Farmer Norton



Manufactured under
exclusive licence
from
Sutton Engineering Co.,
Pittsburgh, U.S.A.

Multi-Roll
Bar & Tube
Straightening
Machines

5-ROLL STRAIGHTENERS

You are invited to discuss any straightening problem you may have with a Farmer Norton application engineer. If we cannot furnish the machine you need from our varied line of proven designs, we will design and build an all-new machine to your order! However able we are to furnish the most advanced equipment, we know from long experience that a succession of new designs must be made, to meet your constantly changing requirements and particularised needs.

FOR HEAVY DUTY STRAIGHTENING

STEEL OR NON-FERROUS TUBES OR ROUND BARS

Designed particularly for heavy-duty straightening of hot-rolled round bars and heavy walled tubes, this machine is an acknowledged leader in its field.

The 5-roll principle distributes the straightening load over three points which results in accurate end-to-end straightening. Because pressures are reduced, maintenance is minimised.

Roll pressure adjusting screws and the angular adjustment for the driven rolls are power operated. A compact heavy duty gear drive incorporates Farmer Norton Universal Joints for long trouble-free life.

Model 3BC. Tubes from 1" O.D. to 10" O.D. Bars from 1" to $6\frac{1}{2}$ " dia.

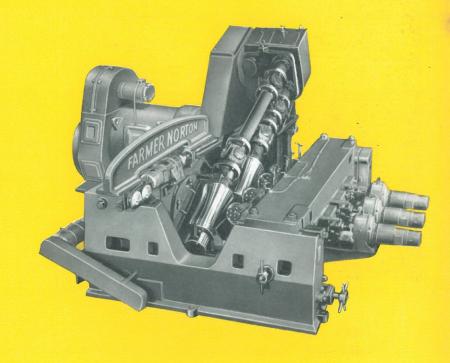
FOR STRAIGHTENING AND POLISHING

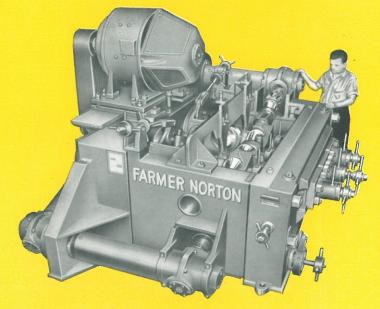
COLD DRAWN ROUND BARS AND TUBES

Designed specifically to polish as it straightens cold drawn bars and tubes at high production speeds.

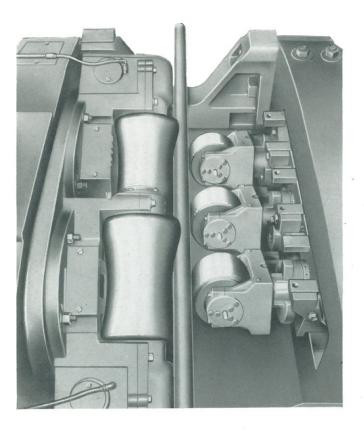
This unit shows the flexibility of the 5-roll principle. While normally only two of the five rolls are driven, this machine has four driven rolls to provide a burnishing action which polishes as the machine straightens.

Model $1\frac{1}{2}$ FX. Tubes from $\frac{5}{16}$ O.D. to 3" O.D. Bars from $\frac{5}{16}$ " to $2\frac{1}{2}$ " dia.





Known for Speed . . . Precision . . . Dependability



WORKING HEAD OF 5-ROLL MACHINE SHOWS ENGINEERING PRINCIPLE

A large driven roll with an opposed idler roll is mounted at the entry end of the machine and another similar set of cross rolls is mounted at the delivery end. Between these two sets of cross rolls is an unopposed pressure roll. Thus straightening loads are distributed over three points reducing unit pressures.

5-ROLL DESIGN ASSURES DEPENDABLE PERFORMANCE

Diagram shows position of rolls in Farmer Norton 5-roll straighteners. Possible adjustments shown are angling of all rolls, straightening pressure adjustment and longitudinal centre adjustment of idler rolls.

* See page 7 for Capacity Chart

For a generation, Sir James Farmer Norton & Co. Ltd., has furnished straightening equipment for ferrous and non-ferrous metal industries.

During the years, many Farmer Norton straightening machines have been built; some with only slight changes and others with radical improvements over former models. All have contributed to the Farmer Norton line of today — the most complete offering of straightening equipment for any requirement.

Presented on these pages are a few representative examples only. Specific applications and particularised problems should be discussed with a Farmer Norton application engineer.

USERS GET OUTSTANDING VALUE

IN PRODUCTION Quality straightening—accurate end-to-end. High customer acceptance because of precise, end-to-end straightening with excellent surface quality. Steady dependable production at high speeds. Case records prove superiority. Farmer Norton machines are engineered and built for dependable service at speeds up to 1000 feet per minute.

IN FLEXIBILITY Each machine handles a wide range of sizes. Longitudinal positioning of pressure rolls together with angular adjustment of all five rolls makes accurate straightening possible over a wide range of sizes. Can be operated without guides if desired. While guides are recommended for best results in some applications, Farmer Norton 5-roll machines are operated with or without guides.

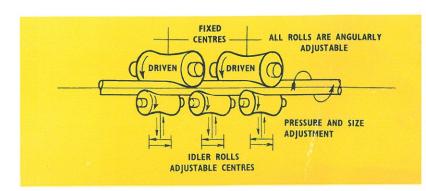
Idler rolls quickly adjusted for size of work. The ease and accessibility of all Farmer Norton adjustments are approved by operators. Roll setting is fast and sure.

Angles of all five rolls are easy to adjust. Angling of rolls is easy and precise in all sizes of Farmer Norton 5-roll machines, whether manually or power operated.

IN ECONOMY Long roll life for low straightening cost. Because only one roll of each pair of cross rolls is driven, roll diameters do not have to be matched, wear is reduced, and roll life lengthened.

Years of performance with minimum down-time. All Farmer Norton 5-roll straighteners are ruggedly built and have anti-friction bearings throughout.

Roll arrangement permits easy scale disposal. Because straightening rolls are placed in a horizontal plane, mill scale falls freely into disposal pit.

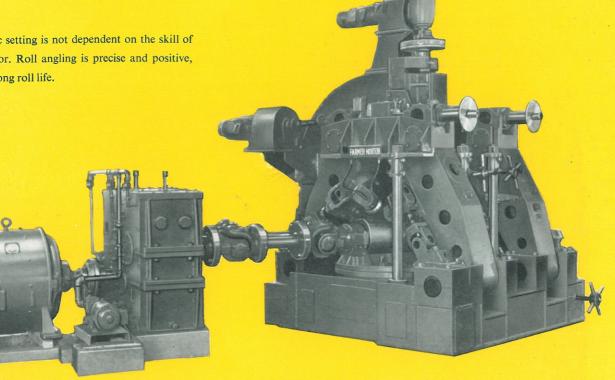


7-ROLL STRAIGHTENERS...

A revolutionary new cluster roll arrangement with Automatic Angling of rolls.

Roll angles are automatically adjusted to the proper setting for the size of material being straightened with full contact between work and rolls

Automatic setting is not dependent on the skill of an operator. Roll angling is precise and positive, assuring long roll life.



During the past several years, the introduction of the new patented 7-roll principle of straightening has made history. All initial installations have been brilliantly successful. Performance is a matter of record. While revolutionary in design of roll arrangement, there has been no change in Farmer Norton's long established policy of precise machining and rugged construction. In 7-roll machines, users get all of the advantages of truly guideless straightening plus dependable Farmer Norton engineering which results in quality products, long machine life and economy of operation and maintenance.

Model 4KTC (pictured) Tubes from $3\frac{5}{8}$ O.D. to 12 O.D.

AVAILABLE IN ALL SIZES

For $\frac{5}{16}$ " to 20" O.D. Tubes For $\frac{5}{16}$ " to 12" Dia. Bars

* See page 7 for Capacity Chart

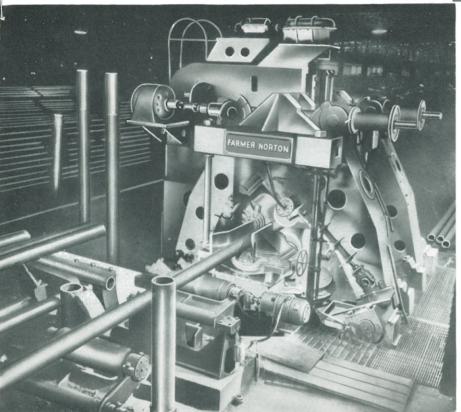
STANDARD OR SPECIAL DESIGNS OF ENTRY AND

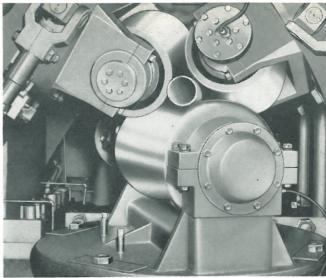
FOR HIGH PRODUCTION, HIGH QUALITY STRAIGHTENING

... for TUBES

Working head of 7-roll machine shows engineering principle of cluster roll arrangement.

Typical installation of a 7-roll straightener. At a speed of 50 to 200 f.p.m. this machine straightens $5\frac{1}{2}''$ O.D. to $18\frac{1}{2}''$ O.D. tubes and round bars up to 12'' Dia.





USER ADVANTAGES

PRODUCTION STRAIGHTENING OF UPSET-END TUBES

Exclusive roll arrangement permits high-speed straightening of oil country tubing having upset-ends.

QUALITY PRODUCTION AT HIGH SPEEDS WITH MINIMUM OF STRESS

Straightening pressures are evenly distributed; tubular products straightened precisely with little cold working of the metal.

WORK IS POSITIVELY CONFINED TO PASS LINE WITHOUT GUIDES

This is a truly guideless straightener. The roll clusters positively confine the work to the pass line from entry to delivery.

POSITIVE FEEDING AND UNIFORM END-TO-END STRAIGHTENING

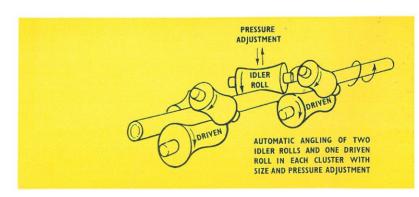
The roll clusters assure positive feeding and delivery of material. Tubes and bars are subjected to uniform pressures resulting in accurate end-to-end straightness.

RAPID CHANGEOVER FOR SIZES CUTS DOWN TIME

Power operated screw-downs and automatic co-ordinated angling of rolls cuts change-over time drastically.

EXCLUSIVE 7-ROLL PRINCIPLE PROVIDES POSITIVE CONFINEMENT

A large driven roll with two opposed idler rolls is located at the entry end of the machine and another identical cluster is at the delivery end. In these clusters, rolls are positioned at approximately 120° to each other. Between these two three-roll clusters is an unopposed pressure roll. This advanced roll arrangement positively confines the work to the pass line and assures accurate end-to-end straightening.



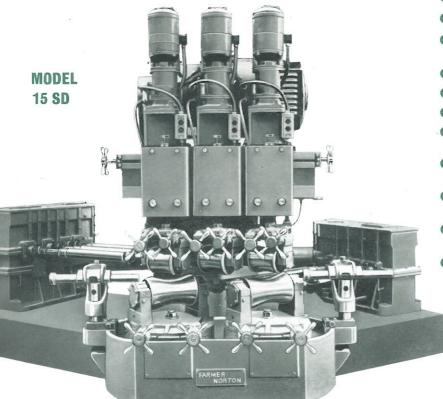
DELIVERY TABLES AVAILABLE FOR ALL MACHINES

OF STEEL OR NON-FERROUS TUBES OR ROUND BARS



SYNCRO-DRIVE STRAIGHTENERS

SPECIAL FEATURES

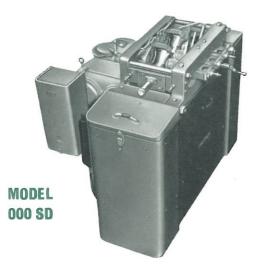


- Precision straightening at high speeds
- Entirely guideless straightening
- All rolls driven positive feeding
- Co-ordinated roll speeds, no roll marking
- Less re-dressing for maximum roll life
- Increased size range for each machine
- Quick set-up and change-over
- Power operated screw-downs for larger machines
- Simplified roll angle adjustment with positive lock
- Open-frame construction for fast roll change
- Vertical rolls pneumatically counterbalanced
- Excellent operator visibility in all models

Patented Farmer Norton Syncro-Drive provides the finest quality, guideless straightening of tubes from \$\frac{1}{64}"\$ to 6" O.D. and bars from \$\frac{1}{64}"\$ to 4" Dia. in all metals. Precision straightening is achieved at high speeds.

With Syncro-Drive, users can straighten materials previously found difficult, or even impossible to straighten, such as thin-walled tubes and bars of stainless steel, brass, zirconium, titanium and other modern metals.

A complete range of sizes and capacities of Farmer Norton Syncro-Drive straighteners is listed opposite.



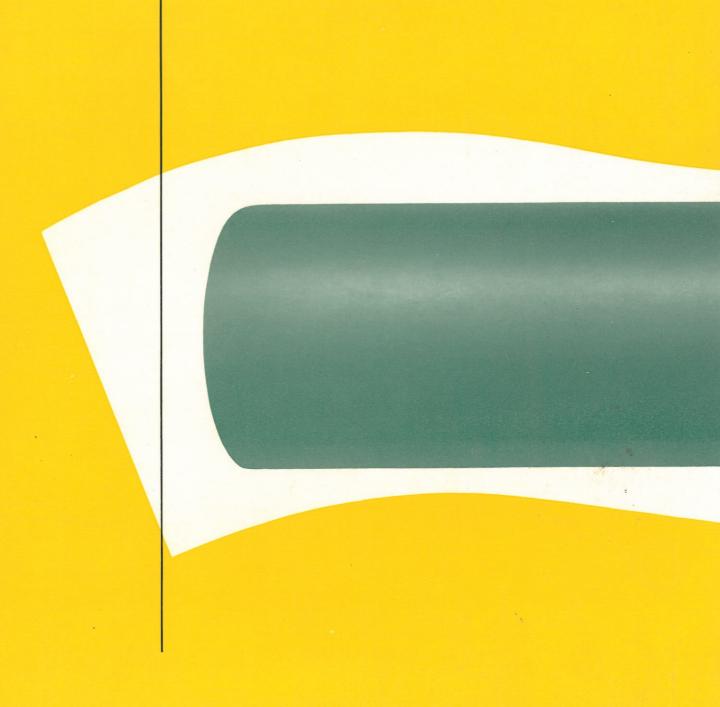
In the 5-roll design, 3 small pressure rolls are opposed by 2 large straightening rolls. All 5 rolls are driven by a single motor with the Syncro-Drive mounted between the drives for the two banks of opposed rolls. Surface speeds of each bank of rolls are co-ordinated automatically, compensating for roll wear and differences of angular roll setting. Farmer Norton 5-roll Straighteners have for years been specified as the most rugged and dependable straighteners available for heavy-duty

most rugged and dependable straighteners available for heavy-duty service at high production speeds. Equipped with Syncro-Drive, they now set new standards of quality for high-speed, precision, end-to-end straightening.

* See opposite for Capacity Chart

CAPACITY CHART

MACHINE	CAPACITY				THROUGH-PUT		MOTOR			FLOOR SPACE		NET WEIGHT	
	TUBES		BARS		SPEED		HORSEPOWER		SPEED	TLOOK SPACE		INET WEIGHT	
	in.	mm.	in.	mm.	Ft./Min.	M./Min.	Tubes	Bars	R.P.M.	Ft. – In.	Metres	Pounds	Kilogramm
ОВ	1 - 5	3 – 16	$\frac{1}{8} - \frac{1}{2}$	3 – 13	75/300	22.9/91.5	2 – 3	2 - 3	500/2000	3′ 9″× 5′ 2″	I · I 43 × I · 575	2,500	1,134
IB	$\frac{3}{16} - \frac{3}{4}$	5 – 19	$\frac{3}{16} - \frac{5}{8}$	5 – 16	75/300	22.9/91.5	3 – 5	3 – 5	500/2000	3'11"× 6' 0"	I · I94× I · 829	3,500	1,588
IBZ					DRIVE REQUIRING 1/3 h.p., 800 r.p.m. MOTOR				DR .	3'11"× 6' 0"	I · I94× I · 829	3,600	1,633
IAC	4-2	6 – 51	$\frac{1}{4} - \frac{1}{2} $	6 – 38	100/300	30.5/91.5	15 – 20	20 – 25	600/1800	9′ 5″× 8′ 4″	2·87 × 2·54	11,000	4,990
IA	<u>1</u> - 2	6-51	$\frac{1}{4} - \frac{1}{2} $	6 – 38	100/300	30-5/91-5	15 – 20	20 – 25	600/1800	7′ 0″× 6′ 6″	2·134×1·981	10,700	4,854
I½ BM	$\frac{1}{4} - \frac{1}{2}$	6 – 38	1/4 - 1 1/4	6 – 32	100/300	30.5/91.5	10 – 15	15 – 20	600/1800	7' 6"× 5' 1"	2·286×1·549	9,500	4,299
1½ B	$\frac{5}{16} - 2\frac{7}{8}$	8 – 73	<u>5</u> - 2	8 - 51	100/300	30.5/91.5	20 – 25	25 – 30	500/1500	7' 6"× 7' 0"	2·286×2·134	11,600	5,262
I ½ BC	5 - 3 5 - 3	8 - 76	<u>5</u> - 2	8 - 51	100/300	30.5/91.5	20 – 25	25 – 30	500/1500	9′ 6″× 7′ 4″	2·896×2·235	16,500	7,483
I½ BF	$\frac{5}{16} - 3$	8 – 76	3 21	8 - 51	100/300	30.5/91.5	20 – 25	25 - 30	500/1500	9' 2"× 8' 4"	2·794×2·54	20,000	9,072
I PUD	글 - 3	10 – 76	$\frac{3}{8}-2\frac{1}{2}$	10 – 64	60/240	18-3/73-2	25 – 30	30 – 40	400/1600	9' 6"× 8' 0"	2·896×2·438	19,000	8,618
(2 ROLLS DR.)	3/8 - 3	10 – 76	3 - 2	10 – 51	75/225	22.9/68.6	50 – 60	60 – 75	300/1200	10' 3"×13' 9"	3·124×4·191	27,000	. 12,247
I ½ FX	3 − 3	10 – 76	$\frac{3}{8}-2\frac{1}{2}$	10 - 64	60/240	18-3/73-2	25 – 30	30 – 40	400/1600	10' 8"× 9' 6"	3·251×2·896	28,400	12,882
I½ BHD (4 ROLLS DR.)	3 - 3	10 – 76	$\frac{3}{8} - 2\frac{1}{2}$	10 – 64	75/225	22-9/68-6	60 – 75	100 – 125	300/1200	11' 3"×15' 1"	3·429×4·597	36,300	16,465
2 JM	1/2 4	13 – 102	$\frac{1}{2} - 3$	13 – 76	100/400	30-5/121-9	50 – 60	50 – 60	400/1600	10' 5"× 9' 0"	3·175×2·743	28,800	13,064
2.014	2 -	10	2	10	100/400	30-5/121-9	40 – 50	50 – 60	400/1600				
2 BM	$\frac{3}{4} - 5$	19 – 127	$\frac{3}{4} - 3\frac{1}{2}$	19 – 89	125/600	38-1/182-9	75 – 100	75 – 100	400/1600	9′ 9″×10′ 1″	2·972×3·073	33,000	14,969
2 JM SPECIAL	5/8 - 2½	16 - 64	Special Hi		250/1000	76-3/305	75 – 100	75 – 100	400/1600	10' 5"×10' 9"	3·175×3·277	49,600	22,499
2 JM MODIFIED	\$ - 5	16 – 127	Machines Used fo		200/800	61/243-8	75 – 100	75 – 100	400/1600	10'10"×11' 2"	3·302×3·358	53,900	24,469
2 B	$\frac{3}{4} - 6$	19 – 152	3/4 - 4	19 – 102	75/300	22.9/91.5	50 – 60	60 – 75	300/1200	9' 9"×10' 3"	2·972×3·124	36,000	16,329
2 J MODIFIED	$\frac{3}{4} - 6\frac{5}{8}$	19 – 168	$\frac{3}{4} - 4\frac{1}{2}$	19-114	75/300	22.9/91.5	60 – 75	75 – 100	300/1200	11' 4"×11' 9"	3·454×3·582	49,400	22,408
2 BC	3/4 - 6	19 – 152	3 - 4	19 – 102	75/300	22.9/91.5	60 – 75	75 – 100	300/1200	14' 7"×10' 0"	4·445 × 3·048	45,600	20,684
2½ BC	$\frac{3}{4} - 6$	19 – 152	$\frac{3}{4} - 4\frac{1}{2}$	19-114	60/240	18-3/73-2	60 – 75	75 – 100	300/1200	17' 3"×11' 3"	5·258×3·429	72,500	32,885
3 B	1 – 10	25 – 254	I – 6	25 -152	60/240	18-3/73-2	60 – 75	75 – 100	300/1200	14' 0"×16' 8"	4·267×5·08	81,000	36,741
3 BC	1 – 10	24 – 254	I - 6½	25 – 152	60/240	18-3/73-2	75 – 100	75 – 100	300/1200	14' 8"×22'11"	4·570×6·985	88,600	40,189
3½ B	11/2 - 12	38 – 305	$1\tfrac{1}{2}-7\tfrac{1}{2}$	38 – 191	60/240	18-3/73-2	75 – 100	100 - 125	300/1200	15' 2"× 17'10"	4·623×5·435	90,000	40,823
3½ BC	2 – 12	51 – 305	2 – 8	51 – 203	60/240	18-3/73-2	100 - 125	125 – 150	300/1200	21' 8"×13' 0"	6·604×3·962	100,000	45,359
5 B	$3 - 18\frac{1}{2}$	76 – 470	3 – 10	76 – 254	50/200	15.2/61	150 – 200	200 – 200	300/1200	22' 0"×25' 5"	6·705×7·747	256,000	116,120
			35										
00 KTC	$\frac{5}{16} - \frac{1}{2}$	8 – 13	$\frac{5}{16} - \frac{1}{2}$	8 – 13	75/150	22-9/45-7	$ \frac{1}{2} - \frac{1}{2} $	$ \frac{1}{2} - \frac{1}{2} $	1150/2300	3' 0"× 2'10"	·914× ·863	750	- 340
I KTC	$\frac{3}{4} - \frac{1}{4} $	19 – 32	3 - 11	19 – 32	75/300	22.9/91.5	7-5 – 10	7.5 10	450/1800	5′ 3″× 3′11″	1-600×1-193	4,700	2,132
2 MKTC	$1\frac{1}{2} - 3\frac{3}{4}$	38 – 95	$1\frac{1}{2} - 3$	38 – 76	75/300	22.9/91.5	40 – 50	50 - 60	400/1600	15' 6"× 9' 5"	4·274×2·870	41,300	19,734
2 KTC	2-6	51 – 152	2 – 4	51 – 102	75/300	22.9/91.5	60 -80	80 - 100	400/1600	16' 0"× 9' 6"	4·877×2·896	46,900	21,274
3 KTC	23/8 - 7	60 – 178	2 3 - 5	60 – 127	60/240	18-3/73-2	100 - 125	125 – 150	300/1200	20' 0"×15' 0"	6·096×4·572	73,000	33,112
3½ KTC	$2\frac{3}{8} - 8\frac{5}{8}$	60-219	2 3 - 6	60 – 152	60/240	18-3/73-2	125 – 150	125 – 200	300/1200	20' 0"×13' 8"	6·096×4·165	90,800	41,187
4 KTC	3 <u>5</u> – 12	98 – 305	3 5 - 8	92 – 203	60/240	18-3/73.2	150 – 200	150 – 200	300/1200	24' 8"×16' 7"	7·518×5·054	130,700	59,286
4 KTC MODIFIED	3 ⁷ / ₈ - 12 ³ / ₄	98 – 324	37/8 - 8	98 – 203	60/240	18-3/73-2	150 – 200	150 – 200	300/1200	24' 9"×16' 7"	7·544×5·054	139,000	63,050
4½ KTC	41-16	108 – 406	4 - 8 -	108 – 209	60/240	18-3/73-2	150 – 200	150 – 200	300/1200	25′ 0″× 18′ 0″	7·620×5·486	165,000	84,744
5M KTC	4½ - 18	114 – 457	$4\frac{1}{2} - 9$	114 – 228	60/240	18-3/73-2	200 – 250	200 – 250	300/1200	29′ 0″×27′ 0″	8·839×8·229	210,000	95,250
5 KTC	$5\frac{1}{2} - 20$	140 – 508	5½ - 12	140 – 305	50/200	15.2/61	250 – 250	250 – 250	300/1200	30' 0"×24' 0"	9·144×7·315	338,000	185,977
000 SD	$\frac{1}{16} - \frac{3}{8}$	1.5-10	$\frac{1}{16} - \frac{5}{16}$	1 · 5 – 8	75/300	22.9/91.5	1 ½	<u> </u>	438/1750	3' 2"× 2' 3"	·965× ·686	750	340
00 SD	1 - 5 8	3 – 16	$\frac{1}{8} - \frac{1}{2}$	3 – 13	70/350			3	465/2820	5′ 1″× 3′11″	1·549×1·194	2,200	1,009
0 SD	3 - 	5 – 29	$\frac{3}{16} - \frac{3}{4}$	5 – 19	100/300	30-5/91-5	7½ - 10	10 15	600/1800	7′ 6″× 5′ 0″	2·286×1·524	6,500	2,950
I0 SD	$\frac{1}{4} - 1\frac{1}{2}$	6 – 38	1/4 - I	6 – 25	100/300	30-5/91-5	10 -15	15 – 20	600/1800	9' 6"× 6' 3"	-	11,800	5,360
15 SD	5 - 3	8 – 76	$\frac{5}{16} - 2$	8 – 51	100/300	30-5/91-5	20 – 25	25 – 30	400/1200	11' 6"× 7' 0"	3·505×2·134	16,000	7,258
17 SD	3 - 4	10 - 102	3 - 23 8 - 23	10 – 70	100/300	30-5/91-5	25 – 30	30 – 40	400/1200)			-6
18 SD	$\frac{1}{2} - 5$	13 – 127	$\frac{1}{2} - 3\frac{1}{2}$	13 – 89	100/300	30.5/91.5	40 – 50	50 – 60	400/1200	[DETAILS ON	REQUEST	
20 SD	3/4 - 6	19 – 152	3 - 4	19 – 102	75/300	27-9/91-5	50 – 60	60 – 75	300/1200	IV.			



Sir James Farmer Norton & Company

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