

Capstan

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Introduction

The Capstan assembly provides a means of drawing the fibre down the tower at a precisely controlled speed and feeding it on to the fibre take up system.

Description

Capstan Unit

The precision ground and balanced capstan pulley uses high specification twin angular contact bearings and operates at speeds of up to 200 m/min. Used in conjunction with the fibre diameter monitor, located below the tower furnace, the capstan features precise automatic control of fibre pulling enabling fibre to be produced with diameter controlled to within very close tolerances.

Fibre is guided onto the capstan pulley from a guide pulley located above the unit. This pulley is the tower fibre line lower alignment datum point.

The fibre is wrapped around the 0.5 metre diameter driven pulley where it is trapped between the pulley surface and a smooth flat urethane belt. The friction grips the coated fibre whilst preventing slippage or damage to it.

(Drawing number 380186A refers)

Fibre Stripper

A fibre stripper installed adjacent to the capstan pulley helps prevent the fibre from wrapping completely around the capstan wheel during initial fibre thread-up or after a fibre break. It is positioned with its edge close to the surface of the capstan wheel (i.e. within the diameter of the coated fibre) to ensure that any sticking fibre is stripped from the pulley.

Note: The fibre stripper must not be allowed to touch the capstan wheel during operation.

Capstan Unit Guard Covers

The capstan unit guard cover slides to the side for access when threading up at the start of a process run. The purpose of these guards is to protect the operator from accidental contact with high speed rotating parts and to prevent broken pieces of fibre or other debris falling onto the pulleys and belt where damage could be caused.

Urethane Belt

A smooth flat urethane belt is used to supply the necessary friction between capstan and fibre. The large wrap angle provided by the belt minimises the force required to prevent slippage during winding and the risk of damage to the fibre by excessive compressive forces.

Alignment

Align the capstan assembly in accordance with the procedures set out in the tower alignment manual.

Maintenance



Warning *The correct Personal Protective Equipment (PPE) is to be worn at all times.*



Warning *Fibre Fragments.*

- *Rubber gloves are to be worn during thread up.*
 - *Any fibre fragments penetrating the skin are to be removed before they become broken off short. Appropriate first aid is to be applied.*
-



Warning *Machinery - Trap Hazard.*

- *The high rotational speeds and inertia produced by the capstan represent a trap hazard. Personnel are to ensure that they have no loose items, i.e. clothing or jewelry, about their person which may become entangled in this component.*
 - *The capstan guard is to be closed once thread up is complete.*
-

General

The capstan assembly requires on-condition servicing dependant on the results of routine maintenance inspections.

Routine

The following inspections and servicing procedures are to be carried out. The frequency of the inspections and servicing may vary dependant on tower usage and the working environment.

Before Every Run

Perform the following steps:

1. Ensure the capstan assembly and surrounding area is scrupulously clean.
2. Clean the guide pulley and capstan pulley with a lint free tissue soaked in methanol.
3. Inspect the urethane belt for resin debris and embedded fibre. Clean or replace if required.
4. Ensure the urethane belt tension is correct i.e. the minimum tension to prevent slipping.
5. Check capstan surface for scratches or lumps which might damage the fibre whilst it is being pulled.

Every three months

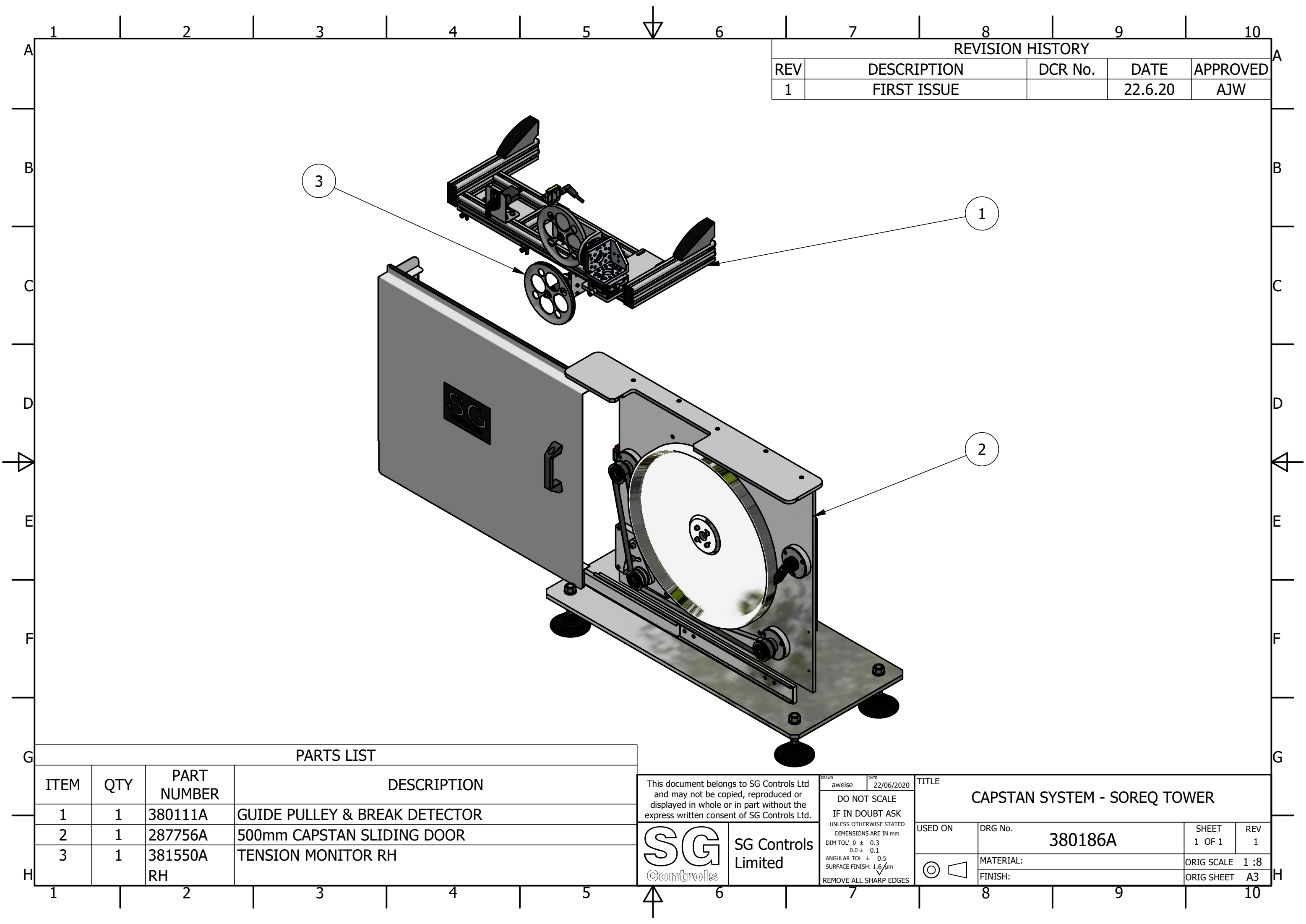
Ensure bearings are not worn.



Warning Bearings are sealed for life. Any attempt to lubricate may cause overheating and failure.

Belt Tension

Belt tension may be adjusted by means of a cam plate on which one of the idler pulleys is mounted. To adjust the belt tension, slacken off the cam plate clamping screws, pivot the cam plate to achieve the desired tension and re-tighten both screws#



REVISION HISTORY				
REV	DESCRIPTION	DCR No.	DATE	APPROVED
1	FIRST ISSUE		22.6.20	AJW

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	380111A	GUIDE PULLEY & BREAK DETECTOR
2	1	287756A	500mm CAPSTAN SLIDING DOOR
3	1	381550A RH	TENSION MONITOR RH

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DRAWN
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DATE
22/06/2020

DO NOT SCALE
IF IN DOUBT ASK
UNLESS OTHERWISE STATED
DIMENSIONS ARE IN mm
DIM TOL' 0 ± 0.3
0.0 ± 0.1
ANGULAR TOL ± 0.5
SURFACE FINISH: 1.6 µm
REMOVE ALL SHARP EDGES

TITLE

CAPSTAN SYSTEM - SOREQ TOWER

USED ON

DRG No.

380186A

SHEET

1 OF 1

REV

1

MATERIAL:

FINISH:

ORIG SCALE

1 :8

ORIG SHEET

A3