

SUPPLYING QUALITY PARTS  
**DRUCEGROVE**  
 TO THE LIFT INDUSTRY SINCE 1983

# Equator®

## ROPE TENSIONING SYSTEM

**USER MANUAL V3**

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### THE IMPORTANCE OF EQUALISING THE ROPE TENSION

The importance of equal tension in lift hoist ropes is well known to Maintenance Engineers and Lift Installers. Unequal tension creates vibration and rope slip, which leads to premature and excessive wear of ropes and sheave grooves.

To help prevent this, it is important to ensure rope tensions are equal on all hoist ropes supporting the lift car and counterweight.

### So how do we know when the hoist rope tensions are equal?

A coarse method of checking for equal rope tension can be achieved by observing the adjustment of springs at rope terminations or by 'rule of thumb'. These are, at best, approximate methods and cannot be relied upon.



The **Equator Rope Tensioning System** from Drucegrove is a quick and easy method to accurately adjust and equalise rope tensions. It uses two identical injection moulded gauges to compare and ensure the tensions in lift hoist ropes are equalised.

The Equator system is fast to implement and the rope tensions measured are accurate because the two gauges are initially site calibrated on the same rope.

The ranges of lift ropes that can be checked are from 6mm (1/4") to 20mm (3/4").



## PREPARATION

Check that both gauges are fitted with the correct Hook Bolts/Spring Assemblies and Rope Locators for the rope diameter to be adjusted.

The rope locators are marked for the range of suitable rope sizes. The hook bolts cover the same ranges of rope sizes.

## HOW TO REMOVE AND REFIT THE HOOK BOLTS

- 1 Remove the End Caps by sliding them toward the hook bolts, then away from the gauge body.

The hook bolts must have their open end facing outwards.



- 2 Remove the non-adjustable hook bolt and replace with the one suitable for the rope to be adjusted. Refit the end cap.



- 3 Remove the assembly containing the adjustable hook bolt, spring and pointer lever peg, by pulling the assembly outwards.



- 4 Hold the pointer in the mid-scale position.



- 5 Place the replacement hook bolt spring and peg assembly halfway into the gauge body.



**6** Move the pointer towards the bottom of the scale (A) and push the spring assembly fully into the body (B).

Check that the pointer lever is correctly located into the pointer lever peg attached to the adjustable hook bolt, by attempting to move the pointer towards the top end of its scale (C).

This should not be possible when the lever is correctly located. Repeat the procedure if necessary.



**7** Ensure that the hook bolt has the open end facing outwards and refit end cap.



**8** Remove the rope locator by pulling it downwards. Refit correct rope locator.



**9** Check that the end caps are correctly fitted by pushing firmly in the upward direction.



**10** Repeat the procedure on the second gauge.



**THE TWO EQUATOR ROPE TENSION GAUGES ARE NOW READY FOR USE.**

## HOW TO CHECK ROPE TENSION

First, ensure that all safety procedures are observed before continuing. Position the lift car so that both the car and counterweight ropes can be accessed without the need to move the lift. Then working from the car top:

- 1 Fit one rope tension gauge onto a car rope at a comfortable working height (preferably the rope that has the highest tension).



- 2 Using the adjustment tool provided...

Bring the pointer into the mid-scale position on the rope tension gauge. The rope should now be slightly deflected.



- 3 Position the second gauge onto the same rope and adjust using the tool provided to obtain the same pointer reading as on the first (reference) gauge.



**DO NOT MAKE ANY FURTHER ADJUSTMENTS TO EITHER GAUGE.**

- 4 Move the second gauge onto a second rope.
- 5 Adjust the second rope at the lift car rope termination to obtain the same gauge pointer position as on the first (reference) rope tension gauge still attached to the first rope.

Please note: -

The pointer position on the reference gauge will change during this operation. This is normal.

- 6 Remove the gauge from the first rope and place it onto the third rope.
- 7 Adjust the third rope at the lift rope termination to obtain the same gauge pointer position as on the second (now reference) gauge.
- 8 Remove the gauge from the second rope and place it on the fourth rope.
- 9 Adjust the fourth rope at the lift rope termination to obtain the same gauge pointer position as on the third (now reference) gauge.
- 10 Repeat until all car ropes have been checked, alternating the reference gauge.
- 11 Repeat steps 1 – 10 for the Counterweight ropes.
- 12 Run the lift one complete trip and recheck all rope tensions using one gauge only. If necessary, repeat steps 1 – 10.



**ROPE TENSION ADJUSTMENT IS NOW COMPLETE.**

