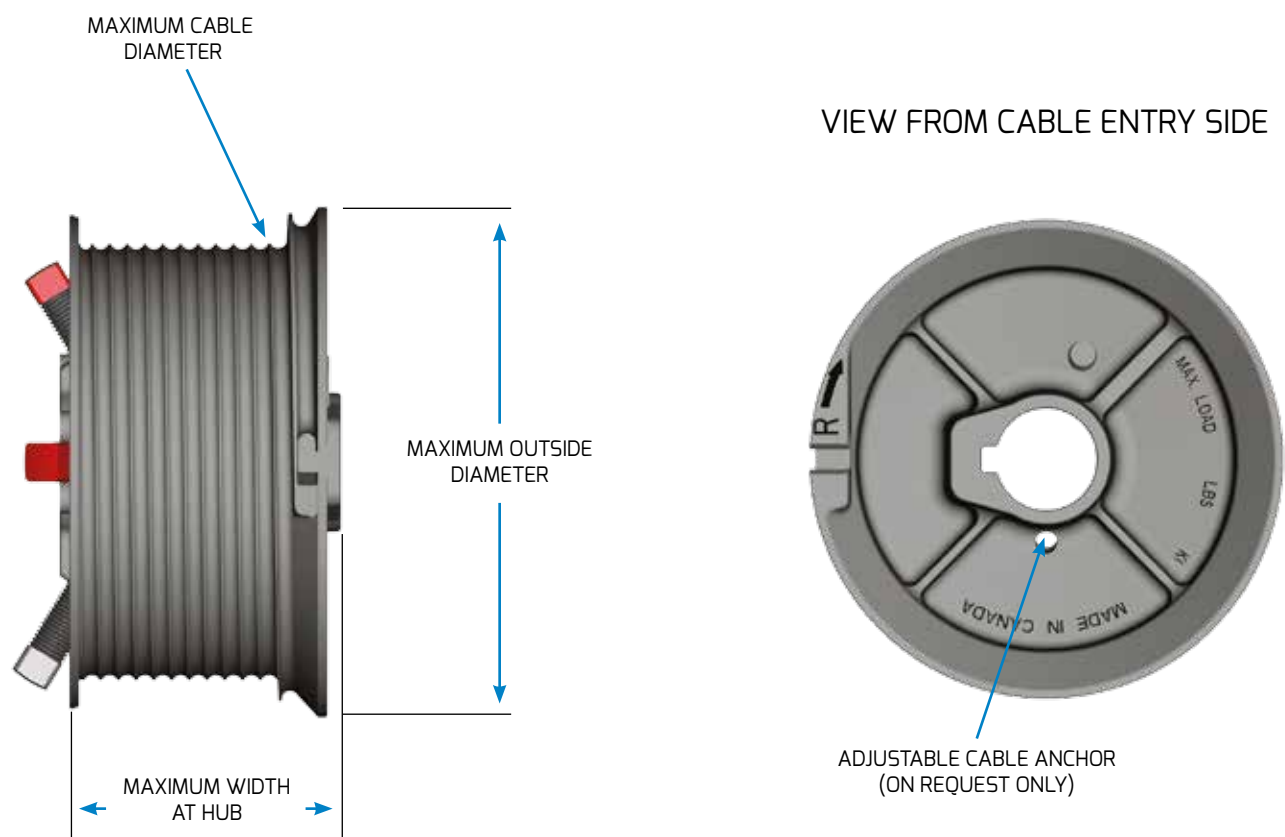
VIEW FROM SET SCREW SIDE



DRUM NAME	INACTIVE WRAPPING	DIMENSIONS						
STANDARD-LIFT	NUMBER OF INACTIVE WRAPPING TURNS	BORE DIAMETER	BORE DIAMETER	MAXIMUM OUTSIDE DIAMETER	MAXIMUM WIDTH AT HUB	MAXIMUM CABLE DIAMETER	HIGH MOMENT ARM	FLAT MOMENT ARM
	Turns	25.4 mm	31.75 mm	mm	mm	mm	mm	mm
M76-2860	1/2	X	N/A	84.1	71.8	3	39.60	39.60
M76-3670	1/2	X	N/A	85.7	85.3	3	39.60	39.60
M102-2400	1/2	X	N/A	121.6	41.6	3	57.68	52.30
M102-2400 W/KW	1/2	X	N/A	121.6	41.6	3	57.68	52.30
M102-3125	1/2	X	N/A	126.7	59.4	4	58.56	52.80
M102-3670	1/2	X	N/A	126.7	66.8	4	58.26	52.80
M134-5500	1/2	X	X	152.4	91.8	5	74.69	69.18
M203-9750	1/2	X	X	228.6	133.6	6	109.38	104.60

PLEASE NOTE:

- Consult the Common Informations on Drums and Plugs section for the general notice.
- All data relates to Maximum Cable Diameter.
- All these drums must be used with a minimum of 1/2 turn of Inactive Wrapping for safety reasons.
- Cable end anchoring to the drum must meet Dasma 102.



WRAPPING				MISCELLANEOUS			CABLE LENGHT RULE ⁽¹⁾	
MAXIMUM DOOR HEIGHT	CIRCUM. OF FLAT PORTION	CABLE CAPACITY OF FLAT	TOTAL CABLE CAPACITY	MAXIMUM WEIGHT PER DRUM	APPROX. SHIPPING WEIGHT (WITH TWO SET SCREWS)	SQUARE HEAD SET SCREW IF PRE-INST.	DISTANCE TO ADD FOR BUTTONS ON CABLE	DISTANCE TO ADD FOR ADJUSTABLE CABLE ANCHOR
mm	mm	mm	mm	kg	kg	in.	mm	mm
2861	248.8	2866	2986	160	0.37	3/8-16x1	127	N/A
3670	248.8	3670	3794	160	0.48	3/8-16x1	127	N/A
2490	328.6	1972	2676	120	0.23	3/8-16x1	203	N/A
2490	328.6	1971	2676	120	0.255	3/8-16x1	203	355
3165	331.7	2887	3348	170	0.38	3/8-16x1:1/4	203	355
3761	331.7	3483	3944	170	0.44	3/8-16x1:1/4	203	355
5881	434.6	5542	6115	340	0.79	3/8-16x1:1/4	254	460
9866	657.2	9529	10209	500	3.79	3/8-16x1:1/2	356	736

(1) Distance from cable attachment point on the door to shaft center line + «value on table».

- Recommended seating torque on set screws: 27 Nm.
- Maximum torque on set screws: 34 Nm except for third set screw anchoring where the maximum torque is 20 Nm.
- IPPT: Multiplier X Door Weight.
- Drums must be assembled on a torsion shaft that meets Dasma 102. If drums are used with a solid shaft, a 3:3/4" bent key or 3"straight key must be assembled on the set screw side of the drum. Please refer to canimex drawing 19478-p1, 19479-p1, 24191-p1, 24192-p1 and 19477-p1 for shaft specifications and to technical document DT-020 for key insertion. DT-020 "Specifications for drum installation".
- Data for reference only. Please consult the FCUO drawing for the latest specifications.

D300-112

MULTIPLIER FOR STANDARD-LIFT DRUM

TRACK RADIUS										
DOOR HEIGHT		10 INCH		12 INCH		15 INCH			LOW HEADROOM	
(FT.)	(IN.)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
6'0"	72	0.1777	8.8	0.1717	9.1	0.1629	9.6	0.1629	0.1865	8.4
6'3"	75	0.1719	9.1	0.1665	9.4	0.1583	9.9	0.1583	0.1801	8.7
6'6"	78	0.1665	9.4	0.1615	9.7	0.1539	10.2	0.1539	0.1741	9.0
6'9"	81	0.1614	9.7	0.1567	10.0	0.1497	10.4	0.1497	0.1684	9.3
7'0"	84	0.1566	10.0	0.1523	10.3	0.1458	10.7	0.1458	0.1632	9.6
7'3"	87	0.1521	10.3	0.1480	10.6	0.1420	11.0	0.1420	0.1582	9.9
7'6"	90	0.1478	10.6	0.1440	10.9	0.1383	11.3	0.1383	0.1535	10.2
7'9"	93	0.1438	10.9	0.1402	11.1	0.1349	11.6	0.1349	0.1491	10.5
8'0"	96	0.1399	11.2	0.1366	11.4	0.1316	11.9	0.1316	0.1449	10.8
8'3"	99	0.1363	11.5	0.1331	11.7	0.1284	12.2	0.1284	0.1410	11.1
8'6"	102	0.1328	11.8	0.1298	12.0	0.1254	12.5	0.1254	0.1372	11.4
8'9"	105	0.1295	12.1	0.1267	12.3	0.1225	12.8	0.1225	0.1337	11.7
9'0"	108	0.1263	12.4	0.1237	12.6	0.1198	13.1	0.1198	0.1303	12.0
9'3"	111	0.1233	12.7	0.1208	12.9	0.1171	13.3	0.1171	0.1271	12.3
9'5"	113	0.1214	12.9	0.1190	13.1	0.1154	13.5	0.1154	0.1250	12.5

D300-144

MULTIPLIER FOR STANDARD-LIFT DRUM

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
6'0"	72	0.1717	9.1	0.1629	9.6	0.1629	0.1865	8.4
6'3"	75	0.1665	9.4	0.1583	9.9	0.1583	0.1801	8.7
6'6"	78	0.1615	9.7	0.1539	10.2	0.1539	0.1741	9.0
6'9"	81	0.1567	10.0	0.1497	10.4	0.1497	0.1684	9.3
7'0"	84	0.1523	10.3	0.1458	10.7	0.1458	0.1632	9.6
7'3"	87	0.1480	10.6	0.1420	11.0	0.1420	0.1582	9.9
7'6"	90	0.1440	10.9	0.1383	11.3	0.1383	0.1535	10.2
7'9"	93	0.1402	11.1	0.1349	11.6	0.1349	0.1491	10.5
8'0"	96	0.1366	11.4	0.1316	11.9	0.1316	0.1449	10.8
8'3"	99	0.1331	11.7	0.1284	12.2	0.1284	0.1410	11.1
8'6"	102	0.1298	12.0	0.1254	12.5	0.1254	0.1372	11.4
8'9"	105	0.1267	12.3	0.1225	12.8	0.1225	0.1337	11.7
9'0"	108	0.1237	12.6	0.1198	13.1	0.1198	0.1303	12.0
9'3"	111	0.1208	12.9	0.1171	13.3	0.1171	0.1271	12.3
9'6"	114	0.1181	13.2	0.1146	13.6	0.1146	0.1240	12.6
9'9"	117	0.1155	13.5	0.1121	13.9	0.1121	0.1211	12.9
10'0"	120	0.1130	13.8	0.1098	14.2	0.1098	0.1183	13.2
10'3"	123	0.1106	14.1	0.1075	14.5	0.1075	0.1157	13.5
10'6"	126	0.1083	14.4	0.1054	14.8	0.1054	0.1131	13.8
10'9"	129	0.1061	14.7	0.1033	15.1	0.1033	0.1107	14.1
11'0"	132	0.1040	15.0	0.1013	15.4	0.1013	0.1084	14.4
11'3"	135	0.1019	15.3	0.0994	15.7	0.0994	0.1061	14.7
11'6"	138	0.0999	15.6	0.0975	16.0	0.0975	0.1040	15.0
11'9"	141	0.0981	15.9	0.0957	16.3	0.0957	0.1019	15.3
12'0"	144	0.0962	16.2	0.0940	16.6	0.0940	0.0999	15.6
12'1"	145	0.0956	16.3	0.0934	16.7	0.0934	0.0993	15.7

D400-96 AND D400-96 W/KW MULTIPLIER FOR STANDARD-LIFT DRUM

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
6'0"	72	0.3374	6.7	0.3219	7.1	0.2837	0.3631	6.3
6'3"	75	0.3266	7.0	0.3124	7.3	0.2757	0.3504	6.5
6'6"	78	0.3165	7.2	0.3033	7.5	0.2681	0.3385	6.7
6'9"	81	0.3070	7.4	0.2948	7.7	0.2608	0.3274	6.9
7'0"	84	0.2980	7.6	0.2866	7.9	0.2539	0.3170	7.2
7'3"	87	0.2895	7.9	0.2789	8.2	0.2473	0.3072	7.4
7'6"	90	0.2814	8.1	0.2715	8.4	0.2410	0.2979	7.6
7'9"	93	0.2738	8.3	0.2645	8.6	0.2350	0.2893	7.9
8'0"	96	0.2666	8.5	0.2579	8.8	0.2292	0.2811	8.1
8'2"	98	0.2619	8.7	0.2536	9.0	0.2255	0.2758	8.2

D400-123 MULTIPLIER FOR STANDARD-LIFT DRUM

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
6'0"	72	0.3425	6.7	0.3268	7.0	0.2879	0.3687	6.2
6'3"	75	0.3317	6.9	0.3172	7.2	0.2798	0.3558	6.4
6'6"	78	0.3214	7.1	0.3080	7.4	0.2720	0.3437	6.7
6'9"	81	0.3117	7.4	0.2993	7.7	0.2647	0.3324	6.9
7'0"	84	0.3026	7.6	0.2910	7.9	0.2576	0.3218	7.1
7'3"	87	0.2939	7.8	0.2832	8.1	0.2509	0.3119	7.4
7'6"	90	0.2858	8.0	0.2757	8.3	0.2445	0.3025	7.6
7'9"	93	0.2780	8.2	0.2686	8.5	0.2384	0.2937	7.8
8'0"	96	0.2706	8.5	0.2618	8.8	0.2326	0.2854	8.0
8'3"	99	0.2637	8.7	0.2553	9.0	0.2270	0.2775	8.3
8'6"	102	0.2570	8.9	0.2492	9.2	0.2217	0.2700	8.5
8'9"	105	0.2507	9.1	0.2433	9.4	0.2166	0.2630	8.7
9'0"	108	0.2446	9.4	0.2377	9.6	0.2117	0.2563	8.9
9'3"	111	0.2389	9.6	0.2323	9.9	0.2070	0.2499	9.2
9'6"	114	0.2334	9.8	0.2271	10.1	0.2025	0.2438	9.4
9'9"	117	0.2281	10.1	0.2222	10.3	0.1982	0.2380	9.6
10'0"	120	0.2231	10.3	0.2175	10.5	0.1941	0.2325	9.9
10'3"	123	0.2183	10.5	0.2129	10.8	0.1901	0.2273	10.1
10'5"	125	0.2152	10.7	0.2100	10.9	0.1875	0.2239	10.2

D400-144

MULTIPLIER FOR STANDARD-LIFT DRUM

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
6'0"	72	0.3425	6.7	0.3268	7.0	0.2879	0.3687	6.2
6'3"	75	0.3317	6.9	0.3172	7.2	0.2798	0.3558	6.4
6'6"	78	0.3214	7.1	0.3080	7.4	0.2720	0.3437	6.7
6'9"	81	0.3117	7.4	0.2993	7.7	0.2647	0.3324	6.9
7'0"	84	0.3026	7.6	0.2910	7.9	0.2576	0.3218	7.1
7'3"	87	0.2939	7.8	0.2832	8.1	0.2509	0.3119	7.4
7'6"	90	0.2858	8.0	0.2757	8.3	0.2445	0.3025	7.6
7'9"	93	0.2780	8.2	0.2686	8.5	0.2384	0.2937	7.8
8'0"	96	0.2706	8.5	0.2618	8.8	0.2326	0.2854	8.0
8'3"	99	0.2637	8.7	0.2553	9.0	0.2270	0.2775	8.3
8'6"	102	0.2570	8.9	0.2492	9.2	0.2217	0.2700	8.5
8'9"	105	0.2507	9.1	0.2433	9.4	0.2166	0.2630	8.7
9'0"	108	0.2446	9.4	0.2377	9.6	0.2117	0.2563	8.9
9'3"	111	0.2389	9.6	0.2323	9.9	0.2070	0.2499	9.2
9'6"	114	0.2334	9.8	0.2271	10.1	0.2025	0.2438	9.4
9'9"	117	0.2281	10.1	0.2222	10.3	0.1982	0.2380	9.6
10'0"	120	0.2231	10.3	0.2175	10.5	0.1941	0.2325	9.9
10'3"	123	0.2183	10.5	0.2129	10.8	0.1901	0.2273	10.1
10'6"	126	0.2137	10.7	0.2086	11.0	0.1863	0.2222	10.3
10'9"	129	0.2093	11.0	0.2044	11.2	0.1826	0.2174	10.5
11'0"	132	0.2050	11.2	0.2003	11.4	0.1791	0.2128	10.8
11'3"	135	0.2009	11.4	0.1965	11.7	0.1757	0.2084	11.0
11'6"	138	0.1970	11.6	0.1927	11.9	0.1724	0.2041	11.2
11'9"	141	0.1932	11.9	0.1891	12.1	0.1692	0.2000	11.5
12'0"	144	0.1896	12.1	0.1857	12.4	0.1662	0.1961	11.7
12'3"	147	0.1861	12.3	0.1823	12.6	0.1632	0.1924	11.9
12'4"	148	0.1849	12.4	0.1812	12.7	0.1623	0.1911	12.0

D525-216

MULTIPLIER FOR STANDARD-LIFT DRUM

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
6'0"	72	0.5712	5.1	0.5443	5.4	0.4928	0.6160	4.8
6'3"	75	0.5532	5.3	0.5284	5.6	0.4790	0.5945	4.9
6'6"	78	0.5362	5.5	0.5133	5.7	0.4657	0.5743	5.1
6'9"	81	0.5201	5.6	0.4989	5.9	0.4531	0.5555	5.3
7'0"	84	0.5050	5.8	0.4852	6.1	0.4411	0.5379	5.5
7'3"	87	0.4906	6.0	0.4722	6.2	0.4296	0.5213	5.6
7'6"	90	0.4770	6.2	0.4598	6.4	0.4186	0.5057	5.8
7'9"	93	0.4641	6.3	0.4480	6.6	0.4082	0.4910	6.0
8'0"	96	0.4519	6.5	0.4368	6.7	0.3982	0.4771	6.2
8'3"	99	0.4403	6.7	0.4261	6.9	0.3886	0.4640	6.3
8'6"	102	0.4292	6.8	0.4158	7.1	0.3795	0.4516	6.5
8'9"	105	0.4187	7.0	0.4061	7.2	0.3708	0.4398	6.7
9'0"	108	0.4087	7.2	0.3967	7.4	0.3624	0.4286	6.9
9'3"	111	0.3991	7.4	0.3878	7.6	0.3544	0.4179	7.0
9'6"	114	0.3899	7.5	0.3792	7.7	0.3467	0.4078	7.2
9'9"	117	0.3812	7.7	0.3710	7.9	0.3393	0.3982	7.4
10'0"	120	0.3728	7.9	0.3631	8.1	0.3323	0.3890	7.5
10'3"	123	0.3648	8.0	0.3556	8.3	0.3255	0.3802	7.7
10'6"	126	0.3571	8.2	0.3483	8.4	0.3189	0.3718	7.9
10'9"	129	0.3497	8.4	0.3414	8.6	0.3126	0.3637	8.1
11'0"	132	0.3427	8.6	0.3347	8.8	0.3066	0.3560	8.2
11'3"	135	0.3359	8.7	0.3282	8.9	0.3008	0.3486	8.4
11'6"	138	0.3293	8.9	0.3220	9.1	0.2951	0.3415	8.6
11'9"	141	0.3230	9.1	0.3160	9.3	0.2897	0.3347	8.8
12'0"	144	0.3170	9.3	0.3102	9.5	0.2845	0.3282	8.9
12'3"	147	0.3111	9.4	0.3047	9.6	0.2795	0.3219	9.1
12'6"	150	0.3055	9.6	0.2993	9.8	0.2746	0.3158	9.3
12'9"	153	0.3001	9.8	0.2941	10.0	0.2699	0.3100	9.5
13'0"	156	0.2948	10.0	0.2891	10.2	0.2653	0.3044	9.6
13'3"	159	0.2897	10.1	0.2842	10.3	0.2609	0.2989	9.8

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
13'6"	162	0.2848	10.3	0.2795	10.5	0.2566	0.2937	10.0
13'9"	165	0.2801	10.5	0.2750	10.7	0.2525	0.2886	10.2
14'0"	168	0.2755	10.7	0.2706	10.9	0.2485	0.2838	10.3
14'3"	171	0.2711	10.8	0.2663	11.0	0.2446	0.2790	10.5
14'6"	174	0.2668	11.0	0.2622	11.2	0.2409	0.2745	10.7
14'9"	177	0.2626	11.2	0.2582	11.4	0.2372	0.2700	10.9
15'0"	180	0.2586	11.4	0.2543	11.5	0.2337	0.2658	11.0
15'3"	183	0.2547	11.5	0.2505	11.7	0.2303	0.2616	11.2
15'6"	186	0.2509	11.7	0.2468	11.9	0.2269	0.2576	11.4
15'9"	189	0.2472	11.9	0.2433	12.1	0.2237	0.2537	11.6
16'0"	192	0.2436	12.1	0.2398	12.2	0.2205	0.2499	11.7
16'3"	195	0.2401	12.2	0.2365	12.4	0.2174	0.2462	11.9
16'6"	198	0.2367	12.4	0.2332	12.6	0.2145	0.2427	12.1
16'9"	201	0.2334	12.6	0.2300	12.8	0.2116	0.2392	12.3
17'0"	204	0.2302	12.8	0.2269	12.9	0.2087	0.2358	12.4
17'3"	207	0.2271	12.9	0.2239	13.1	0.2060	0.2326	12.6
17'6"	210	0.2241	13.1	0.2209	13.3	0.2033	0.2294	12.8
17'9"	213	0.2212	13.3	0.2181	13.5	0.2007	0.2263	13.0
18'0"	216	0.2183	13.5	0.2153	13.6	0.1981	0.2233	13.2
18'3"	219	0.2155	13.6	0.2126	13.8	0.1956	0.2203	13.3
18'6"	222	0.2127	13.8	0.2099	14.0	0.1932	0.2175	13.5
18'9"	225	0.2101	14.0	0.2073	14.2	0.1909	0.2147	13.7
19'0"	228	0.2075	14.2	0.2048	14.3	0.1885	0.2120	13.9
19'3"	231	0.2049	14.3	0.2023	14.5	0.1863	0.2093	14.0

D800-384

MULTIPLIER FOR STANDARD-LIFT DRUM

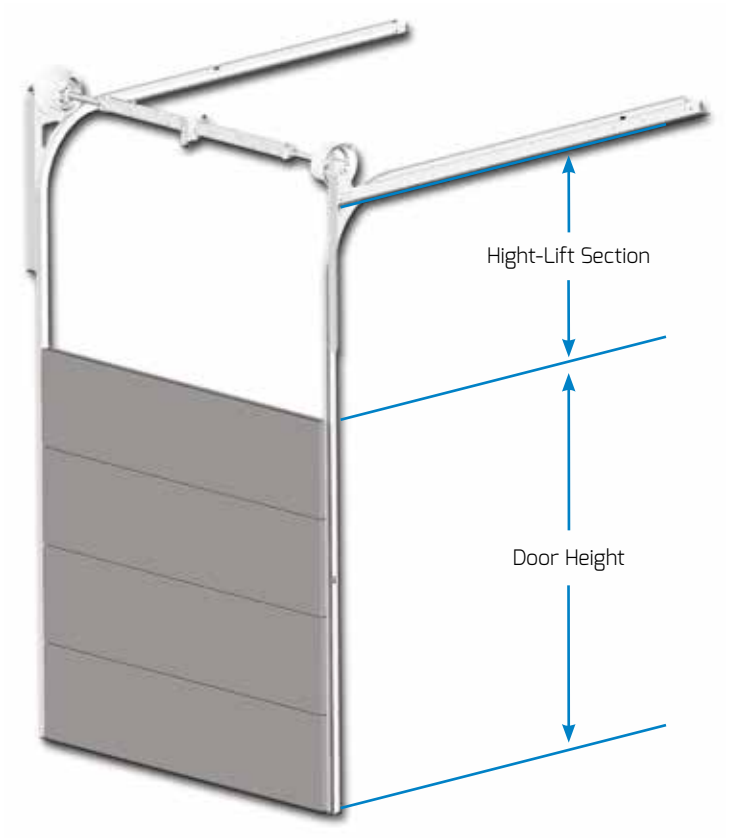
TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
6'0"	72	1.2637	3.4	1.2018	3.6	1.1343	1.3668	3.2
6'3"	75	1.2242	3.5	1.1672	3.7	1.1024	1.3192	3.3
6'6"	78	1.1870	3.6	1.1342	3.8	1.0719	1.2748	3.4
6'9"	81	1.1518	3.7	1.1029	3.9	1.0429	1.2332	3.5
7'0"	84	1.1185	3.9	1.0730	4.0	1.0152	1.1943	3.6
7'3"	87	1.0870	4.0	1.0446	4.1	0.9888	1.1576	3.7
7'6"	90	1.0571	4.1	1.0175	4.2	0.9635	1.1231	3.8
7'9"	93	1.0288	4.2	0.9917	4.3	0.9395	1.0906	4.0
8'0"	96	1.0019	4.3	0.9671	4.5	0.9165	1.0599	4.1
8'3"	99	0.9763	4.4	0.9436	4.6	0.8945	1.0308	4.2
8'6"	102	0.9519	4.5	0.9211	4.7	0.8735	1.0033	4.3
8'9"	105	0.9287	4.6	0.8996	4.8	0.8534	0.9772	4.4
9'0"	108	0.9066	4.8	0.8791	4.9	0.8341	0.9524	4.5
9'3"	111	0.8855	4.9	0.8594	5.0	0.8157	0.9289	4.6
9'6"	114	0.8653	5.0	0.8406	5.1	0.7980	0.9064	4.8
9'9"	117	0.8460	5.1	0.8225	5.2	0.7810	0.8850	4.9
10'0"	120	0.8275	5.2	0.8052	5.4	0.7647	0.8646	5.0
10'3"	123	0.8098	5.3	0.7886	5.5	0.7491	0.8451	5.1
10'6"	126	0.7928	5.4	0.7726	5.6	0.7340	0.8265	5.2
10'9"	129	0.7765	5.6	0.7572	5.7	0.7196	0.8086	5.3
11'0"	132	0.7609	5.7	0.7424	5.8	0.7056	0.7915	5.4
11'3"	135	0.7458	5.8	0.7282	5.9	0.6922	0.7751	5.6
11'6"	138	0.7313	5.9	0.7145	6.0	0.6793	0.7594	5.7
11'9"	141	0.7174	6.0	0.7013	6.1	0.6668	0.7443	5.8
12'0"	144	0.7040	6.1	0.6885	6.3	0.6548	0.7298	5.9
12'3"	147	0.6911	6.2	0.6762	6.4	0.6432	0.7158	6.0
12'6"	150	0.6786	6.4	0.6644	6.5	0.6320	0.7024	6.1
12'9"	153	0.6666	6.5	0.6529	6.6	0.6211	0.6894	6.3
13'0"	156	0.6550	6.6	0.6418	6.7	0.6107	0.6769	6.4
13'3"	159	0.6438	6.7	0.6311	6.8	0.6005	0.6649	6.5
13'6"	162	0.6329	6.8	0.6207	6.9	0.5907	0.6533	6.6
13'9"	165	0.6224	6.9	0.6106	7.1	0.5812	0.6421	6.7
14'0"	168	0.6123	7.0	0.6009	7.2	0.5720	0.6312	6.8
14'3"	171	0.6024	7.2	0.5915	7.3	0.5631	0.6207	6.9
14'6"	174	0.5929	7.3	0.5823	7.4	0.5544	0.6106	7.1
14'9"	177	0.5837	7.4	0.5735	7.5	0.5460	0.6008	7.2

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
15'0"	180	0.5748	7.5	0.5649	7.6	0.5379	0.5913	7.3
15'3"	183	0.5661	7.6	0.5565	7.7	0.5299	0.5820	7.4
15'6"	186	0.5577	7.7	0.5484	7.9	0.5223	0.5731	7.5
15'9"	189	0.5495	7.8	0.5405	8.0	0.5148	0.5644	7.6
16'0"	192	0.5415	8.0	0.5328	8.1	0.5075	0.5560	7.8
16'3"	195	0.5338	8.1	0.5254	8.2	0.5005	0.5479	7.9
16'6"	198	0.5263	8.2	0.5181	8.3	0.4936	0.5400	8.0
16'9"	201	0.5190	8.3	0.5111	8.4	0.4869	0.5323	8.1
17'0"	204	0.5119	8.4	0.5042	8.6	0.4804	0.5248	8.2
17'3"	207	0.5050	8.5	0.4975	8.7	0.4741	0.5175	8.3
17'6"	210	0.4983	8.7	0.4910	8.8	0.4679	0.5104	8.4
17'9"	213	0.4918	8.8	0.4847	8.9	0.4619	0.5035	8.6
18'0"	216	0.4854	8.9	0.4785	9.0	0.4560	0.4968	8.7
18'3"	219	0.4792	9.0	0.4725	9.1	0.4503	0.4903	8.8
18'6"	222	0.4731	9.1	0.4666	9.2	0.4447	0.4840	8.9
18'9"	225	0.4672	9.2	0.4609	9.4	0.4393	0.4778	9.0
19'0"	228	0.4614	9.3	0.4553	9.5	0.4340	0.4717	9.1
19'3"	231	0.4558	9.5	0.4498	9.6	0.4288	0.4658	9.3
19'6"	234	0.4503	9.6	0.4445	9.7	0.4237	0.4601	9.4
19'9"	237	0.4450	9.7	0.4393	9.8	0.4187	0.4545	9.5
20'0"	240	0.4397	9.8	0.4342	9.9	0.4139	0.4490	9.6
20'3"	243	0.4346	9.9	0.4292	10.0	0.4092	0.4437	9.7
20'6"	246	0.4296	10.0	0.4243	10.2	0.4046	0.4385	9.8
20'9"	249	0.4247	10.2	0.4196	10.3	0.4001	0.4334	10.0
21'0"	252	0.4200	10.3	0.4149	10.4	0.3956	0.4284	10.1
21'3"	255	0.4153	10.4	0.4104	10.5	0.3913	0.4235	10.2
21'6"	258	0.4107	10.5	0.4059	10.6	0.3871	0.4188	10.3
21'9"	261	0.4063	10.6	0.4016	10.7	0.3829	0.4141	10.4
22'0"	264	0.4019	10.7	0.3973	10.9	0.3789	0.4096	10.5
22'3"	267	0.3976	10.8	0.3931	11.0	0.3749	0.4051	10.6
22'6"	270	0.3934	11.0	0.3890	11.1	0.3710	0.4008	10.8
22'9"	273	0.3893	11.1	0.3850	11.2	0.3672	0.3965	10.9
23'0"	276	0.3853	11.2	0.3811	11.3	0.3635	0.3923	11.0
23'3"	279	0.3814	11.3	0.3773	11.4	0.3598	0.3883	11.1
23'6"	282	0.3775	11.4	0.3735	11.5	0.3563	0.3843	11.2
23'9"	285	0.3738	11.5	0.3698	11.7	0.3528	0.3803	11.3
24'0"	288	0.3701	11.7	0.3662	11.8	0.3493	0.3765	11.5

D800-384 (CONTINUED) MULTIPLIER FOR STANDARD-LIFT DRUM

TRACK RADIUS								
DOOR HEIGHT		12 INCH		15 INCH			LOW HEADROOM	
(FT)	(IN)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR	MULTI (IN./TURNS)	TURNS ON SPRING
24'3"	291	0.3664	11.8	0.3626	11.9	0.3459	0.3727	11.6
24'6"	294	0.3629	11.9	0.3591	12.0	0.3426	0.3690	11.7
24'9"	297	0.3594	12.0	0.3557	12.1	0.3394	0.3654	11.8
25'0"	300	0.3559	12.1	0.3524	12.2	0.3362	0.3619	11.9
25'3"	303	0.3526	12.2	0.3491	12.4	0.3330	0.3584	12.0
25'6"	306	0.3493	12.3	0.3459	12.5	0.3300	0.3550	12.1
25'9"	309	0.3460	12.5	0.3427	12.6	0.3270	0.3516	12.3
26'0"	312	0.3429	12.6	0.3396	12.7	0.3240	0.3484	12.4
26'3"	315	0.3397	12.7	0.3365	12.8	0.3211	0.3451	12.5
26'6"	318	0.3367	12.8	0.3335	12.9	0.3182	0.3420	12.6
26'9"	321	0.3337	12.9	0.3306	13.0	0.3154	0.3389	12.7
27'0"	324	0.3307	13.0	0.3277	13.2	0.3127	0.3358	12.8
27'3"	327	0.3278	13.2	0.3248	13.3	0.3100	0.3328	13.0
27'6"	330	0.3250	13.3	0.3220	13.4	0.3073	0.3299	13.1
27'9"	333	0.3222	13.4	0.3193	13.5	0.3047	0.3270	13.2
28'0"	336	0.3194	13.5	0.3166	13.6	0.3021	0.3241	13.3
28'3"	339	0.3167	13.6	0.3139	13.7	0.2996	0.3213	13.4
28'6"	342	0.3140	13.7	0.3113	13.9	0.2971	0.3186	13.5
28'9"	345	0.3114	13.8	0.3087	14.0	0.2946	0.3159	13.7
29'0"	348	0.3088	14.0	0.3062	14.1	0.2922	0.3132	13.8
29'3"	351	0.3063	14.1	0.3037	14.2	0.2898	0.3106	13.9
29'6"	354	0.3038	14.2	0.3012	14.3	0.2875	0.3081	14.0
29'9"	357	0.3013	14.3	0.2988	14.4	0.2852	0.3055	14.1
30'0"	360	0.2989	14.4	0.2965	14.5	0.2830	0.3031	14.2
30'3"	363	0.2966	14.5	0.2941	14.7	0.2807	0.3006	14.3
30'6"	366	0.2942	14.7	0.2918	14.8	0.2785	0.2982	14.5
30'9"	369	0.2919	14.8	0.2896	14.9	0.2764	0.2958	14.6
31'0"	372	0.2896	14.9	0.2873	15.0	0.2743	0.2935	14.7
31'3"	375	0.2874	15.0	0.2851	15.1	0.2722	0.2912	14.8
31'6"	378	0.2852	15.1	0.2830	15.2	0.2701	0.2890	14.9
31'9"	381	0.2831	15.2	0.2808	15.4	0.2681	0.2867	15.0
32'0"	384	0.2809	15.4	0.2787	15.5	0.2661	0.2845	15.2
32'3"	387	0.2788	15.5	0.2767	15.6	0.2641	0.2824	15.3
32'5"	389	0.2774	15.5	0.2753	15.7	0.2628	0.2810	15.3

HIGH-LIFT DOOR



FORMULAS

FOR TRACK RADIUS = 15"

Turns = $\frac{\text{HMA}}{\text{Mulltiplier}}$

Open weight = $\frac{\text{Hight-Lift} + 9}{\text{Height}} \times \text{Weight}$

IPPT = Multiplier X Weight

Note :

- Maximum door height = Amount of high lift + Capacity of flat portion.
- Door height - high-lift must not exceed capacity of the flat portion.

HIGH-LIFT DRUMS

**D400-54
(M102-1375)**



**D525-54
(M134-1375)**



**D575-120
(M146-3050)**



The above illustrations are for reference only. Canimex can change the design of drums without notice.



**D800-120
(M203-3050)**

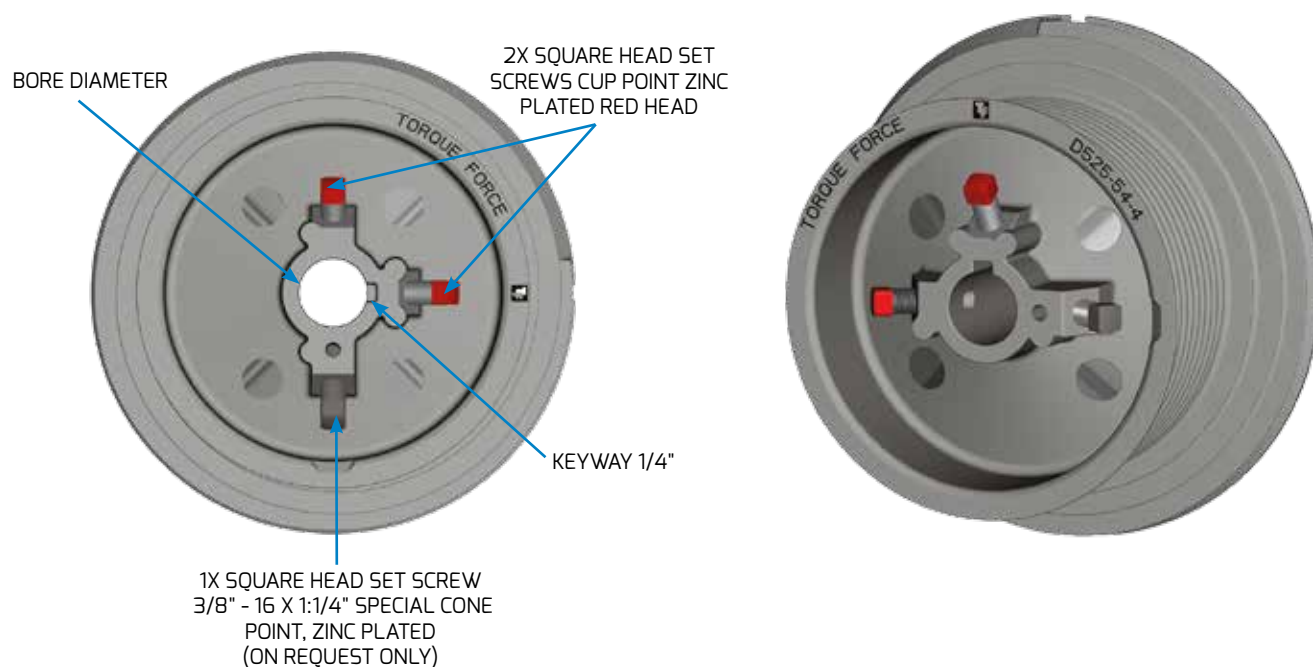


**D6375-164
(M162-4165)**

The above illustrations are for reference only. Canimex can change the design of drums without notice.

PHYSICAL SPECIFICATIONS ON HIGH-LIFT DRUMS (IMPERIAL)

VIEW FROM SET SCREW SIDE

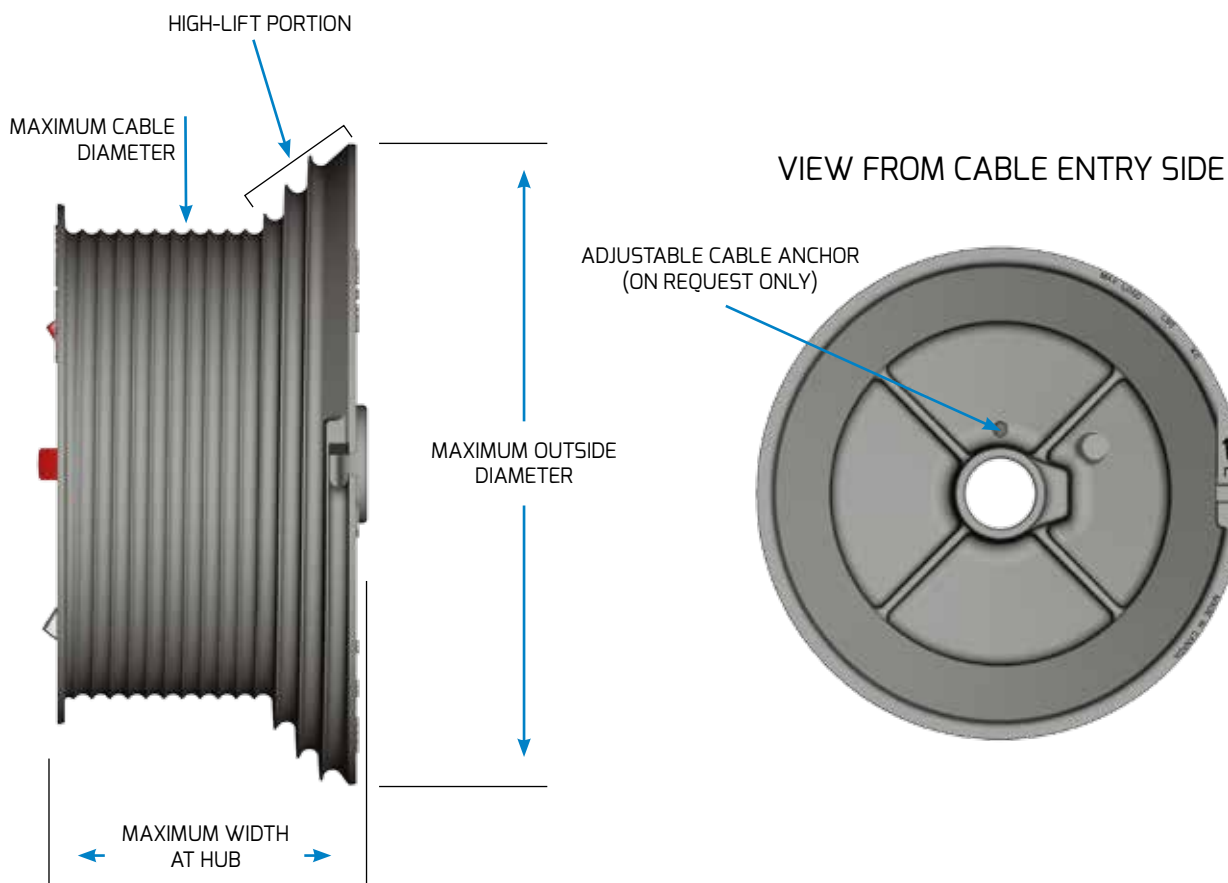


DRUM NAME	INACTIVE WRAPPING	DIMENSIONS						
HIGH-LIFT	NUMBER OF INACTIVE WRAPPING TURNS	BORE DIAMETER	BORE DIAMETER	MAXIMUM OUTSIDE DIAMETER	MAXIMUM WIDTH AT HUB	MAXIMUM CABLE DIAMETER	HIGH MOMENT ARM	FLAT MOMENT ARM
	Turns	1 in.	1:1/4 in.	in.	in.	in.	in.	in.
D400-54	1/2	X	N/A	5.98	3.03	5/32	See Multiplier Chart	2.078
D525-54	1/2	X	X	7.50	3.66	3/16		2.719
D575-120	1/2	X	X	9.38	3.71	3/16		2.969
D6375-164	1/2	X	X	11.00	6.09	1/4		3.313
D800-120	1/2	X	X	11.19	5.22	1/4		4.125

(1) To determine maximum door height capacity for a specific amount of high-lift, add the amount of high-lift to the capacity of the flat portion. Door height minus high-lift must not exceed capacity of flat portion.

PLEASE NOTE:

- Consult the Common Informations on Drums and Plugs section for the general notice.
- All data relates to Maximum Cable Diameter.
- All these drums must be used with a minimum of 1/2 turn of Inactive Wrapping for safety reasons.
- Cable end anchoring to the drum must meet Dasma 102.



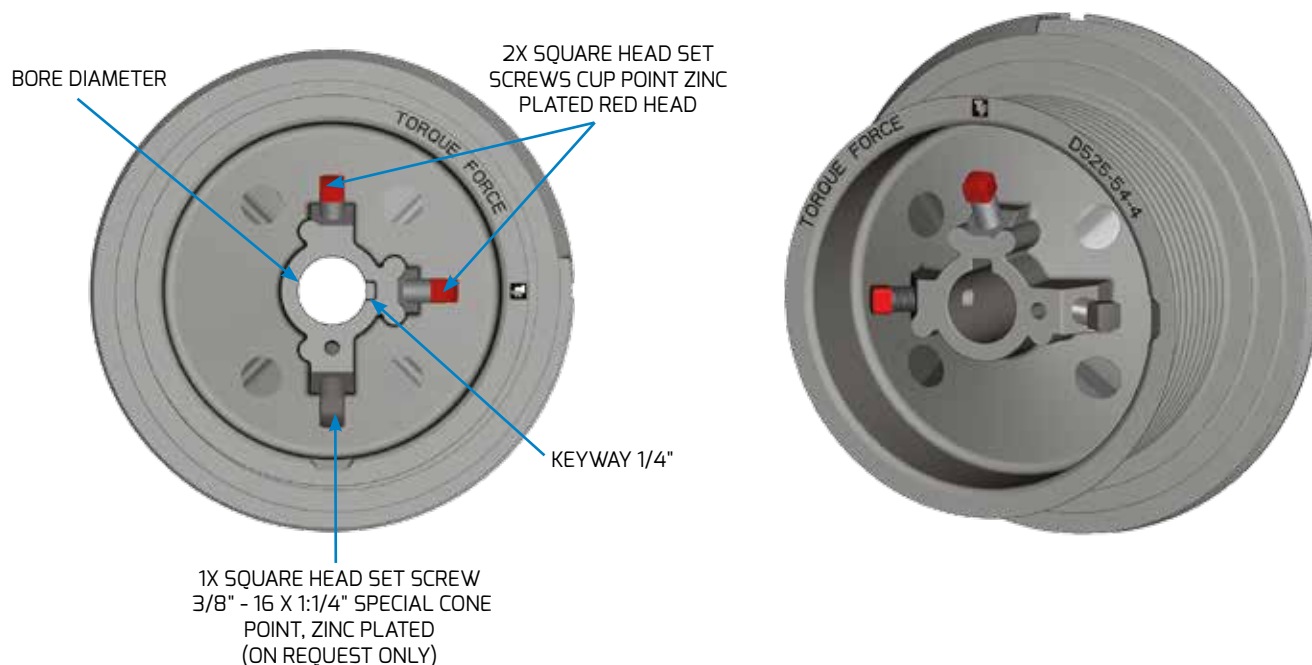
WRAPPING								MISCELLANEOUS			CABLE LENGTH RULE ⁽²⁾	
MAX. HIGH-LIFT	MAX. DOOR HEIGHT	RATE OF RISE OF SPIRAL PORTION	REVOLUTIONS ON SPIRAL WITHOUT INACTIVE WRAPPING	TOTAL REVOLUTIONS INCLUDING INACTIVE WRAPPING	CIRCUM. OF FLAT PORTION	CABLE CAPACITY OF FLAT	TOTAL CABLE CAPACITY INCLUDING INACTIVE WRAPPING	MAX. WEIGHT PER DRUM	APPROX. SHIPPING WEIGHT (WITH 2 SET SCREWS)	SQUARE HEAD SET SCREW IF PRE-INST.	DISTANCE TO ADD FOR BUTTONS ON CABLE	DISTANCE TO ADD FOR ADJUSTABLE CABLE ANCHOR
in.	in.	in.	Turns	Turns	in.	in.	in.	lb	lb	in.	in.	in.
54	See Note (1) Below	0.220	3 1/2	13 1/4	13.06	121	184	275	1.2	3/8-16x1:1/4	63	72
54		0.313	2 3/4	13 3/4	17.08	179	245	500	2.1	3/8-16x1:1/4	66	75
120		0.313	5	13 1/4	18.65	145	277	500	2.7	3/8-16x1:1/4	133	144
164		0.345	6	17 1/2	20.81	229	410	800	7.9	3/8-16x1:1/2	182	195
120		0.313	4	14 3/4	25.92	266	402	1100	9.4	3/8-16x1:1/2	137	150

(2) Distance from cable attachment point on the door to shaft center line + "value on table" - amount of high-lift.

- Recommended seating torque on set screws: 240 lb-in.
- Maximum torque on set screws: 300 lb-in except for third set screw anchoring where the maximum torque is 180 lb-in.
- IPPT: Multiplier X Door Weight.
- Drums must be assembled on a torsion shaft that meets Dasma 102. If drums are used with a solid shaft, a 3:3/4" bent key or 3" straight key must be assembled on the set screw side of the drum (except for D800-120 that must be used with a 4:3/4" bent key or 4" straight key. Please refer to canimex drawing 20772-P1, 20994-P1 and 24657-P2 for shaft specifications and to technical document DT-020 for key insertion.
- Data for reference only. Please consult the FCUO drawing for the latest specifications.

PHYSICAL SPECIFICATIONS ON HIGH-LIFT DRUMS (METRIC)

VIEW FROM SET SCREW SIDE

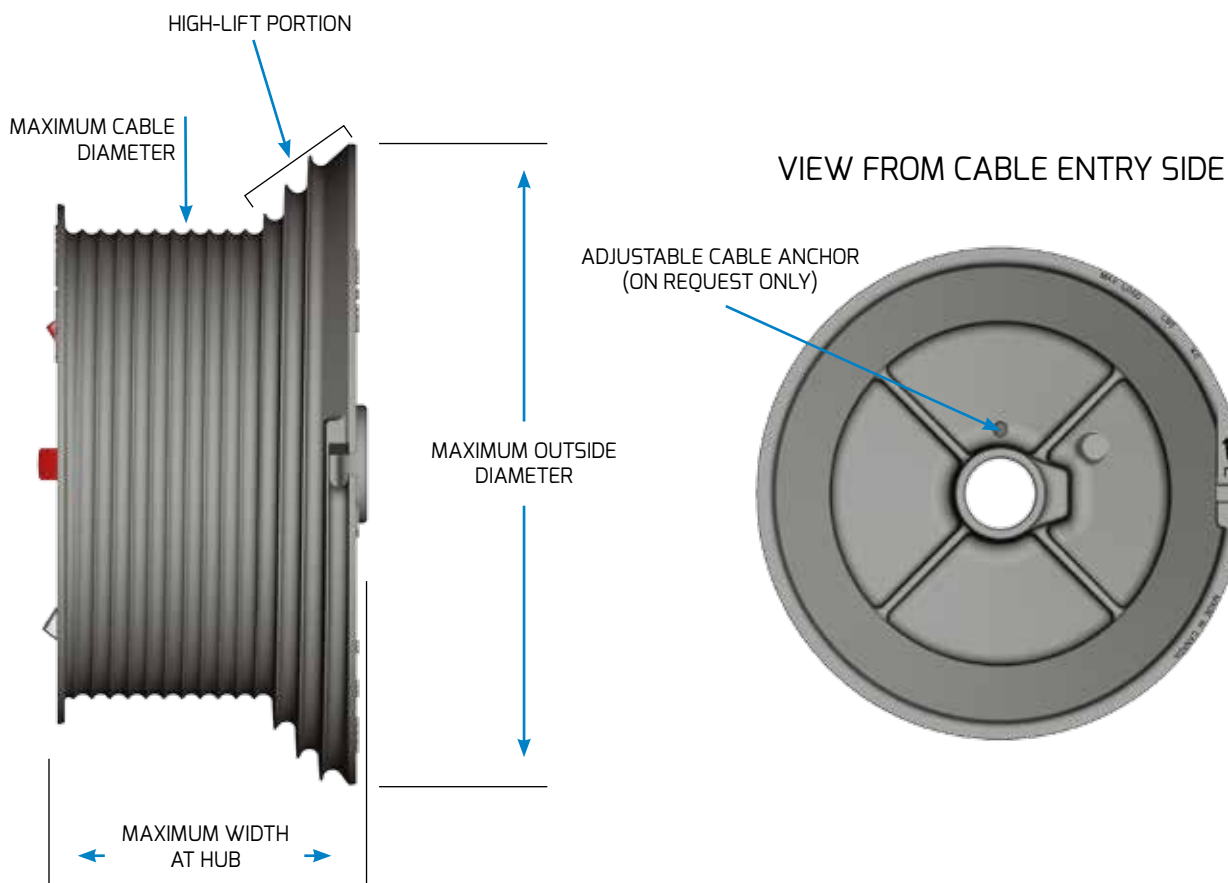


DRUM NAME	INACTIVE WRAPPING	DIMENSIONS						
HIGH-LIFT	NUMBER OF INACTIVE WRAPPING TURNS	BORE DIAMETER	BORE DIAMETER	MAXIMUM OUTSIDE DIAMETER	MAXIMUM WIDTH AT HUB	MAXIMUM CABLE DIAMETER	HIGH MOMENT ARM	FLAT MOMENT ARM
	Turns	25.4 mm	31.75 mm	mm	mm	mm	mm	mm
M102-1375	1/2	X	N/A	151.9	77.0	4	See Multiplier Chart	52.80
M134-1375	1/2	X	X	190.5	93.0	5		69.18
M146-3050	1/2	X	X	238.1	94.2	5		75.53
M162-4165	1/2	X	X	279.4	154.7	6		83.96
M203-3050	1/2	X	X	284.2	132.6	6		104.60

(1) To determine maximum door height capacity for a specific amount of high-lift, add the amount of high-lift to the capacity of the flat portion. Door height minus high-lift must not exceed capacity of flat portion.

PLEASE NOTE:

- Consult the Common Informations on Drums and Plugs section for the general notice.
- All data relates to Maximum Cable Diameter.
- All these drums must be used with a minimum of 1/2 turn of Inactive Wrapping for safety reasons.
- Cable end anchoring to the drum must meet Dasma 102.



WRAPPING								MISCELLANEOUS			CABLE LENGTH RULE ⁽²⁾	
MAX. HIGH-LIFT	MAX. DOOR HEIGHT	RATE OF RISE OF SPIRAL PORTION	REVOLUTIONS ON SPIRAL WITHOUT INACTIVE WRAPPING	TOTAL REVOLUTIONS INCLUDING INACTIVE WRAPPING	CIRCUM. OF FLAT PORTION	CABLE CAPACITY OF FLAT	TOTAL CABLE CAPACITY INCLUDING INACTIVE WRAPPING	MAX. WEIGHT PER DRUM	APPROX. SHIPPING WEIGHT (WITH 2 SET SCREWS)	SQUARE HEAD SET SCREW IF PRE-INST.	DISTANCE TO ADD FOR BUTTONS ON CABLE	DISTANCE TO ADD FOR ADJUSTABLE CABLE ANCHOR
mm	mm	mm	Turns	Turns	mm	mm	mm	kg	kg	mm	mm	mm
1376	See Note (1) Below	5.59	3 1/2	13 1/4	331.8	3069	4672	125	1.1	3/8-16x1:1/4	1600	1830
1384		7.94	2 3/4	13 3/4	434.6	4564	6233	227	1.9	3/8-16x1:1/4	1677	1905
2996		7.94	5	13 1/4	474.5	3678	7036	227	2.5	3/8-16x1:1/4	3380	3657
4156		8.76	6	17 1/2	527.6	5803	10388	363	6.7	3/8-16x1:1/2	4623	4950
3028		7.95	4	14 3/4	657.2	6737	10193	500	8.5	3/8-16x1:1/2	3480	3810

(2) Distance from cable attachment point on the door to shaft center line + "value on table" - amount of high-lift.

- Recommended seating torque on set screws: 27 Nm.
- Maximum torque on set screws: 34 Nm except for third set screw anchoring where the maximum torque is 20 Nm.
- IPPT: Multiplier X Door Weight.
- Drums must be assembled on a torsion shaft that meets Dasma 102. If drums are used with a solid shaft, a 3:3/4" bent key or 3" straight key must be assembled on the set screw side of the drum (except for D800-120 that must be used with a 4:3/4" bent key or 4" straight key. Please refer to canimex drawing 19478-P1, 19479-P1, 24191-P1, 24192-P1 and 19477-P1 for shaft specifications and to technical document DT-Q20 for key insertion.
- Data for reference only. Please consult the FCUO drawing for the latest specifications.

D400-54

MULTIPLIER FOR HIGH-LIFT DRUM

			72"			78"			84"			90"		
			6'0"			6'6"			7'0"			7'6"		
HI-LIFT (inch.)	H.M.A.	REV OF SPIRAL	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR
0	2.0780	0.0000	0.3297	6.3	0.3297	0.3077	6.8	0.3077	0.2884	7.2	0.2884	0.2713	7.7	0.2713
3	2.1277	0.2271	0.3232	6.6	0.3140	0.3028	7.0	0.2943	0.2847	7.5	0.2769	0.2686	7.9	0.2613
6	2.1763	0.4489	0.3168	6.9	0.2983	0.2979	7.3	0.2809	0.2811	7.7	0.2653	0.2659	8.2	0.2512
9	2.2238	0.6659	0.3104	7.2	0.2826	0.2931	7.6	0.2676	0.2775	8.0	0.2538	0.2632	8.4	0.2412
12	2.2704	0.8784	0.3040	7.5	0.2669	0.2884	7.9	0.2542	0.2739	8.3	0.2422	0.2606	8.7	0.2311
15	2.3160	1.0866	0.2977	7.8	0.2512	0.2836	8.2	0.2408	0.2703	8.6	0.2307	0.2579	9.0	0.2211
18	2.3607	1.2908	0.2914	8.1	0.2355	0.2789	8.5	0.2274	0.2668	8.8	0.2192	0.2553	9.2	0.2110
21	2.4046	1.4912	0.2851	8.4	0.2198	0.2741	8.8	0.2141	0.2632	9.1	0.2076	0.2526	9.5	0.2010
24	2.4477	1.6880	0.2787	8.8	0.2041	0.2693	9.1	0.2007	0.2596	9.4	0.1961	0.2500	9.8	0.1909
27	2.4900	1.8814	0.2723	9.1	0.1884	0.2645	9.4	0.1873	0.2560	9.7	0.1846	0.2473	10.1	0.1809
30	2.5317	2.0716	0.2659	9.5	0.1727	0.2597	9.7	0.1739	0.2524	10.0	0.1730	0.2447	10.3	0.1708
33	2.5726	2.2587	0.2594	9.9	0.1570	0.2548	10.1	0.1605	0.2488	10.3	0.1615	0.2420	10.6	0.1608
36	2.6130	2.4428	0.2527	10.3	0.1413	0.2499	10.5	0.1472	0.2451	10.7	0.1500	0.2393	10.9	0.1507
39	2.6527	2.6242	0.2460	10.8	0.1256	0.2449	10.8	0.1338	0.2414	11.0	0.1384	0.2365	11.2	0.1407
42	2.6918	2.8028	0.2392	11.3	0.1099	0.2398	11.2	0.1204	0.2376	11.3	0.1269	0.2337	11.5	0.1306
45	2.7304	2.9790	0.2322	11.8	0.0942	0.2346	11.6	0.1070	0.2337	11.7	0.1154	0.2309	11.8	0.1206
48	2.7684	3.1526	0.2251	12.3	0.0785	0.2293	12.1	0.0936	0.2298	12.0	0.1038	0.2280	12.1	0.1105
51	2.8059	3.3239	0.2178	12.9	0.0628	0.2239	12.5	0.0803	0.2259	12.4	0.0923	0.2251	12.5	0.1005
54	2.8430	3.4930	0.2103	13.5	0.0471	0.2184	13.0	0.0669	0.2218	12.8	0.0807	0.2221	12.8	0.0904

ZERO BALANCE POINT:



Over 20%



Between 10% and 20%



Under 10%

96"			102"			108"			114"			120"		
8'0"			8'6"			9'0"			9'6"			10'0"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0.2561	8.1	0.2561	0.2425	8.6	0.2425	0.2303	9.0	0.2303	0.2192	9.5	0.2192	0.2091	9.9	0.2091
0.2541	8.4	0.2473	0.2411	8.8	0.2347	0.2294	9.3	0.2233	0.2187	9.7	0.2129	0.2090	10.2	0.2035
0.2522	8.6	0.2385	0.2398	9.1	0.2269	0.2285	9.5	0.2163	0.2182	10.0	0.2067	0.2088	10.4	0.1978
0.2503	8.9	0.2296	0.2384	9.3	0.2191	0.2276	9.8	0.2093	0.2177	10.2	0.2004	0.2086	10.7	0.1922
0.2483	9.1	0.2208	0.2371	9.6	0.2112	0.2267	10.0	0.2024	0.2172	10.5	0.1942	0.2084	10.9	0.1865
0.2464	9.4	0.2120	0.2357	9.8	0.2034	0.2259	10.3	0.1954	0.2167	10.7	0.1879	0.2082	11.1	0.1089
0.2445	9.7	0.2031	0.2344	10.1	0.1956	0.2250	10.5	0.1884	0.2162	10.9	0.1816	0.2080	11.4	0.1752
0.2426	9.9	0.1943	0.2331	10.3	0.1878	0.2241	10.7	0.1814	0.2157	11.1	0.1754	0.2078	11.6	0.1696
0.2407	10.2	0.1855	0.2317	10.6	0.1799	0.2232	11.0	0.1745	0.2151	11.4	0.1691	0.2075	11.8	0.1639
0.2387	10.4	0.1766	0.2304	10.8	0.1721	0.2223	11.2	0.1675	0.2146	11.6	0.1628	0.2073	12.0	0.1583
0.2368	10.7	0.1678	0.2290	11.1	0.1643	0.2214	11.4	0.1605	0.2141	11.8	0.1566	0.2071	12.2	0.1526
0.2348	11.0	0.1590	0.2276	11.3	0.1565	0.2205	11.7	0.1535	0.2135	12.0	0.1503	0.2068	12.4	0.1470
0.2329	11.2	0.1501	0.2262	11.6	0.1486	0.2196	11.9	0.1465	0.2130	12.3	0.1440	0.2066	12.6	0.1413
0.2309	11.5	0.1413	0.2248	11.8	0.1408	0.2186	12.1	0.1396	0.2124	12.5	0.1378	0.2063	12.9	0.1357
0.2288	11.8	0.1325	0.2234	12.0	0.1330	0.2177	12.4	0.1326	0.2119	12.7	0.1315	0.2061	13.1	0.1300
0.2268	12.0	0.1236	0.2220	12.3	0.1252	0.2167	12.6	0.1256	0.2113	12.9	0.1253	0.2058	13.3	0.1244
0.2247	12.3	0.1148	0.2205	12.6	0.1174	0.2158	12.8	0.1186	0.2107	13.1	0.1190	0.2055	13.5	0.1187
0.2226	12.6	0.1060	0.2190	12.8	0.1095	0.2148	13.1	0.1117	0.2101	13.4	0.1127	0.2053	13.7	0.1130
0.2205	12.9	0.0971	0.2175	13.1	0.1017	0.2138	13.3	0.1047	0.2095	13.6	0.1065	0.2050	13.9	0.1074

D400-54 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	126			132			138			144		
			10'6"			11'0"			11'6"			12'0"		
			MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	2,0780	0,0000	---	---	---	---	---	---	---	---	---	---	---	---
3	2,1277	0,2271	---	---	---	---	---	---	---	---	---	---	---	---
6	2,1763	0,4489	0,2001	10,9	0,1897	---	---	---	---	---	---	---	---	---
9	2,2238	0,6659	0,2002	11,1	0,1846	---	---	---	---	---	---	---	---	---
12	2,2704	0,8784	0,2002	11,3	0,1794	0,1926	11,8	0,1728	---	---	---	---	---	---
15	2,3160	1,0866	0,2003	11,6	0,1743	0,1929	12,0	0,1682	---	---	---	---	---	---
18	2,3607	1,2908	0,2003	11,8	0,1692	0,1931	12,2	0,1635	0,1864	12,7	0,1581	---	---	---
21	2,4046	1,4912	0,2003	12,0	0,1641	0,1934	12,4	0,1588	0,1868	12,9	0,1539	---	---	---
24	2,4477	1,6880	0,2004	12,2	0,1589	0,1936	12,6	0,1542	0,1872	13,1	0,1496	0,1812	13,5	0,1452
27	2,4900	1,8814	0,2004	12,4	0,1538	0,1938	12,8	0,1495	0,1876	13,3	0,1453	0,1817	13,7	0,1413
30	2,5317	2,0716	0,2004	12,6	0,1487	0,1940	13,0	0,1448	0,1880	13,5	0,1410	0,1823	13,9	0,1374
33	2,5726	2,2587	0,2004	12,8	0,1436	0,1942	13,2	0,1401	0,1884	13,7	0,1368	0,1828	14,1	0,1335
36	2,6130	2,4428	0,2004	13,0	0,1384	0,1944	13,4	0,1355	0,1887	13,8	0,1325	0,1833	14,3	0,1295
39	2,6527	2,6242	0,2004	13,2	0,1333	0,1946	13,6	0,1308	0,1891	14,0	0,1282	0,1838	14,4	0,1256
42	2,6918	2,8028	0,2004	13,4	0,1282	0,1948	13,8	0,1261	0,1894	14,2	0,1239	0,1843	14,6	0,1217
45	2,7304	2,9790	0,2004	13,6	0,1230	0,1950	14,0	0,1215	0,1898	14,4	0,1197	0,1847	14,8	0,1178
48	2,7684	3,1526	0,2003	13,8	0,1179	0,1952	14,2	0,1168	0,1901	14,6	0,1154	0,1852	14,9	0,1138
51	2,8059	3,3239	0,2003	14,0	0,1128	0,1954	14,4	0,1121	0,1905	14,7	0,1111	0,1857	15,1	0,1099
54	2,8430	3,4930	0,2003	14,2	0,1077	0,1955	14,5	0,1074	0,1908	14,9	0,1068	0,1862	15,3	0,1060

ZERO BALANCE POINT:



Over 20%



Between 10% and 20%



Under 10%

150			156			162			168			174		
12'6"			13'0"			13'6"			14'0"			14'6"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
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0,1768	14,3	0,1338	---	----	-----	---	----	-----	---	----	-----	---	----	-----
0,1774	14,5	0,1302	---	----	-----	---	----	-----	---	----	-----	---	----	-----
0,1781	14,7	0,1266	0,1731	15,1	0,1237	---	----	-----	---	----	-----	---	----	-----
0,1787	14,8	0,1230	0,1738	15,3	0,1204	---	----	-----	---	----	-----	---	----	-----
0,1793	15,0	0,1194	0,1745	15,4	0,1171	0,1699	15,8	0,1148	---	----	-----	---	----	-----
0,1799	15,2	0,1158	0,1752	15,6	0,1137	0,1707	16,0	0,1117	---	----	-----	---	----	-----
0,1805	15,3	0,1121	0,1759	15,7	0,1104	0,1714	16,1	0,1086	0,1672	16,6	0,1067	---	----	-----
0,1811	15,5	0,1085	0,1766	15,9	0,1070	0,1722	16,3	0,1054	0,1680	16,7	0,1038	---	----	-----
0,1817	15,7	0,1049	0,1772	16,0	0,1037	0,1730	16,4	0,1023	0,1688	16,8	0,1009	0,1648	17,2	0,0995

D525-54

MULTIPLIER FOR HIGH-LIFT DRUM

			72"			78"			84"			90"		
			6'0"			6'6"			7'0"			7'6"		
HI-LIFT (inch.)	H.M.A.	REV OF SPIRAL	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	2.7188	0.0000	0,5644	4,8	0,5644	0,5267	5,2	0,5267	0,4937	5,5	0,4937	0,4644	5,9	0,4644
3	2.7731	0.1739	0,5507	5,0	0,5376	0,5159	5,4	0,5038	0,4851	5,7	0,4739	0,4577	6,1	0,4472
6	2.8264	0.3444	0,5371	5,3	0,5107	0,5053	5,6	0,4809	0,4767	5,9	0,4542	0,4511	6,3	0,4300
9	2.8787	0.5118	0,5236	5,5	0,4838	0,4947	5,8	0,4580	0,4684	6,1	0,4344	0,4445	6,5	0,4128
12	2.9301	0.6762	0,5102	5,7	0,4569	0,4842	6,1	0,4351	0,4601	6,4	0,4147	0,4379	6,7	0,3956
15	2.9806	0.8377	0,4969	6,0	0,4300	0,4737	6,3	0,4122	0,4519	6,6	0,3949	0,4314	6,9	0,3784
18	3.0302	0.9966	0,4836	6,3	0,4032	0,4633	6,5	0,3893	0,4437	6,8	0,3752	0,4250	7,1	0,3612
21	3.0791	1.1529	0,4703	6,5	0,3763	0,4529	6,8	0,3664	0,4355	7,1	0,3554	0,4185	7,4	0,3440
24	3.1272	1.3068	0,4569	6,8	0,3494	0,4425	7,1	0,3435	0,4273	7,3	0,3357	0,4120	7,6	0,3268
27	3.1745	1.4583	0,4435	7,2	0,3225	0,4320	7,3	0,3206	0,4190	7,6	0,3159	0,4055	7,8	0,3096
30	3.2212	1.6076	0,4300	7,5	0,2957	0,4215	7,6	0,2977	0,4108	7,8	0,2962	0,3990	8,1	0,2924
33	3.2672	1.7548	0,4164	7,8	0,2688	0,4108	8,0	0,2748	0,4025	8,1	0,2765	0,3925	8,3	0,2752
36	3.3125	1.8999	0,4026	8,2	0,2419	0,4001	8,3	0,2519	0,3941	8,4	0,2567	0,3859	8,6	0,2580
39	3.3573	2.0431	0,3886	8,6	0,2150	0,3893	8,6	0,2290	0,3856	8,7	0,2370	0,3793	8,9	0,2408
42	3.4014	2.1844	0,3745	9,1	0,1881	0,3783	9,0	0,2061	0,3771	9,0	0,2172	0,3726	9,1	0,2236
45	3.4450	2.3239	0,3601	9,6	0,1613	0,3672	9,4	0,1832	0,3684	9,4	0,1975	0,3658	9,4	0,2064
48	3.4881	2.4616	0,3454	10,1	0,1344	0,3559	9,8	0,1603	0,3596	9,7	0,1777	0,3590	9,7	0,1892
51	3.5306	2.5977	0,3305	10,7	0,1075	0,3445	10,2	0,1374	0,3507	10,1	0,1580	0,3520	10,0	0,1720
54	3.5726	2.7321	0,3153	11,3	0,0806	0,3328	10,7	0,1145	0,3417	10,5	0,1382	0,3450	10,4	0,1548

ZERO BALANCE POINT:



Over 20%



Between 10% and 20%



Under 10%

96"			102"			108"			114"			120"		
8'0"			8'6"			9'0"			9'6"			10'0"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0,4384	6,2	0,4384	0,4152	6,5	0,4152	0,3942	6,9	0,3942	0,3752	7,2	0,3752	0,3580	7,6	0,3580
0,4331	6,4	0,4233	0,4110	6,7	0,4018	0,3910	7,1	0,3823	0,3728	7,4	0,3645	0,3562	7,8	0,3483
0,4279	6,6	0,4082	0,4069	6,9	0,3884	0,3878	7,3	0,3703	0,3703	7,6	0,3538	0,3543	8,0	0,3387
0,4227	6,8	0,3931	0,4028	7,1	0,3750	0,3846	7,5	0,3584	0,3679	7,8	0,3431	0,3525	8,2	0,3290
0,4175	7,0	0,3780	0,3987	7,3	0,3616	0,3814	7,7	0,3464	0,3655	8,0	0,3324	0,3507	8,4	0,3193
0,4124	7,2	0,3628	0,3947	7,6	0,3482	0,3783	7,9	0,3345	0,3631	8,2	0,3216	0,3489	8,5	0,3096
0,4073	7,4	0,3477	0,3907	7,8	0,3348	0,3752	8,1	0,3225	0,3607	8,4	0,3109	0,3471	8,7	0,3000
0,4022	7,7	0,3326	0,3867	8,0	0,3214	0,3721	8,3	0,3106	0,3583	8,6	0,3002	0,3453	8,9	0,2903
0,3971	7,9	0,3175	0,3827	8,2	0,3080	0,3690	8,5	0,2986	0,3559	8,8	0,2895	0,3435	9,1	0,2806
0,3920	8,1	0,3024	0,3787	8,4	0,2946	0,3659	8,7	0,2867	0,3535	9,0	0,2788	0,3417	9,3	0,2709
0,3869	8,3	0,2873	0,3747	8,6	0,2812	0,3627	8,9	0,2747	0,3511	9,2	0,2680	0,3400	9,5	0,2613
0,3817	8,6	0,2721	0,3707	8,8	0,2678	0,3596	9,1	0,2628	0,3487	9,4	0,2573	0,3382	9,7	0,2516
0,3766	8,8	0,2570	0,3666	9,0	0,2545	0,3565	9,3	0,2509	0,3463	9,6	0,2466	0,3364	9,8	0,2419
0,3714	9,0	0,2419	0,3626	9,3	0,2411	0,3533	9,5	0,2389	0,3439	9,8	0,2359	0,3345	10,0	0,2322
0,3661	9,3	0,2268	0,3585	9,5	0,2277	0,3501	9,7	0,2270	0,3415	10,0	0,2251	0,3327	10,2	0,2225
0,3608	9,5	0,2117	0,3543	9,7	0,2143	0,3469	9,9	0,2150	0,3390	10,2	0,2144	0,3309	10,4	0,2129
0,3555	9,8	0,1965	0,3501	10,0	0,2009	0,3437	10,1	0,2031	0,3365	10,4	0,2037	0,3290	10,6	0,2032
0,3500	10,1	0,1814	0,3459	10,2	0,1875	0,3404	10,4	0,1911	0,3340	10,6	0,1930	0,3271	10,8	0,1935
0,3445	10,4	0,1663	0,3416	10,5	0,1741	0,3371	10,6	0,1792	0,3315	10,8	0,1823	0,3252	11,0	0,1838

D525-54 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

			126"			132"			138"			144"		
			10'6"			11'0"			11'6"			12'0"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPRIRAL	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR
0	2.7188	0.0000	0,3423	7,9	0,3423	0,3279	8,3	0,3279	0,3146	8,6	0,3146	0,3024	9,0	0,3024
3	2.7731	0.1739	0,3409	8,1	0,3335	0,3270	8,5	0,3199	0,3141	8,8	0,3073	0,3022	9,2	0,2957
6	2.8264	0.3444	0,3396	8,3	0,3247	0,3261	8,7	0,3119	0,3136	9,0	0,3000	0,3019	9,4	0,2889
9	2.8787	0.5118	0,3383	8,5	0,3159	0,3252	8,9	0,3039	0,3130	9,2	0,2927	0,3017	9,5	0,2822
12	2.9301	0.6762	0,3370	8,7	0,3072	0,3243	9,0	0,2959	0,3125	9,4	0,2853	0,3015	9,7	0,2755
15	2.9806	0.8377	0,3357	8,9	0,2984	0,3234	9,2	0,2879	0,3120	9,6	0,2780	0,3013	9,9	0,2688
18	3.0302	0.9966	0,3344	9,1	0,2896	0,3226	9,4	0,2799	0,3115	9,7	0,2707	0,3010	10,1	0,2621
21	3.0791	1.1529	0,3331	9,2	0,2808	0,3217	9,6	0,2719	0,3109	9,9	0,2634	0,3008	10,2	0,2553
24	3.1272	1.3068	0,3318	9,4	0,2721	0,3208	9,7	0,2639	0,3104	10,1	0,2561	0,3006	10,4	0,2486
27	3.1745	1.4583	0,3306	9,6	0,2633	0,3199	9,9	0,2559	0,3099	10,2	0,2488	0,3003	10,6	0,2419
30	3.2212	1.6076	0,3293	9,8	0,2545	0,3190	10,1	0,2479	0,3093	10,4	0,2414	0,3001	10,7	0,2352
33	3.2672	1.7548	0,3280	10,0	0,2457	0,3182	10,3	0,2399	0,3088	10,6	0,2341	0,2998	10,9	0,2285
36	3.3125	1.8999	0,3266	10,1	0,2370	0,3173	10,4	0,2319	0,3082	10,7	0,2268	0,2995	11,1	0,2217
39	3.3573	2.0431	0,3253	10,3	0,2282	0,3164	10,6	0,2239	0,3077	10,9	0,2195	0,2993	11,2	0,2150
42	3.4014	2.1844	0,3240	10,5	0,2194	0,3154	10,8	0,2159	0,3071	11,1	0,2122	0,2990	11,4	0,2083
45	3.4450	2.3239	0,3227	10,7	0,2106	0,3145	11,0	0,2079	0,3065	11,2	0,2049	0,2987	11,5	0,2016
48	3.4881	2.4616	0,3213	10,9	0,2019	0,3136	11,1	0,1999	0,3060	11,4	0,1975	0,2984	11,7	0,1949
51	3.5306	2.5977	0,3200	11,0	0,1931	0,3127	11,3	0,1919	0,3054	11,6	0,1902	0,2982	11,8	0,1881
54	3.5726	2.7321	0,3186	11,2	0,1843	0,3117	11,5	0,1839	0,3048	11,7	0,1829	0,2979	12,0	0,1814

ZERO BALANCE POINT:



Over 20%



Between 10% and 20%



Under 10%

150"			156"			162"			168"			174"		
12'6"			13'0"			13'6"			14'0"			14'6"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0,2911	9,3	0,2911	0,2805	9,7	0,2805	0,2708	10,0	0,2708	0,2616	10,4	0,2616	0,2531	10,7	0,2531
0,2911	9,5	0,2849	0,2808	9,9	0,2748	0,2712	10,2	0,2655	0,2623	10,6	0,2567	0,2539	10,9	0,2485
0,2912	9,7	0,2787	0,2811	10,1	0,2691	0,2717	10,4	0,2601	0,2629	10,8	0,2518	0,2546	11,1	0,2439
0,2912	9,9	0,2725	0,2813	10,2	0,2634	0,2721	10,6	0,2548	0,2635	10,9	0,2468	0,2554	11,3	0,2393
0,2912	10,1	0,2663	0,2816	10,4	0,2576	0,2726	10,8	0,2495	0,2641	11,1	0,2419	0,2561	11,4	0,2347
0,2912	10,2	0,2601	0,2818	10,6	0,2519	0,2730	10,9	0,2442	0,2647	11,3	0,2370	0,2568	11,6	0,2301
0,2913	10,4	0,2539	0,2821	10,7	0,2462	0,2734	11,1	0,2389	0,2652	11,4	0,2320	0,2575	11,8	0,2255
0,2913	10,6	0,2477	0,2823	10,9	0,2405	0,2738	11,2	0,2336	0,2658	11,6	0,2271	0,2582	11,9	0,2209
0,2913	10,7	0,2415	0,2825	11,1	0,2347	0,2742	11,4	0,2283	0,2663	11,7	0,2222	0,2589	12,1	0,2163
0,2913	10,9	0,2353	0,2827	11,2	0,2290	0,2746	11,6	0,2230	0,2669	11,9	0,2172	0,2596	12,2	0,2117
0,2913	11,1	0,2291	0,2829	11,4	0,2233	0,2750	11,7	0,2177	0,2674	12,0	0,2123	0,2602	12,4	0,2071
0,2913	11,2	0,2229	0,2831	11,5	0,2176	0,2753	11,9	0,2124	0,2679	12,2	0,2073	0,2609	12,5	0,2025
0,2912	11,4	0,2167	0,2833	11,7	0,2118	0,2757	12,0	0,2071	0,2684	12,3	0,2024	0,2615	12,7	0,1979
0,2912	11,5	0,2105	0,2835	11,8	0,2061	0,2761	12,2	0,2017	0,2690	12,5	0,1975	0,2621	12,8	0,1933
0,2912	11,7	0,2044	0,2837	12,0	0,2004	0,2764	12,3	0,1964	0,2695	12,6	0,1925	0,2628	12,9	0,1887
0,2912	11,8	0,1982	0,2838	12,1	0,1947	0,2768	12,4	0,1911	0,2700	12,8	0,1876	0,2634	13,1	0,1841
0,2911	12,0	0,1920	0,2840	12,3	0,1889	0,2771	12,6	0,1858	0,2705	12,9	0,1827	0,2640	13,2	0,1795
0,2911	12,1	0,1858	0,2842	12,4	0,1832	0,2775	12,7	0,1805	0,2709	13,0	0,1777	0,2647	13,3	0,1749
0,2910	12,3	0,1796	0,2843	12,6	0,1775	0,2778	12,9	0,1752	0,2714	13,2	0,1728	0,2653	13,5	0,1703

D525-54 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

			180"			186"			192"			198"		
			15'0"			15'6"			16'0"			16'6"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	2.7188	0.0000	0,2451	11,1	0,2451	---	---	---	---	---	---	---	---	---
3	2.7731	0.1739	0,2460	11,3	0,2408	---	---	---	---	---	---	---	---	---
6	2.8264	0.3444	0,2469	11,4	0,2365	0,2396	11,8	0,2296	---	---	---	---	---	---
9	2.8787	0.5118	0,2478	11,6	0,2322	0,2406	12,0	0,2255	---	---	---	---	---	---
12	2.9301	0.6762	0,2486	11,8	0,2279	0,2415	12,1	0,2215	0,2348	12,5	0,2154	---	---	---
15	2.9806	0.8377	0,2494	12,0	0,2236	0,2424	12,3	0,2175	0,2358	12,6	0,2117	---	---	---
18	3.0302	0.9966	0,2502	12,1	0,2193	0,2433	12,5	0,2135	0,2368	12,8	0,2079	0,2306	13,1	0,2026
21	3.0791	1.1529	0,2510	12,3	0,2150	0,2442	12,6	0,2094	0,2378	12,9	0,2041	0,2316	13,3	0,1990
24	3.1272	1.3068	0,2518	12,4	0,2107	0,2451	12,8	0,2054	0,2387	13,1	0,2003	0,2327	13,4	0,1955
27	3.1745	1.4583	0,2526	12,6	0,2064	0,2460	12,9	0,2014	0,2397	13,2	0,1965	0,2337	13,6	0,1919
30	3.2212	1.6076	0,2534	12,7	0,2021	0,2469	13,0	0,1973	0,2406	13,4	0,1928	0,2347	13,7	0,1884
33	3.2672	1.7548	0,2541	12,9	0,1978	0,2477	13,2	0,1933	0,2416	13,5	0,1890	0,2357	13,9	0,1848
36	3.3125	1.8999	0,2549	13,0	0,1935	0,2486	13,3	0,1893	0,2425	13,7	0,1852	0,2367	14,0	0,1813
39	3.3573	2.0431	0,2556	13,1	0,1892	0,2494	13,5	0,1853	0,2434	13,8	0,1814	0,2377	14,1	0,1777
42	3.4014	2.1844	0,2564	13,3	0,1849	0,2502	13,6	0,1812	0,2443	13,9	0,1776	0,2387	14,3	0,1741
45	3.4450	2.3239	0,2571	13,4	0,1806	0,2511	13,7	0,1772	0,2452	14,0	0,1739	0,2397	14,4	0,1706
48	3.4881	2.4616	0,2578	13,5	0,1763	0,2519	13,8	0,1732	0,2462	14,2	0,1701	0,2406	14,5	0,1670
51	3.5306	2.5977	0,2586	13,7	0,1720	0,2527	14,0	0,1692	0,2471	14,3	0,1663	0,2416	14,6	0,1635
54	3.5726	2.7321	0,2593	13,8	0,1677	0,2535	14,1	0,1651	0,2480	14,4	0,1625	0,2426	14,7	0,1599

ZERO BALANCE POINT:



Over 20%



Between 10% and 20%



Under 10%

204"			210"			216"			222"			228"			234"		
17'0"			17'6"			18'0"			18'6"			19'0"			19'6"		
MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR	MULTI	URNS	PITCH FACTOR
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0,2269	13,8	0,1908	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0,2280	13,9	0,1875	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0,2291	14,1	0,1841	0,2237	14,4	0,1801	---	---	---	---	---	---	---	---	---	---	---	---
0,2301	14,2	0,1808	0,2248	14,5	0,1769	---	---	---	---	---	---	---	---	---	---	---	---
0,2312	14,3	0,1774	0,2259	14,7	0,1738	0,2208	15,0	0,1702	---	---	---	---	---	---	---	---	---
0,2322	14,5	0,1741	0,2270	14,8	0,1706	0,2219	15,1	0,1672	---	---	---	---	---	---	---	---	---
0,2333	14,6	0,1708	0,2281	14,9	0,1675	0,2231	15,2	0,1643	0,2183	15,6	0,1611	---	---	---	---	---	---
0,2343	14,7	0,1674	0,2292	15,0	0,1643	0,2242	15,4	0,1613	0,2194	15,7	0,1583	---	---	---	---	---	---
0,2353	14,8	0,1641	0,2302	15,2	0,1611	0,2253	15,5	0,1583	0,2206	15,8	0,1555	0,2161	16,1	0,1528	---	---	---
0,2364	14,9	0,1607	0,2313	15,3	0,1580	0,2264	15,6	0,1553	0,2217	15,9	0,1527	0,2172	16,3	0,1501	---	---	---
0,2374	15,0	0,1574	0,2324	15,4	0,1548	0,2275	15,7	0,1523	0,2229	16,0	0,1498	0,2184	16,4	0,1474	0,2141	16,7	0,1450

D575-120

MULTIPLIER FOR HIGH-LIFT DRUM

			72"			78"			84"			90"		
			6'0"			6'6"			7'0"			7'6"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	2,9690	0,0000	0,6731	4,4	0,6731	0,6281	4,7	0,6281	0,5887	5,0	0,5887	0,5539	5,4	0,5539
3	3,0188	0,1595	0,6542	4,6	0,6410	0,6130	4,9	0,6008	0,5764	5,2	0,5652	0,5438	5,6	0,5333
6	3,0679	0,3164	0,6355	4,8	0,6090	0,5979	5,1	0,5735	0,5642	5,4	0,5416	0,5339	5,7	0,5128
9	3,1161	0,4708	0,6169	5,1	0,5769	0,5830	5,3	0,5462	0,5522	5,6	0,5181	0,5241	5,9	0,4923
12	3,1636	0,6229	0,5985	5,3	0,5449	0,5682	5,6	0,5189	0,5402	5,9	0,4945	0,5143	6,2	0,4718
15	3,2105	0,7727	0,5801	5,5	0,5128	0,5535	5,8	0,4916	0,5283	6,1	0,4710	0,5046	6,4	0,4513
18	3,2566	0,9203	0,5618	5,8	0,4808	0,5388	6,0	0,4643	0,5164	6,3	0,4474	0,4950	6,6	0,4308
21	3,3021	1,0659	0,5435	6,1	0,4487	0,5241	6,3	0,4370	0,5045	6,5	0,4239	0,4853	6,8	0,4103
24	3,3470	1,2095	0,5251	6,4	0,4167	0,5094	6,6	0,4097	0,4927	6,8	0,4003	0,4757	7,0	0,3898
27	3,3913	1,3513	0,5066	6,7	0,3846	0,4947	6,9	0,3823	0,4808	7,1	0,3768	0,4660	7,3	0,3692
30	3,4350	1,4912	0,4881	7,0	0,3526	0,4799	7,2	0,3550	0,4689	7,3	0,3532	0,4564	7,5	0,3487
33	3,4782	1,6293	0,4694	7,4	0,3205	0,4650	7,5	0,3277	0,4569	7,6	0,3297	0,4467	7,8	0,3282
36	3,5208	1,7657	0,4506	7,8	0,2885	0,4500	7,8	0,3004	0,4449	7,9	0,3061	0,4369	8,1	0,3077
39	3,5629	1,9005	0,4316	8,3	0,2564	0,4349	8,2	0,2731	0,4327	8,2	0,2826	0,4271	8,3	0,2872
42	3,6046	2,0338	0,4123	8,7	0,2244	0,4196	8,6	0,2458	0,4205	8,6	0,2590	0,4172	8,6	0,2667
45	3,6457	2,1655	0,3928	9,3	0,1923	0,4042	9,0	0,2185	0,4081	8,9	0,2355	0,4073	9,0	0,2462
48	3,6864	2,2957	0,3729	9,9	0,1603	0,3885	9,5	0,1912	0,3956	9,3	0,2119	0,3972	9,3	0,2256
51	3,7267	2,4245	0,3528	10,6	0,1282	0,3726	10,0	0,1639	0,3830	9,7	0,1884	0,3870	9,6	0,2051
54	3,7665	2,5520	0,3323	11,3	0,0962	0,3565	10,6	0,1366	0,3701	10,2	0,1648	0,3767	10,0	0,1846
57	3,8059	2,6781	0,3114	12,2	0,0641	0,3401	11,2	0,1092	0,3571	10,7	0,1413	0,3662	10,4	0,1641
60	3,8449	2,8029	0,2901	13,3	0,0321	0,3234	11,9	0,0819	0,3438	11,2	0,1177	0,3556	10,8	0,1436
63	3,8835	2,9264	0,2683	14,5	0,0000	0,3064	12,7	0,0546	0,3304	11,8	0,0942	0,3449	11,3	0,1231
66	3,9217	3,0488	0,2460	15,9	----	0,2890	13,6	0,0273	0,3166	12,4	0,0706	0,3339	11,7	0,1026
69	3,9596	3,1700	0,2231	17,7	----	0,2712	14,6	0,0000	0,3026	13,1	0,0471	0,3228	12,3	0,0821
72	3,9971	3,2900	0,1997	20,0	----	0,2531	15,8	----	0,2884	13,9	0,0235	0,3114	12,8	0,0615
75	4,0343	3,4089	---	----	----	0,2344	17,2	----	0,2738	14,7	0,0000	0,2998	13,5	0,0410
78	4,0711	3,5267	---	----	----	0,2154	18,9	----	0,2588	15,7	----	0,2880	14,1	0,0205
81	4,1076	3,6434	---	----	----	---	----	----	0,2435	16,9	----	0,2760	14,9	0,0000
84	4,1437	3,7592	---	----	----	---	----	----	0,2279	18,2	----	0,2636	15,7	----
87	4,1796	3,8739	---	----	----	---	----	----	---	----	----	0,2510	16,7	----
90	4,2151	3,9877	---	----	----	---	----	----	---	----	----	0,2380	17,7	----
93	4,2504	4,1005	---	----	----	---	----	----	---	----	----	---	----	----
96	4,2854	4,2123	---	----	----	---	----	----	---	----	----	---	----	----
99	4,3200	4,3233	---	----	----	---	----	----	---	----	----	---	----	----
102	4,3544	4,4334	---	----	----	---	----	----	---	----	----	---	----	----
105	4,3886	4,5426	---	----	----	---	----	----	---	----	----	---	----	----
108	4,4224	4,6510	---	----	----	---	----	----	---	----	----	---	----	----
111	4,4560	4,7585	---	----	----	---	----	----	---	----	----	---	----	----
114	4,4894	4,8653	---	----	----	---	----	----	---	----	----	---	----	----
117	4,5225	4,9713	---	----	----	---	----	----	---	----	----	---	----	----
120	4,5554	5,0765	---	----	----	---	----	----	---	----	----	---	----	----

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

96"			102"			108"			114"			120"		
8'0"			8'6"			9'0"			9'6"			10'0"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0,5228	5,7	0,5228	0,4951	6,0	0,4951	0,4701	6,3	0,4701	0,4475	6,6	0,4475	0,4269	7,0	0,4269
0,5146	5,9	0,5048	0,4884	6,2	0,4791	0,4646	6,5	0,4559	0,4430	6,8	0,4347	0,4232	7,1	0,4154
0,5065	6,1	0,4868	0,4817	6,4	0,4631	0,4591	6,7	0,4416	0,4385	7,0	0,4219	0,4196	7,3	0,4039
0,4985	6,3	0,4688	0,4751	6,6	0,4472	0,4537	6,9	0,4274	0,4340	7,2	0,4091	0,4159	7,5	0,3923
0,4905	6,4	0,4507	0,4686	6,8	0,4312	0,4483	7,1	0,4131	0,4296	7,4	0,3963	0,4123	7,7	0,3808
0,4826	6,7	0,4327	0,4621	6,9	0,4152	0,4430	7,2	0,3989	0,4253	7,5	0,3836	0,4088	7,9	0,3692
0,4747	6,9	0,4147	0,4556	7,1	0,3993	0,4377	7,4	0,3846	0,4209	7,7	0,3708	0,4052	8,0	0,3577
0,4668	7,1	0,3966	0,4491	7,4	0,3833	0,4324	7,6	0,3704	0,4166	7,9	0,3580	0,4017	8,2	0,3462
0,4589	7,3	0,3786	0,4427	7,6	0,3673	0,4271	7,8	0,3561	0,4123	8,1	0,3452	0,3981	8,4	0,3346
0,4511	7,5	0,3606	0,4362	7,8	0,3514	0,4218	8,0	0,3419	0,4079	8,3	0,3324	0,3946	8,6	0,3231
0,4432	7,8	0,3426	0,4298	8,0	0,3354	0,4166	8,2	0,3276	0,4036	8,5	0,3196	0,3911	8,8	0,3115
0,4353	8,0	0,3245	0,4233	8,2	0,3194	0,4113	8,5	0,3134	0,3993	8,7	0,3068	0,3876	9,0	0,3000
0,4273	8,2	0,3065	0,4169	8,4	0,3034	0,4060	8,7	0,2992	0,3950	8,9	0,2941	0,3840	9,2	0,2885
0,4194	8,5	0,2885	0,4104	8,7	0,2875	0,4006	8,9	0,2849	0,3906	9,1	0,2813	0,3805	9,4	0,2769
0,4113	8,8	0,2704	0,4038	8,9	0,2715	0,3953	9,1	0,2707	0,3863	9,3	0,2685	0,3769	9,6	0,2654
0,4032	9,0	0,2524	0,3972	9,2	0,2555	0,3899	9,3	0,2564	0,3819	9,5	0,2557	0,3734	9,8	0,2539
0,3951	9,3	0,2344	0,3906	9,4	0,2396	0,3845	9,6	0,2422	0,3774	9,8	0,2429	0,3698	10,0	0,2423
0,3868	9,6	0,2164	0,3839	9,7	0,2236	0,3791	9,8	0,2279	0,3730	10,0	0,2301	0,3662	10,2	0,2308
0,3785	10,0	0,1983	0,3771	10,0	0,2076	0,3735	10,1	0,2137	0,3685	10,2	0,2174	0,3625	10,4	0,2192
0,3701	10,3	0,1803	0,3703	10,3	0,1916	0,3680	10,3	0,1994	0,3640	10,5	0,2046	0,3589	10,6	0,2077
0,3615	10,6	0,1623	0,3633	10,6	0,1757	0,3624	10,6	0,1852	0,3594	10,7	0,1918	0,3552	10,8	0,1962
0,3528	11,0	0,1442	0,3563	10,9	0,1597	0,3567	10,9	0,1709	0,3548	10,9	0,1790	0,3514	11,1	0,1846
0,3440	11,4	0,1262	0,3492	11,2	0,1437	0,3509	11,2	0,1567	0,3501	11,2	0,1662	0,3476	11,3	0,1731
0,3351	11,8	0,1082	0,3420	11,6	0,1278	0,3451	11,5	0,1425	0,3454	11,5	0,1534	0,3438	11,5	0,1615
0,3260	12,3	0,0901	0,3347	11,9	0,1118	0,3392	11,8	0,1282	0,3406	11,7	0,1406	0,3399	11,8	0,1500
0,3168	12,7	0,0721	0,3273	12,3	0,0958	0,3332	12,1	0,1140	0,3358	12,0	0,1279	0,3360	12,0	0,1385
0,3073	13,2	0,0541	0,3197	12,7	0,0799	0,3271	12,4	0,0997	0,3308	12,3	0,1151	0,3320	12,3	0,1269
0,2977	13,8	0,0361	0,3120	13,2	0,0639	0,3209	12,8	0,0855	0,3258	12,6	0,1023	0,3280	12,5	0,1154
0,2879	14,4	0,0180	0,3041	13,6	0,0479	0,3145	13,2	0,0712	0,3208	12,9	0,0895	0,3239	12,8	0,1038
0,2779	15,0	0,0000	0,2961	14,1	0,0319	0,3081	13,6	0,0570	0,3156	13,2	0,0767	0,3198	13,1	0,0923
0,2676	15,7	----	0,2879	14,6	0,0160	0,3016	14,0	0,0427	0,3103	13,6	0,0639	0,3155	13,4	0,0808
0,2572	16,5	----	0,2796	15,2	0,0000	0,2949	14,4	0,0285	0,3050	13,9	0,0511	0,3112	13,7	0,0692
0,2464	17,4	----	0,2711	15,8	----	0,2881	14,9	0,0142	0,2995	14,3	0,0384	0,3069	14,0	0,0577
---	----	----	0,2623	16,5	----	0,2811	15,4	0,0000	0,2940	14,7	0,0256	0,3024	14,3	0,0462
---	----	----	0,2534	17,2	----	0,2740	15,9	----	0,2883	15,1	0,0128	0,2979	14,6	0,0346
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D575-120 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

			126"			132"			138"			144"		
			10'6"			11'0"			11'6"			12'0"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	2,9690	0,0000	0,4082	7,3	0,4082	0,3910	7,6	0,3910	0,3752	7,9	0,3752	0,3606	8,2	0,3606
3	3,0188	0,1595	0,4052	7,5	0,3977	0,3886	7,8	0,3814	0,3733	8,1	0,3664	0,3591	8,4	0,3526
6	3,0679	0,3164	0,4022	7,6	0,3872	0,3862	7,9	0,3719	0,3714	8,3	0,3577	0,3576	8,6	0,3446
9	3,1161	0,4708	0,3992	7,8	0,3768	0,3838	8,1	0,3624	0,3695	8,4	0,3490	0,3561	8,7	0,3365
12	3,1636	0,6229	0,3963	8,0	0,3663	0,3814	8,3	0,3528	0,3676	8,6	0,3403	0,3547	8,9	0,3285
15	3,2105	0,7727	0,3934	8,2	0,3558	0,3791	8,5	0,3433	0,3657	8,8	0,3315	0,3532	9,1	0,3205
18	3,2566	0,9203	0,3905	8,3	0,3454	0,3768	8,6	0,3338	0,3639	8,9	0,3228	0,3518	9,3	0,3125
21	3,3021	1,0659	0,3877	8,5	0,3349	0,3745	8,8	0,3242	0,3621	9,1	0,3141	0,3504	9,4	0,3045
24	3,3470	1,2095	0,3848	8,7	0,3244	0,3722	9,0	0,3147	0,3602	9,3	0,3054	0,3489	9,6	0,2965
27	3,3913	1,3513	0,3819	8,9	0,3140	0,3699	9,2	0,3052	0,3584	9,5	0,2966	0,3475	9,8	0,2885
30	3,4350	1,4912	0,3791	9,1	0,3035	0,3676	9,3	0,2956	0,3566	9,6	0,2879	0,3461	9,9	0,2805
33	3,4782	1,6293	0,3762	9,2	0,2930	0,3653	9,5	0,2861	0,3547	9,8	0,2792	0,3446	10,1	0,2724
36	3,5208	1,7657	0,3733	9,4	0,2826	0,3629	9,7	0,2765	0,3529	10,0	0,2705	0,3432	10,3	0,2644
39	3,5629	1,9005	0,3705	9,6	0,2721	0,3606	9,9	0,2670	0,3511	10,1	0,2617	0,3418	10,4	0,2564
42	3,6046	2,0338	0,3676	9,8	0,2616	0,3583	10,1	0,2575	0,3492	10,3	0,2530	0,3403	10,6	0,2484
45	3,6457	2,1655	0,3647	10,0	0,2512	0,3560	10,2	0,2479	0,3474	10,5	0,2443	0,3389	10,8	0,2404
48	3,6864	2,2957	0,3618	10,2	0,2407	0,3537	10,4	0,2384	0,3455	10,7	0,2356	0,3374	10,9	0,2324
51	3,7267	2,4245	0,3589	10,4	0,2303	0,3513	10,6	0,2289	0,3436	10,8	0,2268	0,3360	11,1	0,2244
54	3,7665	2,5520	0,3559	10,6	0,2198	0,3489	10,8	0,2193	0,3418	11,0	0,2181	0,3345	11,3	0,2164
57	3,8059	2,6781	0,3529	10,8	0,2093	0,3466	11,0	0,2098	0,3399	11,2	0,2094	0,3330	11,4	0,2083
60	3,8449	2,8029	0,3500	11,0	0,1989	0,3442	11,2	0,2003	0,3380	11,4	0,2007	0,3316	11,6	0,2003
63	3,8835	2,9264	0,3469	11,2	0,1884	0,3417	11,4	0,1907	0,3360	11,6	0,1919	0,3301	11,8	0,1923
66	3,9217	3,0488	0,3439	11,4	0,1779	0,3393	11,6	0,1812	0,3341	11,7	0,1832	0,3285	11,9	0,1843
69	3,9596	3,1700	0,3408	11,6	0,1675	0,3368	11,8	0,1717	0,3322	11,9	0,1745	0,3270	12,1	0,1763
72	3,9971	3,2900	0,3377	11,8	0,1570	0,3343	12,0	0,1621	0,3302	12,1	0,1658	0,3255	12,3	0,1683
75	4,0343	3,4089	0,3345	12,1	0,1465	0,3318	12,2	0,1526	0,3282	12,3	0,1570	0,3239	12,5	0,1603
78	4,0711	3,5267	0,3313	12,3	0,1361	0,3293	12,4	0,1430	0,3262	12,5	0,1483	0,3224	12,6	0,1522
81	4,1076	3,6434	0,3281	12,5	0,1256	0,3267	12,6	0,1335	0,3241	12,7	0,1396	0,3208	12,8	0,1442
84	4,1437	3,7592	0,3248	12,8	0,1151	0,3240	12,8	0,1240	0,3221	12,9	0,1309	0,3192	13,0	0,1362
87	4,1796	3,8739	0,3215	13,0	0,1047	0,3214	13,0	0,1144	0,3200	13,1	0,1221	0,3175	13,2	0,1282
90	4,2151	3,9877	0,3181	13,3	0,0942	0,3187	13,2	0,1049	0,3178	13,3	0,1134	0,3159	13,3	0,1202
93	4,2504	4,1005	0,3147	13,5	0,0837	0,3160	13,5	0,0954	0,3157	13,5	0,1047	0,3142	13,5	0,1122
96	4,2854	4,2123	0,3112	13,8	0,0733	0,3132	13,7	0,0858	0,3135	13,7	0,0960	0,3125	13,7	0,1042
99	4,3200	4,3233	0,3076	14,0	0,0628	0,3104	13,9	0,0763	0,3113	13,9	0,0872	0,3108	13,9	0,0962
102	4,3544	4,4334	0,3040	14,3	0,0523	0,3075	14,2	0,0668	0,3090	14,1	0,0785	0,3090	14,1	0,0881
105	4,3886	4,5426	0,3003	14,6	0,0419	0,3046	14,4	0,0572	0,3067	14,3	0,0698	0,3073	14,3	0,0801
108	4,4224	4,6510	0,2966	14,9	0,0314	0,3016	14,7	0,0477	0,3044	14,5	0,0611	0,3055	14,5	0,0721
111	4,4560	4,7585	0,2927	15,2	0,0209	0,2986	14,9	0,0381	0,3020	14,8	0,0523	0,3036	14,7	0,0641
114	4,4894	4,8653	0,2888	15,5	0,0105	0,2955	15,2	0,0286	0,2996	15,0	0,0436	0,3018	14,9	0,0561
117	4,5225	4,9713	0,2849	15,9	0,0000	0,2924	15,5	0,0191	0,2971	15,2	0,0349	0,2999	15,1	0,0481
120	4,5554	5,0765	0,2808	16,2	----	0,2892	15,8	0,0095	0,2946	15,5	0,0262	0,2979	15,3	0,0401

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

150"			156"			162"			168"			174"		
12'6"			13'0"			13'6"			14'0"			14'6"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
0,3448	8,9	0,3323	---	---	---	---	---	---	---	---	---	---	---	---
0,3437	9,1	0,3249	---	---	---	---	---	---	---	---	---	---	---	---
0,3426	9,2	0,3175	0,3313	9,5	0,3072	---	---	---	---	---	---	---	---	---
0,3415	9,4	0,3102	0,3305	9,7	0,3004	---	---	---	---	---	---	---	---	---
0,3404	9,6	0,3028	0,3297	9,9	0,2936	0,3197	10,2	0,2849	---	---	---	---	---	---
0,3393	9,7	0,2954	0,3289	10,0	0,2868	0,3191	10,3	0,2786	---	---	---	---	---	---
0,3383	9,9	0,2880	0,3282	10,2	0,2799	0,3186	10,5	0,2722	0,3095	10,8	0,2649	---	---	---
0,3372	10,1	0,2806	0,3274	10,4	0,2731	0,3181	10,7	0,2659	0,3092	11,0	0,2590	---	---	---
0,3361	10,2	0,2732	0,3266	10,5	0,2663	0,3175	10,8	0,2596	0,3089	11,1	0,2531	0,3007	11,4	0,2470
0,3350	10,4	0,2659	0,3258	10,7	0,2595	0,3170	11,0	0,2533	0,3086	11,3	0,2473	0,3006	11,6	0,2415
0,3339	10,5	0,2585	0,3250	10,8	0,2526	0,3164	11,1	0,2469	0,3083	11,4	0,2414	0,3004	11,7	0,2360
0,3328	10,7	0,2511	0,3242	11,0	0,2458	0,3159	11,3	0,2406	0,3079	11,6	0,2355	0,3003	11,9	0,2305
0,3317	10,9	0,2437	0,3234	11,1	0,2390	0,3153	11,4	0,2343	0,3076	11,7	0,2296	0,3002	12,0	0,2250
0,3306	11,0	0,2363	0,3226	11,3	0,2321	0,3148	11,6	0,2279	0,3073	11,9	0,2237	0,3000	12,2	0,2195
0,3295	11,2	0,2289	0,3218	11,5	0,2253	0,3142	11,7	0,2216	0,3069	12,0	0,2178	0,2999	12,3	0,2140
0,3284	11,3	0,2215	0,3210	11,6	0,2185	0,3137	11,9	0,2153	0,3066	12,2	0,2119	0,2997	12,4	0,2085
0,3273	11,5	0,2142	0,3201	11,8	0,2117	0,3131	12,0	0,2089	0,3063	12,3	0,2060	0,2996	12,6	0,2031
0,3262	11,7	0,2068	0,3193	11,9	0,2048	0,3126	12,2	0,2026	0,3059	12,4	0,2002	0,2994	12,7	0,1976
0,3250	11,8	0,1994	0,3185	12,1	0,1980	0,3120	12,3	0,1963	0,3056	12,6	0,1943	0,2993	12,8	0,1921
0,3239	12,0	0,1920	0,3177	12,2	0,1912	0,3114	12,5	0,1899	0,3052	12,7	0,1884	0,2991	13,0	0,1866
0,3227	12,2	0,1846	0,3168	12,4	0,1843	0,3108	12,6	0,1836	0,3049	12,9	0,1825	0,2989	13,1	0,1811
0,3216	12,3	0,1772	0,3160	12,5	0,1775	0,3102	12,8	0,1773	0,3045	13,0	0,1766	0,2988	13,3	0,1756
0,3204	12,5	0,1699	0,3151	12,7	0,1707	0,3096	12,9	0,1709	0,3041	13,1	0,1707	0,2986	13,4	0,1701
0,3192	12,6	0,1625	0,3142	12,8	0,1639	0,3090	13,1	0,1646	0,3038	13,3	0,1648	0,2984	13,5	0,1646
0,3180	12,8	0,1551	0,3134	13,0	0,1570	0,3084	13,2	0,1583	0,3034	13,4	0,1590	0,2982	13,7	0,1592
0,3168	13,0	0,1477	0,3125	13,1	0,1502	0,3078	13,3	0,1520	0,3030	13,6	0,1531	0,2981	13,8	0,1537
0,3156	13,1	0,1403	0,3116	13,3	0,1434	0,3072	13,5	0,1456	0,3026	13,7	0,1472	0,2979	13,9	0,1482
0,3144	13,3	0,1329	0,3107	13,5	0,1366	0,3066	13,6	0,1393	0,3022	13,8	0,1413	0,2977	14,0	0,1427
0,3131	13,5	0,1255	0,3097	13,6	0,1297	0,3059	13,8	0,1330	0,3018	14,0	0,1354	0,2975	14,2	0,1372
0,3118	13,6	0,1182	0,3088	13,8	0,1229	0,3053	13,9	0,1266	0,3014	14,1	0,1295	0,2973	14,3	0,1317
0,3105	13,8	0,1108	0,3079	13,9	0,1161	0,3046	14,1	0,1203	0,3010	14,2	0,1236	0,2971	14,4	0,1262
0,3092	14,0	0,1034	0,3069	14,1	0,1092	0,3040	14,2	0,1140	0,3006	14,4	0,1177	0,2969	14,6	0,1207
0,3079	14,1	0,0960	0,3059	14,2	0,1024	0,3033	14,4	0,1076	0,3002	14,5	0,1119	0,2967	14,7	0,1153
0,3066	14,3	0,0886	0,3049	14,4	0,0956	0,3026	14,5	0,1013	0,2997	14,6	0,1060	0,2965	14,8	0,1098
0,3052	14,5	0,0812	0,3039	14,6	0,0888	0,3019	14,6	0,0950	0,2993	14,8	0,1001	0,2963	14,9	0,1043
0,3038	14,7	0,0738	0,3029	14,7	0,0819	0,3012	14,8	0,0886	0,2989	14,9	0,0942	0,2960	15,1	0,0988
0,3024	14,8	0,0665	0,3019	14,9	0,0751	0,3005	14,9	0,0823	0,2984	15,0	0,0883	0,2958	15,2	0,0933
0,3010	15,0	0,0591	0,3008	15,0	0,0683	0,2998	15,1	0,0760	0,2980	15,2	0,0824	0,2956	15,3	0,0878
0,2995	15,2	0,0517	0,2998	15,2	0,0614	0,2990	15,2	0,0696	0,2975	15,3	0,0765	0,2953	15,4	0,0823

D575-120 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

			180"			186"			192"			198"		
			15'0"			15'6"			16'0"			16'6"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	2,9690	0,0000	---	---	---	---	---	---	---	---	---	---	---	---
3	3,0188	0,1595	---	---	---	---	---	---	---	---	---	---	---	---
6	3,0679	0,3164	---	---	---	---	---	---	---	---	---	---	---	---
9	3,1161	0,4708	---	---	---	---	---	---	---	---	---	---	---	---
12	3,1636	0,6229	---	---	---	---	---	---	---	---	---	---	---	---
15	3,2105	0,7727	---	---	---	---	---	---	---	---	---	---	---	---
18	3,2566	0,9203	---	---	---	---	---	---	---	---	---	---	---	---
21	3,3021	1,0659	---	---	---	---	---	---	---	---	---	---	---	---
24	3,3470	1,2095	---	---	---	---	---	---	---	---	---	---	---	---
27	3,3913	1,3513	---	---	---	---	---	---	---	---	---	---	---	---
30	3,4350	1,4912	---	---	---	---	---	---	---	---	---	---	---	---
33	3,4782	1,6293	---	---	---	---	---	---	---	---	---	---	---	---
36	3,5208	1,7657	0,2929	12,0	0,2308	---	---	---	---	---	---	---	---	---
39	3,5629	1,9005	0,2930	12,2	0,2256	---	---	---	---	---	---	---	---	---
42	3,6046	2,0338	0,2930	12,3	0,2205	0,2861	12,6	0,2161	---	---	---	---	---	---
45	3,6457	2,1655	0,2930	12,4	0,2154	0,2863	12,7	0,2113	---	---	---	---	---	---
48	3,6864	2,2957	0,2930	12,6	0,2103	0,2864	12,9	0,2065	0,2801	13,2	0,2028	---	---	---
51	3,7267	2,4245	0,2931	12,7	0,2051	0,2866	13,0	0,2017	0,2804	13,3	0,1983	---	---	---
54	3,7665	2,5520	0,2931	12,9	0,2000	0,2868	13,1	0,1969	0,2806	13,4	0,1938	0,2747	13,7	0,1907
57	3,8059	2,6781	0,2931	13,0	0,1949	0,2869	13,3	0,1921	0,2809	13,5	0,1893	0,2751	13,8	0,1865
60	3,8449	2,8029	0,2931	13,1	0,1897	0,2871	13,4	0,1873	0,2812	13,7	0,1848	0,2755	14,0	0,1822
63	3,8835	2,9264	0,2931	13,3	0,1846	0,2872	13,5	0,1825	0,2815	13,8	0,1803	0,2759	14,1	0,1780
66	3,9217	3,0488	0,2931	13,4	0,1795	0,2874	13,6	0,1777	0,2817	13,9	0,1758	0,2763	14,2	0,1738
69	3,9596	3,1700	0,2931	13,5	0,1744	0,2875	13,8	0,1729	0,2820	14,0	0,1713	0,2766	14,3	0,1695
72	3,9971	3,2900	0,2931	13,6	0,1692	0,2876	13,9	0,1681	0,2823	14,2	0,1668	0,2770	14,4	0,1653
75	4,0343	3,4089	0,2931	13,8	0,1641	0,2878	14,0	0,1633	0,2826	14,3	0,1623	0,2774	14,5	0,1611
78	4,0711	3,5267	0,2931	13,9	0,1590	0,2879	14,1	0,1585	0,2828	14,4	0,1578	0,2778	14,7	0,1568
81	4,1076	3,6434	0,2931	14,0	0,1539	0,2881	14,3	0,1537	0,2831	14,5	0,1532	0,2782	14,8	0,1526
84	4,1437	3,7592	0,2931	14,1	0,1487	0,2882	14,4	0,1489	0,2834	14,6	0,1487	0,2785	14,9	0,1483
87	4,1796	3,8739	0,2930	14,3	0,1436	0,2883	14,5	0,1441	0,2836	14,7	0,1442	0,2789	15,0	0,1441
90	4,2151	3,9877	0,2930	14,4	0,1385	0,2885	14,6	0,1393	0,2839	14,8	0,1397	0,2793	15,1	0,1399
93	4,2504	4,1005	0,2930	14,5	0,1333	0,2886	14,7	0,1345	0,2841	15,0	0,1352	0,2797	15,2	0,1356
96	4,2854	4,2123	0,2930	14,6	0,1282	0,2887	14,8	0,1297	0,2844	15,1	0,1307	0,2800	15,3	0,1314
99	4,3200	4,3233	0,2930	14,7	0,1231	0,2889	15,0	0,1249	0,2847	15,2	0,1262	0,2804	15,4	0,1271
102	4,3544	4,4334	0,2929	14,9	0,1180	0,2890	15,1	0,1201	0,2849	15,3	0,1217	0,2808	15,5	0,1229
105	4,3886	4,5426	0,2929	15,0	0,1128	0,2891	15,2	0,1153	0,2852	15,4	0,1172	0,2812	15,6	0,1187
108	4,4224	4,6510	0,2929	15,1	0,1077	0,2893	15,3	0,1105	0,2855	15,5	0,1127	0,2816	15,7	0,1144
111	4,4560	4,7585	0,2928	15,2	0,1026	0,2894	15,4	0,1057	0,2857	15,6	0,1082	0,2820	15,8	0,1102
114	4,4894	4,8653	0,2928	15,3	0,0974	0,2895	15,5	0,1009	0,2860	15,7	0,1037	0,2823	15,9	0,1060
117	4,5225	4,9713	0,2928	15,4	0,0923	0,2896	15,6	0,0961	0,2863	15,8	0,0992	0,2827	16,0	0,1017
120	4,5554	5,0765	0,2927	15,6	0,0872	0,2898	15,7	0,0913	0,2865	15,9	0,0947	0,2831	16,1	0,0975

D575-120 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

			234"			240"			246"			252"		
			19'6"			20'0"			20'6"			21'0"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	2,9690	0,0000	---	---	---	---	---	---	---	---	---	---	---	---
3	3,0188	0,1595	---	---	---	---	---	---	---	---	---	---	---	---
6	3,0679	0,3164	---	---	---	---	---	---	---	---	---	---	---	---
9	3,1161	0,4708	---	---	---	---	---	---	---	---	---	---	---	---
12	3,1636	0,6229	---	---	---	---	---	---	---	---	---	---	---	---
15	3,2105	0,7727	---	---	---	---	---	---	---	---	---	---	---	---
18	3,2566	0,9203	---	---	---	---	---	---	---	---	---	---	---	---
21	3,3021	1,0659	---	---	---	---	---	---	---	---	---	---	---	---
24	3,3470	1,2095	---	---	---	---	---	---	---	---	---	---	---	---
27	3,3913	1,3513	---	---	---	---	---	---	---	---	---	---	---	---
30	3,4350	1,4912	---	---	---	---	---	---	---	---	---	---	---	---
33	3,4782	1,6293	---	---	---	---	---	---	---	---	---	---	---	---
36	3,5208	1,7657	---	---	---	---	---	---	---	---	---	---	---	---
39	3,5629	1,9005	---	---	---	---	---	---	---	---	---	---	---	---
42	3,6046	2,0338	---	---	---	---	---	---	---	---	---	---	---	---
45	3,6457	2,1655	---	---	---	---	---	---	---	---	---	---	---	---
48	3,6864	2,2957	---	---	---	---	---	---	---	---	---	---	---	---
51	3,7267	2,4245	---	---	---	---	---	---	---	---	---	---	---	---
54	3,7665	2,5520	---	---	---	---	---	---	---	---	---	---	---	---
57	3,8059	2,6781	---	---	---	---	---	---	---	---	---	---	---	---
60	3,8449	2,8029	---	---	---	---	---	---	---	---	---	---	---	---
63	3,8835	2,9264	---	---	---	---	---	---	---	---	---	---	---	---
66	3,9217	3,0488	---	---	---	---	---	---	---	---	---	---	---	---
69	3,9596	3,1700	---	---	---	---	---	---	---	---	---	---	---	---
72	3,9971	3,2900	---	---	---	---	---	---	---	---	---	---	---	---
75	4,0343	3,4089	---	---	---	---	---	---	---	---	---	---	---	---
78	4,0711	3,5267	---	---	---	---	---	---	---	---	---	---	---	---
81	4,1076	3,6434	---	---	---	---	---	---	---	---	---	---	---	---
84	4,1437	3,7592	---	---	---	---	---	---	---	---	---	---	---	---
87	4,1796	3,8739	---	---	---	---	---	---	---	---	---	---	---	---
90	4,2151	3,9877	0,2528	16,7	0,1366	---	---	---	---	---	---	---	---	---
93	4,2504	4,1005	0,2536	16,8	0,1335	---	---	---	---	---	---	---	---	---
96	4,2854	4,2123	0,2544	16,8	0,1305	0,2503	17,1	0,1298	---	---	---	---	---	---
99	4,3200	4,3233	0,2552	16,9	0,1274	0,2511	17,2	0,1269	---	---	---	---	---	---
102	4,3544	4,4334	0,2560	17,0	0,1244	0,2520	17,3	0,1240	0,2481	17,6	0,1236	---	---	---
105	4,3886	4,5426	0,2568	17,1	0,1214	0,2528	17,4	0,1212	0,2490	17,6	0,1208	---	---	---
108	4,4224	4,6510	0,2576	17,2	0,1183	0,2537	17,4	0,1183	0,2499	17,7	0,1181	0,2461	18,0	0,1177
111	4,4560	4,7585	0,2584	17,2	0,1153	0,2546	17,5	0,1154	0,2507	17,8	0,1153	0,2470	18,0	0,1151
114	4,4894	4,8653	0,2592	17,3	0,1123	0,2554	17,6	0,1125	0,2516	17,8	0,1126	0,2479	18,1	0,1125
117	4,5225	4,9713	0,2601	17,4	0,1092	0,2563	17,6	0,1096	0,2525	17,9	0,1098	0,2489	18,2	0,1099
120	4,5554	5,0765	0,2609	17,5	0,1062	0,2571	17,7	0,1067	0,2534	18,0	0,1071	0,2498	18,2	0,1073

ZERO BALANCE POINT:  **Over 20%**

Over 20%

Between 10% and 20%

Under 10%

DRUMS SPECIFICATIONS

[illegible]

D6375-164

MULTIPLIER FOR HIGH-LIFT DRUM

HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	72"			78"			84"			90"		
			6'0"			6'6"			7'0"			7'6"		
			MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	3,3130	0,0000	0,8381	4,0	0,8381	0,7821	4,2	0,7821	0,7330	4,5	0,7330	0,6896	4,8	0,6896
3	3,3624	0,1431	0,8127	4,1	0,7982	0,7615	4,4	0,7481	0,7161	4,7	0,7037	0,6757	5,0	0,6641
6	3,4110	0,2840	0,7876	4,3	0,7583	0,7411	4,6	0,7141	0,6994	4,9	0,6744	0,6619	5,2	0,6386
9	3,4589	0,4230	0,7626	4,5	0,7184	0,7209	4,8	0,6801	0,6828	5,1	0,6451	0,6482	5,3	0,6130
12	3,5062	0,5601	0,7378	4,8	0,6785	0,7007	5,0	0,6461	0,6663	5,3	0,6158	0,6346	5,5	0,5875
15	3,5529	0,6954	0,7131	5,0	0,6386	0,6807	5,2	0,6121	0,6499	5,5	0,5864	0,6210	5,7	0,5619
18	3,5990	0,8289	0,6884	5,2	0,5986	0,6607	5,4	0,5781	0,6336	5,7	0,5571	0,6076	5,9	0,5364
21	3,6445	0,9608	0,6638	5,5	0,5587	0,6408	5,7	0,5441	0,6173	5,9	0,5278	0,5941	6,1	0,5108
24	3,6894	1,0910	0,6391	5,8	0,5188	0,6208	5,9	0,5101	0,6010	6,1	0,4985	0,5807	6,4	0,4853
27	3,7338	1,2196	0,6143	6,1	0,4789	0,6008	6,2	0,4761	0,5846	6,4	0,4691	0,5672	6,6	0,4598
30	3,7776	1,3468	0,5894	6,4	0,4390	0,5807	6,5	0,4421	0,5683	6,6	0,4398	0,5538	6,8	0,4342
33	3,8210	1,4724	0,5644	6,8	0,3991	0,5605	6,8	0,4081	0,5518	6,9	0,4105	0,5403	7,1	0,4087
36	3,8639	1,5967	0,5391	7,2	0,3592	0,5402	7,2	0,3741	0,5353	7,2	0,3812	0,5267	7,3	0,3831
39	3,9063	1,7196	0,5137	7,6	0,3193	0,5197	7,5	0,3401	0,5187	7,5	0,3519	0,5131	7,6	0,3576
42	3,9482	1,8412	0,4879	8,1	0,2794	0,4991	7,9	0,3061	0,5019	7,9	0,3225	0,4994	7,9	0,3320
45	3,9897	1,9615	0,4619	8,6	0,2395	0,4782	8,3	0,2720	0,4850	8,2	0,2932	0,4855	8,2	0,3065
48	4,0308	2,0805	0,4354	9,3	0,1995	0,4571	8,8	0,2380	0,4679	8,6	0,2639	0,4716	8,5	0,2810
51	4,0714	2,1984	0,4086	10,0	0,1596	0,4357	9,3	0,2040	0,4506	9,0	0,2346	0,4575	8,9	0,2554
54	4,1117	2,3151	0,3814	10,8	0,1197	0,4140	9,9	0,1700	0,4331	9,5	0,2053	0,4432	9,3	0,2299
57	4,1516	2,4306	0,3537	11,7	0,0798	0,3920	10,6	0,1360	0,4154	10,0	0,1759	0,4288	9,7	0,2043
60	4,1911	2,5451	0,3255	12,9	0,0399	0,3696	11,3	0,1020	0,3974	10,5	0,1466	0,4142	10,1	0,1788
63	4,2302	2,6585	0,2967	14,3	0,0000	0,3468	12,2	0,0680	0,3792	11,2	0,1173	0,3994	10,6	0,1533
66	4,2689	2,7709	0,2674	16,0	----	0,3237	13,2	0,0340	0,3606	11,8	0,0880	0,3843	11,1	0,1277
69	4,3074	2,8822	0,2373	18,1	----	0,3000	14,4	0,0000	0,3417	12,6	0,0586	0,3691	11,7	0,1022
72	4,3454	2,9926	0,2066	21,0	----	0,2759	15,8	----	0,3224	13,5	0,0293	0,3535	12,3	0,0766
75	4,3832	3,1020	---	---	----	0,2512	17,5	----	0,3028	14,5	0,0000	0,3377	13,0	0,0511
78	4,4206	3,2104	---	----	----	0,2259	19,6	----	0,2828	15,6	----	0,3216	13,7	0,0255
81	4,4577	3,3180	---	----	----	---	----	----	0,2623	17,0	----	0,3052	14,6	0,0000
84	4,4945	3,4247	---	----	----	---	----	----	0,2414	18,6	----	0,2885	15,6	----
87	4,5310	3,5305	---	----	----	---	----	----	---	----	----	0,2714	16,7	----
90	4,5672	3,6354	---	----	----	---	----	----	---	----	----	0,2539	18,0	----
93	4,6031	3,7396	---	----	----	---	----	----	---	----	----	---	----	----
96	4,6388	3,8429	---	----	----	---	----	----	---	----	----	---	----	----
99	4,6742	3,9454	---	----	----	---	----	----	---	----	----	---	----	----
102	4,7093	4,0472	---	----	----	---	----	----	---	----	----	---	----	----
105	4,7441	4,1482	---	----	----	---	----	----	---	----	----	---	----	----
108	4,7787	4,2485	---	----	----	---	----	----	---	----	----	---	----	----
111	4,8131	4,3480	---	----	----	---	----	----	---	----	----	---	----	----
114	4,8472	4,4469	---	----	----	---	----	----	---	----	----	---	----	----
117	4,8810	4,5450	---	----	----	---	----	----	---	----	----	---	----	----
120	4,9147	4,6425	---	----	----	---	----	----	---	----	----	---	----	----
123	4,9481	4,7394	---	----	----	---	----	----	---	----	----	---	----	----
126	4,9813	4,8355	---	----	----	---	----	----	---	----	----	---	----	----
129	5,0142	4,9311	---	----	----	---	----	----	---	----	----	---	----	----
132	5,0470	5,0260	---	----	----	---	----	----	---	----	----	---	----	----
135	5,0795	5,1203	---	----	----	---	----	----	---	----	----	---	----	----
138	5,1118	5,2140	---	----	----	---	----	----	---	----	----	---	----	----
141	5,1439	5,3071	---	----	----	---	----	----	---	----	----	---	----	----
144	5,1759	5,3996	---	----	----	---	----	----	---	----	----	---	----	----
147	5,2076	5,4916	---	----	----	---	----	----	---	----	----	---	----	----
150	5,2391	5,5830	---	----	----	---	----	----	---	----	----	---	----	----
153	5,2705	5,6739	---	----	----	---	----	----	---	----	----	---	----	----
156	5,3016	5,7642	---	----	----	---	----	----	---	----	----	---	----	----
159	5,3326	5,8540	---	----	----	---	----	----	---	----	----	---	----	----
162	5,3634	5,9433	---	----	----	---	----	----	---	----	----	---	----	----
164	5,3839	6,0025	---	----	----	---	----	----	---	----	----	---	----	----

D6375-164 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	126"			132"			138"			144"		
			10'6"			11'0"			11'6"			12'0"		
			MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	3,3130	0,0000	0,5082	6,5	0,5082	0,4868	6,8	0,4868	0,4671	7,1	0,4671	0,4490	7,4	0,4490
3	3,3624	0,1431	0,5034	6,7	0,4952	0,4828	7,0	0,4750	0,4638	7,2	0,4563	0,4462	7,5	0,4390
6	3,4110	0,2840	0,4987	6,8	0,4822	0,4789	7,1	0,4631	0,4605	7,4	0,4454	0,4435	7,7	0,4290
9	3,4589	0,4230	0,4940	7,0	0,4691	0,4749	7,3	0,4512	0,4572	7,6	0,4346	0,4407	7,8	0,4191
12	3,5062	0,5601	0,4894	7,2	0,4561	0,4710	7,4	0,4393	0,4540	7,7	0,4237	0,4380	8,0	0,4091
15	3,5529	0,6954	0,4847	7,3	0,4431	0,4672	7,6	0,4275	0,4507	7,9	0,4128	0,4354	8,2	0,3991
18	3,5990	0,8289	0,4801	7,5	0,4300	0,4633	7,8	0,4156	0,4475	8,0	0,4020	0,4327	8,3	0,3891
21	3,6445	0,9608	0,4756	7,7	0,4170	0,4595	7,9	0,4037	0,4443	8,2	0,3911	0,4300	8,5	0,3791
24	3,6894	1,0910	0,4710	7,8	0,4040	0,4556	8,1	0,3918	0,4411	8,4	0,3802	0,4274	8,6	0,3692
27	3,7338	1,2196	0,4664	8,0	0,3910	0,4518	8,3	0,3800	0,4380	8,5	0,3694	0,4248	8,8	0,3592
30	3,7776	1,3468	0,4619	8,2	0,3779	0,4480	8,4	0,3681	0,4348	8,7	0,3585	0,4221	8,9	0,3492
33	3,8210	1,4724	0,4573	8,4	0,3649	0,4442	8,6	0,3562	0,4316	8,9	0,3476	0,4195	9,1	0,3392
36	3,8639	1,5967	0,4528	8,5	0,3519	0,4404	8,8	0,3443	0,4285	9,0	0,3368	0,4169	9,3	0,3293
39	3,9063	1,7196	0,4482	8,7	0,3388	0,4366	8,9	0,3325	0,4253	9,2	0,3259	0,4143	9,4	0,3193
42	3,9482	1,8412	0,4437	8,9	0,3258	0,4328	9,1	0,3206	0,4221	9,4	0,3151	0,4116	9,6	0,3093
45	3,9897	1,9615	0,4391	9,1	0,3128	0,4290	9,3	0,3087	0,4189	9,5	0,3042	0,4090	9,8	0,2993
48	4,0308	2,0805	0,4345	9,3	0,2997	0,4252	9,5	0,2968	0,4157	9,7	0,2933	0,4063	9,9	0,2893
51	4,0714	2,1984	0,4299	9,5	0,2867	0,4213	9,7	0,2850	0,4125	9,9	0,2825	0,4037	10,1	0,2794
54	4,1117	2,3151	0,4252	9,7	0,2737	0,4174	9,9	0,2731	0,4093	10,0	0,2716	0,4010	10,3	0,2694
57	4,1516	2,4306	0,4205	9,9	0,2606	0,4135	10,0	0,2612	0,4061	10,2	0,2607	0,3983	10,4	0,2594
60	4,1911	2,5451	0,4158	10,1	0,2476	0,4096	10,2	0,2494	0,4028	10,4	0,2499	0,3957	10,6	0,2494
63	4,2302	2,6585	0,4111	10,3	0,2346	0,4057	10,4	0,2375	0,3995	10,6	0,2390	0,3929	10,8	0,2395
66	4,2689	2,7709	0,4063	10,5	0,2215	0,4017	10,6	0,2256	0,3962	10,8	0,2281	0,3902	10,9	0,2295
69	4,3074	2,8822	0,4015	10,7	0,2085	0,3977	10,8	0,2137	0,3929	11,0	0,2173	0,3875	11,1	0,2195
72	4,3454	2,9926	0,3966	11,0	0,1955	0,3936	11,0	0,2019	0,3895	11,2	0,2064	0,3847	11,3	0,2095
75	4,3832	3,1020	0,3917	11,2	0,1824	0,3895	11,3	0,1900	0,3862	11,4	0,1956	0,3819	11,5	0,1995
78	4,4206	3,2104	0,3867	11,4	0,1694	0,3854	11,5	0,1781	0,3827	11,5	0,1847	0,3791	11,7	0,1896
81	4,4577	3,3180	0,3816	11,7	0,1564	0,3812	11,7	0,1662	0,3793	11,8	0,1738	0,3762	11,8	0,1796
84	4,4945	3,4247	0,3765	11,9	0,1433	0,3770	11,9	0,1544	0,3758	12,0	0,1630	0,3734	12,0	0,1696
87	4,5310	3,5305	0,3714	12,2	0,1303	0,3727	12,2	0,1425	0,3723	12,2	0,1521	0,3705	12,2	0,1596
90	4,5672	3,6354	0,3661	12,5	0,1173	0,3684	12,4	0,1306	0,3687	12,4	0,1412	0,3675	12,4	0,1497
93	4,6031	3,7396	0,3608	12,8	0,1043	0,3640	12,6	0,1187	0,3651	12,6	0,1304	0,3646	12,6	0,1397
96	4,6388	3,8429	0,3554	13,1	0,0912	0,3595	12,9	0,1069	0,3614	12,8	0,1195	0,3615	12,8	0,1297
99	4,6742	3,9454	0,3499	13,4	0,0782	0,3550	13,2	0,0950	0,3577	13,1	0,1086	0,3585	13,0	0,1197
102	4,7093	4,0472	0,3444	13,7	0,0652	0,3504	13,4	0,0831	0,3539	13,3	0,0978	0,3554	13,3	0,1098
105	4,7441	4,1482	0,3387	14,0	0,0521	0,3458	13,7	0,0712	0,3501	13,6	0,0869	0,3523	13,5	0,0998
108	4,7787	4,2485	0,3329	14,4	0,0391	0,3411	14,0	0,0594	0,3462	13,8	0,0760	0,3491	13,7	0,0898
111	4,8131	4,3480	0,3271	14,7	0,0261	0,3363	14,3	0,0475	0,3423	14,1	0,0652	0,3459	13,9	0,0798
114	4,8472	4,4469	0,3211	15,1	0,0130	0,3314	14,6	0,0356	0,3383	14,3	0,0543	0,3426	14,1	0,0698
117	4,8810	4,5450	0,3150	15,5	0,0000	0,3264	15,0	0,0237	0,3342	14,6	0,0435	0,3393	14,4	0,0599
120	4,9147	4,6425	0,3088	15,9	----	0,3213	15,3	0,0119	0,3301	14,9	0,0326	0,3359	14,6	0,0499
123	4,9481	4,7394	0,3025	16,4	----	0,3162	15,7	0,0000	0,3258	15,2	0,0217	0,3325	14,9	0,0399
126	4,9813	4,8355	0,2961	16,8	----	0,3109	16,0	----	0,3216	15,5	0,0109	0,3290	15,1	0,0299
129	5,0142	4,9311	----	----	----	0,3055	16,4	----	0,3172	15,8	0,0000	0,3254	15,4	0,0200
132	5,0470	5,0260	----	----	----	0,3001	16,8	----	0,3127	16,1	----	0,3218	15,7	0,0100
135	5,0795	5,1203	----	----	----	----	----	----	0,3082	16,5	----	0,3181	16,0	0,0000
138	5,1118	5,2140	----	----	----	----	----	----	0,3036	16,8	----	0,3144	16,3	----
141	5,1439	5,3071	----	----	----	----	----	----	----	----	----	0,3106	16,6	----
144	5,1759	5,3996	----	----	----	----	----	----	----	----	----	0,3067	16,9	----
147	5,2076	5,4916	----	----	----	----	----	----	----	----	----	----	----	----
150	5,2391	5,5830	----	----	----	----	----	----	----	----	----	----	----	----
153	5,2705	5,6739	----	----	----	----	----	----	----	----	----	----	----	----
156	5,3016	5,7642	----	----	----	----	----	----	----	----	----	----	----	----
159	5,3326	5,8540	----	----	----	----	----	----	----	----	----	----	----	----
162	5,3634	5,9433	----	----	----	----	----	----	----	----	----	----	----	----
164	5,3839	6,0025	----	----	----	----	----	----	----	----	----	----	----	----

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

150"			156"			162"			168"			174"		
12'6"			13'0"			13'6"			14'0"			14'6"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0,4322	7,7	0,4322	0,4166	8,0	0,4166	0,4021	8,2	0,4021	0,3885	8,5	0,3885	0,3758	8,8	0,3758
0,4299	7,8	0,4230	0,4147	8,1	0,4081	0,4006	8,4	0,3942	0,3873	8,7	0,3812	0,3750	9,0	0,3690
0,4276	8,0	0,4138	0,4129	8,3	0,3996	0,3991	8,5	0,3863	0,3862	8,8	0,3738	0,3741	9,1	0,3622
0,4254	8,1	0,4046	0,4111	8,4	0,3911	0,3976	8,7	0,3784	0,3850	9,0	0,3665	0,3732	9,3	0,3553
0,4232	8,3	0,3954	0,4092	8,6	0,3826	0,3962	8,9	0,3705	0,3839	9,1	0,3592	0,3724	9,4	0,3485
0,4210	8,4	0,3862	0,4074	8,7	0,3741	0,3947	9,0	0,3626	0,3828	9,3	0,3519	0,3715	9,6	0,3417
0,4188	8,6	0,3770	0,4057	8,9	0,3656	0,3933	9,2	0,3548	0,3817	9,4	0,3445	0,3706	9,7	0,3348
0,4166	8,7	0,3678	0,4039	9,0	0,3571	0,3919	9,3	0,3469	0,3805	9,6	0,3372	0,3698	9,9	0,3280
0,4144	8,9	0,3586	0,4021	9,2	0,3486	0,3905	9,4	0,3390	0,3794	9,7	0,3299	0,3689	10,0	0,3212
0,4122	9,1	0,3494	0,4003	9,3	0,3401	0,3890	9,6	0,3311	0,3783	9,9	0,3225	0,3681	10,1	0,3143
0,4101	9,2	0,3402	0,3986	9,5	0,3316	0,3876	9,7	0,3232	0,3772	10,0	0,3152	0,3672	10,3	0,3075
0,4079	9,4	0,3310	0,3968	9,6	0,3231	0,3862	9,9	0,3153	0,3761	10,2	0,3079	0,3664	10,4	0,3007
0,4058	9,5	0,3218	0,3951	9,8	0,3146	0,3848	10,0	0,3075	0,3750	10,3	0,3005	0,3655	10,6	0,2938
0,4036	9,7	0,3126	0,3933	9,9	0,3061	0,3834	10,2	0,2996	0,3739	10,4	0,2932	0,3647	10,7	0,2870
0,4014	9,8	0,3034	0,3915	10,1	0,2976	0,3820	10,3	0,2917	0,3727	10,6	0,2859	0,3638	10,9	0,2802
0,3993	10,0	0,2942	0,3898	10,2	0,2891	0,3806	10,5	0,2838	0,3716	10,7	0,2786	0,3630	11,0	0,2733
0,3971	10,2	0,2851	0,3880	10,4	0,2805	0,3791	10,6	0,2759	0,3705	10,9	0,2712	0,3621	11,1	0,2665
0,3949	10,3	0,2759	0,3862	10,5	0,2720	0,3777	10,8	0,2680	0,3694	11,0	0,2639	0,3613	11,3	0,2597
0,3927	10,5	0,2667	0,3844	10,7	0,2635	0,3763	10,9	0,2602	0,3683	11,2	0,2566	0,3604	11,4	0,2528
0,3905	10,6	0,2575	0,3826	10,8	0,2550	0,3748	11,1	0,2523	0,3671	11,3	0,2492	0,3596	11,5	0,2460
0,3883	10,8	0,2483	0,3808	11,0	0,2465	0,3734	11,2	0,2444	0,3660	11,5	0,2419	0,3587	11,7	0,2392
0,3861	11,0	0,2391	0,3790	11,2	0,2380	0,3719	11,4	0,2365	0,3649	11,6	0,2346	0,3578	11,8	0,2323
0,3838	11,1	0,2299	0,3772	11,3	0,2295	0,3705	11,5	0,2286	0,3637	11,7	0,2272	0,3569	12,0	0,2255
0,3816	11,3	0,2207	0,3754	11,5	0,2210	0,3690	11,7	0,2207	0,3625	11,9	0,2199	0,3561	12,1	0,2187
0,3793	11,5	0,2115	0,3735	11,6	0,2125	0,3675	11,8	0,2129	0,3614	12,0	0,2126	0,3552	12,2	0,2118
0,3770	11,6	0,2023	0,3717	11,8	0,2040	0,3660	12,0	0,2050	0,3602	12,2	0,2053	0,3543	12,4	0,2050
0,3747	11,8	0,1931	0,3698	12,0	0,1955	0,3645	12,1	0,1971	0,3590	12,3	0,1979	0,3534	12,5	0,1982
0,3724	12,0	0,1839	0,3679	12,1	0,1870	0,3630	12,3	0,1892	0,3578	12,5	0,1906	0,3525	12,6	0,1913
0,3700	12,1	0,1747	0,3660	12,3	0,1785	0,3615	12,4	0,1813	0,3566	12,6	0,1833	0,3515	12,8	0,1845
0,3677	12,3	0,1655	0,3641	12,4	0,1700	0,3600	12,6	0,1734	0,3554	12,7	0,1759	0,3506	12,9	0,1777
0,3653	12,5	0,1563	0,3621	12,6	0,1615	0,3584	12,7	0,1656	0,3542	12,9	0,1686	0,3497	13,1	0,1708
0,3628	12,7	0,1471	0,3602	12,8	0,1530	0,3568	12,9	0,1577	0,3530	13,0	0,1613	0,3487	13,2	0,1640
0,3604	12,9	0,1379	0,3582	13,0	0,1445	0,3552	13,1	0,1498	0,3517	13,2	0,1539	0,3478	13,3	0,1572
0,3579	13,1	0,1287	0,3562	13,1	0,1360	0,3536	13,2	0,1419	0,3505	13,3	0,1466	0,3468	13,5	0,1503
0,3554	13,3	0,1195	0,3541	13,3	0,1275	0,3520	13,4	0,1340	0,3492	13,5	0,1393	0,3458	13,6	0,1435
0,3528	13,4	0,1103	0,3521	13,5	0,1190	0,3504	13,5	0,1261	0,3479	13,6	0,1319	0,3448	13,8	0,1367
0,3502	13,6	0,1011	0,3500	13,7	0,1105	0,3487	13,7	0,1183	0,3466	13,8	0,1246	0,3438	13,9	0,1298
0,3476	13,8	0,0920	0,3479	13,8	0,1020	0,3470	13,9	0,1104	0,3453	13,9	0,1173	0,3428	14,0	0,1230
0,3449	14,1	0,0828	0,3457	14,0	0,0935	0,3453	14,0	0,1025	0,3439	14,1	0,1100	0,3418	14,2	0,1162
0,3423	14,3	0,0736	0,3436	14,2	0,0850	0,3436	14,2	0,0946	0,3426	14,2	0,1026	0,3408	14,3	0,1093
0,3395	14,5	0,0644	0,3414	14,4	0,0765	0,3418	14,4	0,0867	0,3412	14,4	0,0953	0,3397	14,5	0,1025
0,3367	14,7	0,0552	0,3391	14,6	0,0680	0,3400	14,6	0,0788	0,3398	14,6	0,0880	0,3387	14,6	0,0957
0,3339	14,9	0,0460	0,3368	14,8	0,0595	0,3382	14,7	0,0710	0,3384	14,7	0,0806	0,3376	14,8	0,0888
0,3310	15,1	0,0368	0,3345	15,0	0,0510	0,3364	14,9	0,0631	0,3370	14,9	0,0733	0,3365	14,9	0,0820
0,3281	15,4	0,0276	0,3322	15,2	0,0425	0,3345	15,1	0,0552	0,3355	15,0	0,0660	0,3354	15,0	0,0752
0,3251	15,6	0,0184	0,3298	15,4	0,0340	0,3326	15,3	0,0473	0,3340	15,2	0,0586	0,3343	15,2	0,0683
0,3221	15,9	0,0092	0,3274	15,6	0,0255	0,3307	15,5	0,0394	0,3325	15,4	0,0513	0,3331	15,3	0,0615
0,3190	16,1	0,0000	0,3249	15,8	0,0170	0,3287	15,6	0,0315	0,3310	15,5	0,0440	0,3319	15,5	0,0547
0,3159	16,4	----	0,3224	16,1	0,0085	0,3268	15,8	0,0237	0,3294	15,7	0,0367	0,3308	15,6	0,0478
0,3127	16,7	----	0,3198	16,3	0,0000	0,3247	16,0	0,0158	0,3279	15,9	0,0293	0,3296	15,8	0,0410
0,3094	16,9	----	0,3172	16,5	----	0,3227	16,2	0,0079	0,3263	16,1	0,0220	0,3283	16,0	0,0342
---	----	----	0,3146	16,8	----	0,3206	16,4	0,0000	0,3246	16,2	0,0147	0,3271	16,1	0,0273
---	----	----	0,3118	17,0	----	0,3184	16,6	----	0,3230	16,4	0,0073	0,3258	16,3	0,0205
---	----	----	----	----	----	0,3163	16,9	----	0,3213	16,6	0,0000	0,3246	16,4	0,0137
---	----	----	----	----	----	0,3140	17,1	----	0,3195	16,8	----	0,3233	16,6	0,0068
---	----	----	----	----	----	----	----	----	0,3184	16,9	----	0,3224	16,7	0,0023

D6375-164 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	180"			186"			192"			198"		
			15'0"			15'6"			16'0"			16'6"		
			MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	3,3130	0,0000	0,3640	9,1	0,3640	0,3528	9,4	0,3528	0,3424	9,7	0,3424	0,3325	10,0	0,3325
3	3,3624	0,1431	0,3633	9,3	0,3576	0,3524	9,5	0,3469	0,3421	9,8	0,3367	0,3324	10,1	0,3272
6	3,4110	0,2840	0,3627	9,4	0,3512	0,3520	9,7	0,3409	0,3419	10,0	0,3311	0,3324	10,3	0,3219
9	3,4589	0,4230	0,3621	9,6	0,3448	0,3516	9,8	0,3349	0,3417	10,1	0,3255	0,3323	10,4	0,3166
12	3,5062	0,5601	0,3615	9,7	0,3384	0,3512	10,0	0,3289	0,3415	10,3	0,3199	0,3322	10,6	0,3114
15	3,5529	0,6954	0,3608	9,8	0,3320	0,3508	10,1	0,3229	0,3412	10,4	0,3143	0,3322	10,7	0,3061
18	3,5990	0,8289	0,3602	10,0	0,3257	0,3504	10,3	0,3170	0,3410	10,6	0,3087	0,3321	10,8	0,3008
21	3,6445	0,9608	0,3596	10,1	0,3193	0,3500	10,4	0,3110	0,3408	10,7	0,3031	0,3321	11,0	0,2955
24	3,6894	1,0910	0,3590	10,3	0,3129	0,3495	10,6	0,3050	0,3405	10,8	0,2975	0,3320	11,1	0,2903
27	3,7338	1,2196	0,3584	10,4	0,3065	0,3491	10,7	0,2990	0,3403	11,0	0,2918	0,3319	11,2	0,2850
30	3,7776	1,3468	0,3578	10,6	0,3001	0,3487	10,8	0,2930	0,3401	11,1	0,2862	0,3318	11,4	0,2797
33	3,8210	1,4724	0,3571	10,7	0,2937	0,3483	11,0	0,2871	0,3398	11,2	0,2806	0,3318	11,5	0,2744
36	3,8639	1,5967	0,3565	10,8	0,2874	0,3479	11,1	0,2811	0,3396	11,4	0,2750	0,3317	11,6	0,2691
39	3,9063	1,7196	0,3559	11,0	0,2810	0,3475	11,2	0,2751	0,3394	11,5	0,2694	0,3316	11,8	0,2639
42	3,9482	1,8412	0,3553	11,1	0,2746	0,3471	11,4	0,2691	0,3391	11,6	0,2638	0,3315	11,9	0,2586
45	3,9897	1,9615	0,3547	11,2	0,2682	0,3466	11,5	0,2631	0,3389	11,8	0,2582	0,3314	12,0	0,2533
48	4,0308	2,0805	0,3540	11,4	0,2618	0,3462	11,6	0,2572	0,3386	11,9	0,2526	0,3313	12,2	0,2480
51	4,0714	2,1984	0,3534	11,5	0,2554	0,3458	11,8	0,2512	0,3384	12,0	0,2469	0,3313	12,3	0,2428
54	4,1117	2,3151	0,3528	11,7	0,2490	0,3454	11,9	0,2452	0,3382	12,2	0,2413	0,3312	12,4	0,2375
57	4,1516	2,4306	0,3522	11,8	0,2427	0,3449	12,0	0,2392	0,3379	12,3	0,2357	0,3311	12,5	0,2322
60	4,1911	2,5451	0,3515	11,9	0,2363	0,3445	12,2	0,2332	0,3376	12,4	0,2301	0,3310	12,7	0,2269
63	4,2302	2,6585	0,3509	12,1	0,2299	0,3441	12,3	0,2272	0,3374	12,5	0,2245	0,3309	12,8	0,2216
66	4,2689	2,7709	0,3502	12,2	0,2235	0,3436	12,4	0,2213	0,3371	12,7	0,2189	0,3308	12,9	0,2164
69	4,3074	2,8822	0,3496	12,3	0,2171	0,3432	12,6	0,2153	0,3369	12,8	0,2133	0,3307	13,0	0,2111
72	4,3454	2,9926	0,3489	12,5	0,2107	0,3427	12,7	0,2093	0,3366	12,9	0,2077	0,3306	13,1	0,2058
75	4,3832	3,1020	0,3483	12,6	0,2043	0,3423	12,8	0,2033	0,3363	13,0	0,2020	0,3305	13,3	0,2005
78	4,4206	3,2104	0,3476	12,7	0,1980	0,3418	12,9	0,1973	0,3361	13,2	0,1964	0,3303	13,4	0,1953
81	4,4577	3,3180	0,3469	12,8	0,1916	0,3414	13,1	0,1914	0,3358	13,3	0,1908	0,3302	13,5	0,1900
84	4,4945	3,4247	0,3463	13,0	0,1852	0,3409	13,2	0,1854	0,3355	13,4	0,1852	0,3301	13,6	0,1847
87	4,5310	3,5305	0,3456	13,1	0,1788	0,3404	13,3	0,1794	0,3352	13,5	0,1796	0,3300	13,7	0,1794
90	4,5672	3,6354	0,3449	13,2	0,1724	0,3400	13,4	0,1734	0,3350	13,6	0,1740	0,3299	13,8	0,1742
93	4,6031	3,7396	0,3442	13,4	0,1660	0,3395	13,6	0,1674	0,3347	13,8	0,1684	0,3298	14,0	0,1689
96	4,6388	3,8429	0,3435	13,5	0,1596	0,3390	13,7	0,1615	0,3344	13,9	0,1628	0,3296	14,1	0,1636
99	4,6742	3,9454	0,3428	13,6	0,1533	0,3385	13,8	0,1555	0,3341	14,0	0,1571	0,3295	14,2	0,1583
102	4,7093	4,0472	0,3421	13,8	0,1469	0,3380	13,9	0,1495	0,3338	14,1	0,1515	0,3294	14,3	0,1530
105	4,7441	4,1482	0,3414	13,9	0,1405	0,3375	14,1	0,1435	0,3335	14,2	0,1459	0,3292	14,4	0,1478
108	4,7787	4,2485	0,3406	14,0	0,1341	0,3370	14,2	0,1375	0,3332	14,3	0,1403	0,3291	14,5	0,1425
111	4,8131	4,3480	0,3399	14,2	0,1277	0,3365	14,3	0,1316	0,3329	14,5	0,1347	0,3290	14,6	0,1372
114	4,8472	4,4469	0,3391	14,3	0,1213	0,3360	14,4	0,1256	0,3325	14,6	0,1291	0,3288	14,7	0,1319
117	4,8810	4,5450	0,3384	14,4	0,1149	0,3355	14,5	0,1196	0,3322	14,7	0,1235	0,3287	14,9	0,1267
120	4,9147	4,6425	0,3376	14,6	0,1086	0,3349	14,7	0,1136	0,3319	14,8	0,1179	0,3285	15,0	0,1214
123	4,9481	4,7394	0,3368	14,7	0,1022	0,3344	14,8	0,1076	0,3316	14,9	0,1122	0,3284	15,1	0,1161
126	4,9813	4,8355	0,3360	14,8	0,0958	0,3339	14,9	0,1017	0,3312	15,0	0,1066	0,3282	15,2	0,1108
129	5,0142	4,9311	0,3352	15,0	0,0894	0,3333	15,0	0,0957	0,3309	15,2	0,1010	0,3281	15,3	0,1055
132	5,0470	5,0260	0,3344	15,1	0,0830	0,3327	15,2	0,0897	0,3305	15,3	0,0954	0,3279	15,4	0,1003
135	5,0795	5,1203	0,3336	15,2	0,0766	0,3322	15,3	0,0837	0,3302	15,4	0,0898	0,3277	15,5	0,0950
138	5,1118	5,2140	0,3327	15,4	0,0702	0,3316	15,4	0,0777	0,3298	15,5	0,0842	0,3276	15,6	0,0897
141	5,1439	5,3071	0,3319	15,5	0,0639	0,3310	15,5	0,0718	0,3295	15,6	0,0786	0,3274	15,7	0,0844
144	5,1759	5,3996	0,3310	15,6	0,0575	0,3304	15,7	0,0658	0,3291	15,7	0,0730	0,3272	15,8	0,0792
147	5,2076	5,4916	0,3301	15,8	0,0511	0,3298	15,8	0,0598	0,3287	15,8	0,0673	0,3271	15,9	0,0739
150	5,2391	5,5830	0,3292	15,9	0,0447	0,3292	15,9	0,0538	0,3283	16,0	0,0617	0,3269	16,0	0,0686
153	5,2705	5,6739	0,3283	16,1	0,0383	0,3285	16,0	0,0478	0,3279	16,1	0,0561	0,3267	16,1	0,0633
156	5,3016	5,7642	0,3274	16,2	0,0319	0,3279	16,2	0,0419	0,3276	16,2	0,0505	0,3265	16,2	0,0581
159	5,3326	5,8540	0,3265	16,3	0,0255	0,3273	16,3	0,0359	0,3271	16,3	0,0449	0,3263	16,3	0,0528
162	5,3634	5,9433	0,3255	16,5	0,0192	0,3266	16,4	0,0299	0,3267	16,4	0,0393	0,3261	16,4	0,0475
164	5,3839	6,0025	0,3249	16,6	0,0149	0,3262	16,5	0,0259	0,3265	16,5	0,0355	0,3260	16,5	0,0440

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

204"			210"			216"			222"			228"		
17'0"			17'6"			18'0"			18'6"			19'0"		
MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0,3231	10,3	0,3231	0,3143	10,5	0,3143	0,3060	10,8	0,3060	0,2981	11,1	0,2981	0,2905	11,4	0,2905
0,3232	10,4	0,3182	0,3146	10,7	0,3096	0,3063	11,0	0,3015	0,2985	11,3	0,2939	0,2911	11,6	0,2866
0,3233	10,5	0,3132	0,3148	10,8	0,3049	0,3067	11,1	0,2971	0,2990	11,4	0,2897	0,2916	11,7	0,2826
0,3234	10,7	0,3082	0,3150	11,0	0,3003	0,3070	11,3	0,2927	0,2994	11,6	0,2855	0,2922	11,8	0,2786
0,3235	10,8	0,3033	0,3152	11,1	0,2956	0,3073	11,4	0,2882	0,2998	11,7	0,2813	0,2927	12,0	0,2746
0,3236	11,0	0,2983	0,3154	11,3	0,2909	0,3077	11,5	0,2838	0,3003	11,8	0,2771	0,2932	12,1	0,2706
0,3237	11,1	0,2933	0,3156	11,4	0,2862	0,3080	11,7	0,2794	0,3007	12,0	0,2729	0,2937	12,3	0,2667
0,3238	11,3	0,2883	0,3158	11,5	0,2815	0,3083	11,8	0,2749	0,3011	12,1	0,2687	0,2942	12,4	0,2627
0,3238	11,4	0,2834	0,3160	11,7	0,2768	0,3086	12,0	0,2705	0,3015	12,2	0,2645	0,2947	12,5	0,2587
0,3239	11,5	0,2784	0,3162	11,8	0,2721	0,3089	12,1	0,2661	0,3019	12,4	0,2603	0,2952	12,6	0,2547
0,3240	11,7	0,2734	0,3164	11,9	0,2674	0,3092	12,2	0,2616	0,3023	12,5	0,2561	0,2957	12,8	0,2507
0,3240	11,8	0,2685	0,3166	12,1	0,2627	0,3095	12,3	0,2572	0,3027	12,6	0,2519	0,2962	12,9	0,2468
0,3241	11,9	0,2635	0,3168	12,2	0,2580	0,3098	12,5	0,2528	0,3031	12,7	0,2477	0,2967	13,0	0,2428
0,3241	12,1	0,2585	0,3170	12,3	0,2533	0,3101	12,6	0,2483	0,3035	12,9	0,2435	0,2971	13,1	0,2388
0,3242	12,2	0,2535	0,3172	12,4	0,2486	0,3104	12,7	0,2439	0,3039	13,0	0,2393	0,2976	13,3	0,2348
0,3243	12,3	0,2486	0,3173	12,6	0,2440	0,3107	12,8	0,2395	0,3043	13,1	0,2351	0,2981	13,4	0,2308
0,3243	12,4	0,2436	0,3175	12,7	0,2393	0,3110	13,0	0,2350	0,3046	13,2	0,2309	0,2985	13,5	0,2269
0,3243	12,6	0,2386	0,3177	12,8	0,2346	0,3112	13,1	0,2306	0,3050	13,3	0,2267	0,2990	13,6	0,2229
0,3244	12,7	0,2337	0,3178	12,9	0,2299	0,3115	13,2	0,2262	0,3054	13,5	0,2225	0,2994	13,7	0,2189
0,3244	12,8	0,2287	0,3180	13,1	0,2252	0,3118	13,3	0,2217	0,3057	13,6	0,2183	0,2999	13,8	0,2149
0,3245	12,9	0,2237	0,3182	13,2	0,2205	0,3120	13,4	0,2173	0,3061	13,7	0,2141	0,3004	14,0	0,2109
0,3245	13,0	0,2187	0,3183	13,3	0,2158	0,3123	13,5	0,2129	0,3065	13,8	0,2099	0,3008	14,1	0,2070
0,3246	13,2	0,2138	0,3185	13,4	0,2111	0,3126	13,7	0,2084	0,3068	13,9	0,2057	0,3012	14,2	0,2030
0,3246	13,3	0,2088	0,3187	13,5	0,2064	0,3129	13,8	0,2040	0,3072	14,0	0,2015	0,3017	14,3	0,1990
0,3246	13,4	0,2038	0,3188	13,6	0,2017	0,3131	13,9	0,1995	0,3076	14,1	0,1973	0,3021	14,4	0,1950
0,3247	13,5	0,1989	0,3190	13,7	0,1970	0,3134	14,0	0,1951	0,3079	14,2	0,1931	0,3026	14,5	0,1910
0,3247	13,6	0,1939	0,3191	13,9	0,1923	0,3136	14,1	0,1907	0,3083	14,3	0,1889	0,3030	14,6	0,1871
0,3247	13,7	0,1889	0,3193	14,0	0,1877	0,3139	14,2	0,1862	0,3086	14,4	0,1847	0,3035	14,7	0,1831
0,3247	13,8	0,1839	0,3194	14,1	0,1830	0,3142	14,3	0,1818	0,3090	14,5	0,1805	0,3039	14,8	0,1791
0,3248	14,0	0,1790	0,3196	14,2	0,1783	0,3144	14,4	0,1774	0,3093	14,6	0,1763	0,3044	14,9	0,1751
0,3248	14,1	0,1740	0,3197	14,3	0,1736	0,3147	14,5	0,1729	0,3097	14,7	0,1721	0,3048	15,0	0,1711
0,3248	14,2	0,1690	0,3199	14,4	0,1689	0,3149	14,6	0,1685	0,3101	14,8	0,1679	0,3052	15,1	0,1672
0,3248	14,3	0,1641	0,3200	14,5	0,1642	0,3152	14,7	0,1641	0,3104	14,9	0,1637	0,3057	15,2	0,1632
0,3248	14,4	0,1591	0,3202	14,6	0,1595	0,3155	14,8	0,1596	0,3108	15,0	0,1595	0,3061	15,3	0,1592
0,3249	14,5	0,1541	0,3203	14,7	0,1548	0,3157	14,9	0,1552	0,3111	15,1	0,1553	0,3066	15,4	0,1552
0,3249	14,6	0,1491	0,3204	14,8	0,1501	0,3160	15,0	0,1508	0,3115	15,2	0,1511	0,3070	15,5	0,1512
0,3249	14,7	0,1442	0,3206	14,9	0,1454	0,3162	15,1	0,1463	0,3118	15,3	0,1469	0,3075	15,5	0,1473
0,3249	14,8	0,1392	0,3207	15,0	0,1407	0,3165	15,2	0,1419	0,3122	15,4	0,1427	0,3079	15,6	0,1433
0,3249	14,9	0,1342	0,3209	15,1	0,1361	0,3167	15,3	0,1375	0,3126	15,5	0,1385	0,3084	15,7	0,1393
0,3249	15,0	0,1293	0,3210	15,2	0,1314	0,3170	15,4	0,1330	0,3129	15,6	0,1343	0,3088	15,8	0,1353
0,3249	15,1	0,1243	0,3212	15,3	0,1267	0,3173	15,5	0,1286	0,3133	15,7	0,1301	0,3093	15,9	0,1313
0,3249	15,2	0,1193	0,3213	15,4	0,1220	0,3175	15,6	0,1242	0,3136	15,8	0,1259	0,3097	16,0	0,1274
0,3249	15,3	0,1143	0,3214	15,5	0,1173	0,3178	15,7	0,1197	0,3140	15,9	0,1217	0,3102	16,1	0,1234
0,3249	15,4	0,1094	0,3216	15,6	0,1126	0,3180	15,8	0,1153	0,3144	15,9	0,1175	0,3106	16,1	0,1194
0,3249	15,5	0,1044	0,3217	15,7	0,1079	0,3183	15,9	0,1109	0,3147	16,0	0,1133	0,3111	16,2	0,1154
0,3249	15,6	0,0994	0,3219	15,8	0,1032	0,3186	15,9	0,1064	0,3151	16,1	0,1091	0,3115	16,3	0,1114
0,3249	15,7	0,0945	0,3220	15,9	0,0985	0,3188	16,0	0,1020	0,3155	16,2	0,1049	0,3120	16,4	0,1075
0,3249	15,8	0,0895	0,3221	16,0	0,0938	0,3191	16,1	0,0976	0,3159	16,3	0,1008	0,3125	16,5	0,1035
0,3249	15,9	0,0845	0,3223	16,1	0,0891	0,3194	16,2	0,0931	0,3162	16,4	0,0966	0,3130	16,5	0,0995
0,3249	16,0	0,0795	0,3224	16,2	0,0844	0,3196	16,3	0,0887	0,3166	16,4	0,0924	0,3134	16,6	0,0955
0,3249	16,1	0,0746	0,3226	16,2	0,0798	0,3199	16,4	0,0843	0,3170	16,5	0,0882	0,3139	16,7	0,0915
0,3249	16,2	0,0696	0,3227	16,3	0,0751	0,3202	16,5	0,0798	0,3174	16,6	0,0840	0,3144	16,8	0,0876
0,3249	16,3	0,0646	0,3229	16,4	0,0704	0,3205	16,5	0,0754	0,3178	16,7	0,0798	0,3149	16,8	0,0836
0,3249	16,4	0,0597	0,3230	16,5	0,0657	0,3207	16,6	0,0710	0,3182	16,8	0,0756	0,3154	16,9	0,0796
0,3249	16,5	0,0547	0,3231	16,6	0,0610	0,3210	16,7	0,0665	0,3186	16,8	0,0714	0,3159	17,0	0,0756
0,3249	16,6	0,0514	0,3232	16,7	0,0579	0,3212	16,8	0,0636	0,3188	16,9	0,0686	0,3162	17,0	0,0730

D6375-164 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	234"			240"			246"			252"		
			19'6"			20'0"			20'6"			21'0"		
			MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	3,3130	0,0000	---	---	---	---	---	---	---	---	---	---	---	---
3	3,3624	0,1431	---	---	---	---	---	---	---	---	---	---	---	---
6	3,4110	0,2840	0,2846	12,0	0,2758	---	---	---	---	---	---	---	---	---
9	3,4589	0,4230	0,2853	12,1	0,2720	---	---	---	---	---	---	---	---	---
12	3,5062	0,5601	0,2859	12,3	0,2683	0,2794	12,6	0,2622	---	---	---	---	---	---
15	3,5529	0,6954	0,2865	12,4	0,2645	0,2800	12,7	0,2586	---	---	---	---	---	---
18	3,5990	0,8289	0,2871	12,5	0,2607	0,2807	12,8	0,2550	0,2746	13,1	0,2496	---	---	---
21	3,6445	0,9608	0,2877	12,7	0,2569	0,2814	13,0	0,2514	0,2753	13,2	0,2462	---	---	---
24	3,6894	1,0910	0,2882	12,8	0,2532	0,2820	13,1	0,2478	0,2760	13,4	0,2427	0,2703	13,6	0,2378
27	3,7338	1,2196	0,2888	12,9	0,2494	0,2826	13,2	0,2442	0,2767	13,5	0,2393	0,2711	13,8	0,2346
30	3,7776	1,3468	0,2894	13,1	0,2456	0,2833	13,3	0,2407	0,2774	13,6	0,2359	0,2718	13,9	0,2313
33	3,8210	1,4724	0,2899	13,2	0,2418	0,2839	13,5	0,2371	0,2781	13,7	0,2325	0,2726	14,0	0,2281
36	3,8639	1,5967	0,2905	13,3	0,2380	0,2845	13,6	0,2335	0,2788	13,9	0,2291	0,2733	14,1	0,2248
39	3,9063	1,7196	0,2910	13,4	0,2343	0,2851	13,7	0,2299	0,2795	14,0	0,2256	0,2740	14,3	0,2215
42	3,9482	1,8412	0,2916	13,5	0,2305	0,2858	13,8	0,2263	0,2802	14,1	0,2222	0,2748	14,4	0,2183
45	3,9897	1,9615	0,2921	13,7	0,2267	0,2864	13,9	0,2227	0,2808	14,2	0,2188	0,2755	14,5	0,2150
48	4,0308	2,0805	0,2926	13,8	0,2229	0,2870	14,0	0,2191	0,2815	14,3	0,2154	0,2762	14,6	0,2118
51	4,0714	2,1984	0,2932	13,9	0,2191	0,2876	14,2	0,2155	0,2822	14,4	0,2120	0,2769	14,7	0,2085
54	4,1117	2,3151	0,2937	14,0	0,2154	0,2882	14,3	0,2119	0,2828	14,5	0,2085	0,2776	14,8	0,2053
57	4,1516	2,4306	0,2942	14,1	0,2116	0,2888	14,4	0,2083	0,2835	14,6	0,2051	0,2783	14,9	0,2020
60	4,1911	2,5451	0,2948	14,2	0,2078	0,2894	14,5	0,2047	0,2841	14,8	0,2017	0,2790	15,0	0,1987
63	4,2302	2,6585	0,2953	14,3	0,2040	0,2900	14,6	0,2011	0,2848	14,9	0,1983	0,2797	15,1	0,1955
66	4,2689	2,7709	0,2958	14,4	0,2003	0,2905	14,7	0,1976	0,2854	15,0	0,1949	0,2804	15,2	0,1922
69	4,3074	2,8822	0,2963	14,5	0,1965	0,2911	14,8	0,1940	0,2861	15,1	0,1915	0,2811	15,3	0,1890
72	4,3454	2,9926	0,2969	14,6	0,1927	0,2917	14,9	0,1904	0,2867	15,2	0,1880	0,2818	15,4	0,1857
75	4,3832	3,1020	0,2974	14,7	0,1889	0,2923	15,0	0,1868	0,2874	15,3	0,1846	0,2825	15,5	0,1824
78	4,4206	3,2104	0,2979	14,8	0,1851	0,2929	15,1	0,1832	0,2880	15,3	0,1812	0,2832	15,6	0,1792
81	4,4577	3,3180	0,2984	14,9	0,1814	0,2935	15,2	0,1796	0,2886	15,4	0,1778	0,2839	15,7	0,1759
84	4,4945	3,4247	0,2989	15,0	0,1776	0,2941	15,3	0,1760	0,2893	15,5	0,1744	0,2846	15,8	0,1727
87	4,5310	3,5305	0,2994	15,1	0,1738	0,2946	15,4	0,1724	0,2899	15,6	0,1709	0,2853	15,9	0,1694
90	4,5672	3,6354	0,3000	15,2	0,1700	0,2952	15,5	0,1688	0,2906	15,7	0,1675	0,2860	16,0	0,1662
93	4,6031	3,7396	0,3005	15,3	0,1663	0,2958	15,6	0,1652	0,2912	15,8	0,1641	0,2867	16,1	0,1629
96	4,6388	3,8429	0,3010	15,4	0,1625	0,2964	15,7	0,1616	0,2919	15,9	0,1607	0,2874	16,1	0,1596
99	4,6742	3,9454	0,3015	15,5	0,1587	0,2970	15,7	0,1580	0,2925	16,0	0,1573	0,2881	16,2	0,1564
102	4,7093	4,0472	0,3020	15,6	0,1549	0,2976	15,8	0,1545	0,2932	16,1	0,1538	0,2888	16,3	0,1531
105	4,7441	4,1482	0,3026	15,7	0,1511	0,2982	15,9	0,1509	0,2938	16,1	0,1504	0,2895	16,4	0,1499
108	4,7787	4,2485	0,3031	15,8	0,1474	0,2987	16,0	0,1473	0,2945	16,2	0,1470	0,2902	16,5	0,1466
111	4,8131	4,3480	0,3036	15,9	0,1436	0,2993	16,1	0,1437	0,2951	16,3	0,1436	0,2909	16,5	0,1433
114	4,8472	4,4469	0,3041	15,9	0,1398	0,2999	16,2	0,1401	0,2958	16,4	0,1402	0,2916	16,6	0,1401
117	4,8810	4,5450	0,3047	16,0	0,1360	0,3005	16,2	0,1365	0,2964	16,5	0,1368	0,2923	16,7	0,1368
120	4,9147	4,6425	0,3052	16,1	0,1322	0,3011	16,3	0,1329	0,2971	16,5	0,1333	0,2930	16,8	0,1336
123	4,9481	4,7394	0,3057	16,2	0,1285	0,3017	16,4	0,1293	0,2977	16,6	0,1299	0,2938	16,8	0,1303
126	4,9813	4,8355	0,3063	16,3	0,1247	0,3023	16,5	0,1257	0,2984	16,7	0,1265	0,2945	16,9	0,1271
129	5,0142	4,9311	0,3068	16,3	0,1209	0,3029	16,6	0,1221	0,2991	16,8	0,1231	0,2952	17,0	0,1238
132	5,0470	5,0260	0,3073	16,4	0,1171	0,3036	16,6	0,1185	0,2997	16,8	0,1197	0,2959	17,1	0,1205
135	5,0795	5,1203	0,3079	16,5	0,1134	0,3042	16,7	0,1149	0,3004	16,9	0,1162	0,2967	17,1	0,1173
138	5,1118	5,2140	0,3084	16,6	0,1096	0,3048	16,8	0,1113	0,3011	17,0	0,1128	0,2974	17,2	0,1140
141	5,1439	5,3071	0,3090	16,6	0,1058	0,3054	16,8	0,1078	0,3018	17,0	0,1094	0,2981	17,3	0,1108
144	5,1759	5,3996	0,3095	16,7	0,1020	0,3060	16,9	0,1042	0,3025	17,1	0,1060	0,2989	17,3	0,1075
147	5,2076	5,4916	0,3101	16,8	0,0982	0,3067	17,0	0,1006	0,3032	17,2	0,1026	0,2996	17,4	0,1043
150	5,2391	5,5830	0,3107	16,9	0,0945	0,3073	17,0	0,0970	0,3039	17,2	0,0991	0,3004	17,4	0,1010
153	5,2705	5,6739	0,3112	16,9	0,0907	0,3079	17,1	0,0934	0,3046	17,3	0,0957	0,3011	17,5	0,0977
156	5,3016	5,7642	0,3118	17,0	0,0869	0,3086	17,2	0,0898	0,3053	17,4	0,0923	0,3019	17,6	0,0945
159	5,3326	5,8540	0,3124	17,1	0,0831	0,3092	17,2	0,0862	0,3060	17,4	0,0889	0,3027	17,6	0,0912
162	5,3634	5,9433	0,3129	17,1	0,0793	0,3099	17,3	0,0826	0,3067	17,5	0,0855	0,3034	17,7	0,0880
164	5,3839	6,0025	0,3133	17,2	0,0768	0,3103	17,3	0,0802	0,3072	17,5	0,0832	0,3040	17,7	0,0858

D6375-164 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

			288"			294"			300"			306"		
			24'0"			24'6"			25'0"			25'6"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR
0	3,3130	0,0000	---	---	---	---	---	---	---	---	---	---	---	---
3	3,3624	0,1431	---	---	---	---	---	---	---	---	---	---	---	---
6	3,4110	0,2840	---	---	---	---	---	---	---	---	---	---	---	---
9	3,4589	0,4230	---	---	---	---	---	---	---	---	---	---	---	---
12	3,5062	0,5601	---	---	---	---	---	---	---	---	---	---	---	---
15	3,5529	0,6954	---	---	---	---	---	---	---	---	---	---	---	---
18	3,5990	0,8289	---	---	---	---	---	---	---	---	---	---	---	---
21	3,6445	0,9608	---	---	---	---	---	---	---	---	---	---	---	---
24	3,6894	1,0910	---	---	---	---	---	---	---	---	---	---	---	---
27	3,7338	1,2196	---	---	---	---	---	---	---	---	---	---	---	---
30	3,7776	1,3468	---	---	---	---	---	---	---	---	---	---	---	---
33	3,8210	1,4724	---	---	---	---	---	---	---	---	---	---	---	---
36	3,8639	1,5967	---	---	---	---	---	---	---	---	---	---	---	---
39	3,9063	1,7196	---	---	---	---	---	---	---	---	---	---	---	---
42	3,9482	1,8412	---	---	---	---	---	---	---	---	---	---	---	---
45	3,9897	1,9615	---	---	---	---	---	---	---	---	---	---	---	---
48	4,0308	2,0805	---	---	---	---	---	---	---	---	---	---	---	---
51	4,0714	2,1984	---	---	---	---	---	---	---	---	---	---	---	---
54	4,1117	2,3151	---	---	---	---	---	---	---	---	---	---	---	---
57	4,1516	2,4306	---	---	---	---	---	---	---	---	---	---	---	---
60	4,1911	2,5451	0,2517	16,7	0,1821	---	---	---	---	---	---	---	---	---
63	4,2302	2,6585	0,2526	16,7	0,1796	---	---	---	---	---	---	---	---	---
66	4,2689	2,7709	0,2535	16,8	0,1771	0,2495	17,1	0,1747	---	---	---	---	---	---
69	4,3074	2,8822	0,2544	16,9	0,1746	0,2504	17,2	0,1723	---	---	---	---	---	---
72	4,3454	2,9926	0,2553	17,0	0,1721	0,2513	17,3	0,1699	0,2475	17,6	0,1678	---	---	---
75	4,3832	3,1020	0,2562	17,1	0,1696	0,2523	17,4	0,1676	0,2484	17,6	0,1655	---	---	---
78	4,4206	3,2104	0,2572	17,2	0,1671	0,2532	17,5	0,1652	0,2494	17,7	0,1632	0,2456	18,0	0,1613
81	4,4577	3,3180	0,2581	17,3	0,1646	0,2541	17,5	0,1628	0,2503	17,8	0,1609	0,2466	18,1	0,1591
84	4,4945	3,4247	0,2590	17,4	0,1621	0,2551	17,6	0,1604	0,2512	17,9	0,1586	0,2475	18,2	0,1569
87	4,5310	3,5305	0,2599	17,4	0,1596	0,2560	17,7	0,1580	0,2522	18,0	0,1563	0,2485	18,2	0,1547
90	4,5672	3,6354	0,2608	17,5	0,1571	0,2569	17,8	0,1556	0,2531	18,0	0,1540	0,2495	18,3	0,1525
93	4,6031	3,7396	0,2617	17,6	0,1547	0,2578	17,9	0,1532	0,2541	18,1	0,1517	0,2504	18,4	0,1502
96	4,6388	3,8429	0,2626	17,7	0,1522	0,2588	17,9	0,1508	0,2550	18,2	0,1494	0,2514	18,5	0,1480
99	4,6742	3,9454	0,2635	17,7	0,1497	0,2597	18,0	0,1484	0,2560	18,3	0,1471	0,2523	18,5	0,1458
102	4,7093	4,0472	0,2644	17,8	0,1472	0,2606	18,1	0,1460	0,2569	18,3	0,1448	0,2533	18,6	0,1436
105	4,7441	4,1482	0,2653	17,9	0,1447	0,2615	18,1	0,1436	0,2579	18,4	0,1425	0,2543	18,7	0,1414
108	4,7787	4,2485	0,2662	18,0	0,1422	0,2625	18,2	0,1412	0,2588	18,5	0,1402	0,2552	18,7	0,1392
111	4,8131	4,3480	0,2671	18,0	0,1397	0,2634	18,3	0,1388	0,2598	18,5	0,1379	0,2562	18,8	0,1370
114	4,8472	4,4469	0,2680	18,1	0,1372	0,2643	18,3	0,1364	0,2607	18,6	0,1356	0,2572	18,8	0,1348
117	4,8810	4,5450	0,2689	18,1	0,1347	0,2653	18,4	0,1340	0,2617	18,7	0,1333	0,2581	18,9	0,1326
120	4,9147	4,6425	0,2699	18,2	0,1322	0,2662	18,5	0,1316	0,2626	18,7	0,1310	0,2591	19,0	0,1304
123	4,9481	4,7394	0,2708	18,3	0,1297	0,2671	18,5	0,1293	0,2636	18,8	0,1287	0,2601	19,0	0,1282
126	4,9813	4,8355	0,2717	18,3	0,1272	0,2681	18,6	0,1269	0,2645	18,8	0,1264	0,2610	19,1	0,1259
129	5,0142	4,9311	0,2726	18,4	0,1247	0,2690	18,6	0,1245	0,2655	18,9	0,1241	0,2620	19,1	0,1237
132	5,0470	5,0260	0,2736	18,4	0,1222	0,2700	18,7	0,1221	0,2665	18,9	0,1218	0,2630	19,2	0,1215
135	5,0795	5,1203	0,2745	18,5	0,1197	0,2709	18,7	0,1197	0,2674	19,0	0,1195	0,2640	19,2	0,1193
138	5,1118	5,2140	0,2754	18,6	0,1172	0,2719	18,8	0,1173	0,2684	19,0	0,1172	0,2650	19,3	0,1171
141	5,1439	5,3071	0,2764	18,6	0,1147	0,2729	18,9	0,1149	0,2694	19,1	0,1149	0,2660	19,3	0,1149
144	5,1759	5,3996	0,2773	18,7	0,1122	0,2738	18,9	0,1125	0,2704	19,1	0,1126	0,2670	19,4	0,1127
147	5,2076	5,4916	0,2783	18,7	0,1098	0,2748	19,0	0,1101	0,2714	19,2	0,1103	0,2680	19,4	0,1105
150	5,2391	5,5830	0,2792	18,8	0,1073	0,2758	19,0	0,1077	0,2724	19,2	0,1080	0,2690	19,5	0,1083
153	5,2705	5,6739	0,2802	18,8	0,1048	0,2768	19,0	0,1053	0,2734	19,3	0,1057	0,2700	19,5	0,1061
156	5,3016	5,7642	0,2812	18,9	0,1023	0,2777	19,1	0,1029	0,2744	19,3	0,1034	0,2710	19,6	0,1038
159	5,3326	5,8540	0,2821	18,9	0,0998	0,2787	19,1	0,1005	0,2754	19,4	0,1011	0,2720	19,6	0,1016
162	5,3634	5,9433	0,2831	18,9	0,0973	0,2797	19,2	0,0981	0,2764	19,4	0,0988	0,2731	19,6	0,0994
164	5,3940	6,0320	0,2838	19,0	0,0956	0,2804	19,2	0,0965	0,2771	19,4	0,0973	0,2738	19,7	0,0980

D6375-164 (CONTINUED) MULTIPLIER FOR HIGH-LIFT DRUM

HI-LIFT (INCH.)	H.M.A.	REV OF SPIRAL	342"			348"			354"			360"		
			28'6"			29'0"			29'6"			30'0"		
			MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURNS	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0	3,3130	0,0000	---	---	---	---	---	---	---	---	---	---	---	---
3	3,3624	0,1431	---	---	---	---	---	---	---	---	---	---	---	---
6	3,4110	0,2840	---	---	---	---	---	---	---	---	---	---	---	---
9	3,4589	0,4230	---	---	---	---	---	---	---	---	---	---	---	---
12	3,5062	0,5601	---	---	---	---	---	---	---	---	---	---	---	---
15	3,5529	0,6954	---	---	---	---	---	---	---	---	---	---	---	---
18	3,5990	0,8289	---	---	---	---	---	---	---	---	---	---	---	---
21	3,6445	0,9608	---	---	---	---	---	---	---	---	---	---	---	---
24	3,6894	1,0910	---	---	---	---	---	---	---	---	---	---	---	---
27	3,7338	1,2196	---	---	---	---	---	---	---	---	---	---	---	---
30	3,7776	1,3468	---	---	---	---	---	---	---	---	---	---	---	---
33	3,8210	1,4724	---	---	---	---	---	---	---	---	---	---	---	---
36	3,8639	1,5967	---	---	---	---	---	---	---	---	---	---	---	---
39	3,9063	1,7196	---	---	---	---	---	---	---	---	---	---	---	---
42	3,9482	1,8412	---	---	---	---	---	---	---	---	---	---	---	---
45	3,9897	1,9615	---	---	---	---	---	---	---	---	---	---	---	---
48	4,0308	2,0805	---	---	---	---	---	---	---	---	---	---	---	---
51	4,0714	2,1984	---	---	---	---	---	---	---	---	---	---	---	---
54	4,1117	2,3151	---	---	---	---	---	---	---	---	---	---	---	---
57	4,1516	2,4306	---	---	---	---	---	---	---	---	---	---	---	---
60	4,1911	2,5451	---	---	---	---	---	---	---	---	---	---	---	---
63	4,2302	2,6585	---	---	---	---	---	---	---	---	---	---	---	---
66	4,2689	2,7709	---	---	---	---	---	---	---	---	---	---	---	---
69	4,3074	2,8822	---	---	---	---	---	---	---	---	---	---	---	---
72	4,3454	2,9926	---	---	---	---	---	---	---	---	---	---	---	---
75	4,3832	3,1020	---	---	---	---	---	---	---	---	---	---	---	---
78	4,4206	3,2104	---	---	---	---	---	---	---	---	---	---	---	---
81	4,4577	3,3180	---	---	---	---	---	---	---	---	---	---	---	---
84	4,4945	3,4247	---	---	---	---	---	---	---	---	---	---	---	---
87	4,5310	3,5305	---	---	---	---	---	---	---	---	---	---	---	---
90	4,5672	3,6354	---	---	---	---	---	---	---	---	---	---	---	---
93	4,6031	3,7396	---	---	---	---	---	---	---	---	---	---	---	---
96	4,6388	3,8429	---	---	---	---	---	---	---	---	---	---	---	---
99	4,6742	3,9454	---	---	---	---	---	---	---	---	---	---	---	---
102	4,7093	4,0472	---	---	---	---	---	---	---	---	---	---	---	---
105	4,7441	4,1482	---	---	---	---	---	---	---	---	---	---	---	---
108	4,7787	4,2485	---	---	---	---	---	---	---	---	---	---	---	---
111	4,8131	4,3480	---	---	---	---	---	---	---	---	---	---	---	---
114	4,8472	4,4469	0,2374	20,4	0,1291	---	---	---	---	---	---	---	---	---
117	4,8810	4,5450	0,2384	20,5	0,1274	---	---	---	---	---	---	---	---	---
120	4,9147	4,6425	0,2394	20,5	0,1256	0,2364	20,8	0,1247	---	---	---	---	---	---
123	4,9481	4,7394	0,2405	20,6	0,1238	0,2374	20,8	0,1230	---	---	---	---	---	---
126	4,9813	4,8355	0,2415	20,6	0,1221	0,2384	20,9	0,1213	0,2355	21,2	0,1205	---	---	---
129	5,0142	4,9311	0,2425	20,7	0,1203	0,2395	20,9	0,1196	0,2365	21,2	0,1189	---	---	---
132	5,0470	5,0260	0,2435	20,7	0,1185	0,2405	21,0	0,1179	0,2376	21,2	0,1172	0,2346	21,5	0,1165
135	5,0795	5,1203	0,2446	20,8	0,1167	0,2416	21,0	0,1162	0,2386	21,3	0,1156	0,2357	21,6	0,1149
138	5,1118	5,2140	0,2456	20,8	0,1150	0,2426	21,1	0,1145	0,2396	21,3	0,1139	0,2367	21,6	0,1133
141	5,1439	5,3071	0,2467	20,9	0,1132	0,2436	21,1	0,1128	0,2407	21,4	0,1123	0,2378	21,6	0,1117
144	5,1759	5,3996	0,2477	20,9	0,1114	0,2447	21,2	0,1110	0,2417	21,4	0,1106	0,2388	21,7	0,1102
147	5,2076	5,4916	0,2488	20,9	0,1097	0,2457	21,2	0,1093	0,2428	21,4	0,1090	0,2399	21,7	0,1086
150	5,2391	5,5830	0,2498	21,0	0,1079	0,2468	21,2	0,1076	0,2438	21,5	0,1073	0,2409	21,7	0,1070
153	5,2705	5,6739	0,2509	21,0	0,1061	0,2479	21,3	0,1059	0,2449	21,5	0,1057	0,2420	21,8	0,1054
156	5,3016	5,7642	0,2519	21,0	0,1044	0,2489	21,3	0,1042	0,2460	21,6	0,1040	0,2431	21,8	0,1038
159	5,3326	5,8540	0,2530	21,1	0,1026	0,2500	21,3	0,1025	0,2470	21,6	0,1024	0,2441	21,8	0,1022
162	5,3634	5,9433	0,2541	21,1	0,1008	0,2511	21,4	0,1008	0,2481	21,6	0,1007	0,2452	21,9	0,1006
164	5,3940	6,0320	0,2548	21,1	0,0996	0,2518	21,4	0,0997	0,2488	21,6	0,0996	0,2459	21,9	0,0995

D800-120

MULTIPLIER FOR HIGH-LIFT DRUM

			72"			78"			84"			90"		
			6'0"			6'6"			7'0"			7'6"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPRIRAL	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0	4,1250	0,0000	1,2993	3,2	1,2993	1,2125	3,4	1,2125	1,1364	3,6	1,1364	1,0691	3,9	1,0691
3	4,1610	0,1152	1,2506	3,3	1,2374	1,1720	3,6	1,1598	1,1022	3,8	1,0909	1,0400	4,0	1,0295
6	4,1967	0,2295	1,2022	3,5	1,1755	1,1317	3,7	1,1071	1,0683	3,9	1,0455	1,0112	4,2	0,9899
9	4,2321	0,3428	1,1541	3,7	1,1137	1,0916	3,9	1,0544	1,0345	4,1	1,0000	0,9824	4,3	0,9503
12	4,2672	0,4551	1,1061	3,9	1,0518	1,0516	4,1	1,0016	1,0009	4,3	0,9546	0,9539	4,5	0,9107
15	4,3021	0,5666	1,0583	4,1	0,9899	1,0118	4,3	0,9489	0,9674	4,4	0,9091	0,9254	4,6	0,8711
18	4,3366	0,6771	1,0105	4,3	0,9281	0,9721	4,5	0,8962	0,9340	4,6	0,8637	0,8970	4,8	0,8315
21	4,3709	0,7868	0,9628	4,5	0,8662	0,9325	4,7	0,8435	0,9006	4,9	0,8182	0,8686	5,0	0,7919
24	4,4049	0,8956	0,9151	4,8	0,8043	0,8928	4,9	0,7908	0,8672	5,1	0,7728	0,8403	5,2	0,7523
27	4,4386	1,0036	0,8673	5,1	0,7424	0,8531	5,2	0,7381	0,8339	5,3	0,7273	0,8120	5,5	0,7127
30	4,4721	1,1108	0,8193	5,5	0,6806	0,8133	5,5	0,6853	0,8005	5,6	0,6818	0,7837	5,7	0,6732
33	4,5054	1,2171	0,7712	5,8	0,6187	0,7734	5,8	0,6326	0,7670	5,9	0,6364	0,7553	6,0	0,6336
36	4,5383	1,3227	0,7229	6,3	0,5568	0,7334	6,2	0,5799	0,7335	6,2	0,5909	0,7269	6,2	0,5940
39	4,5711	1,4275	0,6743	6,8	0,4950	0,6932	6,6	0,5272	0,6998	6,5	0,5455	0,6984	6,5	0,5544
42	4,6036	1,5316	0,6254	7,4	0,4331	0,6528	7,1	0,4745	0,6660	6,9	0,5000	0,6697	6,9	0,5148
45	4,6359	1,6350	0,5761	8,0	0,3712	0,6121	7,6	0,4217	0,6320	7,3	0,4546	0,6410	7,2	0,4752
48	4,6680	1,7376	0,5265	8,9	0,3094	0,5712	8,2	0,3690	0,5977	7,8	0,4091	0,6121	7,6	0,4356
51	4,6999	1,8396	0,4764	9,9	0,2475	0,5299	8,9	0,3163	0,5633	8,3	0,3636	0,5830	8,1	0,3960
54	4,7315	1,9408	0,4258	11,1	0,1856	0,4883	9,7	0,2636	0,5286	9,0	0,3182	0,5538	8,5	0,3564
57	4,7629	2,0414	0,3747	12,7	0,1237	0,4463	10,7	0,2109	0,4936	9,6	0,2727	0,5243	9,1	0,3168
60	4,7942	2,1413	0,3229	14,8	0,0619	0,4038	11,9	0,1582	0,4583	10,5	0,2273	0,4946	9,7	0,2772
63	4,8252	2,2406	0,2706	17,8	0,0000	0,3609	13,4	0,1054	0,4227	11,4	0,1818	0,4647	10,4	0,2376
66	4,8560	2,3392	0,2175	22,3	----	0,3175	15,3	0,0527	0,3866	12,6	0,1364	0,4344	11,2	0,1980
69	4,8866	2,4372	0,1637	29,9	----	0,2735	17,9	0,0000	0,3502	14,0	0,0909	0,4039	12,1	0,1584
72	4,9171	2,5346	0,1091	45,1	----	0,2290	21,5	----	0,3134	15,7	0,0455	0,3730	13,2	0,1188
75	4,9473	2,6314	---	----	----	0,1838	26,9	----	0,2761	17,9	0,0000	0,3418	14,5	0,0792
78	4,9774	2,7277	---	----	----	0,1380	36,1	----	0,2383	20,9	----	0,3102	16,0	0,0396
81	5,0073	2,8233	---	----	----	---	----	----	0,1999	25,0	----	0,2783	18,0	0,0000
84	5,0370	2,9184	---	----	----	---	----	----	0,1611	31,3	----	0,2459	20,5	----
87	5,0665	3,0129	---	----	----	---	----	----	---	----	----	0,2130	23,8	----
90	5,0959	3,1068	---	----	----	---	----	----	---	----	----	0,1797	28,4	----
93	5,1251	3,2003	---	----	----	---	----	----	---	----	----	---	----	----
96	5,1541	3,2932	---	----	----	---	----	----	---	----	----	---	----	----
99	5,1830	3,3856	---	----	----	---	----	----	---	----	----	---	----	----
102	5,2117	3,4774	---	----	----	---	----	----	---	----	----	---	----	----
105	5,2402	3,5688	---	----	----	---	----	----	---	----	----	---	----	----
108	5,2686	3,6597	---	----	----	---	----	----	---	----	----	---	----	----
111	5,2969	3,7500	---	----	----	---	----	----	---	----	----	---	----	----
114	5,3250	3,8399	---	----	----	---	----	----	---	----	----	---	----	----
117	5,3529	3,9294	---	----	----	---	----	----	---	----	----	---	----	----
120	5,3807	4,0183	---	----	----	---	----	----	---	----	----	---	----	----

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

96"			102"			108"			114"			120"		
8'0"			8'6"			9'0"			9'6"			10'0"		
MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
1,0093	4,1	1,0093	0,9557	4,3	0,9557	0,9074	4,5	0,9074	0,8638	4,8	0,8638	0,8241	5,0	0,8241
0,9843	4,2	0,9745	0,9341	4,5	0,9248	0,8887	4,7	0,8799	0,8474	4,9	0,8391	0,8097	5,1	0,8018
0,9595	4,4	0,9397	0,9127	4,6	0,8940	0,8701	4,8	0,8524	0,8311	5,0	0,8144	0,7954	5,3	0,7796
0,9349	4,5	0,9049	0,8914	4,7	0,8632	0,8516	5,0	0,8249	0,8149	5,2	0,7897	0,7812	5,4	0,7573
0,9104	4,7	0,8701	0,8702	4,9	0,8324	0,8331	5,1	0,7974	0,7988	5,3	0,7651	0,7670	5,6	0,7350
0,8860	4,9	0,8353	0,8491	5,1	0,8015	0,8148	5,3	0,7699	0,7828	5,5	0,7404	0,7530	5,7	0,7127
0,8616	5,0	0,8005	0,8281	5,2	0,7707	0,7965	5,4	0,7424	0,7668	5,7	0,7157	0,7390	5,9	0,6905
0,8373	5,2	0,7656	0,8072	5,4	0,7399	0,7783	5,6	0,7149	0,7509	5,8	0,6910	0,7250	6,0	0,6682
0,8131	5,4	0,7308	0,7862	5,6	0,7090	0,7602	5,8	0,6875	0,7351	6,0	0,6664	0,7110	6,2	0,6459
0,7888	5,6	0,6960	0,7653	5,8	0,6782	0,7420	6,0	0,6600	0,7192	6,2	0,6417	0,6971	6,4	0,6237
0,7646	5,8	0,6612	0,7444	6,0	0,6474	0,7239	6,2	0,6325	0,7034	6,4	0,6170	0,6832	6,5	0,6014
0,7403	6,1	0,6264	0,7235	6,2	0,6166	0,7057	6,4	0,6050	0,6876	6,6	0,5923	0,6694	6,7	0,5791
0,7160	6,3	0,5916	0,7026	6,5	0,5857	0,6876	6,6	0,5775	0,6717	6,8	0,5676	0,6555	6,9	0,5568
0,6917	6,6	0,5568	0,6816	6,7	0,5549	0,6694	6,8	0,5500	0,6559	7,0	0,5430	0,6416	7,1	0,5346
0,6673	6,9	0,5220	0,6606	7,0	0,5241	0,6512	7,1	0,5225	0,6400	7,2	0,5183	0,6277	7,3	0,5123
0,6427	7,2	0,4872	0,6395	7,2	0,4933	0,6330	7,3	0,4950	0,6241	7,4	0,4936	0,6138	7,6	0,4900
0,6181	7,6	0,4524	0,6184	7,5	0,4624	0,6146	7,6	0,4675	0,6082	7,7	0,4689	0,5998	7,8	0,4677
0,5934	7,9	0,4176	0,5971	7,9	0,4316	0,5963	7,9	0,4400	0,5922	7,9	0,4442	0,5858	8,0	0,4455
0,5685	8,3	0,3828	0,5758	8,2	0,4008	0,5778	8,2	0,4125	0,5761	8,2	0,4196	0,5718	8,3	0,4232
0,5434	8,8	0,3480	0,5543	8,6	0,3699	0,5593	8,5	0,3850	0,5600	8,5	0,3949	0,5577	8,5	0,4009
0,5182	9,3	0,3132	0,5326	9,0	0,3391	0,5406	8,9	0,3575	0,5438	8,8	0,3702	0,5436	8,8	0,3786
0,4927	9,8	0,2784	0,5109	9,4	0,3083	0,5218	9,2	0,3300	0,5275	9,1	0,3455	0,5293	9,1	0,3564
0,4671	10,4	0,2436	0,4890	9,9	0,2775	0,5029	9,7	0,3025	0,5111	9,5	0,3208	0,5150	9,4	0,3341
0,4412	11,1	0,2088	0,4668	10,5	0,2466	0,4839	10,1	0,2750	0,4946	9,9	0,2962	0,5007	9,8	0,3118
0,4151	11,8	0,1740	0,4446	11,1	0,2158	0,4647	10,6	0,2475	0,4780	10,3	0,2715	0,4862	10,1	0,2896
0,3887	12,7	0,1392	0,4221	11,7	0,1850	0,4454	11,1	0,2200	0,4613	10,7	0,2468	0,4716	10,5	0,2673
0,3621	13,7	0,1044	0,3993	12,5	0,1541	0,4258	11,7	0,1925	0,4444	11,2	0,2221	0,4569	10,9	0,2450
0,3351	14,9	0,0696	0,3764	13,3	0,1233	0,4061	12,3	0,1650	0,4274	11,7	0,1974	0,4421	11,3	0,2227
0,3078	16,4	0,0348	0,3532	14,3	0,0925	0,3863	13,0	0,1375	0,4102	12,3	0,1728	0,4272	11,8	0,2005
0,2802	18,1	0,0000	0,3297	15,4	0,0617	0,3662	13,8	0,1100	0,3928	12,9	0,1481	0,4122	12,3	0,1782
0,2522	20,2	----	0,3060	16,7	0,0308	0,3458	14,7	0,0825	0,3753	13,6	0,1234	0,3970	12,8	0,1559
0,2238	22,9	----	0,2819	18,2	0,0000	0,3253	15,8	0,0550	0,3576	14,3	0,0987	0,3816	13,4	0,1336
0,1951	26,4	----	0,2576	20,0	----	0,3045	16,9	0,0275	0,3397	15,2	0,0740	0,3661	14,1	0,1114
----	----	----	0,2329	22,3	----	0,2834	18,3	0,0000	0,3216	16,1	0,0494	0,3505	14,8	0,0891
----	----	----	0,2078	25,1	----	0,2621	19,9	----	0,3033	17,2	0,0247	0,3346	15,6	0,0668
----	----	----	----	----	----	0,2405	21,8	----	0,2848	18,4	0,0000	0,3186	16,4	0,0445
----	----	----	----	----	----	0,2186	24,1	----	0,2660	19,8	----	0,3024	17,4	0,0223
----	----	----	----	----	----	----	----	----	0,2470	21,4	----	0,2860	18,5	0,0000
----	----	----	----	----	----	----	----	----	0,2277	23,4	----	0,2694	19,8	----
----	----	----	----	----	----	----	----	----	----	----	----	0,2526	21,2	----
----	----	----	----	----	----	----	----	----	----	----	----	0,2355	22,8	----

D800-120

MULTIPLIER FOR HIGH-LIFT DRUM

			126"			132"			138"			144"		
			10'6"			11'0"			11'6"			12'0"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPRIRAL	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0	4,1250	0,0000	0,7879	5,2	0,7879	0,7547	5,5	0,7547	0,7242	5,7	0,7242	0,6960	5,9	0,6960
3	4,1610	0,1152	0,7752	5,4	0,7677	0,7435	5,6	0,7363	0,7142	5,8	0,7074	0,6871	6,1	0,6806
6	4,1967	0,2295	0,7626	5,5	0,7475	0,7323	5,7	0,7179	0,7043	6,0	0,6905	0,6783	6,2	0,6651
9	4,2321	0,3428	0,7500	5,6	0,7273	0,7212	5,9	0,6995	0,6944	6,1	0,6737	0,6695	6,3	0,6496
12	4,2672	0,4551	0,7375	5,8	0,7071	0,7101	6,0	0,6811	0,6846	6,2	0,6568	0,6607	6,5	0,6342
15	4,3021	0,5666	0,7251	5,9	0,6869	0,6991	6,2	0,6627	0,6748	6,4	0,6400	0,6520	6,6	0,6187
18	4,3366	0,6771	0,7128	6,1	0,6667	0,6882	6,3	0,6443	0,6651	6,5	0,6231	0,6433	6,7	0,6032
21	4,3709	0,7868	0,7004	6,2	0,6465	0,6773	6,5	0,6259	0,6554	6,7	0,6063	0,6347	6,9	0,5878
24	4,4049	0,8956	0,6882	6,4	0,6263	0,6664	6,6	0,6075	0,6457	6,8	0,5895	0,6261	7,0	0,5723
27	4,4386	1,0036	0,6759	6,6	0,6061	0,6555	6,8	0,5890	0,6361	7,0	0,5726	0,6175	7,2	0,5568
30	4,4721	1,1108	0,6637	6,7	0,5859	0,6447	6,9	0,5706	0,6265	7,1	0,5558	0,6090	7,3	0,5414
33	4,5054	1,2171	0,6514	6,9	0,5657	0,6339	7,1	0,5522	0,6169	7,3	0,5389	0,6004	7,5	0,5259
36	4,5383	1,3227	0,6392	7,1	0,5455	0,6231	7,3	0,5338	0,6073	7,5	0,5221	0,5919	7,7	0,5104
39	4,5711	1,4275	0,6270	7,3	0,5253	0,6123	7,5	0,5154	0,5977	7,6	0,5053	0,5834	7,8	0,4950
42	4,6036	1,5316	0,6148	7,5	0,5051	0,6015	7,7	0,4970	0,5881	7,8	0,4884	0,5748	8,0	0,4795
45	4,6359	1,6350	0,6025	7,7	0,4849	0,5907	7,8	0,4786	0,5785	8,0	0,4716	0,5663	8,2	0,4640
48	4,6680	1,7376	0,5902	7,9	0,4647	0,5798	8,1	0,4602	0,5689	8,2	0,4547	0,5578	8,4	0,4486
51	4,6999	1,8396	0,5779	8,1	0,4445	0,5690	8,3	0,4418	0,5593	8,4	0,4379	0,5492	8,6	0,4331
54	4,7315	1,9408	0,5656	8,4	0,4243	0,5581	8,5	0,4234	0,5497	8,6	0,4210	0,5407	8,8	0,4176
57	4,7629	2,0414	0,5532	8,6	0,4041	0,5472	8,7	0,4050	0,5400	8,8	0,4042	0,5321	9,0	0,4022
60	4,7942	2,1413	0,5408	8,9	0,3838	0,5362	8,9	0,3866	0,5303	9,0	0,3874	0,5235	9,2	0,3867
63	4,8252	2,2406	0,5283	9,1	0,3636	0,5252	9,2	0,3682	0,5206	9,3	0,3705	0,5149	9,4	0,3712
66	4,8560	2,3392	0,5158	9,4	0,3434	0,5142	9,4	0,3497	0,5109	9,5	0,3537	0,5062	9,6	0,3558
69	4,8866	2,4372	0,5032	9,7	0,3232	0,5031	9,7	0,3313	0,5011	9,8	0,3368	0,4975	9,8	0,3403
72	4,9171	2,5346	0,4905	10,0	0,3030	0,4920	10,0	0,3129	0,4912	10,0	0,3200	0,4888	10,1	0,3248
75	4,9473	2,6314	0,4778	10,4	0,2828	0,4807	10,3	0,2945	0,4813	10,3	0,3032	0,4800	10,3	0,3094
78	4,9774	2,7277	0,4649	10,7	0,2626	0,4695	10,6	0,2761	0,4714	10,6	0,2863	0,4712	10,6	0,2939
81	5,0073	2,8233	0,4520	11,1	0,2424	0,4581	10,9	0,2577	0,4613	10,9	0,2695	0,4623	10,8	0,2784
84	5,0370	2,9184	0,4390	11,5	0,2222	0,4467	11,3	0,2393	0,4513	11,2	0,2526	0,4534	11,1	0,2629
87	5,0665	3,0129	0,4258	11,9	0,2020	0,4351	11,6	0,2209	0,4411	11,5	0,2358	0,4445	11,4	0,2475
90	5,0959	3,1068	0,4126	12,4	0,1818	0,4235	12,0	0,2025	0,4309	11,8	0,2189	0,4354	11,7	0,2320
93	5,1251	3,2003	0,3992	12,8	0,1616	0,4118	12,4	0,1841	0,4206	12,2	0,2021	0,4263	12,0	0,2165
96	5,1541	3,2932	0,3857	13,4	0,1414	0,4000	12,9	0,1657	0,4102	12,6	0,1853	0,4172	12,4	0,2011
99	5,1830	3,3856	0,3721	13,9	0,1212	0,3881	13,4	0,1473	0,3997	13,0	0,1684	0,4079	12,7	0,1856
102	5,2117	3,4774	0,3583	14,5	0,1010	0,3760	13,9	0,1289	0,3891	13,4	0,1516	0,3986	13,1	0,1701
105	5,2402	3,5688	0,3444	15,2	0,0808	0,3639	14,4	0,1104	0,3785	13,8	0,1347	0,3892	13,5	0,1547
108	5,2686	3,6597	0,3303	15,9	0,0606	0,3516	15,0	0,0920	0,3677	14,3	0,1179	0,3797	13,9	0,1392
111	5,2969	3,7500	0,3161	16,8	0,0404	0,3392	15,6	0,0736	0,3568	14,8	0,1011	0,3702	14,3	0,1237
114	5,3250	3,8399	0,3017	17,6	0,0202	0,3267	16,3	0,0552	0,3459	15,4	0,0842	0,3605	14,8	0,1083
117	5,3529	3,9294	0,2871	18,6	0,0000	0,3140	17,0	0,0368	0,3348	16,0	0,0674	0,3507	15,3	0,0928
120	5,3807	4,0183	0,2724	19,8	---	0,3011	17,9	0,0184	0,3235	16,6	0,0505	0,3409	15,8	0,0773

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

150"			156"			162"			168"			174"		
12'6"			13'0"			13'6"			14'0"			14'6"		
MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0,6700	6,2	0,6700	0,6458	6,4	0,6458	0,6233	6,6	0,6233	0,6023	6,8	0,6023	0,5827	7,1	0,5827
0,6620	6,3	0,6557	0,6387	6,5	0,6326	0,6169	6,7	0,6111	0,5965	7,0	0,5909	0,5775	7,2	0,5721
0,6541	6,4	0,6415	0,6316	6,6	0,6194	0,6105	6,9	0,5988	0,5908	7,1	0,5796	0,5723	7,3	0,5615
0,6462	6,5	0,6272	0,6245	6,8	0,6063	0,6042	7,0	0,5866	0,5851	7,2	0,5682	0,5672	7,5	0,5509
0,6384	6,7	0,6130	0,6175	6,9	0,5931	0,5979	7,1	0,5744	0,5795	7,4	0,5568	0,5621	7,6	0,5403
0,6306	6,8	0,5987	0,6105	7,0	0,5799	0,5917	7,3	0,5622	0,5739	7,5	0,5455	0,5571	7,7	0,5297
0,6229	7,0	0,5845	0,6036	7,2	0,5667	0,5854	7,4	0,5500	0,5683	7,6	0,5341	0,5520	7,9	0,5191
0,6152	7,1	0,5702	0,5967	7,3	0,5535	0,5792	7,5	0,5377	0,5627	7,8	0,5227	0,5470	8,0	0,5085
0,6075	7,3	0,5559	0,5898	7,5	0,5404	0,5731	7,7	0,5255	0,5572	7,9	0,5114	0,5420	8,1	0,4979
0,5998	7,4	0,5417	0,5830	7,6	0,5272	0,5669	7,8	0,5133	0,5516	8,0	0,5000	0,5371	8,3	0,4873
0,5922	7,6	0,5274	0,5761	7,8	0,5140	0,5608	8,0	0,5011	0,5461	8,2	0,4887	0,5321	8,4	0,4767
0,5846	7,7	0,5132	0,5693	7,9	0,5008	0,5547	8,1	0,4889	0,5406	8,3	0,4773	0,5272	8,5	0,4661
0,5770	7,9	0,4989	0,5625	8,1	0,4876	0,5486	8,3	0,4766	0,5352	8,5	0,4659	0,5223	8,7	0,4555
0,5693	8,0	0,4847	0,5557	8,2	0,4745	0,5425	8,4	0,4644	0,5297	8,6	0,4546	0,5173	8,8	0,4449
0,5617	8,2	0,4704	0,5489	8,4	0,4613	0,5364	8,6	0,4522	0,5242	8,8	0,4432	0,5124	9,0	0,4343
0,5541	8,4	0,4562	0,5421	8,6	0,4481	0,5303	8,7	0,4400	0,5188	8,9	0,4318	0,5075	9,1	0,4238
0,5465	8,5	0,4419	0,5353	8,7	0,4349	0,5242	8,9	0,4277	0,5133	9,1	0,4205	0,5026	9,3	0,4132
0,5389	8,7	0,4276	0,5285	8,9	0,4217	0,5181	9,1	0,4155	0,5078	9,3	0,4091	0,4977	9,4	0,4026
0,5313	8,9	0,4134	0,5217	9,1	0,4086	0,5120	9,2	0,4033	0,5024	9,4	0,3977	0,4928	9,6	0,3920
0,5236	9,1	0,3991	0,5149	9,3	0,3954	0,5059	9,4	0,3911	0,4969	9,6	0,3864	0,4879	9,8	0,3814
0,5160	9,3	0,3849	0,5080	9,4	0,3822	0,4998	9,6	0,3789	0,4914	9,8	0,3750	0,4830	9,9	0,3708
0,5083	9,5	0,3706	0,5012	9,6	0,3690	0,4937	9,8	0,3666	0,4859	9,9	0,3636	0,4780	10,1	0,3602
0,5006	9,7	0,3564	0,4943	9,8	0,3558	0,4875	10,0	0,3544	0,4804	10,1	0,3523	0,4731	10,3	0,3496
0,4929	9,9	0,3421	0,4874	10,0	0,3427	0,4814	10,2	0,3422	0,4749	10,3	0,3409	0,4681	10,4	0,3390
0,4851	10,1	0,3279	0,4805	10,2	0,3295	0,4752	10,3	0,3300	0,4694	10,5	0,3296	0,4632	10,6	0,3284
0,4773	10,4	0,3136	0,4736	10,4	0,3163	0,4690	10,5	0,3178	0,4638	10,7	0,3182	0,4582	10,8	0,3178
0,4695	10,6	0,2994	0,4666	10,7	0,3031	0,4628	10,8	0,3055	0,4583	10,9	0,3068	0,4532	11,0	0,3072
0,4616	10,8	0,2851	0,4596	10,9	0,2899	0,4565	11,0	0,2933	0,4527	11,1	0,2955	0,4482	11,2	0,2966
0,4537	11,1	0,2708	0,4525	11,1	0,2768	0,4502	11,2	0,2811	0,4470	11,3	0,2841	0,4432	11,4	0,2860
0,4458	11,4	0,2566	0,4455	11,4	0,2636	0,4439	11,4	0,2689	0,4414	11,5	0,2727	0,4381	11,6	0,2754
0,4377	11,6	0,2423	0,4383	11,6	0,2504	0,4376	11,6	0,2566	0,4357	11,7	0,2614	0,4330	11,8	0,2648
0,4297	11,9	0,2281	0,4312	11,9	0,2372	0,4312	11,9	0,2444	0,4300	11,9	0,2500	0,4279	12,0	0,2543
0,4216	12,2	0,2138	0,4240	12,2	0,2241	0,4248	12,1	0,2322	0,4243	12,1	0,2386	0,4228	12,2	0,2437
0,4134	12,5	0,1996	0,4167	12,4	0,2109	0,4183	12,4	0,2200	0,4185	12,4	0,2273	0,4177	12,4	0,2331
0,4051	12,9	0,1853	0,4094	12,7	0,1977	0,4118	12,7	0,2078	0,4127	12,6	0,2159	0,4125	12,6	0,2225
0,3968	13,2	0,1711	0,4020	13,0	0,1845	0,4052	12,9	0,1955	0,4069	12,9	0,2046	0,4073	12,9	0,2119
0,3885	13,6	0,1568	0,3946	13,4	0,1713	0,3986	13,2	0,1833	0,4010	13,1	0,1932	0,4020	13,1	0,2013
0,3800	13,9	0,1425	0,3871	13,7	0,1582	0,3920	13,5	0,1711	0,3951	13,4	0,1818	0,3967	13,4	0,1907
0,3715	14,3	0,1283	0,3796	14,0	0,1450	0,3853	13,8	0,1589	0,3891	13,7	0,1705	0,3914	13,6	0,1801
0,3629	14,8	0,1140	0,3719	14,4	0,1318	0,3785	14,1	0,1467	0,3831	14,0	0,1591	0,3860	13,9	0,1695
0,3542	15,2	0,0998	0,3643	14,8	0,1186	0,3717	14,5	0,1344	0,3770	14,3	0,1477	0,3806	14,1	0,1589

D800-120

MULTIPLIER FOR HIGH-LIFT DRUM

			180"			186"			192"			198"		
			15'0"			15'6"			16'0"			16'6"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPRIRAL	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0	4,1250	0,0000	0,5643	7,3	0,5643	0,5470	7,5	0,5470	0,5307	7,8	0,5307	0,5154	8,0	0,5154
3	4,1610	0,1152	0,5596	7,4	0,5544	0,5428	7,7	0,5377	0,5269	7,9	0,5220	0,5120	8,1	0,5072
6	4,1967	0,2295	0,5549	7,6	0,5445	0,5386	7,8	0,5284	0,5232	8,0	0,5133	0,5086	8,3	0,4991
9	4,2321	0,3428	0,5503	7,7	0,5346	0,5344	7,9	0,5192	0,5194	8,1	0,5046	0,5052	8,4	0,4909
12	4,2672	0,4551	0,5458	7,8	0,5247	0,5303	8,0	0,5099	0,5157	8,3	0,4959	0,5018	8,5	0,4827
15	4,3021	0,5666	0,5412	7,9	0,5148	0,5262	8,2	0,5006	0,5120	8,4	0,4872	0,4985	8,6	0,4745
18	4,3366	0,6771	0,5367	8,1	0,5049	0,5221	8,3	0,4914	0,5083	8,5	0,4785	0,4952	8,8	0,4663
21	4,3709	0,7868	0,5322	8,2	0,4950	0,5180	8,4	0,4821	0,5046	8,7	0,4698	0,4918	8,9	0,4581
24	4,4049	0,8956	0,5277	8,3	0,4851	0,5140	8,6	0,4728	0,5010	8,8	0,4611	0,4885	9,0	0,4500
27	4,4386	1,0036	0,5232	8,5	0,4752	0,5100	8,7	0,4635	0,4973	8,9	0,4524	0,4853	9,1	0,4418
30	4,4721	1,1108	0,5187	8,6	0,4653	0,5059	8,8	0,4543	0,4937	9,1	0,4437	0,4820	9,3	0,4336
33	4,5054	1,2171	0,5143	8,8	0,4554	0,5019	9,0	0,4450	0,4901	9,2	0,4350	0,4787	9,4	0,4254
36	4,5383	1,3227	0,5099	8,9	0,4455	0,4979	9,1	0,4357	0,4865	9,3	0,4263	0,4755	9,5	0,4172
39	4,5711	1,4275	0,5054	9,0	0,4356	0,4939	9,3	0,4265	0,4829	9,5	0,4176	0,4722	9,7	0,4091
42	4,6036	1,5316	0,5010	9,2	0,4257	0,4900	9,4	0,4172	0,4793	9,6	0,4089	0,4690	9,8	0,4009
45	4,6359	1,6350	0,4966	9,3	0,4158	0,4860	9,5	0,4079	0,4757	9,7	0,4002	0,4658	10,0	0,3927
48	4,6680	1,7376	0,4922	9,5	0,4059	0,4820	9,7	0,3986	0,4721	9,9	0,3915	0,4625	10,1	0,3845
51	4,6999	1,8396	0,4877	9,6	0,3960	0,4780	9,8	0,3894	0,4685	10,0	0,3828	0,4593	10,2	0,3763
54	4,7315	1,9408	0,4833	9,8	0,3861	0,4740	10,0	0,3801	0,4650	10,2	0,3741	0,4561	10,4	0,3682
57	4,7629	2,0414	0,4789	9,9	0,3762	0,4701	10,1	0,3708	0,4614	10,3	0,3654	0,4528	10,5	0,3600
60	4,7942	2,1413	0,4745	10,1	0,3663	0,4661	10,3	0,3616	0,4578	10,5	0,3567	0,4496	10,7	0,3518
63	4,8252	2,2406	0,4701	10,3	0,3564	0,4621	10,4	0,3523	0,4542	10,6	0,3480	0,4464	10,8	0,3436
66	4,8560	2,3392	0,4656	10,4	0,3465	0,4581	10,6	0,3430	0,4506	10,8	0,3393	0,4431	11,0	0,3354
69	4,8866	2,4372	0,4612	10,6	0,3366	0,4541	10,8	0,3338	0,4470	10,9	0,3306	0,4399	11,1	0,3272
72	4,9171	2,5346	0,4567	10,8	0,3267	0,4501	10,9	0,3245	0,4434	11,1	0,3219	0,4367	11,3	0,3191
75	4,9473	2,6314	0,4523	10,9	0,3168	0,4461	11,1	0,3152	0,4398	11,2	0,3132	0,4334	11,4	0,3109
78	4,9774	2,7277	0,4478	11,1	0,3069	0,4421	11,3	0,3059	0,4362	11,4	0,3045	0,4302	11,6	0,3027
81	5,0073	2,8233	0,4433	11,3	0,2970	0,4380	11,4	0,2967	0,4325	11,6	0,2958	0,4269	11,7	0,2945
84	5,0370	2,9184	0,4388	11,5	0,2871	0,4340	11,6	0,2874	0,4289	11,7	0,2871	0,4236	11,9	0,2863
87	5,0665	3,0129	0,4342	11,7	0,2772	0,4299	11,8	0,2781	0,4253	11,9	0,2784	0,4203	12,1	0,2782
90	5,0959	3,1068	0,4297	11,9	0,2673	0,4258	12,0	0,2689	0,4216	12,1	0,2697	0,4170	12,2	0,2700
93	5,1251	3,2003	0,4251	12,1	0,2574	0,4217	12,2	0,2596	0,4179	12,3	0,2610	0,4137	12,4	0,2618
96	5,1541	3,2932	0,4205	12,3	0,2475	0,4176	12,3	0,2503	0,4142	12,4	0,2523	0,4104	12,6	0,2536
99	5,1830	3,3856	0,4159	12,5	0,2376	0,4135	12,5	0,2410	0,4105	12,6	0,2436	0,4071	12,7	0,2454
102	5,2117	3,4774	0,4113	12,7	0,2277	0,4093	12,7	0,2318	0,4068	12,8	0,2349	0,4037	12,9	0,2373
105	5,2402	3,5688	0,4066	12,9	0,2178	0,4051	12,9	0,2225	0,4030	13,0	0,2262	0,4003	13,1	0,2291
108	5,2686	3,6597	0,4019	13,1	0,2079	0,4009	13,1	0,2132	0,3992	13,2	0,2175	0,3970	13,3	0,2209
111	5,2969	3,7500	0,3972	13,3	0,1980	0,3967	13,4	0,2040	0,3954	13,4	0,2088	0,3936	13,5	0,2127
114	5,3250	3,8399	0,3924	13,6	0,1881	0,3924	13,6	0,1947	0,3916	13,6	0,2001	0,3901	13,6	0,2045
117	5,3529	3,9294	0,3876	13,8	0,1782	0,3882	13,8	0,1854	0,3878	13,8	0,1914	0,3867	13,8	0,1963
120	5,3807	4,0183	0,3828	14,1	0,1683	0,3838	14,0	0,1761	0,3839	14,0	0,1827	0,3832	14,0	0,1882

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

204"			210"			216"			222"			228"		
17'0"			17'6"			18'0"			18'6"			19'0"		
MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0,5010	8,2	0,5010	0,4873	8,5	0,4873	0,4743	8,7	0,4743	0,4621	8,9	0,4621	0,4504	9,2	0,4504
0,4979	8,4	0,4933	0,4845	8,6	0,4800	0,4718	8,8	0,4675	0,4598	9,0	0,4556	0,4484	9,3	0,4442
0,4948	8,5	0,4855	0,4817	8,7	0,4727	0,4693	8,9	0,4606	0,4575	9,2	0,4490	0,4463	9,4	0,4381
0,4917	8,6	0,4778	0,4790	8,8	0,4655	0,4668	9,1	0,4537	0,4553	9,3	0,4425	0,4443	9,5	0,4319
0,4887	8,7	0,4701	0,4762	9,0	0,4582	0,4643	9,2	0,4468	0,4531	9,4	0,4360	0,4423	9,6	0,4257
0,4857	8,9	0,4624	0,4735	9,1	0,4509	0,4619	9,3	0,4400	0,4508	9,5	0,4295	0,4403	9,8	0,4196
0,4827	9,0	0,4547	0,4708	9,2	0,4436	0,4594	9,4	0,4331	0,4486	9,7	0,4230	0,4383	9,9	0,4134
0,4797	9,1	0,4470	0,4681	9,3	0,4364	0,4570	9,6	0,4262	0,4464	9,8	0,4165	0,4363	10,0	0,4072
0,4767	9,2	0,4393	0,4654	9,5	0,4291	0,4546	9,7	0,4193	0,4443	9,9	0,4100	0,4344	10,1	0,4010
0,4737	9,4	0,4316	0,4627	9,6	0,4218	0,4522	9,8	0,4125	0,4421	10,0	0,4035	0,4324	10,3	0,3949
0,4708	9,5	0,4239	0,4601	9,7	0,4146	0,4498	9,9	0,4056	0,4399	10,2	0,3970	0,4304	10,4	0,3887
0,4678	9,6	0,4162	0,4574	9,9	0,4073	0,4474	10,1	0,3987	0,4377	10,3	0,3905	0,4285	10,5	0,3825
0,4649	9,8	0,4085	0,4547	10,0	0,4000	0,4450	10,2	0,3918	0,4356	10,4	0,3840	0,4266	10,6	0,3764
0,4620	9,9	0,4008	0,4521	10,1	0,3927	0,4426	10,3	0,3850	0,4334	10,5	0,3775	0,4246	10,8	0,3702
0,4591	10,0	0,3931	0,4495	10,2	0,3855	0,4402	10,5	0,3781	0,4313	10,7	0,3710	0,4227	10,9	0,3640
0,4561	10,2	0,3854	0,4468	10,4	0,3782	0,4379	10,6	0,3712	0,4292	10,8	0,3644	0,4208	11,0	0,3579
0,4532	10,3	0,3776	0,4442	10,5	0,3709	0,4355	10,7	0,3643	0,4270	10,9	0,3579	0,4189	11,1	0,3517
0,4503	10,4	0,3699	0,4416	10,6	0,3636	0,4331	10,9	0,3575	0,4249	11,1	0,3514	0,4169	11,3	0,3455
0,4474	10,6	0,3622	0,4390	10,8	0,3564	0,4307	11,0	0,3506	0,4228	11,2	0,3449	0,4150	11,4	0,3393
0,4445	10,7	0,3545	0,4363	10,9	0,3491	0,4284	11,1	0,3437	0,4206	11,3	0,3384	0,4131	11,5	0,3332
0,4416	10,9	0,3468	0,4337	11,1	0,3418	0,4260	11,3	0,3369	0,4185	11,5	0,3319	0,4112	11,7	0,3270
0,4387	11,0	0,3391	0,4311	11,2	0,3346	0,4237	11,4	0,3300	0,4164	11,6	0,3254	0,4093	11,8	0,3208
0,4358	11,1	0,3314	0,4285	11,3	0,3273	0,4213	11,5	0,3231	0,4143	11,7	0,3189	0,4074	11,9	0,3147
0,4328	11,3	0,3237	0,4258	11,5	0,3200	0,4189	11,7	0,3162	0,4121	11,9	0,3124	0,4054	12,1	0,3085
0,4299	11,4	0,3160	0,4232	11,6	0,3127	0,4166	11,8	0,3094	0,4100	12,0	0,3059	0,4035	12,2	0,3023
0,4270	11,6	0,3083	0,4206	11,8	0,3055	0,4142	11,9	0,3025	0,4079	12,1	0,2994	0,4016	12,3	0,2962
0,4241	11,7	0,3006	0,4179	11,9	0,2982	0,4118	12,1	0,2956	0,4057	12,3	0,2929	0,3997	12,5	0,2900
0,4211	11,9	0,2929	0,4153	12,1	0,2909	0,4094	12,2	0,2887	0,4036	12,4	0,2863	0,3978	12,6	0,2838
0,4182	12,0	0,2852	0,4126	12,2	0,2836	0,4070	12,4	0,2819	0,4014	12,5	0,2798	0,3958	12,7	0,2776
0,4152	12,2	0,2775	0,4100	12,4	0,2764	0,4047	12,5	0,2750	0,3993	12,7	0,2733	0,3939	12,9	0,2715
0,4122	12,4	0,2697	0,4073	12,5	0,2691	0,4023	12,7	0,2681	0,3971	12,8	0,2668	0,3920	13,0	0,2653
0,4093	12,5	0,2620	0,4046	12,7	0,2618	0,3998	12,8	0,2612	0,3950	13,0	0,2603	0,3900	13,1	0,2591
0,4063	12,7	0,2543	0,4019	12,8	0,2546	0,3974	13,0	0,2544	0,3928	13,1	0,2538	0,3881	13,3	0,2530
0,4033	12,9	0,2466	0,3993	13,0	0,2473	0,3950	13,1	0,2475	0,3906	13,3	0,2473	0,3861	13,4	0,2468
0,4003	13,0	0,2389	0,3965	13,1	0,2400	0,3926	13,3	0,2406	0,3884	13,4	0,2408	0,3842	13,6	0,2406
0,3973	13,2	0,2312	0,3938	13,3	0,2327	0,3901	13,4	0,2337	0,3862	13,6	0,2343	0,3822	13,7	0,2345
0,3942	13,4	0,2235	0,3911	13,5	0,2255	0,3877	13,6	0,2269	0,3840	13,7	0,2278	0,3802	13,9	0,2283
0,3912	13,5	0,2158	0,3884	13,6	0,2182	0,3852	13,8	0,2200	0,3818	13,9	0,2213	0,3782	14,0	0,2221
0,3881	13,7	0,2081	0,3856	13,8	0,2109	0,3827	13,9	0,2131	0,3796	14,0	0,2148	0,3762	14,2	0,2159
0,3850	13,9	0,2004	0,3828	14,0	0,2036	0,3803	14,1	0,2062	0,3774	14,2	0,2083	0,3742	14,3	0,2098
0,3819	14,1	0,1927	0,3800	14,2	0,1964	0,3778	14,2	0,1994	0,3751	14,3	0,2017	0,3722	14,5	0,2036

D800-120

MULTIPLIER FOR HIGH-LIFT DRUM

			234"			240"			246"			252"		
			19'6"			20'0"			20'6"			21'0"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPRIRAL	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0	4,1250	0,0000	0,4393	9,4	0,4393	0,4288	9,6	0,4288	0,4187	9,9	0,4187	0,4091	10,1	0,4091
3	4,1610	0,1152	0,4375	9,5	0,4335	0,4271	9,7	0,4232	0,4172	10,0	0,4134	0,4078	10,2	0,4041
6	4,1967	0,2295	0,4356	9,6	0,4276	0,4255	9,9	0,4176	0,4157	10,1	0,4081	0,4065	10,3	0,3990
9	4,2321	0,3428	0,4338	9,8	0,4217	0,4238	10,0	0,4121	0,4143	10,2	0,4028	0,4052	10,4	0,3940
12	4,2672	0,4551	0,4320	9,9	0,4159	0,4222	10,1	0,4065	0,4128	10,3	0,3975	0,4039	10,6	0,3889
15	4,3021	0,5666	0,4302	10,0	0,4100	0,4206	10,2	0,4009	0,4114	10,5	0,3922	0,4026	10,7	0,3838
18	4,3366	0,6771	0,4284	10,1	0,4042	0,4190	10,4	0,3954	0,4099	10,6	0,3869	0,4013	10,8	0,3788
21	4,3709	0,7868	0,4267	10,2	0,3983	0,4174	10,5	0,3898	0,4085	10,7	0,3816	0,4000	10,9	0,3737
24	4,4049	0,8956	0,4249	10,4	0,3925	0,4158	10,6	0,3842	0,4071	10,8	0,3763	0,3987	11,0	0,3687
27	4,4386	1,0036	0,4231	10,5	0,3866	0,4142	10,7	0,3786	0,4057	10,9	0,3710	0,3975	11,2	0,3636
30	4,4721	1,1108	0,4214	10,6	0,3807	0,4126	10,8	0,3731	0,4043	11,1	0,3657	0,3962	11,3	0,3586
33	4,5054	1,2171	0,4196	10,7	0,3749	0,4111	11,0	0,3675	0,4029	11,2	0,3604	0,3949	11,4	0,3535
36	4,5383	1,3227	0,4179	10,9	0,3690	0,4095	11,1	0,3619	0,4015	11,3	0,3551	0,3937	11,5	0,3485
39	4,5711	1,4275	0,4161	11,0	0,3632	0,4080	11,2	0,3564	0,4001	11,4	0,3498	0,3924	11,6	0,3434
42	4,6036	1,5316	0,4144	11,1	0,3573	0,4064	11,3	0,3508	0,3987	11,5	0,3445	0,3912	11,8	0,3384
45	4,6359	1,6350	0,4127	11,2	0,3515	0,4048	11,5	0,3452	0,3973	11,7	0,3392	0,3900	11,9	0,3333
48	4,6680	1,7376	0,4109	11,4	0,3456	0,4033	11,6	0,3397	0,3959	11,8	0,3339	0,3887	12,0	0,3283
51	4,6999	1,8396	0,4092	11,5	0,3397	0,4017	11,7	0,3341	0,3945	11,9	0,3286	0,3875	12,1	0,3232
54	4,7315	1,9408	0,4075	11,6	0,3339	0,4002	11,8	0,3285	0,3931	12,0	0,3233	0,3862	12,3	0,3182
57	4,7629	2,0414	0,4058	11,7	0,3280	0,3987	11,9	0,3230	0,3917	12,2	0,3180	0,3850	12,4	0,3131
60	4,7942	2,1413	0,4041	11,9	0,3222	0,3971	12,1	0,3174	0,3903	12,3	0,3127	0,3838	12,5	0,3081
63	4,8252	2,2406	0,4023	12,0	0,3163	0,3956	12,2	0,3118	0,3890	12,4	0,3074	0,3825	12,6	0,3030
66	4,8560	2,3392	0,4006	12,1	0,3105	0,3940	12,3	0,3063	0,3876	12,5	0,3021	0,3813	12,7	0,2980
69	4,8866	2,4372	0,3989	12,3	0,3046	0,3925	12,5	0,3007	0,3862	12,7	0,2968	0,3801	12,9	0,2929
72	4,9171	2,5346	0,3972	12,4	0,2987	0,3909	12,6	0,2951	0,3848	12,8	0,2915	0,3788	13,0	0,2879
75	4,9473	2,6314	0,3954	12,5	0,2929	0,3894	12,7	0,2896	0,3834	12,9	0,2862	0,3776	13,1	0,2828
78	4,9774	2,7277	0,3937	12,6	0,2870	0,3878	12,8	0,2840	0,3821	13,0	0,2809	0,3764	13,2	0,2778
81	5,0073	2,8233	0,3920	12,8	0,2812	0,3863	13,0	0,2784	0,3807	13,2	0,2756	0,3751	13,3	0,2727
84	5,0370	2,9184	0,3903	12,9	0,2753	0,3847	13,1	0,2728	0,3793	13,3	0,2703	0,3739	13,5	0,2677
87	5,0665	3,0129	0,3885	13,0	0,2694	0,3832	13,2	0,2673	0,3779	13,4	0,2650	0,3726	13,6	0,2626
90	5,0959	3,1068	0,3868	13,2	0,2636	0,3816	13,4	0,2617	0,3765	13,5	0,2597	0,3714	13,7	0,2576
93	5,1251	3,2003	0,3850	13,3	0,2577	0,3801	13,5	0,2561	0,3751	13,7	0,2544	0,3702	13,8	0,2525
96	5,1541	3,2932	0,3833	13,4	0,2519	0,3785	13,6	0,2506	0,3737	13,8	0,2491	0,3689	14,0	0,2475
99	5,1830	3,3856	0,3815	13,6	0,2460	0,3769	13,8	0,2450	0,3723	13,9	0,2438	0,3677	14,1	0,2424
102	5,2117	3,4774	0,3798	13,7	0,2402	0,3754	13,9	0,2394	0,3709	14,1	0,2385	0,3664	14,2	0,2374
105	5,2402	3,5688	0,3780	13,9	0,2343	0,3738	14,0	0,2339	0,3695	14,2	0,2332	0,3652	14,4	0,2323
108	5,2686	3,6597	0,3763	14,0	0,2284	0,3722	14,2	0,2283	0,3681	14,3	0,2279	0,3639	14,5	0,2273
111	5,2969	3,7500	0,3745	14,1	0,2226	0,3706	14,3	0,2227	0,3666	14,4	0,2226	0,3626	14,6	0,2222
114	5,3250	3,8399	0,3727	14,3	0,2167	0,3690	14,4	0,2172	0,3652	14,6	0,2173	0,3614	14,7	0,2172
117	5,3529	3,9294	0,3709	14,4	0,2109	0,3674	14,6	0,2116	0,3638	14,7	0,2120	0,3601	14,9	0,2121
120	5,3807	4,0183	0,3691	14,6	0,2050	0,3658	14,7	0,2060	0,3624	14,8	0,2067	0,3588	15,0	0,2071

ZERO BALANCE POINT:

Over 20%

Between 10% and 20%

Under 10%

258"			264"			270"			276"			282"		
21'6"			22'0"			22'6"			23'0"			23'6"		
MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0,3999	10,3	0,3999	0,3912	10,5	0,3912	---	----	----	---	----	----	---	----	----
0,3988	10,4	0,3951	0,3901	10,7	0,3866	---	----	----	---	----	----	---	----	----
0,3976	10,6	0,3903	0,3891	10,8	0,3820	0,3809	11,0	0,3740	---	----	----	---	----	----
0,3964	10,7	0,3855	0,3880	10,9	0,3774	0,3800	11,1	0,3696	---	----	----	---	----	----
0,3953	10,8	0,3807	0,3870	11,0	0,3728	0,3791	11,3	0,3652	0,3715	11,5	0,3579	---	----	----
0,3941	10,9	0,3758	0,3860	11,1	0,3682	0,3782	11,4	0,3608	0,3707	11,6	0,3537	---	----	----
0,3930	11,0	0,3710	0,3850	11,3	0,3636	0,3773	11,5	0,3564	0,3699	11,7	0,3495	0,3629	12,0	0,3428
0,3918	11,2	0,3662	0,3840	11,4	0,3590	0,3764	11,6	0,3520	0,3692	11,8	0,3453	0,3622	12,1	0,3388
0,3907	11,3	0,3614	0,3830	11,5	0,3543	0,3755	11,7	0,3476	0,3684	12,0	0,3410	0,3615	12,2	0,3348
0,3896	11,4	0,3566	0,3820	11,6	0,3497	0,3747	11,8	0,3432	0,3676	12,1	0,3368	0,3608	12,3	0,3307
0,3884	11,5	0,3517	0,3810	11,7	0,3451	0,3738	12,0	0,3388	0,3668	12,2	0,3326	0,3601	12,4	0,3267
0,3873	11,6	0,3469	0,3800	11,9	0,3405	0,3729	12,1	0,3344	0,3661	12,3	0,3284	0,3595	12,5	0,3227
0,3862	11,8	0,3421	0,3790	12,0	0,3359	0,3720	12,2	0,3300	0,3653	12,4	0,3242	0,3588	12,6	0,3186
0,3851	11,9	0,3373	0,3780	12,1	0,3313	0,3712	12,3	0,3256	0,3645	12,5	0,3200	0,3581	12,8	0,3146
0,3840	12,0	0,3325	0,3770	12,2	0,3267	0,3703	12,4	0,3212	0,3638	12,7	0,3158	0,3575	12,9	0,3106
0,3829	12,1	0,3277	0,3760	12,3	0,3221	0,3694	12,5	0,3168	0,3630	12,8	0,3116	0,3568	13,0	0,3065
0,3818	12,2	0,3228	0,3751	12,4	0,3175	0,3685	12,7	0,3124	0,3622	12,9	0,3074	0,3561	13,1	0,3025
0,3807	12,3	0,3180	0,3741	12,6	0,3129	0,3677	12,8	0,3080	0,3615	13,0	0,3032	0,3555	13,2	0,2985
0,3796	12,5	0,3132	0,3731	12,7	0,3083	0,3668	12,9	0,3036	0,3607	13,1	0,2989	0,3548	13,3	0,2944
0,3785	12,6	0,3084	0,3721	12,8	0,3037	0,3660	13,0	0,2992	0,3600	13,2	0,2947	0,3542	13,4	0,2904
0,3774	12,7	0,3036	0,3711	12,9	0,2991	0,3651	13,1	0,2948	0,3592	13,3	0,2905	0,3535	13,6	0,2864
0,3763	12,8	0,2987	0,3702	13,0	0,2945	0,3642	13,2	0,2904	0,3585	13,5	0,2863	0,3528	13,7	0,2823
0,3752	12,9	0,2939	0,3692	13,2	0,2899	0,3634	13,4	0,2860	0,3577	13,6	0,2821	0,3522	13,8	0,2783
0,3741	13,1	0,2891	0,3682	13,3	0,2853	0,3625	13,5	0,2816	0,3570	13,7	0,2779	0,3515	13,9	0,2743
0,3730	13,2	0,2843	0,3673	13,4	0,2807	0,3617	13,6	0,2772	0,3562	13,8	0,2737	0,3509	14,0	0,2702
0,3719	13,3	0,2795	0,3663	13,5	0,2761	0,3608	13,7	0,2728	0,3554	13,9	0,2695	0,3502	14,1	0,2662
0,3708	13,4	0,2747	0,3653	13,6	0,2715	0,3599	13,8	0,2684	0,3547	14,0	0,2653	0,3496	14,2	0,2622
0,3697	13,5	0,2698	0,3643	13,7	0,2669	0,3591	13,9	0,2640	0,3539	14,1	0,2610	0,3489	14,4	0,2581
0,3686	13,7	0,2650	0,3634	13,9	0,2623	0,3582	14,1	0,2596	0,3532	14,3	0,2568	0,3482	14,5	0,2541
0,3675	13,8	0,2602	0,3624	14,0	0,2577	0,3574	14,2	0,2552	0,3524	14,4	0,2526	0,3476	14,6	0,2501
0,3664	13,9	0,2554	0,3614	14,1	0,2531	0,3565	14,3	0,2508	0,3517	14,5	0,2484	0,3469	14,7	0,2460
0,3653	14,0	0,2506	0,3604	14,2	0,2485	0,3556	14,4	0,2464	0,3509	14,6	0,2442	0,3463	14,8	0,2420
0,3642	14,2	0,2457	0,3594	14,3	0,2439	0,3548	14,5	0,2420	0,3501	14,7	0,2400	0,3456	14,9	0,2380
0,3630	14,3	0,2409	0,3584	14,5	0,2393	0,3539	14,6	0,2376	0,3494	14,8	0,2358	0,3449	15,0	0,2339
0,3619	14,4	0,2361	0,3575	14,6	0,2347	0,3530	14,8	0,2332	0,3486	14,9	0,2316	0,3443	15,1	0,2299
0,3608	14,5	0,2313	0,3565	14,7	0,2301	0,3521	14,9	0,2288	0,3479	15,1	0,2274	0,3436	15,3	0,2259
0,3597	14,6	0,2265	0,3555	14,8	0,2255	0,3513	15,0	0,2244	0,3471	15,2	0,2232	0,3429	15,4	0,2218
0,3586	14,8	0,2216	0,3545	14,9	0,2209	0,3504	15,1	0,2200	0,3463	15,3	0,2189	0,3423	15,5	0,2178
0,3574	14,9	0,2168	0,3535	15,1	0,2163	0,3495	15,2	0,2156	0,3455	15,4	0,2147	0,3416	15,6	0,2138
0,3563	15,0	0,2120	0,3525	15,2	0,2117	0,3486	15,4	0,2112	0,3448	15,5	0,2105	0,3409	15,7	0,2097
0,3552	15,1	0,2072	0,3515	15,3	0,2071	0,3477	15,5	0,2068	0,3440	15,6	0,2063	0,3402	15,8	0,2057

D800-120

MULTIPLIER FOR HIGH-LIFT DRUM

			288"			294"			300"			306"		
			24'0"			24'6"			25'0"			25'6"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPRIRAL	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0	4,1300	0,0161	---	---	---	---	---	---	---	---	---	---	---	---
3	4,1300	0,0161	---	---	---	---	---	---	---	---	---	---	---	---
6	4,1300	0,0160	---	---	---	---	---	---	---	---	---	---	---	---
9	4,1300	0,0160	---	---	---	---	---	---	---	---	---	---	---	---
12	4,1300	0,0159	---	---	---	---	---	---	---	---	---	---	---	---
15	4,1300	0,0159	---	---	---	---	---	---	---	---	---	---	---	---
18	4,1299	0,0158	---	---	---	---	---	---	---	---	---	---	---	---
21	4,1299	0,0158	---	---	---	---	---	---	---	---	---	---	---	---
24	4,1299	0,0157	0,3548	12,4	0,3287	---	---	---	---	---	---	---	---	---
27	4,1299	0,0156	0,3543	12,5	0,3248	---	---	---	---	---	---	---	---	---
30	4,1299	0,0156	0,3537	12,6	0,3210	0,3474	12,9	0,3154	---	---	---	---	---	---
33	4,1299	0,0155	0,3531	12,8	0,3171	0,3469	13,0	0,3117	---	---	---	---	---	---
36	4,1298	0,0155	0,3525	12,9	0,3132	0,3465	13,1	0,3080	0,3406	13,3	0,3029	---	---	---
39	4,1298	0,0154	0,3519	13,0	0,3094	0,3460	13,2	0,3043	0,3402	13,4	0,2994	---	---	---
42	4,1298	0,0154	0,3514	13,1	0,3055	0,3455	13,3	0,3006	0,3397	13,6	0,2958	0,3342	13,8	0,2912
45	4,1298	0,0153	0,3508	13,2	0,3016	0,3450	13,4	0,2969	0,3393	13,7	0,2922	0,3339	13,9	0,2877
48	4,1298	0,0153	0,3502	13,3	0,2978	0,3445	13,6	0,2931	0,3389	13,8	0,2887	0,3335	14,0	0,2843
51	4,1298	0,0152	0,3497	13,4	0,2939	0,3440	13,7	0,2894	0,3385	13,9	0,2851	0,3332	14,1	0,2809
54	4,1297	0,0152	0,3491	13,6	0,2900	0,3435	13,8	0,2857	0,3381	14,0	0,2815	0,3328	14,2	0,2775
57	4,1297	0,0151	0,3485	13,7	0,2862	0,3430	13,9	0,2820	0,3377	14,1	0,2780	0,3325	14,3	0,2740
60	4,1297	0,0151	0,3479	13,8	0,2823	0,3425	14,0	0,2783	0,3373	14,2	0,2744	0,3322	14,4	0,2706
63	4,1297	0,0150	0,3474	13,9	0,2784	0,3421	14,1	0,2746	0,3369	14,3	0,2708	0,3318	14,5	0,2672
66	4,1297	0,0149	0,3468	14,0	0,2746	0,3416	14,2	0,2709	0,3365	14,4	0,2673	0,3315	14,6	0,2638
69	4,1297	0,0149	0,3462	14,1	0,2707	0,3411	14,3	0,2672	0,3360	14,5	0,2637	0,3311	14,8	0,2603
72	4,1296	0,0148	0,3457	14,2	0,2668	0,3406	14,4	0,2635	0,3356	14,6	0,2602	0,3308	14,9	0,2569
75	4,1296	0,0148	0,3451	14,3	0,2629	0,3401	14,5	0,2597	0,3352	14,8	0,2566	0,3305	15,0	0,2535
78	4,1296	0,0147	0,3445	14,4	0,2591	0,3396	14,7	0,2560	0,3348	14,9	0,2530	0,3301	15,1	0,2501
81	4,1296	0,0147	0,3440	14,6	0,2552	0,3391	14,8	0,2523	0,3344	15,0	0,2495	0,3298	15,2	0,2466
84	4,1296	0,0146	0,3434	14,7	0,2513	0,3386	14,9	0,2486	0,3340	15,1	0,2459	0,3294	15,3	0,2432
87	4,1296	0,0146	0,3428	14,8	0,2475	0,3382	15,0	0,2449	0,3336	15,2	0,2423	0,3291	15,4	0,2398
90	4,1295	0,0145	0,3423	14,9	0,2436	0,3377	15,1	0,2412	0,3332	15,3	0,2388	0,3288	15,5	0,2363
93	4,1295	0,0145	0,3417	15,0	0,2397	0,3372	15,2	0,2375	0,3328	15,4	0,2352	0,3284	15,6	0,2329
96	4,1295	0,0144	0,3411	15,1	0,2359	0,3367	15,3	0,2338	0,3323	15,5	0,2316	0,3281	15,7	0,2295
99	4,1295	0,0144	0,3405	15,2	0,2320	0,3362	15,4	0,2301	0,3319	15,6	0,2281	0,3277	15,8	0,2261
102	4,1295	0,0143	0,3400	15,3	0,2281	0,3357	15,5	0,2264	0,3315	15,7	0,2245	0,3274	15,9	0,2226
105	4,1295	0,0142	0,3394	15,4	0,2243	0,3352	15,6	0,2226	0,3311	15,8	0,2210	0,3270	16,0	0,2192
108	4,1294	0,0142	0,3388	15,6	0,2204	0,3347	15,7	0,2189	0,3307	15,9	0,2174	0,3267	16,1	0,2158
111	4,1294	0,0141	0,3382	15,7	0,2165	0,3342	15,8	0,2152	0,3303	16,0	0,2138	0,3264	16,2	0,2124
114	4,1294	0,0141	0,3376	15,8	0,2127	0,3337	16,0	0,2115	0,3298	16,1	0,2103	0,3260	16,3	0,2089
117	4,1294	0,0140	0,3371	15,9	0,2088	0,3332	16,1	0,2078	0,3294	16,2	0,2067	0,3257	16,4	0,2055
120	4,1294	0,0140	0,3365	16,0	0,2049	0,3327	16,2	0,2041	0,3290	16,4	0,2031	0,3253	16,5	0,2021

D800-120

MULTIPLIER FOR HIGH-LIFT DRUM

			342"			348"			354"			360"		
			28'6"			29'0"			29'6"			30'0"		
HI-LIFT (INCH.)	H.M.A.	REV OF SPRIRAL	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR	MULTI	TURN	PITCH FACTOR
0	4,1300	0,0161	---	----	----	---	----	----	---	----	----	---	----	----
3	4,1300	0,0161	---	----	----	---	----	----	---	----	----	---	----	----
6	4,1300	0,0160	---	----	----	---	----	----	---	----	----	---	----	----
9	4,1300	0,0160	---	----	----	---	----	----	---	----	----	---	----	----
12	4,1300	0,0159	---	----	----	---	----	----	---	----	----	---	----	----
15	4,1300	0,0159	---	----	----	---	----	----	---	----	----	---	----	----
18	4,1299	0,0158	---	----	----	---	----	----	---	----	----	---	----	----
21	4,1299	0,0158	---	----	----	---	----	----	---	----	----	---	----	----
24	4,1299	0,0157	---	----	----	---	----	----	---	----	----	---	----	----
27	4,1299	0,0156	---	----	----	---	----	----	---	----	----	---	----	----
30	4,1299	0,0156	---	----	----	---	----	----	---	----	----	---	----	----
33	4,1299	0,0155	---	----	----	---	----	----	---	----	----	---	----	----
36	4,1298	0,0155	---	----	----	---	----	----	---	----	----	---	----	----
39	4,1298	0,0154	---	----	----	---	----	----	---	----	----	---	----	----
42	4,1298	0,0154	---	----	----	---	----	----	---	----	----	---	----	----
45	4,1298	0,0153	---	----	----	---	----	----	---	----	----	---	----	----
48	4,1298	0,0153	---	----	----	---	----	----	---	----	----	---	----	----
51	4,1298	0,0152	---	----	----	---	----	----	---	----	----	---	----	----
54	4,1297	0,0152	---	----	----	---	----	----	---	----	----	---	----	----
57	4,1297	0,0151	---	----	----	---	----	----	---	----	----	---	----	----
60	4,1297	0,0151	---	----	----	---	----	----	---	----	----	---	----	----
63	4,1297	0,0150	---	----	----	---	----	----	---	----	----	---	----	----
66	4,1297	0,0149	---	----	----	---	----	----	---	----	----	---	----	----
69	4,1297	0,0149	---	----	----	---	----	----	---	----	----	---	----	----
72	4,1296	0,0148	---	----	----	---	----	----	---	----	----	---	----	----
75	4,1296	0,0148	---	----	----	---	----	----	---	----	----	---	----	----
78	4,1296	0,0147	0,3042	16,4	0,2331	---	----	----	---	----	----	---	----	----
81	4,1296	0,0147	0,3042	16,5	0,2303	---	----	----	---	----	----	---	----	----
84	4,1296	0,0146	0,3042	16,6	0,2276	0,3003	16,8	0,2251	---	----	----	---	----	----
87	4,1296	0,0146	0,3041	16,7	0,2249	0,3003	16,9	0,2225	---	----	----	---	----	----
90	4,1295	0,0145	0,3041	16,8	0,2221	0,3003	17,0	0,2198	0,2966	17,2	0,2176	---	----	----
93	4,1295	0,0145	0,3041	16,9	0,2194	0,3003	17,1	0,2172	0,2966	17,3	0,2150	---	----	----
96	4,1295	0,0144	0,3041	16,9	0,2166	0,3004	17,2	0,2145	0,2967	17,4	0,2124	0,2931	17,6	0,2104
99	4,1295	0,0144	0,3041	17,0	0,2139	0,3004	17,3	0,2119	0,2968	17,5	0,2099	0,2932	17,7	0,2079
102	4,1295	0,0143	0,3041	17,1	0,2111	0,3004	17,3	0,2092	0,2968	17,6	0,2073	0,2933	17,8	0,2054
105	4,1295	0,0142	0,3040	17,2	0,2084	0,3004	17,4	0,2066	0,2969	17,7	0,2048	0,2934	17,9	0,2029
108	4,1294	0,0142	0,3040	17,3	0,2057	0,3005	17,5	0,2039	0,2970	17,7	0,2022	0,2935	18,0	0,2005
111	4,1294	0,0141	0,3040	17,4	0,2029	0,3005	17,6	0,2013	0,2970	17,8	0,1996	0,2936	18,0	0,1980
114	4,1294	0,0141	0,3040	17,5	0,2002	0,3005	17,7	0,1986	0,2971	17,9	0,1971	0,2937	18,1	0,1955
117	4,1294	0,0140	0,3040	17,6	0,1974	0,3005	17,8	0,1960	0,2971	18,0	0,1945	0,2938	18,2	0,1930
120	4,1294	0,0140	0,3039	17,7	0,1947	0,3006	17,9	0,1933	0,2972	18,1	0,1920	0,2939	18,3	0,1906

VERTICAL-LIFT DRUMS

VERTICAL-LIFT DOOR



FORMULAS

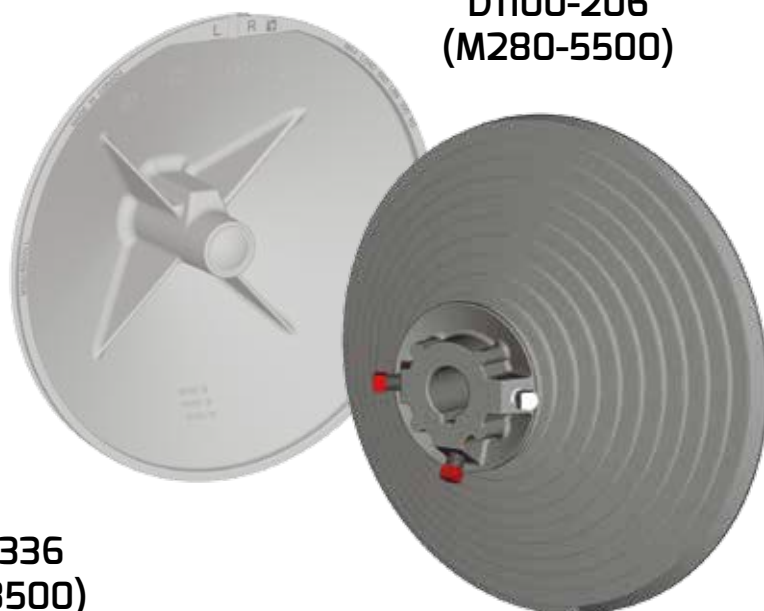
$$\text{Turns} = \frac{\text{HMA}}{\text{Multiplier}}$$

$$\text{IPPT} = \text{Multiplier} \times \text{Weight}$$

**D850-132
(M216-3350)**



**D1100-206
(M280-5500)**

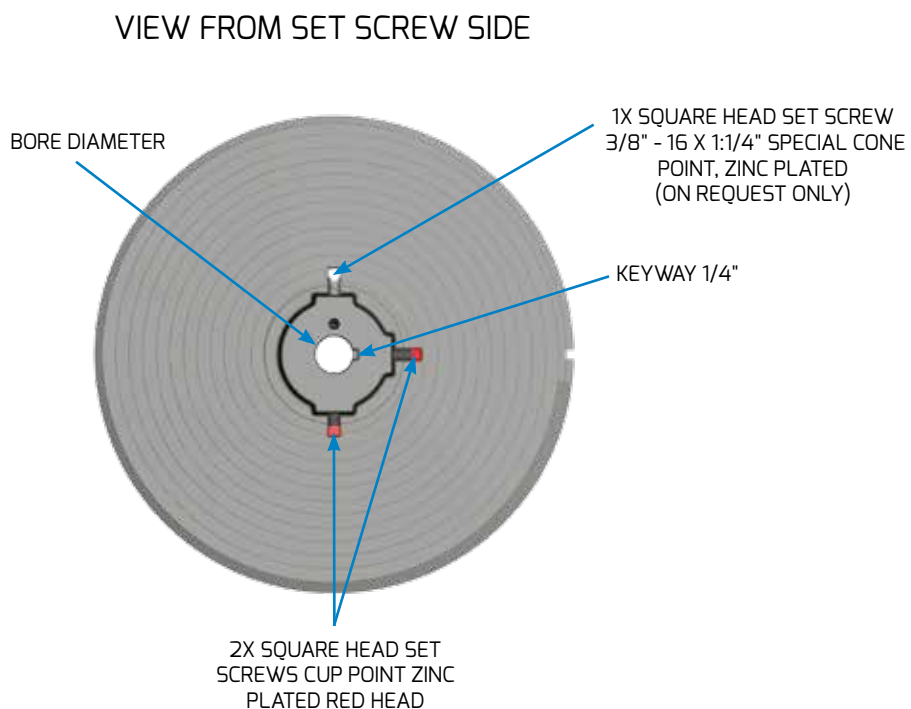


**D1350-336
(M340-8500)**



The above illustrations are for reference only. Canimex can change the design of drums without notice.

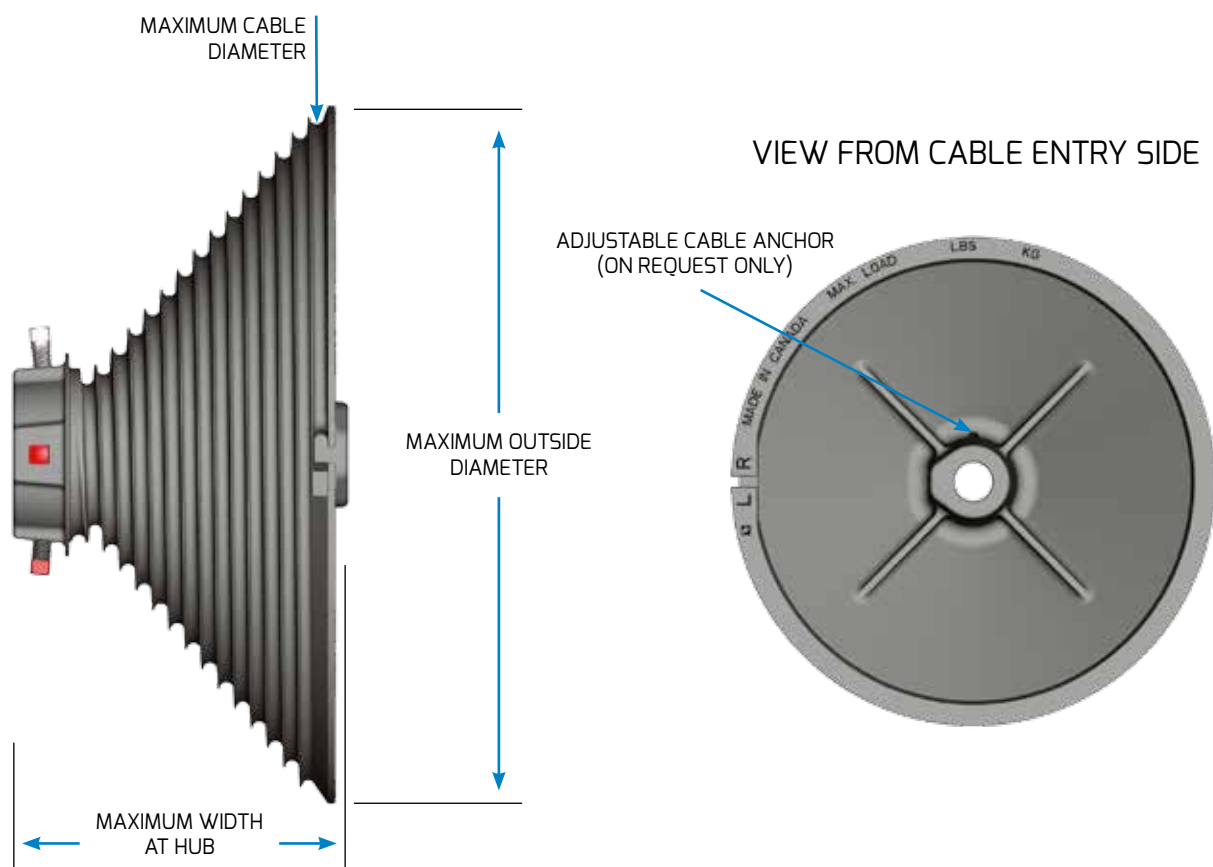
PHYSICAL SPECIFICATIONS ON VERTICAL-LIFT DRUMS (IMPERIAL)



DRUM NAME	INACTIVE WRAPPING	DIMENSIONS						
VERTICAL-LIFT	NUMBER OF INACTIVE WRAPPING TURNS	BORE DIAMETER	BORE DIAMETER	MAXIMUM OUTSIDE DIAMETER	MAXIMUM WIDTH AT HUB	MAXIMUM CABLE DIAMETER	HIGH MOMENT ARM	FLAT MOMENT ARM
	Turns	1 in.	1 1/4 in.	in.	in.	in.	in.	in.
D850-132	1/2	X	X	8.63	3.33	3/16	4.156	1.344
D1100-216	1/2	X	X	10.88	4.29	3/16	5.281	1.344
D1350-336	1/2	X	X	13.45	6.75	1/4	6.438	1.375

PLEASE NOTE:

- Consult the Common Informations on Drums and Plugs section for the general notice.
- All data relates to Maximum Cable Diameter.
- All these drums must be used with a minimum of 1/2 turn of Inactive Wrapping for safety reasons.
- Cable end anchoring to the drum must meet DASMA 102.

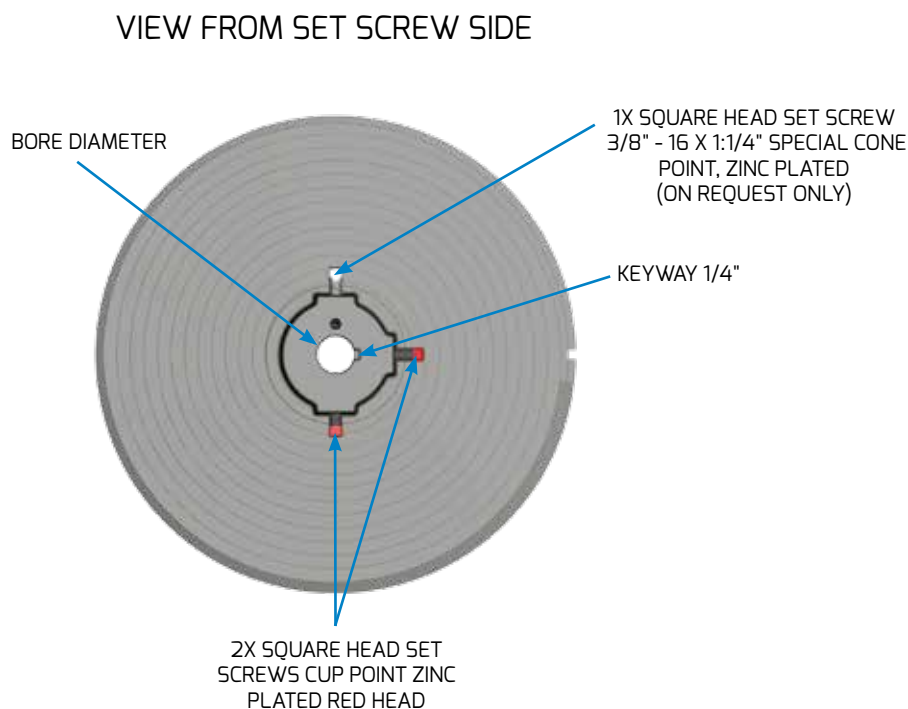


WRAPPING		MISCELLANEOUS			CABLE LENGTH RULE ⁽¹⁾	
MAX.DOOR HEIGHT	RATE OF RISE PER REVOLUTION	MAX. WEIGHT PER DRUM	APPROX. SHIPPING WEIGHT (WITH 2 SET SCREWS)	SQUARE HEAD SET SCREW IF PRE-INST.	DISTANCE TO ADD FOR BUTTONS ON CABLE	DISTANCE TO ADD FOR ADJUSTABLE CABLE ANCHOR
in.	in.	lb	lb	in.	in.	in.
129	0.375	425	2.2	3/8-16 x 1:1/4	143.75	156
218	0.375	660	4.0	3/8-16 x 1:1/4	235.25	250
331	0.375	1100	9.9	3/8-16 x 1:1/2	352.75	369

(1) Distance from cable attachment point on the door to shaft center line + " value on table" - door height.

- Recommended seating torque on set screws: 240 lb-in.
- Maximum torque on set screws: 300 lb-in except for third set screw anchoring where the maximum torque is 180 lb-in.
- IPPT: Multiplier X Door Weight.
- Drums must be assembled on a torsion shaft that meets Dasma 102. If drums are used with a solid shaft, a 3:3/4" bent key or 3" straight key must be assembled on the set screw side of the drum (except for D1350-336 that must be used with a 4:3/4" bent key or 4" straight key. Please refer to canimex drawing 20772-P1, 20994-P1 and 24657-P2 for shaft specifications and to technical document DT-020 for key insertion.
- Data for reference only. Please consult the FCUO drawing for the latest specifications.

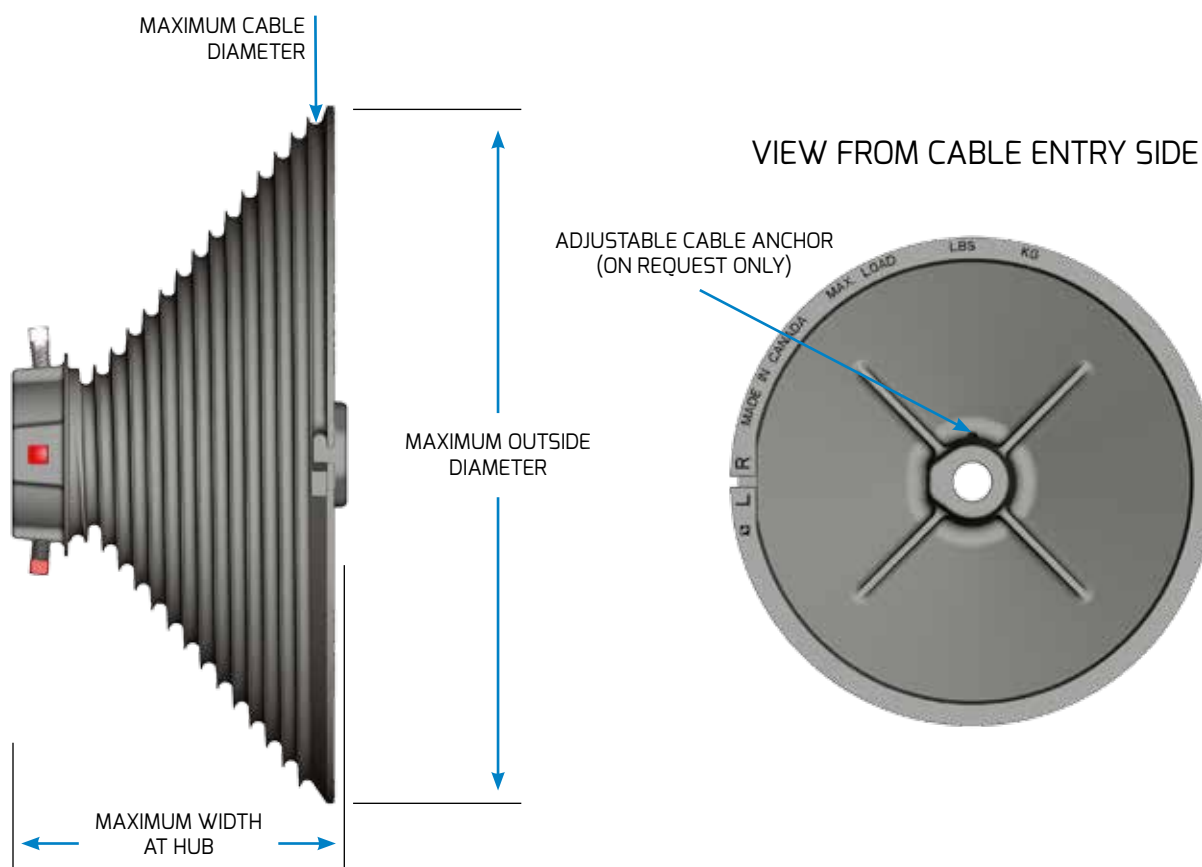
PHYSICAL SPECIFICATIONS ON VERTICAL-LIFT DRUMS (METRIC)



DRUM NAME	INACTIVE WRAPPING	DIMENSIONS						
VERTICAL-LIFT	NUMBER OF INACTIVE WRAPPING TURNS	BORE DIAMETER	BORE DIAMETER	MAXIMUM OUTSIDE DIAMETER	MAXIMUM WIDTH AT HUB	MAXIMUM CABLE DIAMETER	HIGH MOMENT ARM	FLAT MOMENT ARM
	Turns	25.4 mm	31.75 mm	mm	mm	mm	mm	mm
M216-3350	1/2	X	X	219.1	84.6	5	105.69	34.25
M280-5500	1/2	X	X	276.2	108.9	5	134.26	34.25
M340-8500	1/2	X	X	341.5	171.5	6	163.34	34.75

PLEASE NOTE:

- Consult the Common Informations on Drums and Plugs section for the general notice.
- All data relates to Maximum Cable Diameter.
- All these drums must be used with a minimum of 1/2 turn of Inactive Wrapping for safety reasons.
- Cable end anchoring to the drum must meet Dasma 102.



WRAPPING		MISCELLANEOUS			CABLE LENGTH RULE ⁽¹⁾	
MAX. DOOR HEIGHT	RATE OF RISE PER REVOLUTION	MAX. WEIGHT PER DRUM	APPROX. SHIPPING WEIGHT (WITH 2 SET SCREWS)	SQUARE HEAD SET SCREW IF PRE-INST.	DISTANCE TO ADD FOR BUTTONS ON CABLE	DISTANCE TO ADD FOR ADJUSTABLE CABLE ANCHOR
mm	mm	Kg	Kg	mm	mm	mm
3297	9.53	193	1.0	3/8-16 x 1:1/4	3665	3960
5558	9.53	300	1.8	3/8-16 x 1:1/4	6005	6350
8401	9.53	500	4.5	3/8-16 x 1:1/2	8946	9370

(1) Distance from cable attachment point on the door to shaft center line + " value on table" - door height.

- Recommended seating torque on set screws: 27 Nm.
- Maximum torque on set screws: 34 Nm except for third set screw anchoring where the maximum torque is 20 Nm.
- IPPT: Multiplier X Door Weight.
- Drums must be assembled on a torsion shaft that meets Dasma 102. If drums are used with a solid shaft, a 3:3/4" bent key or 3" straight key must be assembled on the set screw side of the drum (except for M340-8500 that must be used with a 4:3/4" bent key or 4" straight key. Please refer to canimex drawing 19478-P1, 19479-P1, 24191-P1, 24192-P1 and 19477-P1 for shaft specifications and to technical document DT-020 for key insertion.
- Data for reference only. Please consult the FCUO drawing for the latest specifications.

D850-132

MULTIPLIER FOR VERTICAL-LIFT DRUM

DOOR HEIGHT		H.M.A	REV. OF DRUM	TURNS ON SPRING
(FT)	(IN)	(INCH)	(TURNS)	(TURNS)
0'0"	0	1,344	0,00	3,6
0'3"	3	1,471	0,34	3,9
0'6"	6	1,588	0,65	4,2
0'9"	9	1,697	0,94	4,5
1'0"	12	1,799	1,22	4,8
1'3"	15	1,896	1,47	5,1
1'6"	18	1,989	1,72	5,3
1'9"	21	2,077	1,95	5,5
2'0"	24	2,161	2,18	5,8
2'3"	27	2,242	2,40	6,0
2'6"	30	2,321	2,61	6,2
2'9"	33	2,397	2,81	6,4
3'0"	36	2,470	3,00	6,6
3'3"	39	2,542	3,19	6,8
3'6"	42	2,611	3,38	7,0
3'9"	45	2,679	3,56	7,1
4'0"	48	2,745	3,74	7,3
4'3"	51	2,810	3,91	7,5
4'6"	54	2,873	4,08	7,7
4'9"	57	2,934	4,24	7,8
5'0"	60	2,995	4,40	8,0
5'3"	63	3,054	4,56	8,1
5'6"	66	3,112	4,71	8,3
5'9"	69	3,169	4,87	8,5
6'0"	72	3,225	5,02	8,6
6'3"	75	3,280	5,16	8,7
6'6"	78	3,334	5,31	8,9
6'9"	81	3,387	5,45	9,0
7'0"	84	3,440	5,59	9,2
7'3"	87	3,492	5,73	9,3
7'6"	90	3,542	5,86	9,4
7'9"	93	3,593	6,00	9,6
8'0"	96	3,642	6,13	9,7
8'3"	99	3,691	6,26	9,8
8'6"	102	3,739	6,39	10,0
8'9"	105	3,787	6,51	10,1
9'0"	108	3,834	6,64	10,2
9'3"	111	3,880	6,76	10,3
9'6"	114	3,926	6,89	10,5
9'9"	117	3,971	7,01	10,6
10'0"	120	4,016	7,13	10,7
10'3"	123	4,061	7,24	10,8
10'6"	126	4,104	7,36	10,9
10'9"	129	4,148	7,48	11,1

D1100-216

MULTIPLIER FOR VERTICAL-LIFT DRUM

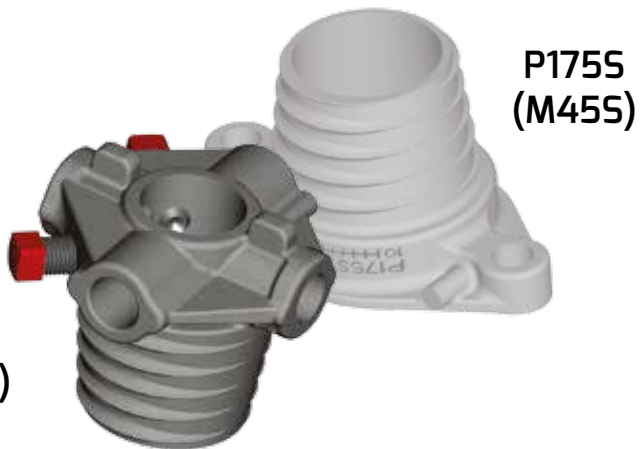
DOOR HEIGHT		H.M.A	REV. OF DRUM	TURNS ON SPRING
(FT)	(IN)	(INCH)	(TURNS)	(TURNS)
11'0"	132	4,191	7,59	11,2
11'3"	135	4,233	7,71	11,3
11'6"	138	4,275	7,82	11,4
11'9"	141	4,317	7,93	11,5
12'0"	144	4,358	8,04	11,6
12'3"	147	4,399	8,15	11,7
12'6"	150	4,440	8,26	11,8
12'9"	153	4,480	8,36	11,9
13'0"	156	4,520	8,47	12,1
13'3"	159	4,559	8,57	12,2
13'6"	162	4,598	8,68	12,3
13'9"	165	4,637	8,78	12,4
14'0"	168	4,675	8,88	12,5
14'3"	171	4,714	8,99	12,6
14'6"	174	4,751	9,09	12,7
14'9"	177	4,789	9,19	12,8
15'0"	180	4,826	9,29	12,9
15'3"	183	4,863	9,38	13,0
15'6"	186	4,900	9,48	13,1
15'9"	189	4,936	9,58	13,2
16'0"	192	4,972	9,68	13,3
16'3"	195	5,008	9,77	13,4
16'6"	198	5,044	9,87	13,5
16'9"	201	5,079	9,96	13,5
17'0"	204	5,114	10,05	13,6
17'3"	207	5,149	10,15	13,7
17'6"	210	5,184	10,24	13,8
17'9"	213	5,218	10,33	13,9
18'0"	216	5,253	10,42	14,0
18'2"	218	5,275	10,48	14,1

D1350-336

MULTIPLIER FOR VERTICAL-LIFT DRUM

DOOR HEIGHT		H.M.A	REV. OF DRUM	TURNS ON SPRING
(FT)	(IN)	(INCH)	(TURNS)	(TURNS)
18'0"	216	5,261	10,36	14,0
18'3"	219	5,295	10,45	14,1
18'6"	222	5,328	10,54	14,2
18'9"	225	5,362	10,63	14,3
19'0"	228	5,395	10,72	14,4
19'3"	231	5,428	10,81	14,5
19'6"	234	5,461	10,90	14,6
19'9"	237	5,494	10,98	14,6
20'0"	240	5,526	11,07	14,7
20'3"	243	5,558	11,16	14,8
20'6"	246	5,591	11,24	14,9
20'9"	249	5,623	11,33	15,0
21'0"	252	5,654	11,41	15,1
21'3"	255	5,686	11,50	15,2
21'6"	258	5,717	11,58	15,2
21'9"	261	5,748	11,66	15,3
22'0"	264	5,780	11,75	15,4
22'3"	267	5,810	11,83	15,5
22'6"	270	5,841	11,91	15,6
22'9"	273	5,872	11,99	15,7
23'0"	276	5,902	12,07	15,7
23'3"	279	5,932	12,15	15,8
23'6"	282	5,963	12,23	15,9
23'9"	285	5,992	12,31	16,0
24'0"	288	6,022	12,39	16,1
24'3"	291	6,052	12,47	16,1
24'6"	294	6,081	12,55	16,2
24'9"	297	6,111	12,63	16,3
25'0"	300	6,140	12,71	16,4
25'3"	303	6,169	12,78	16,5
25'6"	306	6,198	12,86	16,5
25'9"	309	6,227	12,94	16,6
26'0"	312	6,256	13,02	16,7
26'3"	315	6,284	13,09	16,8
26'6"	318	6,313	13,17	16,8
26'9"	321	6,341	13,24	16,9
27'0"	324	6,369	13,32	17,0
27'3"	327	6,397	13,39	17,1
27'6"	330	6,425	13,47	17,1
27'7"	331	6,434	13,49	17,2

**P175W
(M45W)**



**P175S
(M45S)**

**P200W
(M50W)**



**P200S
(M50S)**

**P2625W
(M67W)**



**P2625S
(M67S)**

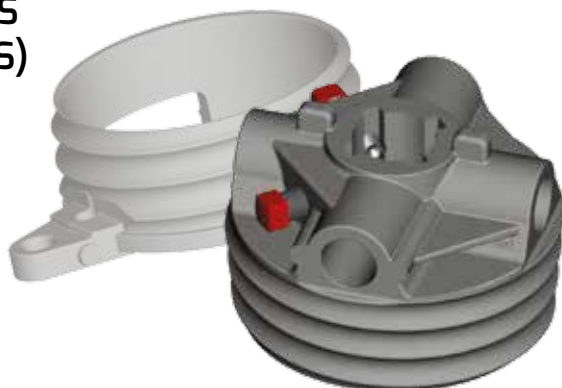
**P375W
(M95W)**



**P375S
(M95S)**

The above illustrations are for reference only. Canimex can change the design of plugs without notice.

**P381S
(M97S)**



**P381W
(M97W)**

**P528W
(M136W)**



**P528S
(M136S)**



**P602S
(M154S)**



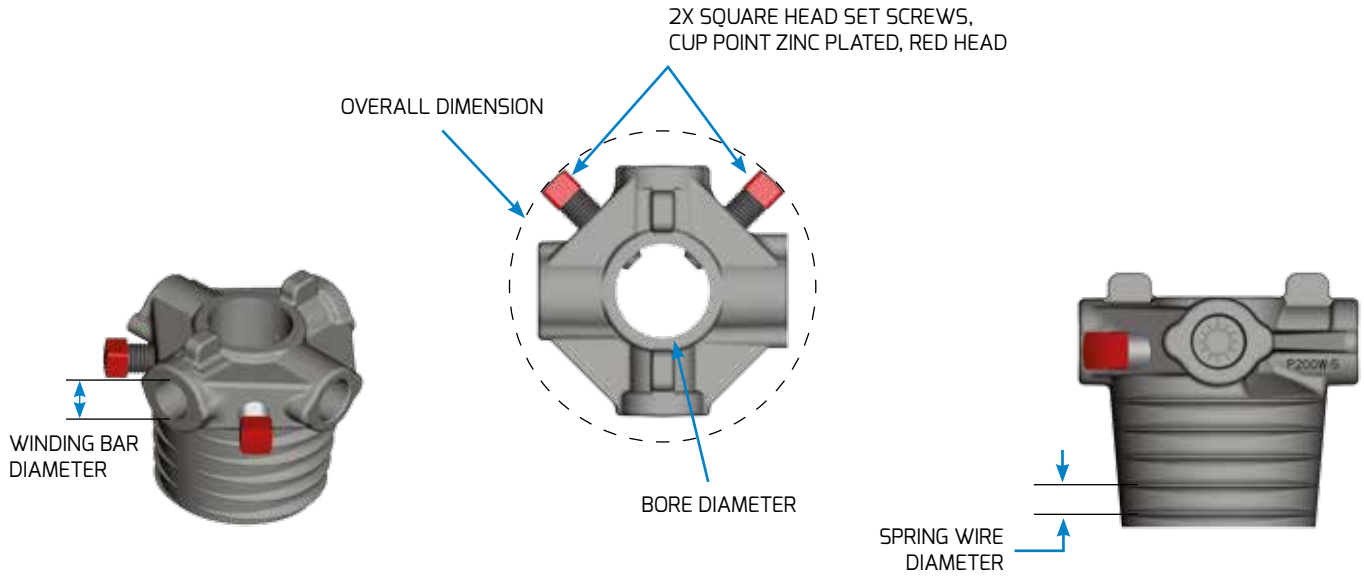
**P602W
(M154W)**

**P603S
(M155S)**



**P603W
(M155W)**

WINDING PLUGS PHYSICAL SPECIFICATIONS



WINDING PLUGS	SPRING DIMENSIONS									
	NOMINAL SPRING INSIDE DIAMETER		MIN. SPRING INSIDE DIAMETER ⁽¹⁾		MAX. SPRING INSIDE DIAMETER ⁽¹⁾		MIN. SPRING WIRE DIAMETER ⁽³⁾		MAX. SPRING WIRE DIAMETER ⁽²⁾	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
P175W (M45W)	1 3/4	44.5	1.730	43.9	1.760	44.7	0.192	4.88	0.295	7.49
P200W (M50W)	2	50.8	1.980	50.3	2.010	51.1	0.192	4.88	0.295	7.49
P2625W (M67W)	2 5/8	66.7	2.605	66.2	2.635	66.9	0.263	6.68	0.331	8.41
P375W (M95W)	3 3/4	95.2	3.730	94.7	3.780	96.0	0.320	8.13	0.406	10.31
P381W (M97W)	3 3/4	95	3.730	94.74	3.780	96.01	0.320	8.13	0.406	10.31
P528W (M136W)	5 1/4	133	5.230	132.84	5.280	134.1	0.343	8.71	0.438	11.13
P602W (M154W)	6	152	5.980	151.9	6.030	153.16	0.343	8.71	0.438	11.13
P603W (M155W)	6	152	5.980	151.9	6.030	153.16	0.343	8.71	0.438	11.13

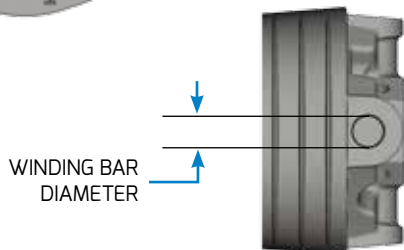
- (1) If spring is out of specification limits, Canimex will not be held responsible for difficulty of plug insertion or spring slippage.
- (2) Plugs should be used with garage door type of torsion spring meeting ASTM A229 or galvanized wire and free of coating that can reduce friction between plugs and spring. Contact Canimex engineering for approval of other material and coating.
- (3) This data is for reference only, for the case of plug insertion into the spring.

PLEASE NOTE:

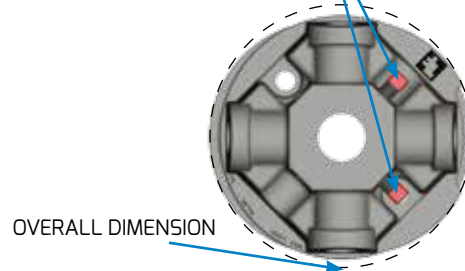
- Spring insertion must comply with Canimex technical document DT-005 "Specifications for screw-in torsion spring plug".
- Winding bar must be as per Canimex drawing 6424-p1.
- Universal type of spring screwing threads. Universal means the spring could be a left hand wound or a right hand wound.
- When the keyed configuration is used, always use a key. Never anchor a set screw directly into the keyway of the shaft.
- Although these parts have universal threads, they can also be color-coded for your convenience.
- For shaft specifications refer to drawings 19477-p1, 19478-p1, 19479-p1, 20772-p1, 20994-p1, 24191-p1, 24192-p1, 24657-p2.

WARNING: Not seating Winding Bar at the bottom will induce excessive stress in the winding hole which may result in fracture of the part.

WARNING: Winding the springs could be very dangerous. To avoid serious injuries, please read the DT-005 "Specifications for screw-in torsion spring plug".



2X SQUARE HEAD SET SCREWS,
CUP POINT ZINC PLATED, RED HEAD



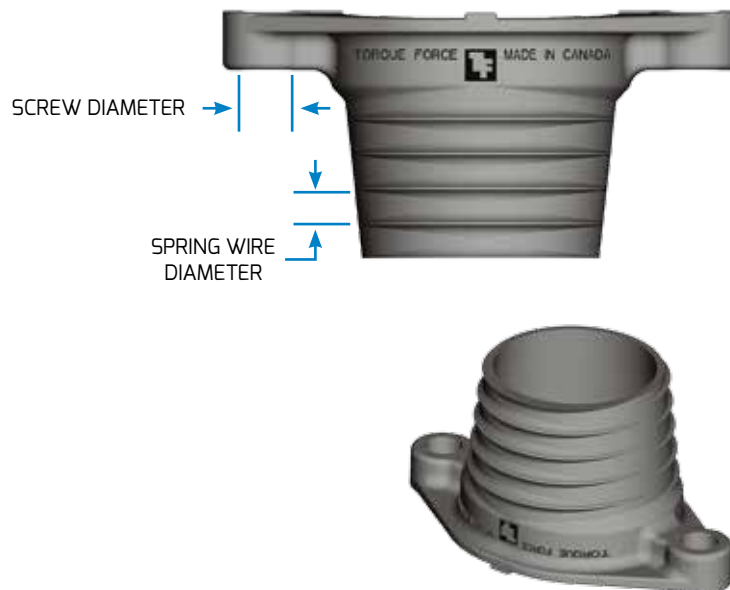
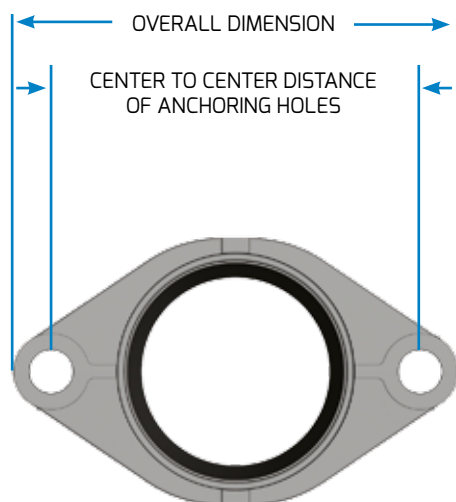
PLUG DIMENSIONS										MISCELLANEOUS				
MIN. WINDING BAR DIAMETER		MAX. WINDING BAR DIAMETER		OVERALL DIMENSION		BORE DIAMETER		KEYWAY		MAX. TORQUE TO BE GENER. BY SPRINGS		APPROXIMATE SHIPPING WEIGHT		NUMBER OF DEAD COIL
in.	mm	in.	mm	in.	mm	1 in. 25.4 mm	1 1/4 in. 31.75 mm	0kw	4kw	lb-in.	Nm	lb	Kg	Coils
0.490	12.45	0.499	12.67	3.60	91.5	X	N/A	X	N/A	569	64	0.42	0.19	2.5
0.490	12.45	0.499	12.67	3.60	91.5	X	N/A	X	N/A	569	64	0.45	0.20	2.5
0.490	12.45	0.499	12.67	3.70	94.5	X	X	X	X	784	89	0.60	0.27	2.5
0.600	15.24	0.625	15.88	4.10	104.1	X	X	X	X	1388	157	1.10	0.50	2.5
0.600	15.24	0.625	15.88	4.091	103.9	X	N/A	X	X	1388	157	0.89	0.40	2.5
0.600	15.24	0.625	15.88	5.650	143.6	X	X	X	X	2000	226	1.94	0.88	1.5
0.600	15.24	0.625	15.88	6.641	168.7	X	X	X	X	2000	226	1.75	0.79	1.0
0.600	15.24	0.625	15.88	6.720	170.69	X	X	X	X	2000	226	2.19	0.99	1.5

- P175W and P200W are designed to be used on tubular shaft. Torque on set screw should not exceed 240 lb-in (27 Nm)
- For P2625W to P603W, the recommended seating torque on set screw is 240 lb-in (27 Nm) and should not exceed 300 lb-in (34 Nm).
- After insertion of P375W (M95W), P381W (M1797W), P528W (M136W), P602W (M154W) or P603W (M155W) the spring tail must be bent downward in the spring anchor hole.
- When specially ordered, parts for P528W (M136W) and P603W (M155W) can be used as outer segments of a duplex spring assembly. When used in this manner, do not exceed 2000 lb-in. (226 Nm) for the duplex assembly.

WARNING: Not seating Winding Bar at the bottom will induce excessive stress in the winding hole which may result in fracture of the part.

WARNING: Winding the springs could be very dangerous. To avoid serious injuries, please read the DT-005 "Specifications for screw-in torsion spring plug".

STATIONARY PLUGS PHYSICAL SPECIFICATIONS



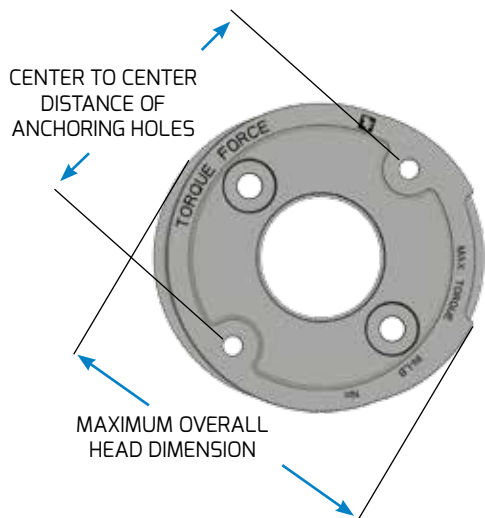
STATIONARY PLUGS	SPRING DIMENSIONS									
	NOMINAL SPRING INSIDE DIAMETER		MIN. SPRING INSIDE DIAMETER ⁽¹⁾		MAX. SPRING INSIDE DIAMETER ⁽¹⁾		MIN. SPRING WIRE DIAMETER ⁽³⁾		MAX. SPRING WIRE DIAMETER ⁽²⁾	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
P175S (M45S)	1 3/4	44.5	1.730	43.9	1.760	44.7	0.192	4.88	0.295	7.49
P200S (M50S)	2	50.8	1.980	50.3	2.010	51.1	0.192	4.88	0.295	7.49
P2625S (M67S)	2 5/8	66.7	2.605	66.2	2.635	66.9	0.263	6.68	0.331	8.41
P375S (M95S)	3 3/4	95.2	3.730	94.7	3.780	96.0	0.320	8.13	0.406	10.31
P381S (M97S)	3 3/4	95	3.730	94.74	3.780	96.0	0.320	8.13	0.406	10.31
P528S (M136S)	5 1/4	133	5.230	132.84	5.280	134.1	0.343	8.71	0.438	11.13
P602S (M154S)	6	152	5.980	151.9	6.030	153.2	0.343	8.71	0.438	11.13
P603S (M155S)	6	152	5.980	151.9	6.030	153.2	0.343	8.71	0.438	11.13

- (1) If spring is out of specification limits, Canimex will not be held responsible for difficulty of plug insertion or spring slippage.
- (2) Plugs should be used with garage door type of torsion spring meeting ASTM A229 or galvanized wire and free of coating that can reduce friction between plugs and spring. Contact Canimex engineering for approval of other material and coating.
- (3) This data is for reference only, for the case of plug insertion into the spring.

PLEASE NOTE:

- Universal type of spring screwing threads. Universal means the spring could be a left hand wound or a right hand wound.
- Recommended bearing/bushing Canimex C16-32F family.
- Spring insertion must comply with Canimex technical document DT-005 "Specifications for screw-in torsion spring plug".
- Ears minimum impact resistance : 19.5 lb-ft (2.2Nm).

WARNING: Winding the springs could be very dangerous. To avoid serious injuries, please read the DT-005 "Specifications for screw-in torsion spring plug".



PLUG DIMENSIONS					MISCELLANEOUS				
SCREW TO BE USED	MAX. OVERALL HEAD DIMENSION		CENTER TO CENTER DISTANCE OF ANCHORING HOLES		MAX. TORQUE TO BE GENERATED BY SPRING		APPROXIMATE SHIPPING WEIGHT		NUMBER OF DEAD COIL
in.	in.	mm	in.	mm	lb-in.	Nm	lb	Kg	Coils
3/8-16	4.08	104	3 3/8	86	569	64	0.19	0.09	2.5
3/8-16	4.08	104	3 3/8	86	569	64	0.17	0.08	2.5
3/8-16	5.17	132	4 1/4	108	784	89	0.33	0.15	2.5
3/8-16 or M10	6.20	158	5:7/16	138	1388	157	0.60	0.27	2.5
			3:7/16	87					
3/8-16 or M10	6.20	158	5:7/16	138	1388	157	0.49	0.22	2.5
			3:7/16	87					
3/8-16 or M10	5.73	146	4 1/4	108	2000	226	0.92	0.42	1.5
			3:7/16	87					
3/8-16	6.64	169	5:7/16	138	2000	226	1.19	0.54	1.0
3/8-16 or M10	6.69	170	5:7/16	138	2000	226	1.19	0.54	1.5
			3:15/16 - 3:7/16	100-87					

- After insertion of P375S (M95S), P381S (M1797S), P528S (M136S), P602S (M154S) or P603S (M155S) the spring tail must be bent downward in the spring anchor hole.
- When specially ordered, parts for P528S (M136S) and P603S (M155S) can be used as outer segments of a duplex spring assembly. When used in this manner, do not exceed 2000 lb-in. (226 Nm) for the duplex assembly.

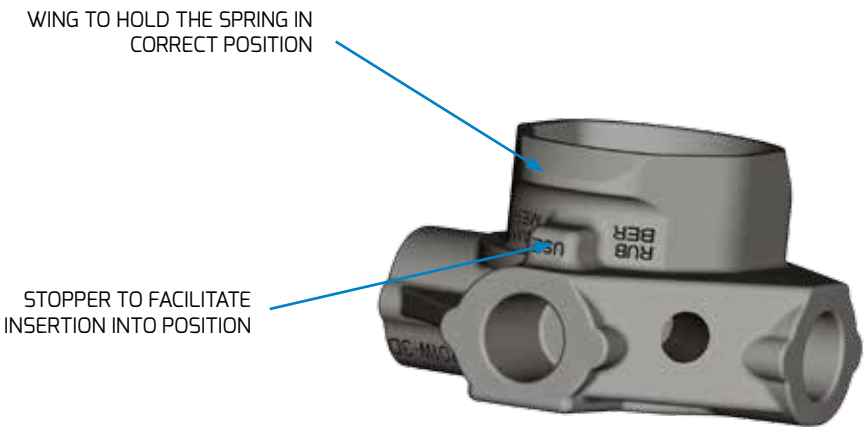
WARNING: Winding the springs could be very dangerous. To avoid serious injuries, please read the DT-005 "Specifications for screw-in torsion spring plug".

CLEVER PLUGS

Understanding the needs of our customers and always aiming to improve our products, Canimex has addressed the time consuming and costly plug insertion process (coning), and is proud to introduce the Clever Plug.

- Quick Installation
- Strong structure
- Universal Plugs

CLEVER 2" PLUG CHARACTERISTICS



US PAT. 6694673

SPRING DIMENSIONS	
NOMINAL SPRING INSIDE DIAMETER	2" (50.8mm)
MIN. SPRING INSIDE DIAMETER	1.980" (50.30mm)
MAX. SPRING INSIDE DIAMETER	2.010" (51.05mm)
MAX. SPRING WIRE DIAMETER	0.295" (7.49mm)
MIN. SPRING WIRE DIAMETER	0.192" (4.88mm)

PLUG INFORMATION	
MIN. WINDING BAR DIAMETER	0.490" (12.45mm)
MAX. WINDING BAR DIAMETER	0.499" (12.67mm)
BORE DIAMETER	1" (25.4mm)
MAX. TORQUE TO BE GENERATED BY SPRINGS	569 ln-in 64 Nm
APPROXIMATE SHIPPING WEIGHT	0.37 lb (0.17 kg)

For more information, please refer to Canimex technical document DT-0036

Winding bar must be as per Canimex drawing 6424-P1

Recommended seating torque on set screws: 240 to 300 lb-in. (27 to 34 Nm)

Maximum torque on set screws: 300 lb-in.

For shaft specifications, refers to drawing 19477-P1

WARNING: Never use on solid shaft, Clever Plugs must be use only on tubular shafts.

OTHER COUNTERBALANCING SYSTEMS

DUPLEX ASSEMBLY

The main advantage of a duplex assembly is to decrease the space required by the spring. Canimex plugs offer many different ways to install a duplex assembly

EQUAL LENGTH INSIDE DUPLEX INSTALLATION



EQUAL LENGTH OUTSIDE DUPLEX INSTALLATION



UNEQUAL LENGTH DUPLEX INSTALLATION



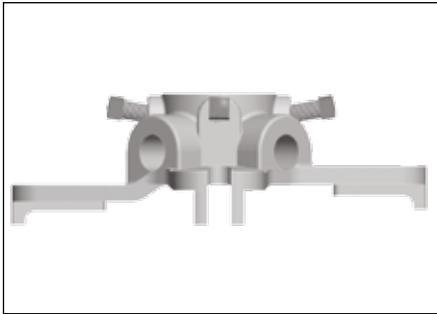
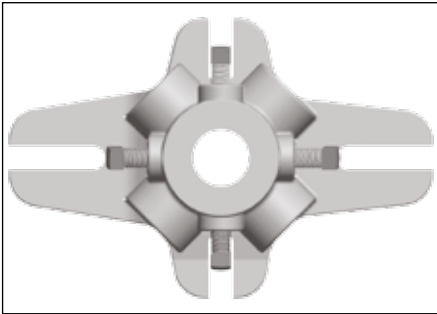
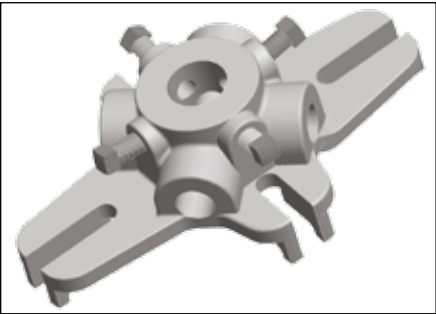
Canimex 5:1/4" (M136) plug should be used with 2:5/8" (M67) or 3:3/4" (M95 or M97) plug for duplex assembly.
Canimex 6" (M154 or M155) should be used with a 3:3/4" (M95 or M97) plug for duplex assembly.

NOTE :

Either Standard Plug or Clever Plug series can be used for duplex assembly.
The physical specifications for the plugs are mentioned in the previous section.
For more information, please consult DT-021 "Duplex Assembly Installation".

OTHER COUNTERBALANCING SYSTEMS

PCS600



STATIONARY & WINDING PLUGS

SPRING DIMENSIONS		
	3 3/4" Spring	6" Spring
MIN. SPRING INSIDE DIAMETER	3.370" (94.7 mm)	5.980" (151.9 mm)
MAX. SPRING INSIDE DIAMETER	3.760" (95.5 mm)	6.030" (153.2 mm)
MIN. SPRING WIRE (ROUND)	0.283" (7.19 mm)	0.283" (7.19 mm)
MAX. SPRING WIRE (ROUND)	0.438" (11.12 mm)	0.438" (11.12 mm)
MIN. SPRING WIRE (SQUARE)	0.313" (7.95 mm)	0.313" (7.95 mm)
MAX. SPRING WIRE (SQUARE)	0.331" (8.41 mm)	0.331" (8.41 mm)

PLUG INFORMATION	
MIN. WINDING BAR DIAMETER	0.600" (15.25 mm)
MAX. WINDING BAR DIAMETER	0.625" (15.88 mm)
MIN. BORE DIAMETER	1" (25.4 mm)
MAX. TORQUE TO BE GENERATED BY SPRINGS	3000 lb-in 339 Nm
APPROXIMATE SHIPPING WEIGHT	3.3 lb (1.5 kg)

For more information, please refer to Canimex technical document DT-019 "PCS600 Installation Guide".

Winding bar must be as per Canimex drawing 6424-p1.

Recommended seating torque on set screws : 240 to 300 lb-in. (27 to 34 Nm).

Maximum torque on set screws : 300 lb-in.

For shaft specifications, refer to drawing 19477-p1, 24657-p2, 24191-p1 and 24192-p1.

WARNING: Winding the springs could be very dangerous and should be performed by a trained technician or a mechanically experienced person using the appropriate tools.

COUNTERBALANCING CALCULATION

This section presents Counterbalancing Calculation Method developed by Canimex that easily identifies springs that counterbalance most garage doors found today. Four quick steps, that is all it takes to replace the time-consuming worksheet that has been used in the industry up until now.

This “plug & play” method simply requires a few quick equations that can be calculated by hand or by any calculator in less than a few minutes. By using this method you also enjoy the major advantage of finding many more spring possibilities for the same garage door. Most spring calculator software programs offer only a few options. Using the Canimex method now means you can counterbalance most doors with minimum spring inventory.

Look at the examples on the following pages explaining the method. Then, photocopy the blank template provided and try this method for yourself.

This spring calculation method takes into consideration standard industry spring calculations. For special application like: double pitched track, tipped back vertical lift door, etc; please refer to the door manufacturer specifications.

COUNTERBALANCING EXAMPLE FOR HORIZONTAL TRACK

— STANDARD-LIFT DRUM (1 SPRING)

STEP 1: COLLECTING DATA

Choose a Torque Force Drum for the following:

DOOR CLASSIFICATION: (STANDARD-LIFT, HIGH-LIFT, VERTICAL-LIFT)	Standard-Lift
DOOR HEIGHT:	135 in.
DOOR WIDTH:	108 in.
DOOR WEIGHT:	300 lb
TRACK RADIUS:	12 in.
APPROPRIATE DRUM:	D400-144

STEP 2: FIND THE APPROPRIATE MULTIPLIER

On the appropriate technical sheet, determine: MULTIPLIER: 0.2009
TURN ON SPRING: 11.4 turns

D400-144		TRACK RADIUS			
DOOR HEIGHT		12"		15"	
(FT)	(IN.)	MULTI (IN./TURNS)	TURNS ON SPRING	MULTI (IN./TURNS)	TURNS ON SPRING
10' 9"	129	0.2093	11.0	0.2044	11.2
11' 0"	132	0.2050	11.2	0.2003	11.4
11' 3"	135	0.2009	11.4	0.1965	11.7
11' 6"	138	0.1970	11.6	0.1927	11.9

STEP 3: MIP CALCULATION

Complete the following counterbalancing equation to find the appropriate spring and plug dimensions.

Multi: 0.2009 x Door Weight: 300 =

IPPT: 60.27

X

Turns on spring: 11.4

÷

Qty of spring: 1

=

MIP per spring: 687.1*

*MIP in Appendix 1 must be higher than 687.1.
So, it is possible to choose **0.3195" wire or larger** (for 10,000 cycles).
All data in bold is valid.

APPENDIX 1: MAX. MIP ADMISSIBLE					
MIP TORQUE CAPACITIES OF VARIOUS WIRE SIZES AT SELECTED CYCLE LEVELS.					
WIRE SIZE	10 M	15 M	25 M	50 M	100 M
0.3125	668	619	559	480	413
0.3195	710	659	594	510	439
0.3310	784	727	656	563	485

STEP 4: SPRING LENGTH CALCULATION

As shown in Step 3., it is now possible to select 0.3195 wire or bigger. The many options available allow you to choose from a range of spring possibilities. Here are some of them:

		OPTION 1	OPTION 2	OPTION 3
		0.3310" WIRE / 2.625" PLUG DIAMETER	0.3310" WIRE / 3.375" PLUG DIAMETER	0.3750" WIRE / 3.375" PLUG DIAMETER
SPRING QTY.		1	1	1
X		X	X	X
DIVIDER		3961.0	3159.4	5827.7
÷		÷	÷	÷
IPPT		60.27	60.27	60.27
=		=	=	=
LENGTH OF ACTIVE COILS		65.72	52.42	96.69
+		+	+	+
DEAD COIL FACTOR		1.66	1.66	1.13
(IF COILS DIAMETER < 3.5, CHOOSE FACTOR 1; OTHERWISE, CHOOSE FACTOR 2)				
=		=	=	=
TOTAL SPRING LENGTH		65.72 in.	52.42 in.	95.56 in.

To find Total Spring Length, you must find the Divider and the Dead Coil Factor. Data below shows acceptable spring possibilities. Data in bold represents Option 1 in the previous example.

Appendix 2: Divider and Dead Coil Factor										
Wire	Coil Diameter								Dead Coil Factor	
Diameter	1.75	2	2.5	2.625	3.375	3.5	3.625	3.75	Factor 1	Factor 2
0.3195	-	-	3479.8	3332.1	2655.7	2568.7	2487.3	2410.9	1.60	0.96
0.3310	-	-	4135.9	3961.0	3159.4	3056.3	2959.8	2869.1	1.66	0.99
0.3437	-	-	-	-	3800.8	3677.2	3561.4	3452.7	1.72	1.03
0.3625	-	-	-	-	4935.5	4775.8	4626.1	4485.5	1.81	1.09

NOTE 1: It is possible to estimate the life cycle of the spring by comparing the calculated MIP with the MIP in Appendix 1. In this example the calculated MIP is 687. So if the 0.3310" wire size is chosen, Appendix 1. shows that 687 is between 15M and 25M cycles.

NOTE 2: To estimate the weight (lb) of the spring, multiply the spring length (in.) by the value in Appendix 4.

NOTE 3: Before selecting the spring to counterbalance the door, make sure that the maximum length for fully wound spring(s) will not exceed the door width capacity.

– STANDARD-LIFT DRUM (2 SPRINGS)

STEP 1: COLLECTING DATA

Choose a Torque Force Drum for the following:

DOOR CLASSIFICATION: (STANDARD-LIFT, HIGH-LIFT, VERTICAL-LIFT)	Standard-Lift
DOOR HEIGHT:	135 in.
DOOR WEIGHT:	300 lb
DOOR HIGH-LIFT:	12 in.
DOOR WIDTH:	108 in.
APPROPRIATE DRUM:	D400-144

STEP 2: FIND THE APPROPRIATE MULTIPLIER

On the appropriate Technical Sheet, determine: MULTIPLIER: 0.2009

TURN ON SPRING: 11.4 turns

STEP 3: MIP CALCULATION

Solve the following counterbalancing equation to find the appropriate spring and plug dimensions.

Multi: 0.2009 x Door Weight: 300 =	IPPT:	60.27
	X	
Turns on spring:		11.4
	÷	
Qty of spring:		2
=		
*MIP per spring:		343.54

MIP in Appendix 1 must be higher than this value. So, it is possible to choose **0.250" Wire or larger** (for 10,000 cycles).

STEP 4: SPRING LENGTH CALCULATION

At this stage, many options are available to choose spring possibilities. Here are some of them.

	OPTION 1	OPTION 2	OPTION 3
	0.250" WIRE / 1.750" PLUG DIAMETER	0.250" WIRE / 2.000" PLUG DIAMETER	0.250" WIRE / 2.625" PLUG DIAMETER
SPRING QTY.	2	2	2
X	X	X	X
DIVIDER	1438.4	1279.1	1001.0
÷	÷	÷	÷
IPPT	60.27	60.27	60.27
=	=	=	=
LENGTH OF ACTIVE COILS	47.75	42.45	33.22
+	+	+	+
DEAD COIL FACTOR	1.25	1.25	1.25
(IF COILS DIAMETER < 3.5, CHOOSE FACTOR 1; OTHERWISE, CHOOSE FACTOR 2)			
=	=	=	=
TOTAL SPRING LENGTH	49.00 in.	43.70 in.	34.47 in.

— HIGH-LIFT DRUM (2 SPRINGS)

STEP 1: COLLECTING DATA

Choose a Torque Force Drum for the following:

DOOR CLASSIFICATION: (STANDARD-LIFT, HIGH-LIFT, VERTICAL-LIFT)	High-Lift
DOOR HEIGHT:	180 in.
DOOR WEIGHT:	700 lb
DOOR HIGH-LIFT:	96 in.
DOOR WIDTH:	144 in.
APPROPRIATE DRUM:	D575-120

(Because 2 drums are used, the maximum load capacity is 500 lb x 2 Drums = 1000 lb)

STEP 2: FIND THE APPROPRIATE MULTIPLIER

On the appropriate Technical Sheet, determine: MULTIPLIER: 0.2930
TURN ON SPRING: 14.6 turns

STEP 3: MIP CALCULATION

Solve the following counterbalancing equation to find the appropriate spring and plug dimensions:

Multi: 0.2930 x Door Weight: 700 =

IPPT: 205.1

X

Turns on spring: 14.6

÷

Qty of spring: 2

=

*MIP per spring: 1497.2

MIP in Appendix 1 must be higher than this value. So, it is possible to choose **0.4218" Wire or larger** (for 10,000 cycles).

STEP 4: SPRING LENGTH CALCULATION

At this stage, many options are available to choose spring possibilities. Here are some of them.

	OPTION 1	OPTION 2
	0.4218" WIRE / 5.25" PLUG DIAMETER	0.4218" WIRE / 6.00" PLUG DIAMETER
SPRING QTY.	2	2
X	X	X
DIVIDER	6937.2	6127.0
÷	÷	÷
IPPT	205.1	205.1
=	=	=
LENGTH OF ACTIVE COILS	67.65	59.75
+	+	+
DEAD COIL FACTOR	1.27	1.27
(IF COILS DIAMETER < 3.5, CHOOSE FACTOR 1; OTHERWISE, CHOOSE FACTOR 2)		
=	=	=
TOTAL SPRING LENGTH	68.92 in.	60.02 in.

— VERTICAL-LIFT DRUM (2 SPRINGS)

STEP 1: COLLECTING DATA

Choose a Torque Force Drum for the following:

DOOR CLASSIFICATION: (STANDARD-LIFT, HIGH-LIFT, VERTICAL-LIFT)	Vertical-Lift
DOOR HEIGHT:	165 in.
DOOR WEIGHT:	500 lb
DOOR WIDTH:	156 in.
APPROPRIATE DRUM:	D1100-216

STEP 2: FIND THE APPROPRIATE MULTIPLIER

On the appropriate Technical Sheet, determine: MULTIPLIER: 0.3750

TURN ON SPRING: 12.4 turns

STEP 3: MIP CALCULATION

Solve the following counterbalancing equation to find the appropriate spring and plug dimensions:

$$\begin{array}{rcl}
 \text{Multi: } 0.3750 \times \text{Door Weight: } 500 & = & \text{IPPT: } 187.5 \\
 & \times & \\
 \text{Turns on spring: } 12.4 & & \\
 \div & & \\
 \text{Qty of spring: } 2 & & \\
 = & & \\
 \text{*MIP per spring: } & & 1162.5
 \end{array}$$

MIP in Appendix 1 must be higher than this value. So, it is possible to choose
0.3938" Wire or larger (for 10,000 cycles).

STEP 4: SPRING LENGTH CALCULATION

At this stage, many options are available to choose spring possibilities. Here are some of them.

	OPTION 1	OPTION 2	OPTION 3
	0.3938" WIRE / 3.375" PLUG DIAMETER	0.3938" WIRE / 5.25" PLUG DIAMETER	0.4062" WIRE / 5.25" PLUG DIAMETER
SPRING QTY.	2	2	2
X	X	X	X
DIVIDER	7405.4	4945.2	5761.7
÷	÷	÷	÷
IPPT	187.5	187.5	187.5
=	=	=	=
LENGTH OF ACTIVE COILS	78.99	52.75	61.46
+	+	+	+
DEAD COIL FACTOR	1.97	1.18	1.22
(IF COILS DIAMETER < 3.5, CHOOSE FACTOR 1; OTHERWISE, CHOOSE FACTOR 2)			
=	=	=	=
TOTAL SPRING LENGTH	80.96 in. Too long for the door width capacity	53.93 in.	62.68 in.

DUPLIX SPRING ASSEMBLY CALCULATION

Duplex spring calculation can become really complex especially if an equal length booster is needed. Most of the time, this kind of calculation is performed by computer programs. Since hand-made calculation is not commonly used, only general tips we be given into this manual.

- Follow step 1 to 3 of the normal spring calculation to find the global MIP. Rule of thumb: normally, for a duplex installation, the inner section takes about 1/3 of the global MIP and the outer section takes 2/3 of the torque.
- With the MIP of each spring, it is possible to find the spring length following step 4 of the normal spring calculation. If an un-equal length duplex is acceptable, it is possible to take directly those values for the spring length. If an equal length duplex is required, iteration will be needed until an equal inner and outer section can be found.
- Normally, the outer section should have a smaller life cycle than the inner section to be able to visually see if the spring break.

COUNTERBALANCING EXAMPLE FOR DOOR WITH PITCH

STANDARD-LIFT WITH PITCH ANGLE

STEP 1: COLLECTING DATA

Choose a Torque Force Drum according to:	DOOR CLASSIFICATION: (STANDARD-LIFT, HIGH-LIFT, VERTICAL-LIFT)	Standard-Lift
	DOOR HEIGHT:	102 in.
	DOOR WEIGHT:	300 lb
	TRACK RADIUS:	15 in.
	DOOR PITCH:	1/12 (4.76 deg)
APPROPRIATE DRUM:		D400-123

STEP 2: FIND THE APPROPRIATE MULTIPLIER

On the appropriate Technical Sheet, determine: MULTIPLIER: 0.2175
PITCH FACTOR: 0.1941 turns

D400-123		TRACK RADIUS		
DOOR HEIGHT		15"		
(FT)	(IN.)	MULTI (IN./TURNS)	TURNS ON SPRING	PITCH FACTOR
9'9"	117	0.2222	10.3	0.1982
10'0"	120	0.2175	10.5	0.1941
10'3"	123	0.2129	10.8	0.1901

STEP 2A: MODIFY THE MULTIPLIER (FOR DOOR WITH PITCH)

Make the correction to the Multiplier to take the pitch into consideration.
Answer the following equation to find the correct Multiplier and Turns on Spring
Multiplier with Pitch = Multiplier - (Pitch Factor X Sines) = 0.2175 - (0.1941 X 0.083) = 0.2013
Turn on Spring = HMA ÷ Multiplier with Pitch = 2.293 ÷ 0.2013 = 11.4

Appendix 3: Roof pitch angles and their equivalent sines.

PITCH OUT OF 12	ANGLE DEGREE	SINES
1	4.76	0.083
2	9.46	0.164
3	14.04	0.243
4	18.43	0.316

STEP 3 & 4:

Use the standard sheet calculation and resolve Step 3 with the new Multiplier with Pitch and Turn on Spring.
For this specific example, it gives approximately the same result as Example 2 Standard-Lift Drum (2 springs).

GENERAL COUNTERBALANCING CALCULATION SHEET

STEP 1: COLLECTING DATA

Choose a Torque Force Drum for the following:

DOOR CLASSIFICATION:
(STANDARD-LIFT, HIGH-LIFT, VERTICAL-LIFT) _____

DOOR HEIGHT: _____ in.

DOOR WEIGHT: _____ lb

DOOR WIDTH: _____ in.

TRACK RADIUS: _____ in.

DOOR HIGHT-LIFT: _____ in.

APPROPRIATE DRUM: _____

STEP 2: FIND THE APPROPRIATE MULTIPLIER

On the appropriate Technical Sheet, determine: MULTIPLIER: _____
TURN ON SPRING: _____

STEP 2A: MODIFY THE MULTIPLIER (FOR DOOR WITH PITCH)

Multiplier _____ - (Pitch Factor _____ x sines _____) = Multiplier with Pitch _____
HMA _____ ÷ Multiplier with Pitch _____ = Turns on Spring _____
Use this data for Steps 3 & 4

STEP 3: MIP CALCULATION

Complete the following counterbalancing calculation equation to find the appropriate Wire Dimension.

Multi: _____ x Door Weight: _____ =

IPPT: _____
X
Turns on spring: _____
÷
Qty of spring: _____
=
*MIP per spring: _____

*MIP in Appendix 1 must be higher than this value.

STEP 4: SPRING LENGTH CALCULATION

At this stage, many options are available to choose spring possibilities. Here are some of them.

	OPTION 1	OPTION 2	OPTION 3
	WIRE / PLUG DIAMETER	WIRE / PLUG DIAMETER	WIRE / PLUG DIAMETER
SPRING QTY.			
X	X	X	X
DIVIDER			
÷	÷	÷	÷
IPPT			
=	=	=	=
LENGTH OF ACTIVE COILS			
+	+	+	+
DEAD COIL FACTOR			
(IF COILS DIAMETER < 3.5, CHOOSE FACTOR 1; OTHERWISE, CHOOSE FACTOR 2)			
=	=	=	=
TOTAL SPRING LENGTH			

APPENDIX 1

MAXIMUM INCH POUND (MIP) SPRING CAPACITY TABLE

MAXIMUM INCH POUND TORQUE CAPACITIES OF VARIOUS WIRE SIZES ATSELECTED CYCLE LEVELS. OIL TEMPERED O.H. DOOR QUALITY					
CYCLE LEVEL					
WIRE DIA. (INCH)	10 M	15 M	25 M	50 M	100 M
0.1480	83	77	69	60	51
0.1620	107	99	89	77	66
0.1770	137	127	114	98	85
0.1875	161	149	134	115	99
0.1920	172	159	143	123	106
0.2070	212	196	177	152	131
0.2187	247	229	206	177	153
0.2253	268	249	224	193	166
0.2344	298	276	249	214	184
0.2375	311	288	260	223	192
0.2437	337	309	279	240	206
0.2500	358	332	300	257	222
0.2625	411	381	343	295	254
0.2730	458	425	383	329	283
0.2830	506	470	424	364	313
0.2890	537	498	449	386	332
0.2950	569	527	476	408	352
0.2970	580	537	485	416	358
0.3065	633	587	529	454	391
0.3125	668	619	559	480	413
0.3195	710	659	594	510	439
0.3310	784	727	656	563	485
0.3437	871	808	729	626	538
0.3625	1011	937	845	726	625
0.3750	1111	1030	929	798	687
0.3938	1273	1181	1065	914	787
0.4062	1388	1287	1161	997	858
0.4218	1542	1430	1290	1108	953
0.4305	1633	1514	1366	1173	1009
0.4375	1708	1584	1428	1227	1056
0.4531	1883	1746	1575	1352	1164
0.4615	1982	1838	1658	1424	1225
0.4687	2070	1919	1731	1486	1279
0.4844	2269	2104	1898	1630	1403
0.4900	2343	2173	1960	1683	1448
0.5000	2479	2299	2073	1780	1532

APPENDIX 2

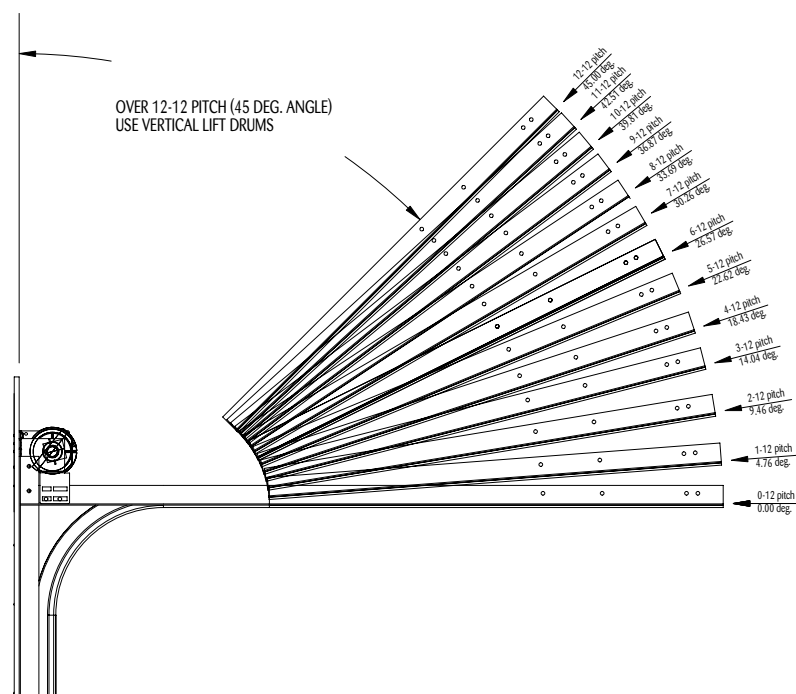
DIVIDER AND DEAD COIL FACTOR TABLE

WIRE DIA. (IN.)	COIL DIAMETER													DEAD COIL FACTOR ⁽¹⁾	
	1.75	2	2.5	2.625	3.375	3.5	3.625	3.75	4.5	5.25	5.875	6	7.625	FACTOR 1	FACTOR 2
0.1480	110.3	-	-	-	-	-	-	-	-	-	-	-	-	0.74	0.44
0.1620	172.0	-	-	-	-	-	-	-	-	-	-	-	-	0.81	0.49
0.1770	265.7	-	-	-	-	-	-	-	-	-	-	-	-	0.89	0.53
0.1875	352.5	-	-	-	-	-	-	-	-	-	-	-	-	0.94	0.56
0.1920	395.9	350.8	285.6	-	-	-	-	-	-	-	-	-	-	0.96	0.58
0.2070	572.3	507.5	413.7	-	-	-	-	-	-	-	-	-	-	1.04	0.62
0.2187	748.9	664.5	542.3	-	-	-	-	-	-	-	-	-	-	1.09	0.66
0.2253	866.1	768.8	627.7	600.2	475.2	-	-	-	-	-	-	-	-	1.13	0.68
0.2344	1050.8	933.3	762.6	729.3	577.7	-	-	-	-	-	-	-	-	1.17	0.70
0.2375	1120.4	995.2	813.5	777.9	616.4	-	-	-	-	-	-	-	-	1.19	0.71
0.2437	1270.5	1129.0	923.2	883.0	700.0	-	-	-	-	-	-	-	-	1.22	0.73
0.2500	1438.9	1279.1	1046.5	1001.0	793.9	767.4	742.7	719.5	-	-	-	-	-	1.25	0.75
0.2625	1825.1	1623.4	1329.6	1272.0	1009.8	976.2	944.8	915.4	-	-	-	-	-	1.31	0.79
0.2730	2209.0	1966.0	1611.5	1542.0	1225.0	1184.4	1146.4	1110.8	-	-	-	-	-	1.37	0.82
0.2812	2550.9	2271.4	1863.0	1782.9	1417.2	1370.3	1326.5	1285.3	-	-	-	-	-	1.41	0.84
0.2830	2631.3	2343.1	1922.2	1839.5	1462.4	1414.1	1368.8	1326.4	-	-	-	-	-	1.42	0.85
0.2890	2913.7	2595.5	2130.2	2038.8	1621.5	1568.0	1517.9	1470.9	1240.6	1072.6	963.8	944.7	750.7	1.45	0.87
0.2950	3219.5	2868.8	2355.6	2254.8	1794.0	1734.9	1679.6	1627.7	1373.1	1187.4	1067.1	1045.9	831.3	1.48	0.89
0.2970	-	-	2434.8	2330.6	1854.6	1793.6	1736.4	1682.8	1419.7	1227.7	1103.4	1081.5	859.6	1.49	0.89
0.3065	-	-	2840.3	2719.2	2165.2	2094.1	2027.5	1965.1	1658.4	1434.6	1289.5	1264.0	1005.0	1.53	0.92
0.3125	-	-	3122.7	2989.8	2381.7	2303.6	2230.5	2161.9	1825.0	1578.9	1419.4	1391.3	1106.5	1.56	0.94
0.3195	-	-	3479.8	3332.1	2655.7	2568.7	2487.3	2410.9	2035.8	1761.6	1583.9	1552.5	1235.0	1.60	0.96
0.3310	-	-	4135.9	3961.0	3159.4	3056.3	2959.8	2869.1	2423.7	2098.0	1886.7	1849.4	1471.7	1.66	0.99
0.3437	-	-	-	-	3800.8	3677.2	3561.4	3452.7	2918.1	2526.8	2272.9	2228.1	1773.7	1.72	1.03
0.3625	-	-	-	-	4935.5	4775.8	4626.1	4485.5	3793.6	3286.7	2957.4	2899.3	2309.4	1.81	1.09
0.3750	-	-	-	-	5827.7	5639.7	5463.5	5297.9	4482.9	3885.1	3496.6	3428.1	2731.7	1.88	1.13
0.3875	-	-	-	-	6843.1	6623.1	6416.8	6222.9	5268.0	4567.2	4111.3	4030.9	3213.4	1.94	1.16
0.3938	-	-	-	-	7405.4	7167.7	6944.7	6735.2	5703.0	4945.2	4452.1	4365.1	3480.5	1.97	1.18
0.4062	-	-	-	-	8618.7	8342.9	8084.2	7841.1	6642.4	5761.7	5188.4	5087.1	4057.8	2.03	1.22
0.4218	-	-	-	-	-	-	-	-	-	6937.2	6248.7	6127.0	4889.7	2.11	1.27
0.4305	-	-	-	-	-	-	-	-	-	7671.0	6910.7	6776.3	5409.4	2.15	1.29
0.4375	-	-	-	-	-	-	-	-	-	8305.1	7482.8	7337.5	5858.6	2.19	1.31
0.4531	-	-	-	-	-	-	-	-	-	-	8893.5	-	6966.8	2.27	1.36
0.4615	-	-	-	-	-	-	-	-	-	-	9736.0	-	7629.1	2.31	1.38
0.4687	-	-	-	-	-	-	-	-	-	-	10507.7	-	8235.7	2.34	1.41
0.4844	-	-	-	-	-	-	-	-	-	-	12358.8	-	9691.8	2.42	1.45
0.4900	-	-	-	-	-	-	-	-	-	-	13078.4	-	10258.1	2.45	1.47
0.5000	-	-	-	-	-	-	-	-	-	-	14445.9	-	11334.4	2.50	1.50

(1) If Coil Diameter is smaller than 3.5 choose Factor 1, otherwise choose Factor 2.

APPENDIX 3

ROOF PITCH ANGLES AND THEIR EQUIVALENT SINES



EQUIVALENT SINES		
PITCH 1 TO 12	ANGLE DEGREE	SINES
1	4.76°	0.083
2	9.46°	0.164
3	14.04°	0.243
4	18.43°	0.316
5	22.62°	0.385
6	26.57°	0.447
7	30.26°	0.504
8	33.69°	0.555
9	36.87°	0.600
10	39.81°	0.640
11	42.51°	0.676
12	45.00°	0.707

APPENDIX 4

WEIGHT (LB) PER INCH OF SPRING

WIRE DIA. (IN.)	COIL DIAMETER												
	1.75	2	2.5	2.625	3.375	3.5	3.625	3.75	4.5	5.25	5.875	6	7.625
0.1480	0.196	0.222	0.274	0.287	0.364	0.377	0.390	0.403	0.480	0.558	0.622	0.635	0.803
0.1620	0.216	0.245	0.301	0.315	0.400	0.414	0.428	0.443	0.527	0.612	0.683	0.697	0.881
0.1770	0.238	0.269	0.331	0.346	0.439	0.454	0.470	0.485	0.578	0.671	0.748	0.763	0.964
0.1875	0.254	0.286	0.352	0.368	0.466	0.483	0.499	0.516	0.614	0.712	0.794	0.810	1.023
0.1920	0.260	0.294	0.361	0.378	0.478	0.495	0.512	0.528	0.629	0.730	0.813	0.830	1.048
0.2070	0.283	0.319	0.391	0.409	0.518	0.536	0.554	0.572	0.680	0.789	0.879	0.897	1.132
0.2187	0.301	0.339	0.415	0.434	0.549	0.568	0.587	0.606	0.721	0.835	0.931	0.950	1.198
0.2253	0.311	0.350	0.429	0.448	0.566	0.586	0.606	0.625	0.743	0.861	0.960	0.979	1.235
0.2344	0.325	0.366	0.448	0.468	0.591	0.611	0.632	0.652	0.775	0.898	1.000	1.020	1.286
0.2375	0.330	0.371	0.454	0.475	0.599	0.620	0.641	0.661	0.786	0.910	1.014	1.034	1.304
0.2437	0.339	0.382	0.467	0.488	0.616	0.637	0.658	0.680	0.807	0.935	1.041	1.062	1.339
0.2500	0.349	0.393	0.480	0.502	0.633	0.655	0.676	0.698	0.829	0.960	1.069	1.091	1.375
0.2625	0.369	0.415	0.506	0.529	0.667	0.690	0.713	0.735	0.873	1.010	1.125	1.148	1.446
0.2730	0.386	0.433	0.529	0.552	0.695	0.719	0.743	0.767	0.910	1.053	1.172	1.196	1.506
0.2812	0.399	0.448	0.546	0.571	0.718	0.742	0.767	0.792	0.939	1.086	1.209	1.233	1.552
0.2830	0.402	0.451	0.550	0.575	0.723	0.748	0.772	0.797	0.945	1.093	1.217	1.242	1.563
0.2890	0.411	0.462	0.563	0.588	0.739	0.765	0.790	0.815	0.966	1.118	1.244	1.269	1.597
0.2950	0.421	0.473	0.576	0.601	0.756	0.782	0.807	0.833	0.988	1.142	1.271	1.297	1.631
0.2970	0.425	0.476	0.580	0.606	0.762	0.787	0.813	0.839	0.995	1.150	1.280	1.306	1.643
0.3065	0.440	0.494	0.601	0.627	0.788	0.815	0.841	0.868	1.029	1.189	1.323	1.350	1.698
0.3125	0.450	0.505	0.614	0.641	0.805	0.832	0.859	0.886	1.050	1.214	1.350	1.377	1.732
0.3195	0.462	0.517	0.629	0.657	0.824	0.852	0.880	0.908	1.075	1.243	1.382	1.410	1.772
0.3310	0.481	0.539	0.654	0.683	0.857	0.885	0.914	0.943	1.117	1.290	1.434	1.463	1.839
0.3437	0.502	0.562	0.682	0.712	0.892	0.922	0.952	0.982	1.162	1.342	1.492	1.522	1.912
0.3625	0.535	0.598	0.725	0.756	0.946	0.978	1.009	1.041	1.231	1.421	1.579	1.611	2.022
0.3750	0.556	0.622	0.753	0.786	0.982	1.015	1.047	1.080	1.277	1.473	1.637	1.669	2.095
0.3875	0.578	0.646	0.781	0.815	1.018	1.052	1.086	1.120	1.322	1.525	1.695	1.728	2.168
0.3938	0.590	0.658	0.796	0.830	1.036	1.071	1.105	1.139	1.346	1.552	1.724	1.758	2.205
0.4062	0.612	0.682	0.824	0.860	1.072	1.108	1.143	1.179	1.392	1.604	1.782	1.817	2.278
0.4218	0.640	0.713	0.861	0.897	1.118	1.155	1.192	1.229	1.450	1.671	1.855	1.891	2.370
0.4305	0.655	0.731	0.881	0.919	1.144	1.182	1.219	1.257	1.482	1.708	1.895	1.933	2.422
0.4375	0.668	0.745	0.897	0.936	1.165	1.203	1.241	1.279	1.508	1.738	1.928	1.967	2.463
0.4531	0.697	0.776	0.934	0.974	1.211	1.251	1.290	1.330	1.567	1.804	2.002	2.042	2.556
0.4615	0.713	0.793	0.954	0.995	1.236	1.277	1.317	1.357	1.599	1.841	2.042	2.082	2.606
0.4687	0.726	0.808	0.972	1.013	1.258	1.299	1.340	1.381	1.626	1.872	2.076	2.117	2.649
0.4844	0.756	0.840	1.009	1.052	1.3105	1.348	1.390	1.432	1.686	1.940	2.151	2.193	2.743
0.4900	0.766	0.852	1.023	1.066	1.322	1.365	1.408	1.451	1.707	1.964	2.178	2.221	2.777
0.5000	0.786	0.873	1.047	1.091	1.353	1.397	1.440	1.484	1.746	2.008	2.226	2.269	2.837



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