

World Leader in Modular Torque Limiters

# Brunel Corporation

Maintenance Instructions  
Safety Element Torque Limiters  
JSE1-0254DCF



# Maintenance Instructions

## Safety Element Torque Limiters JSE1-0254DCF

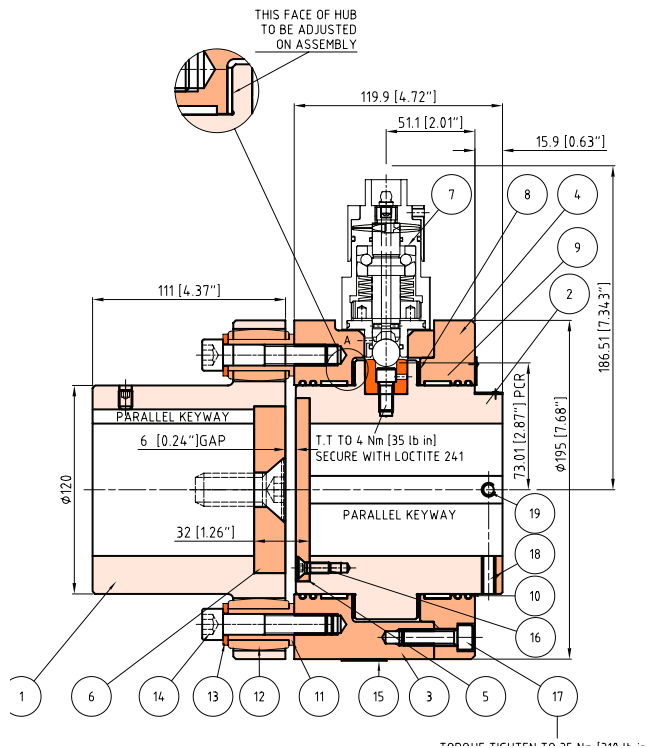


Figure 1

Part No.	Description	Qty.
1	Eflex Hub	1
2	Detent Pocket Hub	1
3	Element Carrier	1
4	Endplate	1
5	Retaining Plate	1
6	Retaining Plate - Eflex	1
7	SE5 Module Disc Cam	4
8	Thrust Pad	2
9	Strip Bearing	2
10	'O' Ring Nitrile	4
11	Buffer Bush	6
12	Buffer	6
13	Washer M12 Plain	6
14	Capscrew M12 x 60 SKT HD ST. ST Wedgelock	6
15	Label (Nameplate)	1
16	Setscrew 1/4" -28 UNF x 3/4" Long	3
17	Capscrews 3/8" UNF x 1.25 Long	8
18	Grubscrew 5/16" UNF x 3/4" Long	1
19	Grubscrew 5/16" UNF x 1/2" Long	2
20	Drive Screws	6
21	Label (Pointer Alignment)	2

### 1. PROIR TO INSTALLATION

Check shaft extensions & installation area where Torque Limiter is to be mounted to make sure there is sufficient space available for resetting after disengagement.

### 2. MOUNTING TORQUE LIMITER ON SHAFT

- Make sure bores & keyways are clean and free of burrs, and that set screws are in place.
- Mount Eflex Hub (1-19) onto gearbox output shaft and mark setscrew locations on shaft. Remove Eflex hub and dimple shaft with drill to allow set screws to lock hub in vertical location on shaft (debur after drilling)
- Slide torque limiter and Eflex hubs onto shafts and lock with set screws. Make sure that shafts are aligned and that there is a 6mm (.24") gap between clutch detent pocket hub (1-1) and Eflex Hub (1-19).

### 3. TORQUE ADJUSTMENT & INTIAL STARTUP

- These torque limiters were preset at the factory, no further adjustment is required at this time. If it is desired to adjust the torque at a later date, proceed as follows.
- To adjust torque at the job site: Loosen Set Screw (1-20) on the safety element housing and adjust the torque by turning the safety element Housing Nut (2-7) with a 1 1/8" wrench. The torque is increased by turning the nut clockwise

*Refer To Page 4 For Detailed Setting Instruction*

### 4. CHECKING RELEASE TORQUE SETTING

Release torque can be checked with a load cell test set up or by applying torque with dummy shaft and key - by locking one side to ground and using a torque wrench.

### 5. RESETTING

On overload, the safety element ball is displaced and the Module Carrier (1-2) disengages from the Detent Pocket hub (1-1), allowing the Module Carrier to rotate freely. With the drive at rest (the power off) and the overload cleared, align the twoset arrows on the Detent Pocket Hub and Module Carrier by jogging the drive motor. After aligning the match marks strike the safety element plunger with a soft mallet and the plunger will move back into the safety element 1/4 inch signifying that the unit is engaged and the drive can be restarted.

### 6. GENERAL MAINTENACE

- Grease 2-3 pumps from a grease gun into Grease Fitting (2-13) every 6 months. Recommended grease is Mobilith SHC PM Series.
- Safety elements should be stripped, inspected and re-assembled at least once every 3 years, more frequently where frequent tripping occurs.

### 7. TROUBLE SHOOTING

- Continual releasing, further adjustment making no difference.
  - Detent Pocket (2-10) worn. Remove Safety Element (1-10), extract Detent Pocket (use extraction screw), & Rotate Detent 90° & reinstall. If badly worn replace with new detent pocket.
  - Additional torque capacity is required. (Consult Brunel Corporation)

- b. Unable to screw Housing Nut (2-7) in any further.
  - 1) Loosen Set Screw (2-17) and make sure that the threads on the Housing Nut and Housing are not damaged, if so clean & file burrs until usable or replace defective parts.
  - 2) You have reached maximum torque capacity.
- c. Unable to reset.
  - Reset arrows not aligned. Check reference marks on Module Carrier Hub (1-1) and Detent Pocket Plate (1-3). 8.

**SAFETY ELEMENT - METHOD OF ASSEMBLY**

- a. Clean all components and coat all working surfaces with a suitable anti-seize compound.
- b. Grease & install "O" ring (2-14) into groove in Housing (2-11)
- c. Grease inside surfaces of the Housing and install Outer Thrust Race (2-2).
- d. Install "O" Ring (2-20) into Housing Nut (2-7).
- e. Install 16 springs (2-5) oriented as shown in cross section, and fully greased.
- f. Grease and install the Inner Thrust Race (2-4).
- g. Install the Plunger (2-1) through the inner thrust race, springs & the end of the Housing Nut (2-7) ensuring that the "O" Ring is not damaged by the Plunger threads.
- h. Install 11 - 1/4" Balls (2-3), apply grease to hold balls in place.
- i. Screw in the Housing Nut (2-7) into the Housing until there is contact with the springs.
- j. Insert the Locking Pellet (2-18) and Set Screw (2-17) into the side of the Housing to facilitate locking the Housing Nut. (Refer to #3 for Torque Adjustment)
- k. Grease and insert the "O" Ring (2-21) into groove in housing (2-11).
- l. Slide "O" ring (2-21) over Bushing (2-8). Grease and insert the "O" Ring (2-19) into the Bushing (2-8), insert the Detent Ball (2-9) after thoroughly greasing the Bushing ID. Grease the Plunger (2-1) and install the Bushing.
- m. Loctite Shroud (2-12) to the end of Plunger (2-1) using Loctite #270. Grease for rebuilding Safety Elements: Mobilith SHC PM Series.

**9) METHOD OF PRELOADING EACH SAFETY ELEMENT**

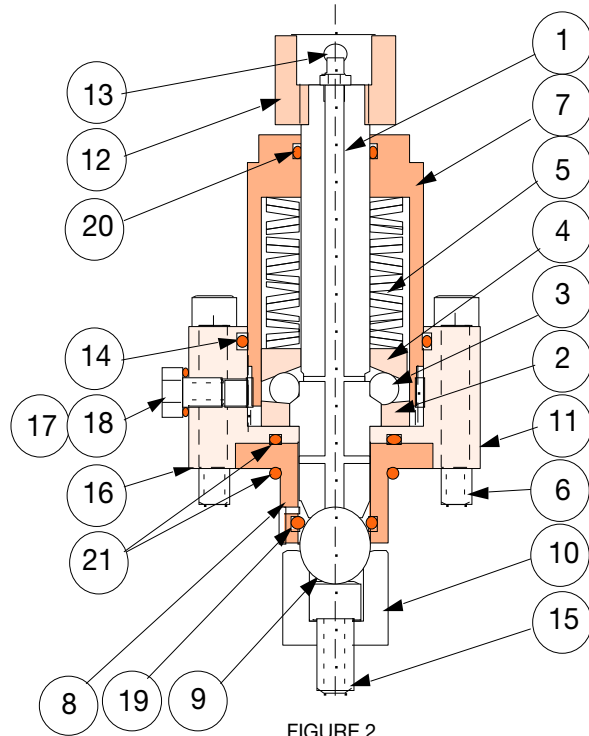
(Only required if changing Safety Elements from originals supplied)

- a. If replacing original Safety Elements, remove quantity 4, 1/4"-28 x 1 5/8" SHCS (2-6) and remove the Safety Element (1-10) including Bushing (2-8) Shims (2-16) and Ball (2-9). Replace Detent Pocket (if worn), this may require extracting the Detent using a 3/8"-16 bolt, insert new Detent Pocket and loctite in place with 5/16"-24 x 5/8" socket head cap screw.
- b. Place the Detent Ball (2-9) on top of the Detent Pocket, then insert the Bushing (2-8), less Bushing "O" Rings (2-21), into the hole until the flange of the Bushing bottoms.
- c. Insert the assembled Safety Element through the bushing until the Plunger comes in contact with the ball.

**Notes:**

- 1) Safety Element must be in the engaged position
- 2) Housing Nut (2-7) must be turned past "0" to give some spring compression
- 3) "O" Rings (2-21) are to be left out while measuring for shims.
- 4) Shims must not be in place when measuring for shims.

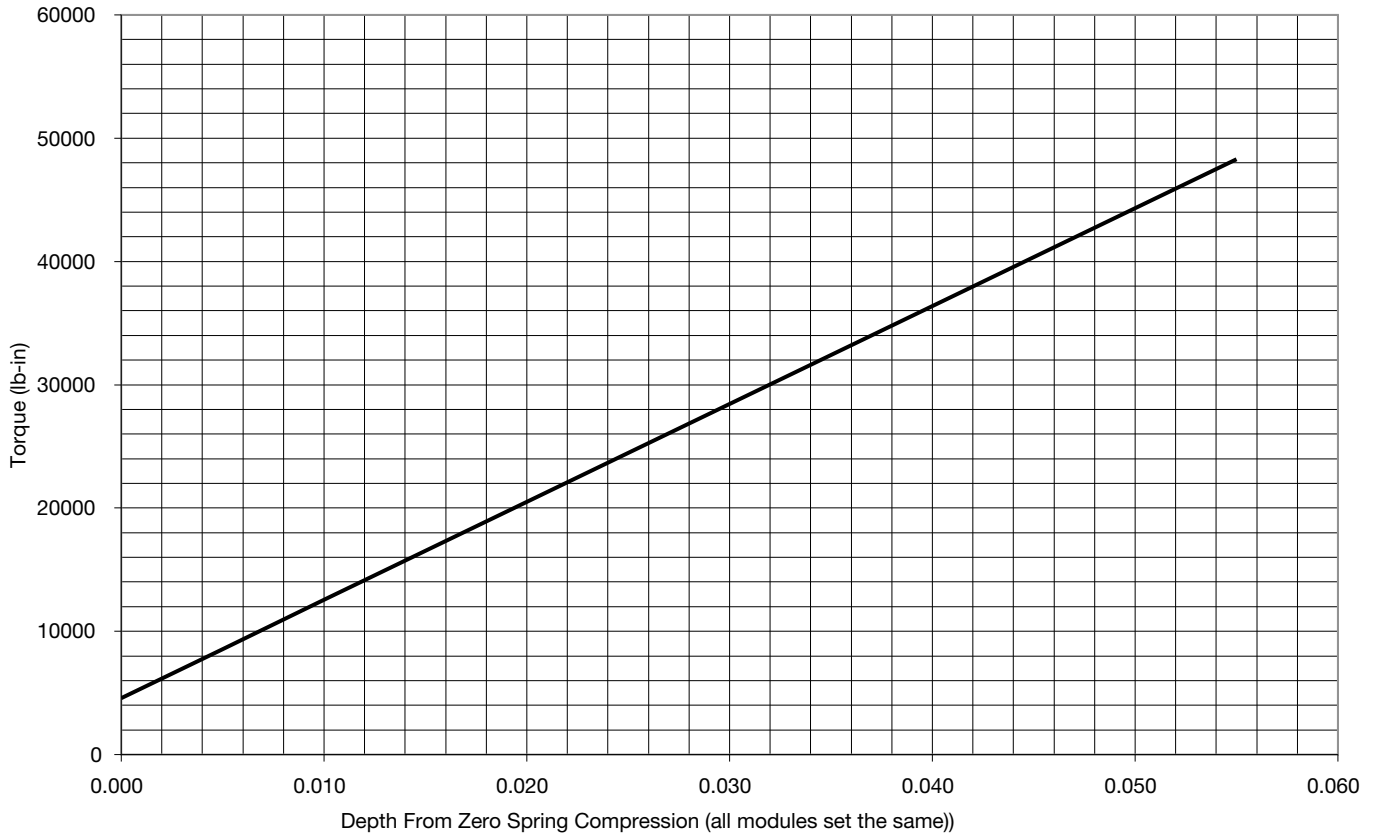
- d. With a suitable height gage or feeler gage, measure the resultant gap between the inner face of the Housing (2-11) and the Module Carrier (1-2). Deduct .003 - .008" from the measurement (Preload required) and select a suitable sized laminated Shim Pack (2-16) to accommodate this gap. Place the Shim Pack onto the Module Carrier Hub, grease and insert the Bushing, with "O" rings (2-21) in place and secure the Safety Element with the 4 socket head cap screws.



**FIGURE 2**  
SECTIONED VIEW OF JSE1-0015  
Externally Adjustable  
Safety Element

Item	Part No.	Description	Qty.
1	JSE1 0015-1	Plunger	1
2	JSE1 0015-2	Outer thrust race	1
3	JSE1 0014-3	Ball - 1/4"	11
4	JSE1 0015-4	Inner thrust race	1
5	JSE1 0015-5	Disc spring	16
6	JSE1 0015-6	1/4"-28 X 1 3/4" S.H.C.S.	4
7	JSE1 0015-7	Housing nut	1
8	JSE1 0015-8	Bushing	1
9	JSE1 0014-9	Detent ball - 5/8"	1
10	JSE1 0015-10	Detent pocket	1
11	JSE1 0015-11	Housing	1
12	JSE1 0015-12	Shroud	1
13	JSE1 0014-13	Grease fitting	1
14	JSE1 0015-14	"O" Ring (Housing/Housing Nut)	1
15	JSE1 0015-15	5/16"-24 x 5/8" S.H.C.S.	1
16	JSE1 0015-16	Shim Pack	1
17	JSE1 0015-17	Hex Head Set Screw	1
18	JSE1 0014-18	Locking Pellet	1
19	JSE1 0014-19	"O" Ring (Bushing)	1
20	JSE1 0015-20	"O" Ring (Housing Nut)	1
21	JSE1 0015-21	"O" Ring (Bushing/Housing)	2

# JSE1-0254DCF Torque Adjustment Graph



## Standard and Disconnect Cam Safety Elements

### Detailed Setting Instructions JSE.5-0016 (DISC CAM) & JSE.5-0014 (STD)



Perform the following calculation and proceed with setting each Safety Element to the same tangential force. Note that the dimension "X" (Figure 5) as measured in step 7 will vary from element to element. However, the "depth setting from zero spring compression" from the graph must be the same and added to "X"

**Example calculation:**

Example Torque Limiter has Qty. 1, JSE.5-0104MA Safety Element Torque Limiter. Example release torque = 8,000 lb-in.

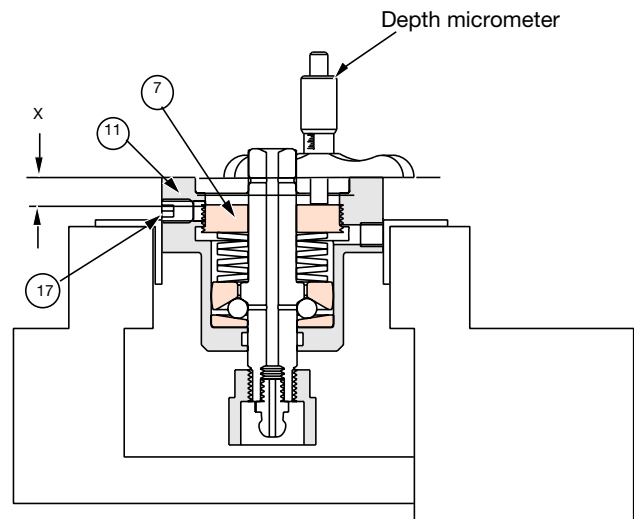
1. Determine Setting for each Safety Element Setting = 8,000 lb-in / setting per graph on Page 3.
2. Read from graph for JSE.5-0104MA, the required depth setting from zero compression. For this example: Depth from zero compression = .028" Add this to the zero spring compression depth (as measured in step 7).  
Note: a depth of .080" equals one revolution of the adjusting nut.
3. Set each element in accordance with instructions to follow.

**JSE.5-0014 SETTING INSTRUCTIONS**

1. Ensure Set Screw (5-17) is not locking the Adjusting Nut (5-7).
2. Hold safety element in soft jaws in a bench vice, as shown in Figure 4.
3. Tighten Adjusting Nut (5-7) by turning clockwise with adjusting tool, then loosen by turning counterclockwise until all spring load is removed.
4. With adjusting tool, slowly tighten the Adjusting Nut (5-7) until it just touches the disc springs - you will note a large increase in resistance when the nut comes up against the disc springs. At this point the Adjusting Nut is bearing on the Disc Springs with no pre-load.

5. Arrange a depth micrometer and measure the distance "X" from the safety element Housing (5-11) base, to the face of the Adjusting Nut (5-7). This is equivalent to the zero setting on the Torque vs. Depth setting graph. Make a scribe mark on the adjusting nut face to note the position of this measurement and make all future measurements on the scribe mark.
6. Read off the graph, the depth setting for the required Torque, and add this to dimension "X".
7. Using the micrometer depth gauge, slowly tighten Nut until the required depth is reached. This safety element is now set to the required Torque setting.
8. Remove safety element from vice.
9. Tighten Set Screw (5-17) to lock Nut (5-7).

Figure 5



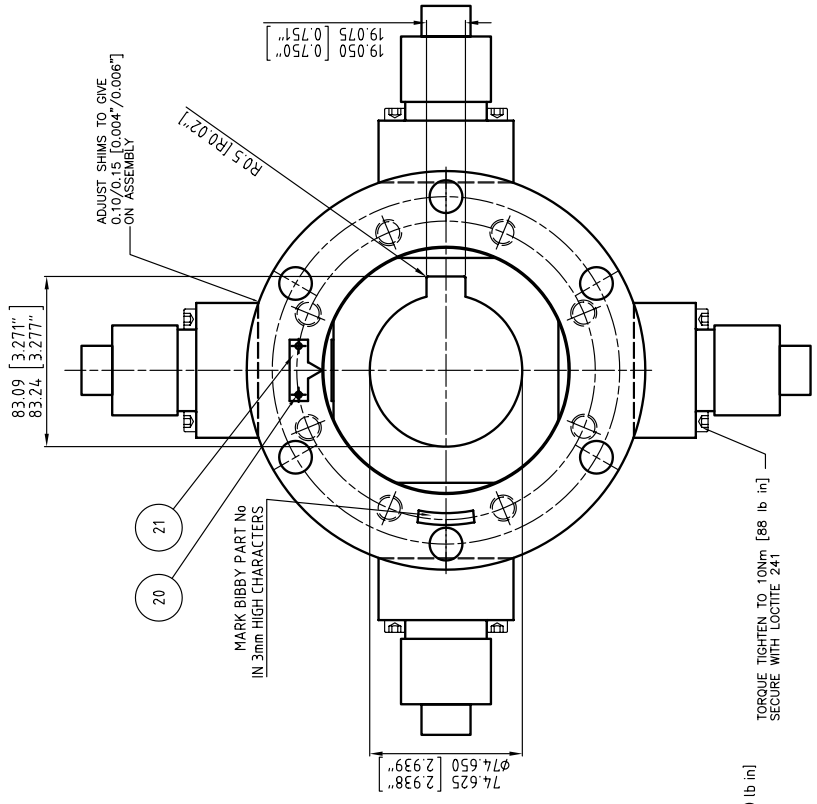
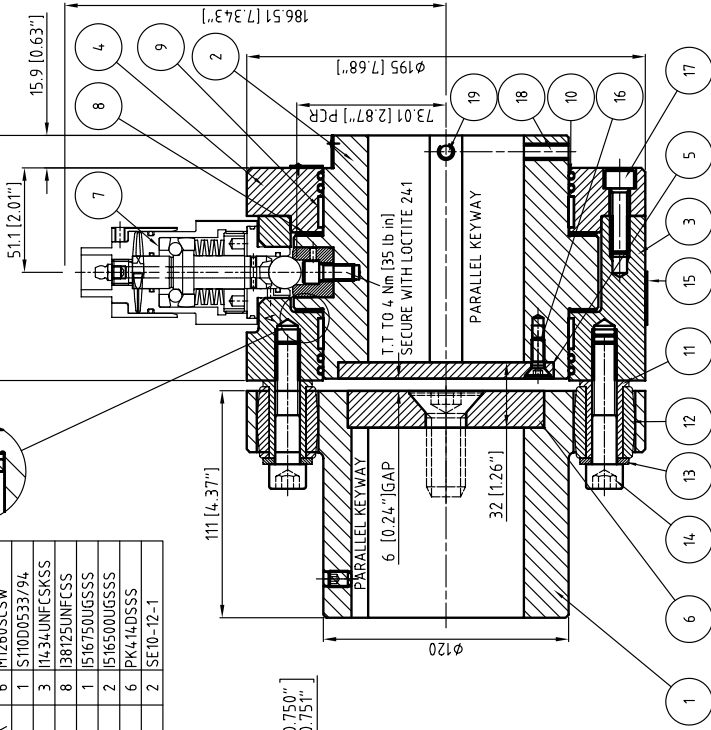
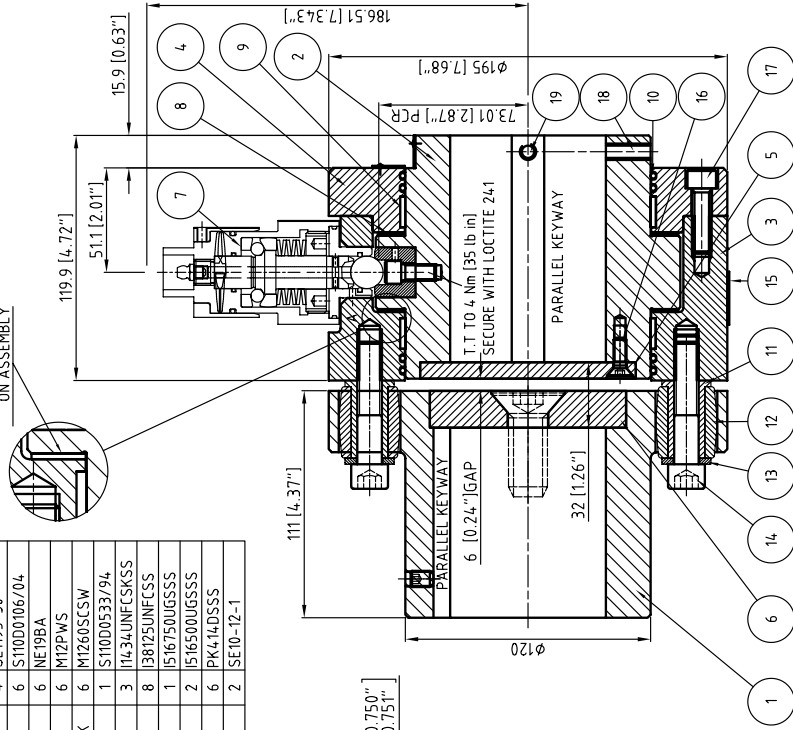
Item	P/N	Description	Qty.
7	JSE1 0014-7	Adjusting Nut	1
11	JSE1 0014-11	Housing	1
17	JSE1 0014-17	Socket Set Screw	11

DO NOT SCALE IF IN DOUBT ASK

MAXIMUM BREAK-OUT TORQUE = 4.965 Nm (4.3944 lb in)  
 MAX PRESET BREAK-OUT TORQUE = 80% OF MAX = 3972 Nm (35155 lb in)  
 MIN PRESET BREAK-OUT TORQUE = 64.2 Nm (5682 lb in)  
 PRESET TORQUE = REFER TO ORDER

Item	Description	Qty	ID Number
1	EFLX HUB	1	S110D0089/08
2	DETENT-POCKET HUB	1	S110D0090/08
3	ELEMENT CARRIER	1	S110D0091/08
4	ENDPLATE	1	S110D0092/08
5	RETAINING PLATE	1	S110D0194/06
6	RETAINING PLATE - EFLX	1	S110D0195/06
7	SES MODULE DISC CAM	4	SE10DC/BHBRU
8	THRUST PAD	2	S110D0027/95
9	STRIP BEARING	2	SE10SB-120-15
10	O' RING NITRILE	4	SL1195-30
11	BUFFER BUSH	6	S110D0106/04
12	BUFFER	6	NET98A
13	WASHER M12 PLAIN	6	M12PWS
14	CAPSCREW M12 x 60 SKT HD ST. WEDGELOCK	6	M1260SCSW
15	LABEL (NAMEPLATE)	1	S110D0537/94
16	SETScrew 1/4"-28 UNF x 3/4" LONG	3	1/4-34UNFCSSKSS
17	CAPSCREW 3/8" UNF x 1.25" LG	8	3/8-125UNFCSS
18	GRUBSCREW 5/16" UNF x 3/4" LG	1	5/16750UGSSSS
19	GRUBSCREW 5/16" UNF x 1/2" LG	2	5/16500UGSSSS
20	DRIVE SCREWS	6	PK414DSSS
21	LABEL (POINTER ALIGNMENT)	2	SE10-12-1

THIS FACE OF HUB TO BE ADJUSTED ON ASSEMBLY



TORQUE TIGHTEN TO 35 Nm [310 lb in]  
 SECURE WITH LOCTITE 241

TORQUE TIGHTEN TO 10Nm [88 lb in]  
 SECURE WITH LOCTITE 241

OPERATING SPEED = 53 RPM

PART No. P10/78582M01

NO.	REVISION	DATE	DESCRIPTION

UNLESS OTHERWISE STATED  
 ALL DIMENSIONS IN MILLIMETRES ARE TO BE SQUARE AND CONCENTRIC TO DATUM (D) WITHIN 0.05mm (0.002") TIR  
 ISO METRIC THREADS TO BE 3.4 CLASS 6H/6g FIT  
 UNSPECIFIED PADS TO BE 0.8mm (0.032")  
 B.S. SPEC'S COMPLY WITH LATEST ISSUE



DRBY	J. HOLSORTH
APPRD	T. A.
SCALE	1:1
PROJECTION	1ST ANGLE
ESG No.	

DESCRIPTION  
 SE10 SAFETY ELEMENT  
 ARRANGEMENT  
 08-S10NA0088-B



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Publication: WWJSE0253DC0 4-10

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