

## A&N GROWING LINE – CONCEPT OF OPERATION

### 1. The growing line consists essentially of four pieces of equipment:-

- i. RFIP c/w MT
- ii. RLIS
- iii. RWPP c/w PT
- iv. RWIP c/w MT (lead screw for c-c adjustment is optional)

The growing line concept is designed for large diameter tubular workpieces that have high moments of inertia so that they can be supported on just two points without suffering excessive deflection. A typical application would be for a wind tower.

### 2. RFIP

This can be viewed as a conventional idler roll on a non-motorised travel car except that it has the feature of being able to raise each roller with a stroke of 130mm (max). In addition, the travel car is mounted offset to the centre line of the skid. During installation the protruding side of the travel car carriage should face away from the RLIS so that the RFIP can move closer to the RLIS.

### 3. RLIS

This is a floor mounted unit that allows the entire unit to move longitudinally with a stroke of 300mm (longitudinal travel) on an integral rail base. The upper body is fitted with an elevating table with a stroke of 160mm.

On the table are the following:-

- i. 4 x independent steel rollers that have a stroke of 210mm
- ii. A pair of cylindrical rollers arranged in a v-manner
- iii. The v-cylindrical roller is used for facilitating the conveying of the pipe after fit-up has completed. The 4-independent steel rollers are used for fit-up purposes. The height of the steel roller is lower than the v-cylindrical roller when fully collapsed thus allowing conveying to commence.

### 4. RWPP-PT

This is a typical conventional power rotator on a motorised travel car. It also features an offset travel car to allow it to move closer to the RLIS.

#### Abbrev.

GP – Growing Pipe

FP – Feed Pipe

FR – Fit Up Roller

VR – V-Cylindrical Roller

BOP – Bottom of Pipe

RWPP– Power Rotator

RWIP – Idler Rotator

PT – Travel Carriage Motorised

MT – Travel Car

R2CP – Fit UP Bed

RFIP – Fit Up

RLIS – Fit Up Roll

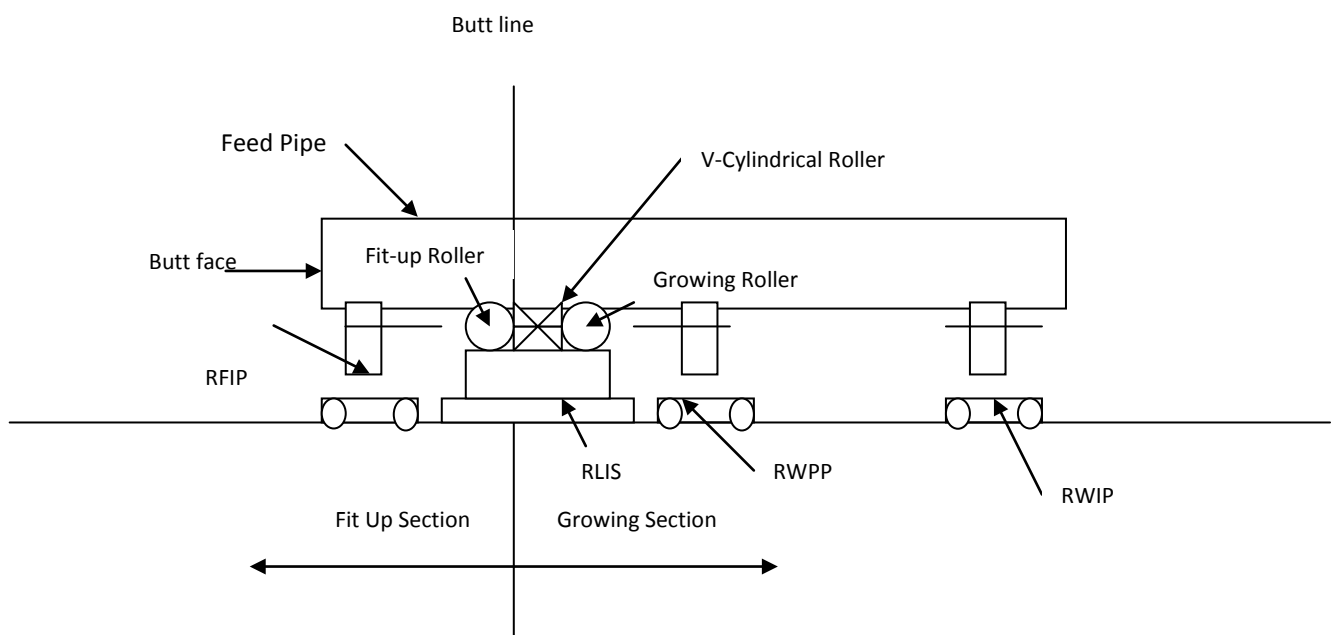
CP – Conjoin Pipe

## 5. RWIP-MT

This is a typical conventional idler rotator on a non-motorised travel car. When rotating wind towers which have a tapered body, an option is available for the c-c pitch to be variable via a leadscrew.

## 6. OPERATION

The entire system is arranged as follows:-



### Step 1

#### LOADING

1. Space the RWPP, RWIP appropriately according to the length of GP.
2. Space the RFIP from the RLIS according to the length of the FP.
3. Adjust table height, FR height, growing roller to suitable height.
4. Load FP and GP using an overhead crane.
5. Rotate GP to get proper seam orientation with FP.

### Step 2

#### BUTT-UP

1. If there is a large gap between FP and GP, lower GR and raise VR so that GP sits on VR, RWPP and RWIP. Move RWPP left to butt up.
2. In normal cases the gap is usually less than 1" after loading. By jerking the longitudinal travel towards the right the FP can be jolted to butt up whilst GP remains stationary due to braking at PT.

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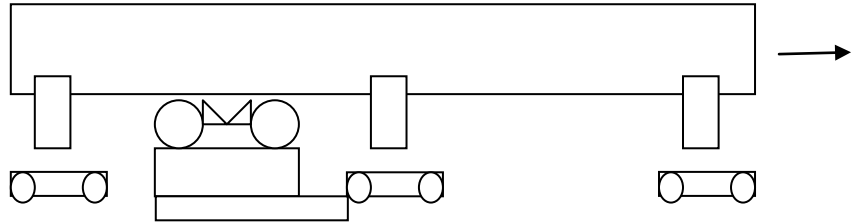
CP – Conjoin Pipe

**Step 3****FIT UP**

1. Return support of GP to GR, RWPP & RWIP.
2. Fit up using RFIP and FR.
3. Rotate CP when initial weld is strong enough.

**Step 4****CIRC-SEAM**

1. After full fit up, internal circ-seam can commence.

**Step 5****SELF PROPELLING**

1. Lower both FR and GR and RFIP.
2. Raise table, i.e. raising VR so that CP rests on VR, RWPP & RWIP.
3. Move RWPP towards the right until butt face of CP is at butt line.
4. Raising the VR may cause RWPP to lose contact but this is okay as you can continue to move RWPP right and it will engage the BOP again due to deflection of CP.

**Step 6**

1. Repeat for the next FP.

**IMPORTANT NOTES:**

1. As the windtower has a tapered body, above procedure is based on the assumption that the BOP is parallel to floor level.
2. It is usual for the windtower to be fitted with taper towards right hand side.
3. It is usual to fit up to 9m section on R2CP before fitting on growing line.

**ALTERNATIVE CONCEPT**

In this concept the position of RWPP and RWIP exchange places. The advantage of this is that the VR can be raised fully so that CP rests on VR and RWPP to effect self-propelling in a straight forward manner. The disadvantage is that electricians will have to cater to PT as pipe grows longer. Another disadvantage is the feedback of rotation with RWPP at the rear end. This also entails a cumbersome long pendant cable from RWPP to the fit up area.

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