

# H.D. FABRIC BELT FINGER SPLICE STATION PREPARATION

## SCOPE OF PAPER

These instructions refer to the process and techniques involved in setting up the splicing station for finger splicing plied and straight-warp conveyor belt. To maximize performance at the high tensions under which these belt types can operate, the procedures in this specification must be strictly adhered to. Fenner Dunlop cannot be held responsible for any modification or shortcut in the operation of this procedure.

## SPLICE STATION PLANNING / FACILITIES

The location, protection from the elements (snow, rain & dew) and environmental influences (bright sunlight & blowing dust) by a covered shelter with accessibility around the conveyor belt in the splice preparation working area (splice station) are of considerable importance in achieving a long lasting, correctly aligned splice.

The splice station should be placed where the run of the belt is straight for at least the equivalent of five belt widths either side of the splice.

The open splice must be protected from any foreign materials including dust, oil, grease and moisture.

There must be sufficient access around the working area for the splicing personnel and their equipment to move around rather than walking over the open splice.

Power supplies to operate necessary equipment including outlets for hand tools must be available.

Ensure that anchorages of sufficient strength for securing and tensioning the belt ends are available where the closing splice will be completed. The tension to control the belt can be extremely high and this factor is frequently overlooked or under rated.

Consider all restrictions to the activities e.g. a back-stop may dictate the direction in which the belt **MUST** be run in. Alternatively the back stop may be disabled but its reinstatement **MUST** then be added to the clean up check list.

Ensure that all belt clamping and hauling equipment is "fit for purpose". This is especially important for uphill incline hauls.

Place belt let-off and tensioning (anchorage points) in the most advantageous places to obtain the best quality splice.

## BELT TENSIONING

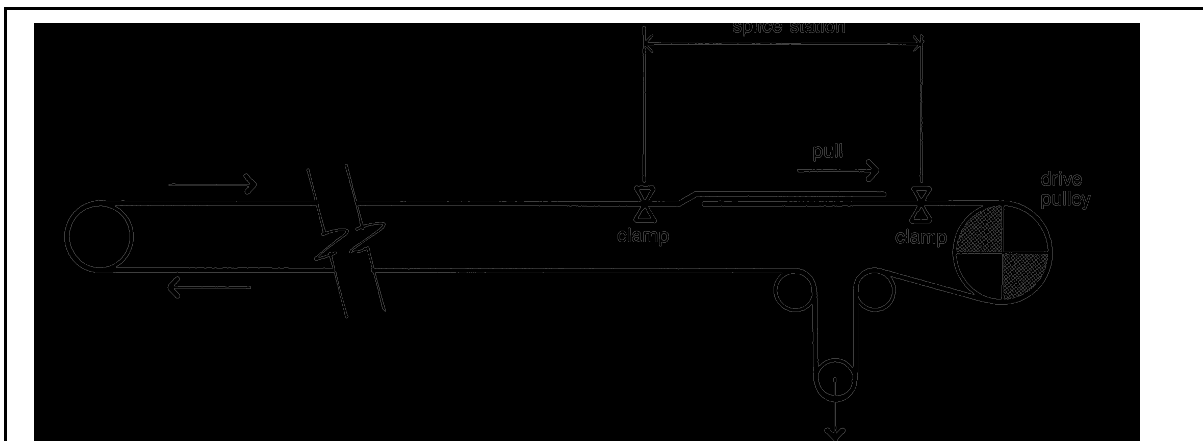
Tensioning is carried out where the closing splice is made.

Unless a tension equal to that of the average "Running Loaded" is induced into the belt at the time of completing the closing splice, the take-up travel may prove to be insufficient when the conveyor is put into service.

The only strictly correct way of ensuring the take-up has sufficient travel for operation is to accurately calculate the tension required in the belt at the point where the belt is tensioned (spliced) and with the take-up pulley locked in the required position for "Running Empty" condition, pull the free end of the belt over the clamped end until the required tension is measured by a dynamometer or other equivalent tension measuring device.

The splice is then completed and allowed curing/post curing time to reach strength before releasing the take-up and tensioning equipment.

In some instances this is the only satisfactory method to adopt, for example, in long complex overland multi-grade conveyors. However, the majority of installations may be satisfactorily tensioned by the following method without the use of sophisticated measuring equipment. (Refer Figure 1 below)



**Figure 1**

Clamp off leading end of belt immediately adjacent to splicing station.

- Pull belt across splicing station until take-up pulley, with correct counterweight take up travel is achieved and clamp off the free end.
- Prepare and complete splice maintaining clamps with belt tension removed.

### **WORK AREA PREPARATION**

Remove sufficient idler sets in selected area for installation of vulcaniser and adjacent work tables.

Install vulcaniser and work tables, securely attaching these items to conveyor structure, i.e. stringers. (Belt ends will be secured to these tables or adjacent structure). These items should be arranged with the working table level with the top edges of the troughing idlers.

The vulcaniser should overlap the splice by at least 3 inches in the width direction on each side. Overlapping the width provides support to the edge bars and promotes even vulcanising across the full width of the splice. Uncured splice rubber must be completely covered in the one cure vulcanizing cycle with the press overlapping **each end** of the splice by 4 inches. The vulcanizer must have flexible platens with water cooling jackets.

#### Vulcanizing Equipment

- a) Suitable surface area to allow completion of splice in one (1) cure
- b) Size sufficient to allow for “heat” loss along edges of the platen surfaces.
- c) Constant and uniform heat with easily monitored / adjustable controls
- d) Temperature controls set at of 300°F (with +/- variance of 5°F)
- e) Uniform pressure, 100 psi minimum capability
- f) If necessary, compliance with local MSHA requirements
- g) Capable of curing belts up to 2” thick
- h) Edge or “blocking” irons (1/16” less than belt thickness). When possible seek width / thickness ratios of 6:1.

It should be reiterated that the above dimensions are the minimum possible for any belt type or width. Longer platens are always beneficial to the joint by allowing longer splice lengths to be accommodated.

Follow the splicing process in the Finger Splice Manual.