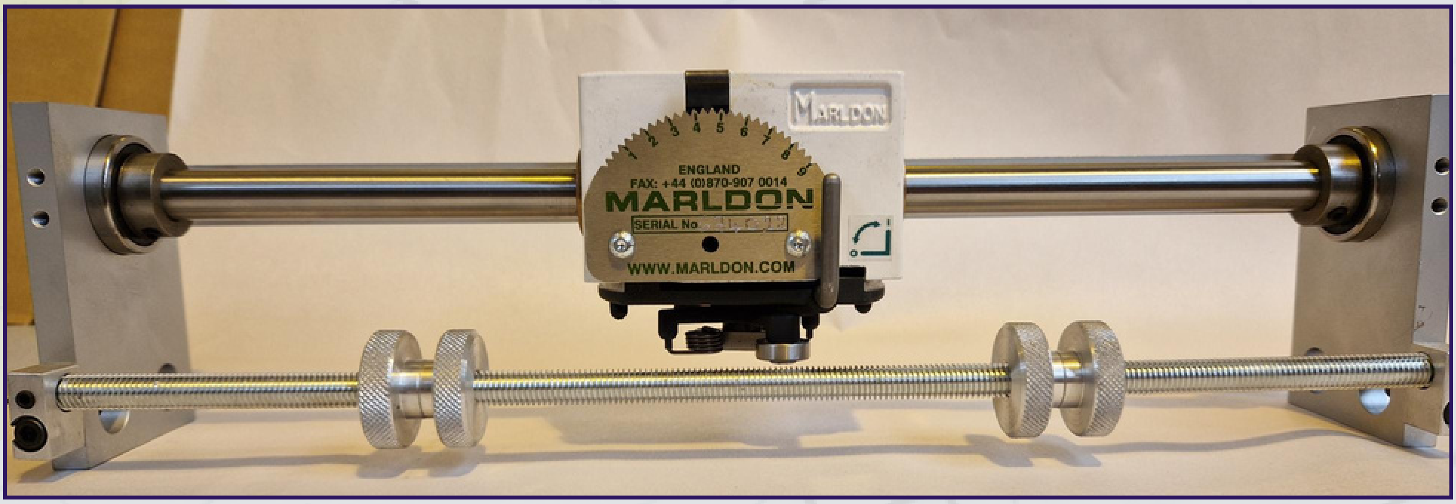
TRAVERSE UNITS BROCHURE

www.marldon.com

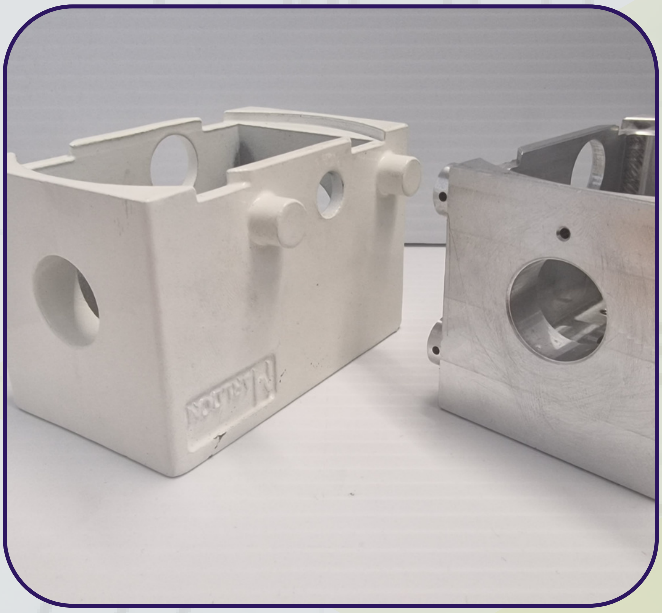
0151 632 3146

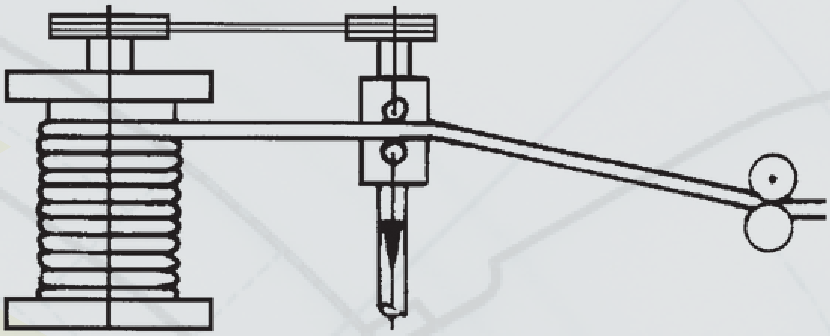
INTRODUCTION



The Marldon rolling ring traverse unit converts rotary motion into linear travel. Rotating rolling ring bearings with a specially shaped inner race, spring loaded against a smooth round shaft and maintained under constant pressure, convert the rotary motion of the shaft into linear movement at a rate that is proportional to the angular position of the rolling bearing set relative to the shaft axis. A simple adjustment of this angle by a regulating mechanism allows a wide range of traversing speeds while the shaft speed remains constant.

Marldon have invested in the latest cnc machinery so now manufacture our Traverse boxes in-house from a series 6000 Aluminium billet. Historically they were made from a cast aluminium, but by making them ourselves this reduces lead times and accuracy considerably.





The product is mainly used as a guiding mechanism for feeding linear material onto a rotating reel during the winding process, where one rotation of the reel requires a traverse movement equal to one diameter of the material being wound. The shaft carrying the traverse unit must rotate with a constant relationship to the rotation of the reel being wound. This is affected by a toothed belt connection from the shaft supporting the reel to the traverse shaft. (See illustration above).

The unit is self-reversing, so the direction of the shaft rotation does not need to be reversed to effect travel in the opposite direction. The place where reversal occurs is dictated by the position of stops adjacent to the shaft which reverse the angle of the bearing set on contact.

For ease of operation, all models are fitted with a disengaging lever which releases the unit's grip on the shaft allowing the user to slide the traverse along the shaft to any desired position.

The Marldon traverse will operate in a horizontal, vertical or indeed any, plane.

ADVANTAGES

The Marldon system has two unique features which overcome the inherent weaknesses in alternative suppliers' designs.

★ A solid one-piece housing with fixed, load-carrying bushings fitted onto the shaft.

★ A driving system independent of the housing.

The combination of these features acts to separate the two functions of a traverse unit, the functions of load bearing and driving.

Consequently, the performance of the Marldon traverse is not affected by external masses carried upon it as any loads are transmitted through the housing onto the load carrying bushes and hence onto the shaft, putting no stress on the internal rolling bearing mechanism. Consistent even performance is assured.

(Competitors' designs must use the internal bearing mechanism to carry the unit and externally imposed loads - leading to increased wear and variable, load-dependent, performance).

Additionally, and very importantly, the Marldon design means that the unit remains stable longitudinally.

(Competing designs must "float" around the shaft leading to a rocking action (or loss of traction if vibration is present) which can result in loss of precision and variation in side thrust).

MANUFACTURING

Our Traverse Units are machined from a 6000 series Aluminium Billet which bring key advantages:

1. Customisation: Machining aluminium billets allows for precise customisation of the final product. You can create intricate shapes, designs, and features that might be difficult to achieve with cast aluminium boxes.

2. Tighter Tolerances: Machining allows for greater control over tolerances, resulting in parts that have consistent and accurate dimensions. This is especially important for applications that require high precision.

3. Material Selection: Machining from billets allows you to choose from a wider range of aluminium alloys, each with specific properties suited to different applications. You can select an alloy that offers the ideal combination of strength, corrosion resistance, and other characteristics.

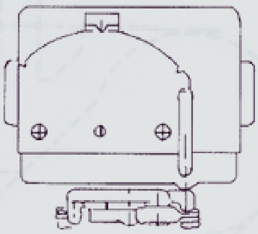
4. Strength and Durability: Machined aluminium parts can often exhibit higher mechanical properties compared to cast parts. The machining process can help refine the grain structure, leading to improved strength and durability.

5. Surface Finish: Machined parts generally have a smoother and more refined surface finish compared to cast parts, which might have surface imperfections due to the casting process.

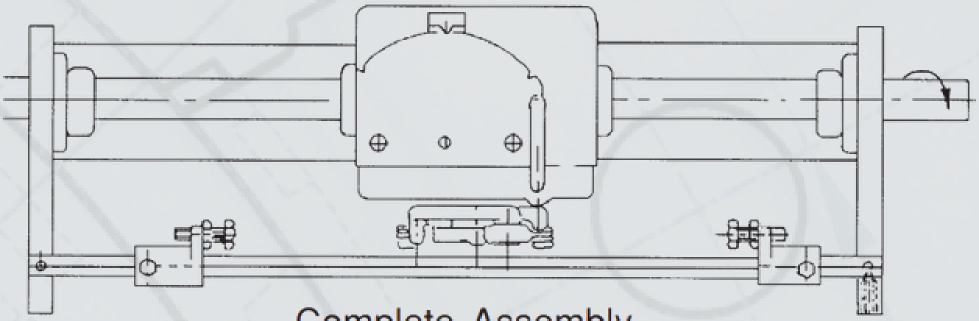
6. Complex Geometries: Machining allows for the creation of complex geometries and features, making it suitable for parts with intricate shapes and requirements.

7. Low-Volume Production: If you need a relatively small quantity of parts, machining can be a cost-effective option compared to setting up casting moulds and processes for limited production runs.

CONFIGURATIONS AVAILABLE



Traverse Unit



Complete Assembly

OPTIONS AVAILABLE

Remote Pitch Adjustment A gear attachment to the pitch control mechanism enables the pitch to be adjusted using a square section shaft extending through the side of the support assembly.

Remote Stop Adjustment A mechanism to change the position of the return stops by means of screwed shafts extending through the side of the support assembly.

Two Way Shaft Rotation To cater for situations where the traverse shaft may be rotated in both directions it is necessary to fits stops in front of and behind the support frame, each set moving into position according to the current shaft direction.

Guide Rollers For mounting on the traverse box, to guide cable etc.

Set Screws For different speed in each direction.

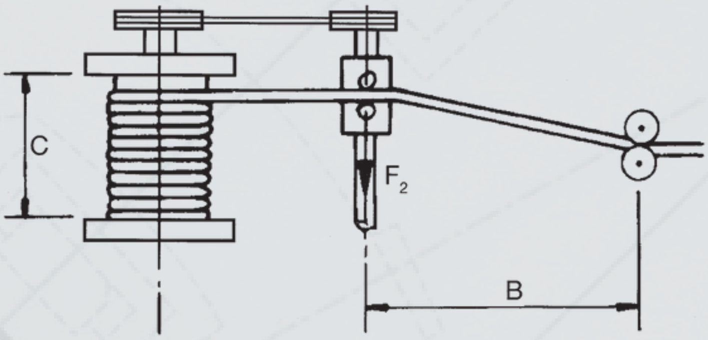
Reversal Slow Down For use when winding flat materials.

TRAVERSE SELECTION

To select the right unit for your application you need to determine the following:

1.Side Thrust Requirement

The side thrust rating for each model is given overleaf in Table 1. Your side thrust requirement (F2), if used in a typical winding application, can be determined using the following formula.



$$F2 = \frac{(C \times F1)}{(1.6 \times B)}$$

Where F1 = line tension in Newtons

Important note on side thrust:

It is important to estimate side thrust to ensure that the critical factors in your application are recognised. Often more side thrust is assumed to be necessary than is actually needed.

The stated side thrust in Table 1 is the value set in our factory for standard unit. If a higher value is required it is possible in most circumstances to increase the power by a simple adjustment.

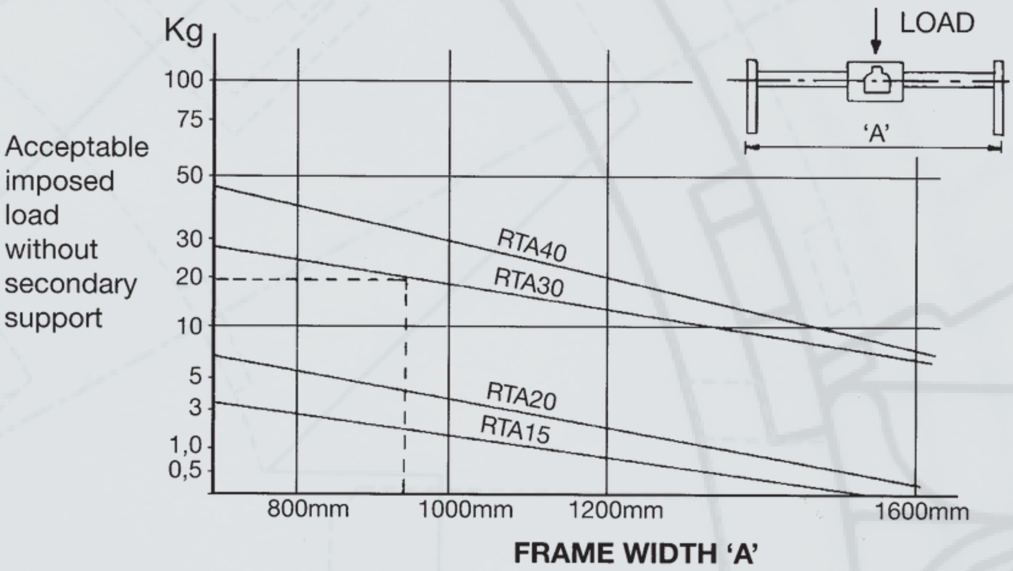
All current Marldon units have 3 rings inside. Competitor companies often promote 4 ring units on the basis that 4 rings give greater power. This is a fact.

However, it should be recognised that often this extra power is redundant and the true reason for the proposal is the greater stability on the shaft afforded by the 4 ring unit in their design. Marldon 3 ring units are already stable on the shaft without the need of a 4th ring.

2. Distance to be Traversed

In winding applications this is the inside distance between the flanges of the reel. This distance will be limited for any particular size of traverse unit to the extent that the shaft must not bend under the combined weight of the traverse unit and any other load carried by it.

The adjacent chart shows the acceptable combinations of shaft length and imposed load. If your application exceeds the unit's capability, a secondary support structure should be used where the weight is supported by other means and the traverse unit only provides the reciprocating motion.



3. Rate of Traverse (pitch)

In most winding applications, for one revolution of the reel, the traverse needs to move a distance of one diameter of the material being wound. As the rate of traverse can be varied by moving the pitch lever, the optimum relationship between pitch setting and shaft speed needs to be selected.

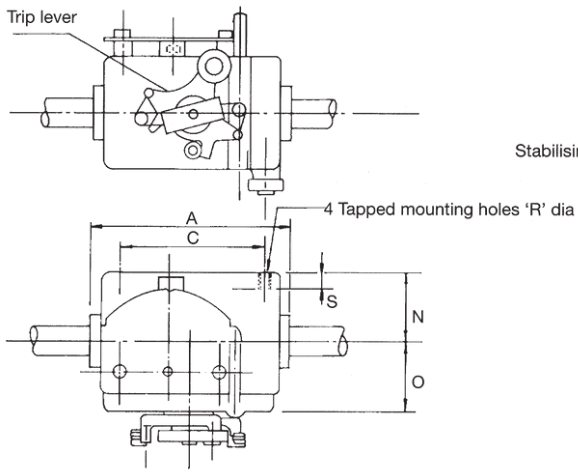
The traverse shaft is driven by the reel shaft using a toothed belt. For best results the traverse shaft speed should be kept at a minimum and the traverse pitch near maximum. The optimum ratio of reel shaft speed to traverse shaft speed can be calculated as:

$$\frac{\textbf{maximum pitch per revolution of the traverse unit (per table 1)}}{\textbf{maximum product diameter x 1.1}}$$

DATA SHEET

Table 1

Model	Shaft Dia (mm)	Traverse mm/rev Max	Maximum Side Thrust 'N' 100rpm	Maximum Side Thrust 'N' 1000rpm	Weight Kg	Dimensions (mm) A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T
RT15	15	11	130	110	1.0	96	53	36	32	16	22 25	5	32	16	20	39	47	33	30	5	M5	8	45
RT20	20	16	170	160	1.8	126	70	70	40	19	33 37	6	40	19	32	54	62	44	41	6	M6	10	60
RT30	30	24	280	260	3.3	144	86	80	50	25	45 52	7	47	22	40	67	76	55	51	8	M6	10	65
RT40	40	32	450	420	8.0	204	112	160	68	32	63 60	8	59	26	50	76	91	67	66	9	M10	12	95



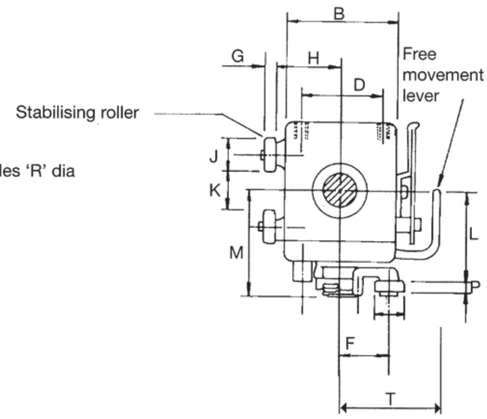
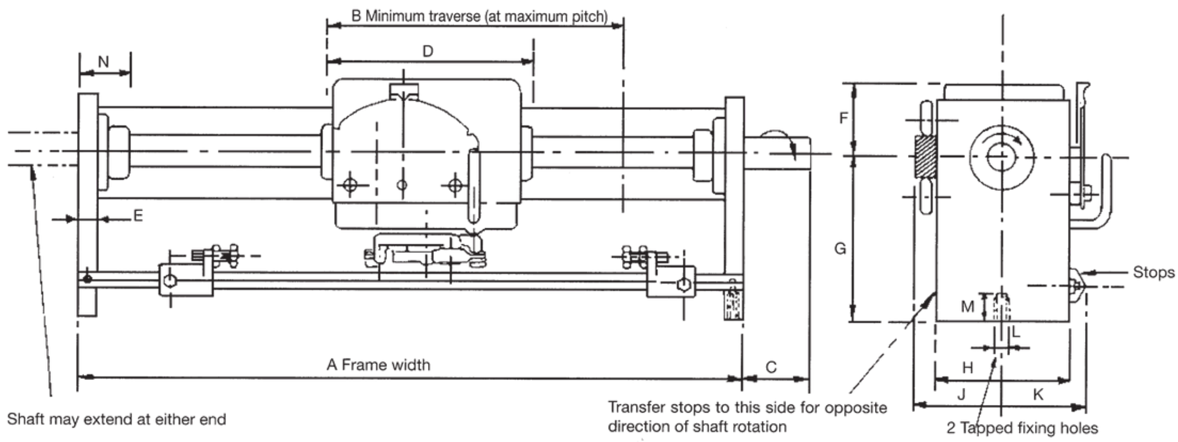


Table 2

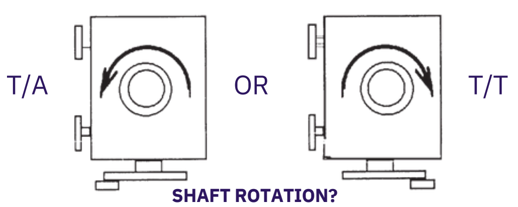
Model	Shaft Dia. (mm)	Frame Length A	Minimum Traverse B	Shaft Extension C	Standard Dimensions (mm) D	E	F	G	H	J	K	L	M	N
RTA15	15	*As*	15	*As*	96	10	33	75	60	40	37	M6	15	28
RTA20	20	*Required*	30	*Required*	126	13	44	104	70	47	52	M10	15	34
RTA30	30	*See Note*	40	*See Note*	144	16	55	120	90	60	66	M12	15	38
RTA40	40	*(1) below*	42	*(2) below*	204	20	67	150	120	80	85	M16	25	45

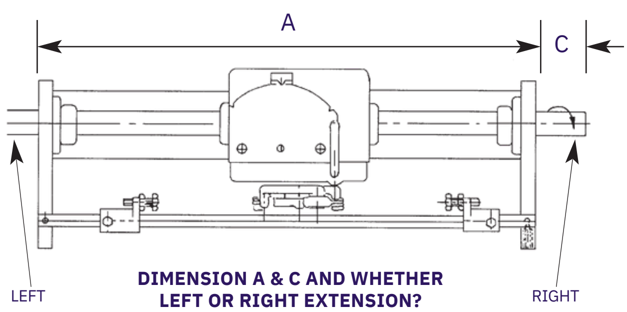
Notes:
(1) Frame length (dimension A). The frame length for your application is calculated as A = (2xN) + D + required maximum traverse distance.

(2) Shaft extension (dimension C) will be supplied to your requirement. Please specify the length, whether extending to left or right, and whether any machining is required.



PLEASE SUPPLY THE FOLLOWING INFORMATION WHEN ORDERING





marldon

www.marldon.com

0151 632 3146

sales@marldon.com