SQUEEZE ROLLER LAPPING
RECOMMENDATIONS

ANDAR's current recommendation for fitting rope lapping to the top squeeze roller is as follows:

PRESSES 1-3

(de-suint or scour duties) fit 50mm continuous polyamide.

PRESSES 4-6

(warm/cold rinse and light scour duties) fit 60mm discontinuous polyamide.

PRESS 6

(bleach/acid/chemical duties) fit 60mm discontinuous polyester.

ANDAR's current recommendation for rope lengths for roller working widths are as follows:

50mm Continuous Polyamide

2.0m w/w = 46.5m

2.4m w/w = 55.5m

3.0m w/w = 78.5m

60mm Discontinuous Polyamide or Polyester

2.0m w/w = 40.0m

2.4m w/w = 47.5m

3.0m w/w = 67.0m

Squeeze Roller Lapping
FITTING PROCEDURE

1. Preparation of the Squeeze Rollers:

1.1 GAP BETWEEN THE ROLLERS

Pack the roller bearing housings with wood or other suitable material so that the clearance between the bottom roller and the top roller is 55-60mm (for 50mm rope) and 65-70mm (for 60mm rope). It is important that when the rope is being applied there is no compression force being exerted to the rope. Assuming the correct catch clutch gear ratios are being used there should be just enough engagement to drive the roller.

1.2 PRESSURE

Turn the air supply to the regulator off and lower the top roller onto the packers and check for satisfactory clearance between the roller surfaces as mentioned above.

2. Preparation of the Rope:

2.1 Unroll the rope (keeping the fixing tail end of the rope at the squeeze press) fully on the same side of the scour as the Squeeze Roller catch clutch gears in the direction of wool flow away from the squeeze press (towards the dryer). Confirm the length of the rope as per specifications above.

2.2 Where the fixing tail joins the main body of the rope there is a blue dot on the surface of the rope. This side of the rope must be put down against the roller surface.

3. Installation:

3.1 Feed the fixing tail through the two holes in the flange of the top roller on the catch clutch side of the squeeze roller.

3.2 Undo the strands of the end of the fixing tail and fan them out over the surface of the roller.
- Tape the strands to the roller to hold them in place when the roller is turned.
- The main rope when applied will hold the and cover the strands in place.

3.3 Turn the top roller while gently feeding the rope over the top of the roller:
- Usually the catch clutch gears will just be engaged and will turn the top roller when the motor is started.

3.4 Don't pull hard on the rope, feed gently.

3.5 Using a sledge hammer, hammer the rope sideways so that the spirals of rope are hard against each other.

3.6 Check from time that enough lateral pressure is being applied by the hammer i.e. 10 coils of 50mm rope should take up no more than 500mm and preferably will be around 450mm or less.

3.7 If everything is done correctly, the rope should seem to be too short.

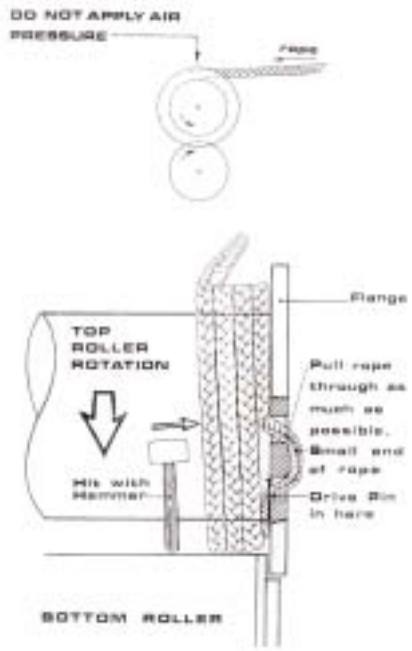
3.8 If you get to the end of the top roller and you have excess rope, do not cut shorter. Check the rope length with the specifications above and using more lateral action, re-apply the rope.

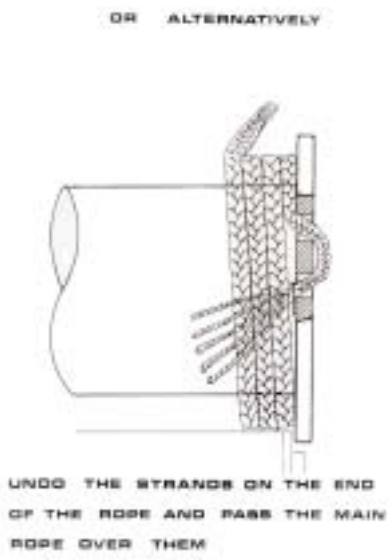
4. Finishing:

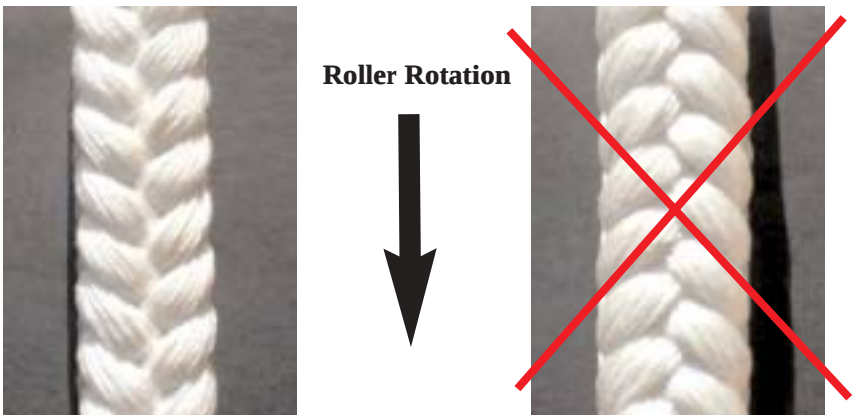
4.1 Lift the top roller using the air equipment, remove packers and lower the top roller. **Do not apply air pressure at this stage (roller weight only).**

4.2 Fill the bowl with water and start the circulation pump. Dose the bowl with detergent to help the rope bed in.

4.3 Start the squeeze roller and set pressure at zero for 30mins. Check the rope ends are still in place and gradually increase the squeezing pressure up to 6 bar over a period of 6 hours. Note that the longer the bedding in period at low pressures the less likely the ends of the rope will pop out and rope life will be superior due to consistent forces on all parts of the lapping.







Catch Clutch Gear CONFIGURATIONS

1.1 CATCH CLUTCH DRIVE TO THE TOP ROLLER

This clutch consists of a pair of cast gears keyed on one end of each of the top and bottom roller stubs. Also on the top roller there is a sprung one-way ratchet drive that is not keyed to the stub which floats and is usually not engaged (see drawing SR1-0200). If the top roller stalls, then the ratchet engages itself and drives the top roller. Under normal conditions, the friction between the top and bottom rollers drives the top roller. Because of carefully chosen ratios, the keyed gear on the end of the top roller stub rotates slightly faster than the floating gear also on the end of the top roller (which is positively driven from the bottom keyed gear). The ratchet drive can then be heard to 'thump' regularly at a slow rate. This is quite normal as the noise is made by the sprung ratchet being 'over-driven'.

Note: If the catch clutch is not making any noise then either the top roller is slipping, or the top roller has too much lapping on it. The clutch will then be continually driving the top roller, and rapid wear of the cast gears will result.

1.2 GEAR AND ROLLER RATIOS (*See Figs. 1-3*)

For efficient ratcheting the ratio of small gear-large gear must be slightly **smaller** than the ratio of lower roller-upper roller so that the gears turn **slower** than the top roller i.e. the top roller catch clutch ratchet overrides and clicks on the ratchet gear.

Suggest roller ratios and gear ratios:

ϕ 302/ϕ 415 = 0.73 (60mm rope)	19T/26T = 0.73
ϕ 302/ϕ 395 = 0.77 (50mm rope)	19T/25T = 0.76

If any doubt exists in the future as to the ratios of the rollers, we suggest a measurement of all top and bottom roller diameters and recommend that the prior ratios are implemented to ensure appropriate gear tooth engagement. Rope **type** and **thickness** must be chosen so that provision will, if needed, be made for rope compression over time. End flanges serve as a guide to the thickness of rope needed for the current gears selected.

We have conducted measurements on the centre distances of the 26T/19T and 25T/19T gear combinations. (*See figures 6-8*). When the gears are brought as close together as possible, the centre distance (CD) is approximately 328mm on 26T/19T and 314mm on 25T/19T. At these centre distances the gears will **not** turn freely due to the gear tooth profile which also will **not** allow the teeth to completely bottom out. Any attempt to run gears at these CD's would result in gear tooth failure. Therefore, the CD will always have to be sufficiently greater than this to avoid any damage. While the wool is being processed a 'mat' of wool may be keeping the gear CD further apart to avoid damage, but when the wool ceases to flow through the rollers and they come together, the gear CD will potentially be too close.

FIGURE 1

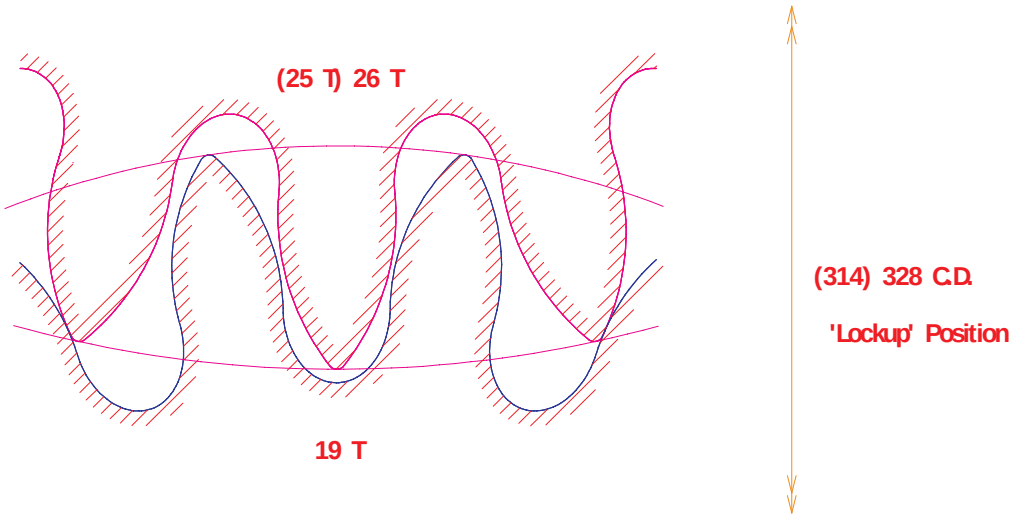
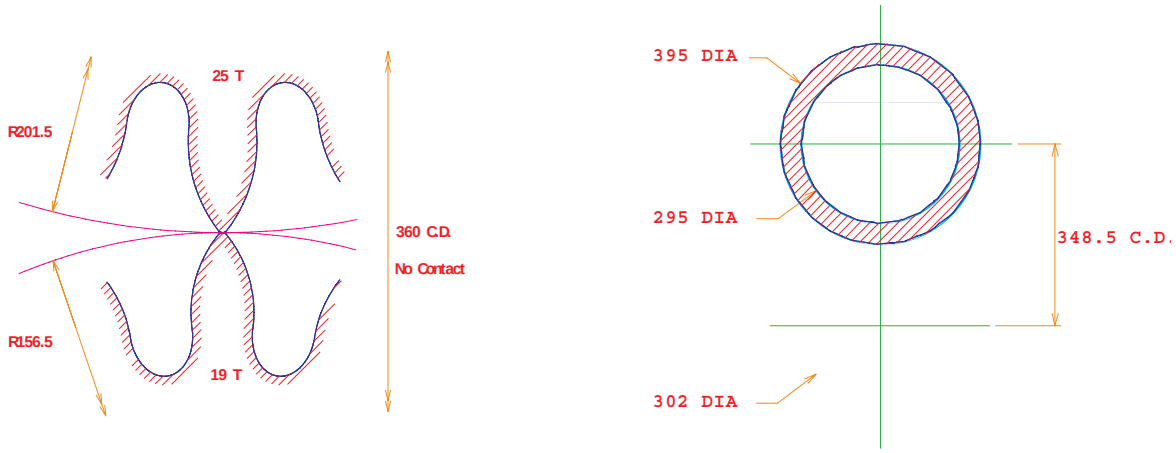
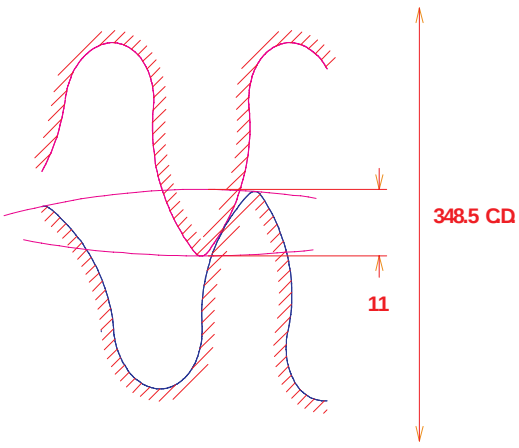


FIGURE 2 *With 50 square rope 25T/19T*

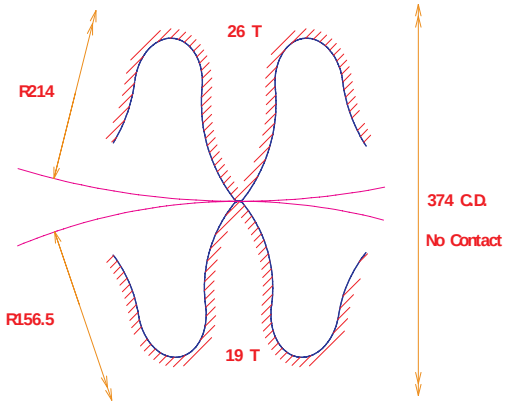


No Engagement *(As New)*

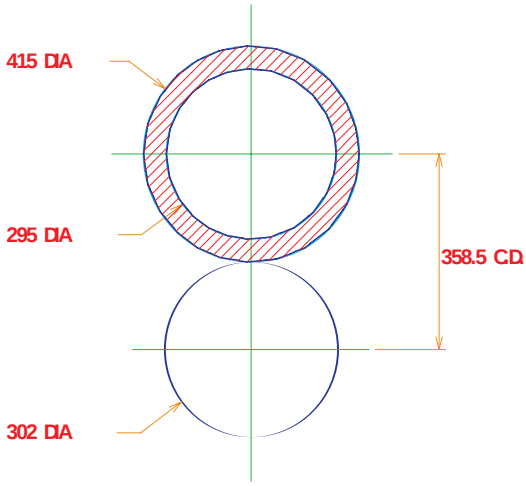


Minimum Engagement

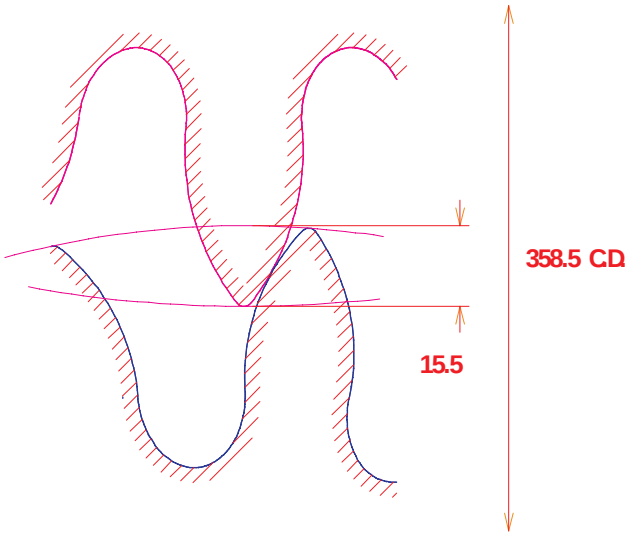
FIGURE 3 *With 60 square rope 26T/19T*



No Engagement



(As New)



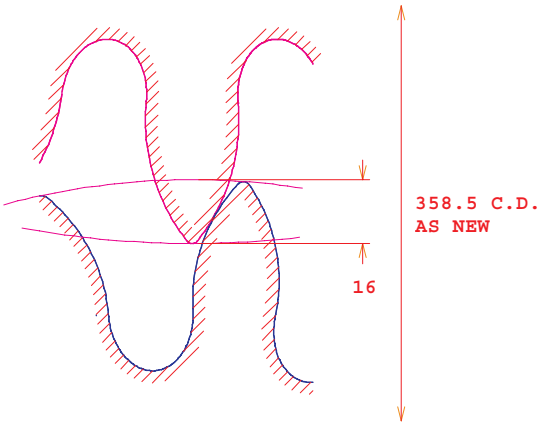
Minimum Engagement

1.3 TRANSITION FROM 26T/19T CATCH CLUTCH GEARS COMBINATIONS TO 25T/19T (See Figs. a-e)

Over a period of time a discontinuous rope on the top rollers of presses 4, 5 and 6 will compress. This reduces its effective diameter and so the centre distance (CD) between the top and bottom rollers will reduce. This will also reduce the CD of the gears. It is prudent at some stage to change gears to avoid the situation whereby the gears will be as close as they can go, and hence 'lock up'.

Considering dimension X on Fig. C, add 5mm to get clear of lock up and 5mm for safety. This increases the CD from 328mm to 338mm. As new the lapping was 60mm thick, therefore, at change over it is 39.5mm (say 40mm). Therefore the change over diameter is when the top roller is (295 + 80) = 375mm, or it might be easier to measure the circumference (1178mm). Measurements at regular intervals of the top roller circumference is recommended in order to determine when to change over.

FIGURE A



374 - New CD = Overlap
374 - 358.5 = 15.5mm

FIGURE B

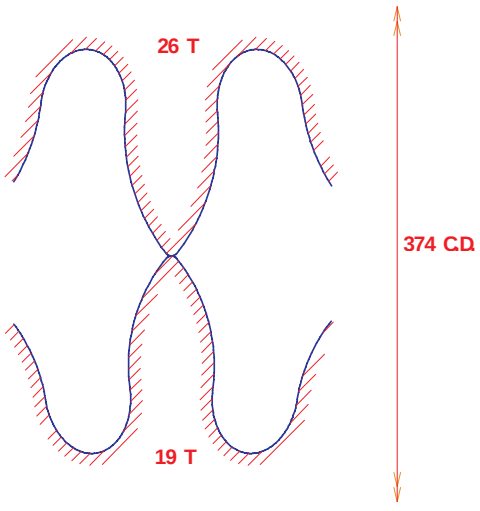
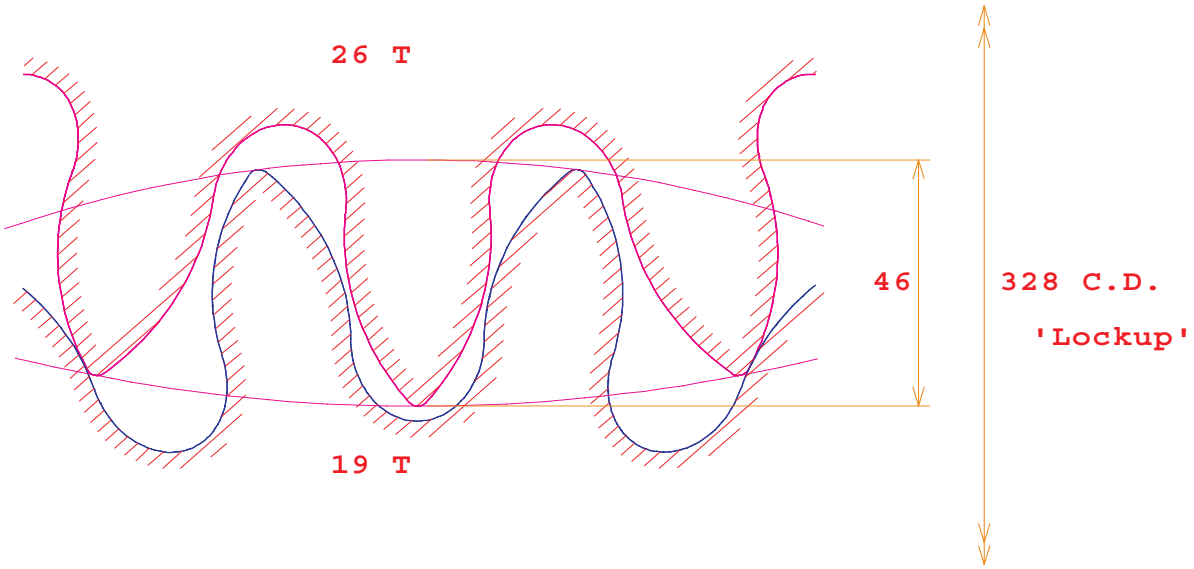


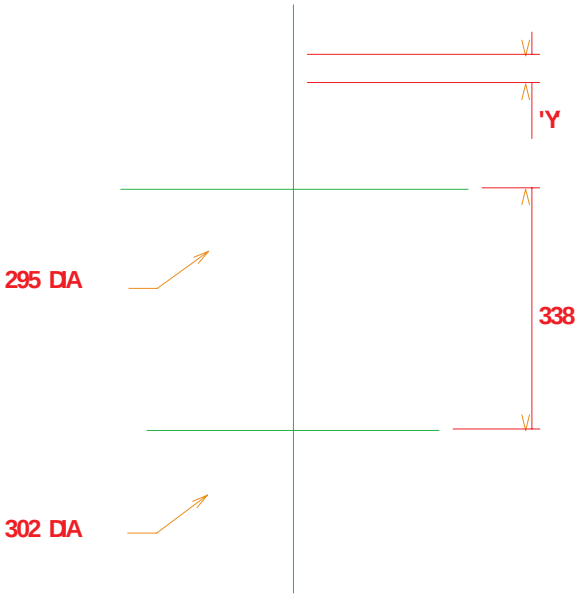
FIGURE C



Gears as close as possible at 'lock up'.

374 - New CD = Overlap.
374 - New CD = 36mm

New CD = 374 - 36 = 338mm



will be 360 - 338.5 = 21.5mm.

$$\frac{(295 + 2Y) + 302}{2} = 338$$

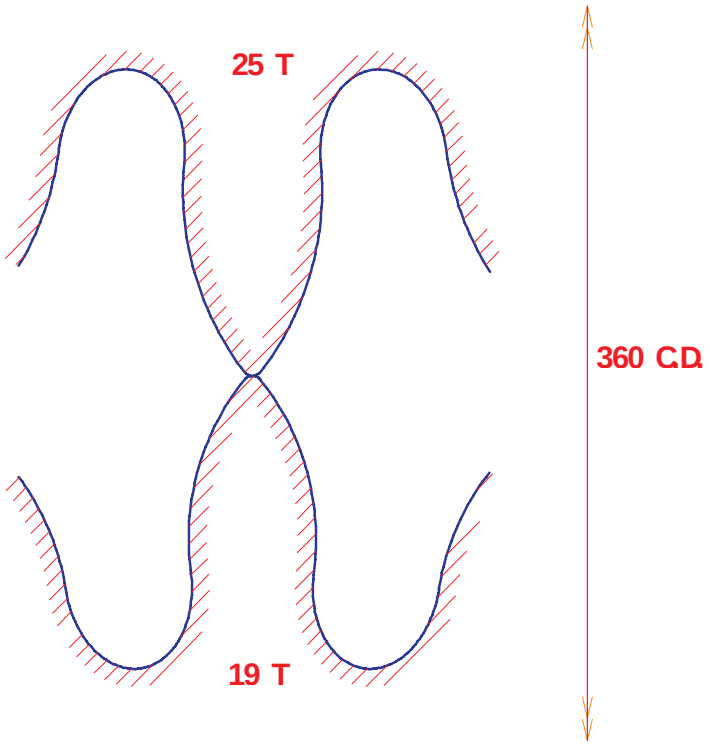
$2Y = 79mm$

$So \frac{79}{2} = 39.5$ say 40mm

$So\ C.D. = \frac{(295 + 80) + 302}{2} = 338.5$

So with a CD of 338.5mm the overlap of gears on 25T/19T.

FIGURE D



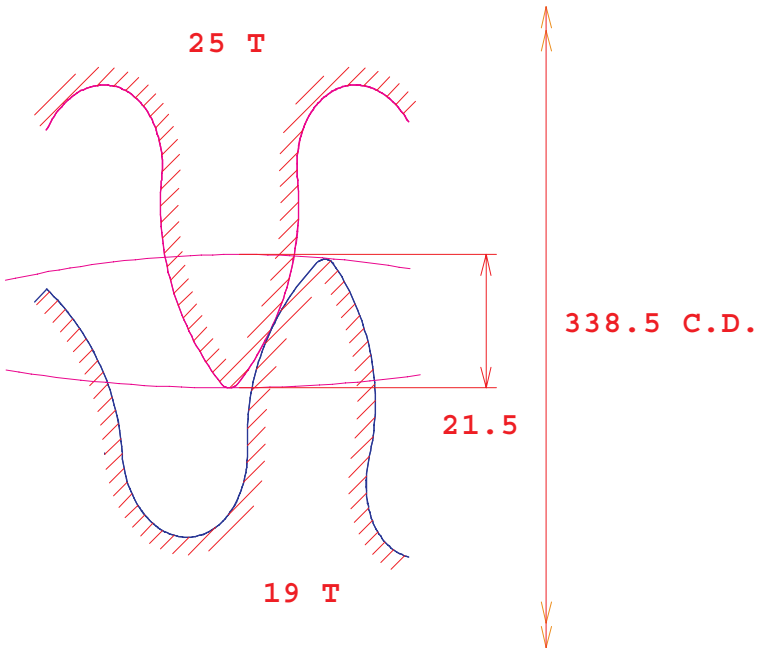
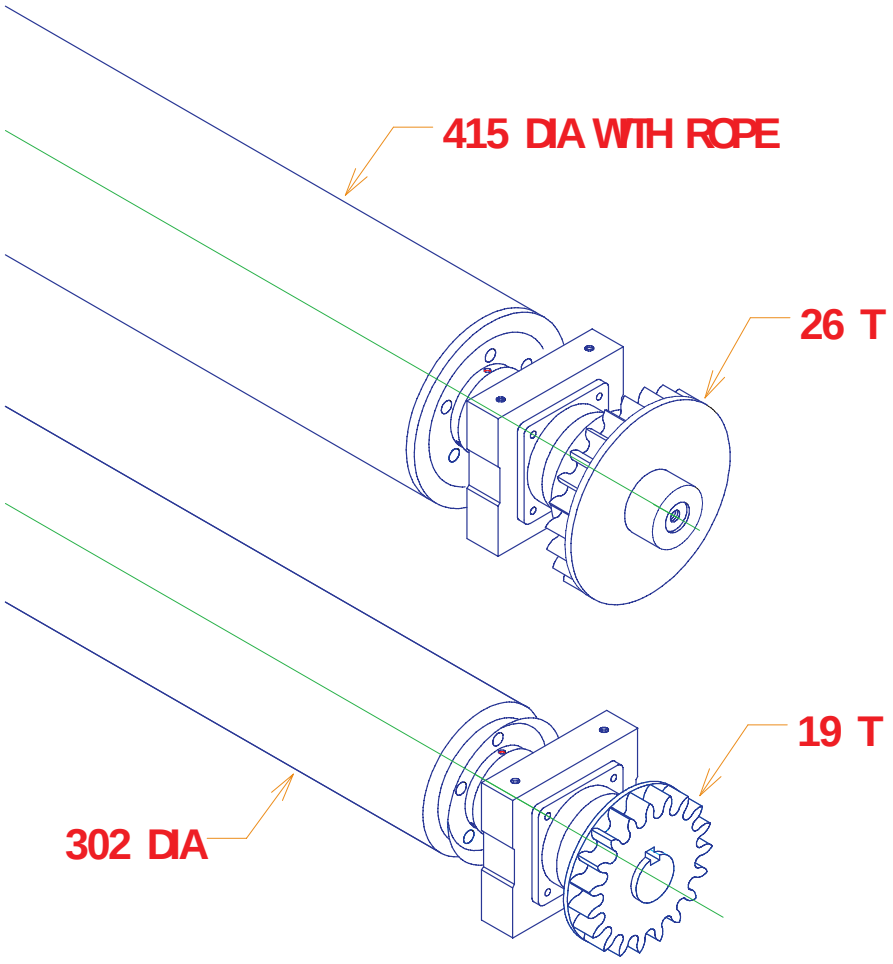


FIGURE E 26T/19T SITUATION



Centre distance between stubs = 358.5mm.

Clearance between top flange and bottom flange = 44mm.

Distance between centre of top stub and bottom roller = 207.5mm.

Top flange Dia = 381mm.