

Ceeco Group

TKU 1346, TKU 1346.1, TKU 1346.2

OPERATING AND SERVICE MANUAL

FOR

6-HEAD SPOOLER TAKE-UP FRAMES

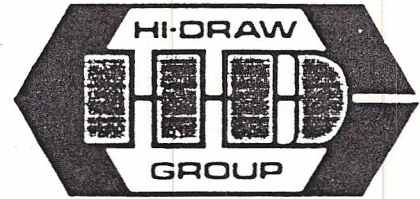
TYPE - TSFA

CUSTOMER: TITAN STEEL & WIRE CO. LTD.
11041 ELEVATOR ROAD
SURREY, B.C.

WORK ORDER NO: 1674

MACHINE TYPE: 800

CUSTOMER P.O. NO. 25959



Spooling Head Frames- Types TSF and TSFA

The range of application for these units is wide. They would typically take-up from such processes as annealing, patenting, cleaning, galvanizing, plastic coating, tinning, enamelling, etc.

Two types of spooling frame are available. One requires that the process line is stopped during spool changes, the other permits continuous production to be achieved. These frames essentially differ only in the type of haul-through provided and are designated:

- Type TSF with single flanged, non-accumulating capstan,
- Type TSFA with double block accumulating device.

Spooling frames are essential in order to avoid the costly exercise of re-spooling from coils when the take up wire is required for stranding, or for any application involving further processing on spools.

A full range of machines is available to accommodate spools with flange sizes from 300 to 1250 mm and for wire sizes 0.5 to 7.5 mm diameter in high and low carbon steels and non-ferrous materials.

General Features

Main Framework

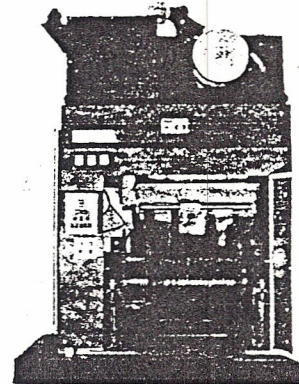
The frame is comprised of individual fabricated units for each capstan and spooler, connected side by side or back to back in groups as required.

Blocks

The capstan is either a single or double block accumulation unit mounted on the horizontal shaft extension of a wormgear reduction assembly

Capstans and bottom blocks on accumulation units are induction hardened on the wire line.

Top blocks are driven through an integral friction brake disc.



A Single TSFA unit suitable for 630-1250 mm spools

Spoolers

The take up spool stand can be cantilever frame type, with a power or manually operated hydraulic jacking system for pintle height adjustment or rigid frame type with fixed pintle height.

Spool pick-up in each case is between points, with head and tailstock pintles which are adjustable for spool width by handwheel or by a pneumatic power system

The traverse mechanism is either of the endless belt type with instantaneous pneumatic solenoid operated changeover, or of the rotary shaft, skew-ring type. Constant angle or constant pitch winding can be provided.

Spool braking is by solenoid operated pneumatic disc caliper with foot operated release switch.

Power assisted spool ejection systems can be provided.

Stringing Up

Wires are led from the processing plant around each single or double accumulation haul-through block and onto the take-up spool via the traverse pulley.

Access to the upper level creel pulleys is provided by locally sited stairways.

Guide Pulleys

Inlet and intermediate sets of creel pulleys are provided as required to guide and support all of the wires being processed.

Guards

Wire mesh gate guards with electrical interlocks are available for each block and spooling unit but are not fitted as standard.

Fixed guarding is provided around all transmissions.

Finishing Die

Provision can be made for a "finishing" die to be accommodated at the inlet to the capstan or double block unit to facilitate, "polishing" or "rounding up", particularly on galvanized materials.

Length Counting

Digital type preset count-down units can be provided to facilitate automatic stopping of the take up spool at a desired length.

Visual and audible warning devices are included.

Drives

An individual D.C. variable speed drive is provided for each spooler.

Traverse mechanisms may be individually D.C. driven or share a common variable speed drive.

A common variable speed drive, either by means of an A.C. cage motor and infinitely adjustable gear box or by a D.C. motor, is provided for up to 12 capstans which can be arranged as a group or in a line.

Accumulation Control (TYPE TSFA)

The take up spooler operates in a constant linear speed controlled mode with material speed feedback signal derived from the top block of the double block unit.

The spooling tension is set by the friction of the double block take off ring.

Whilst the spooler is running a "fixed" amount of accumulated wire remains on the double block unit.

When the take up spool is stopped for changeover the line continues to run with the material accumulating on the double block unit.

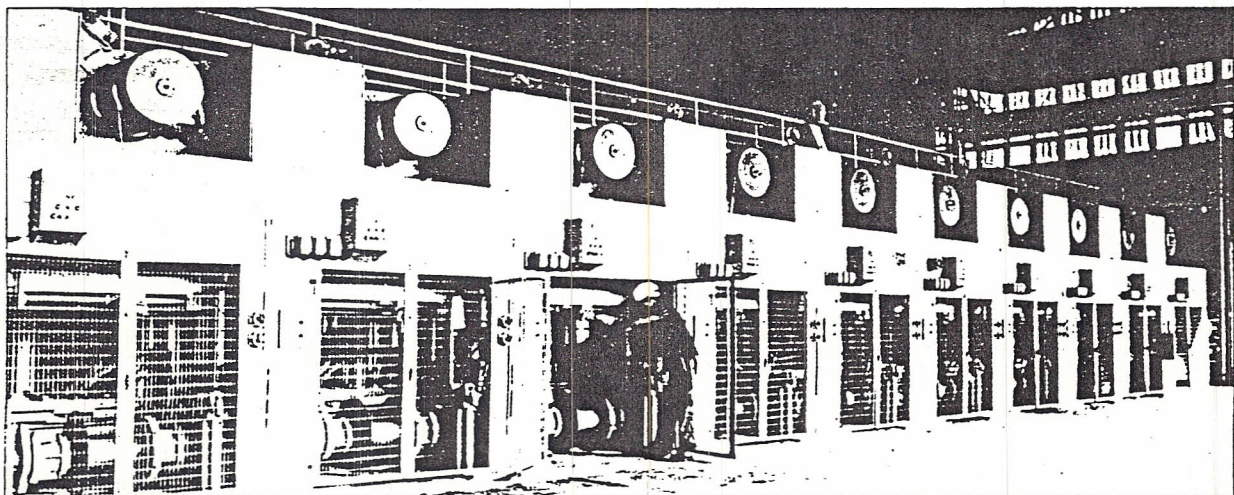
A facility is provided to strip off the extra accumulation when the empty spool is started up.

To avoid the need for extremely precise setting of the take up spool speed an "automatic" mode is provided which causes the double block take off ring to "hunt" slowly between 2 sensors which call for "speed up" and "speed down" alternatively.

Spool Size Ranges

The following standard ranges can be accommodated in four different sizes of take-up frame:

Spool diameters in mm: 300-600, 400-800, 500-1000 and 630-1250



Two Groups Of 10 Each: TSFA For 630-1250 mm. Spools During Erection At The End Of A Galvanizing Line

MACHINE SPECIFICATION NO. 1674

Machine 6-Head Spooling Take-up Frame
 Take-Up From Galvanizing
 Machine Type TSFA with accumulator block in the vertical mode.
 Double Block Diameter 550 mm
 Wire Quality Galvanized high carbon steel
 Wire Sizes .060" to .192"
 Speeds Range 50 to 300 FPM
 Speed Indication Analogue type indicator in FPM, fitted to each station.

Spool Dimensions

	<u>Spool No.1</u>	<u>Spool No.2</u>	<u>Spool No. 3</u>
Flange Dia.	24-7/8"	41 - 43	31-1/4"
Barrel Dia.	11-1/4"	24"	14"
	or 8-1/2"		
Overall Width	17-3/8"	26-1/4"	19-3/8"
	with long core		
Traverse Width	14-1/2"	20-1/4"	17-1/4"
	or 11-1/4"		
Bore dia.	5"	3.2"	3"
	<i>Rubber</i>		

Drive Arrangement

Individual 10 H.P. D.C. constant torque motor through helical bevel reducer to each block.

Capstan Drive Motor

Open, drip proof, blown and filtered.

Capstan Accumulators

Suitably hardened capstan block. Top blocks are of (Double Block) steel construction. Wire is transferred between the two blocks via an independent ball bearing mounted 12" diameter transfer pulley on the transfer ring. The top block is fitted with a reference tachogenerator for spool speed control.

The wire tension between the capstan and spooler shall be controlled by manual adjustment of the air operated friction disc.

Traverse Assembly

This is situated between the double block accumulator and the spool shaft. It is of the endless belt type and is driven by a D.C. Geared motor. The speed is arranged to give a variable pitch of between 0 and 30 times the wire diameter. Lay per unit length (constant angle) winding is to be supplied.

DC Motor Spooler 5HP J.S.

This one

- Spooler Assembly The spools are mounted between pneumatically operated pintles. These pintles are mounted on cantilever arms which are hydraulically raised and lowered by means of a motorized pump. The head and tail stocks are pneumatically operated and carry hardened, easily replaceable pintles, and the headstock carries a spool drive plate.
- Spool Drive By D.C. geared motor which follows the D.C. tachogenerator fitted to the top block. Through belts and pulleys to headstock.
- Wire Clamp A wire clamp is fitted to the traverse unit.
- Broken Wire Detector A stainless steel insulated lashing wire plate is fitted to the front face of the traverse support frame. Using a small amplified voltage signal the line will shut down under emergency stop conditions immediately an end of wire earths the stainless steel plate with the frame.
- Block Stripping A two position switch will be fitted to switch the spooler drive into overspeed mode to strip the accumulator prior to a spool change. This will be spring-loaded and will return to the "off" position when released by the operator so as to avoid completely stripping the block.
- Guards All rotating shafts and couplings are guarded. Reels are not guarded.
- Compressed Air A compressed air supply of at least 5.25 kgs/cm² pressure must be available.
- Length Measuring By pulse operated electronic length counter operated from top block operating a light warning at each station and a common warning horn with preset prewarning.