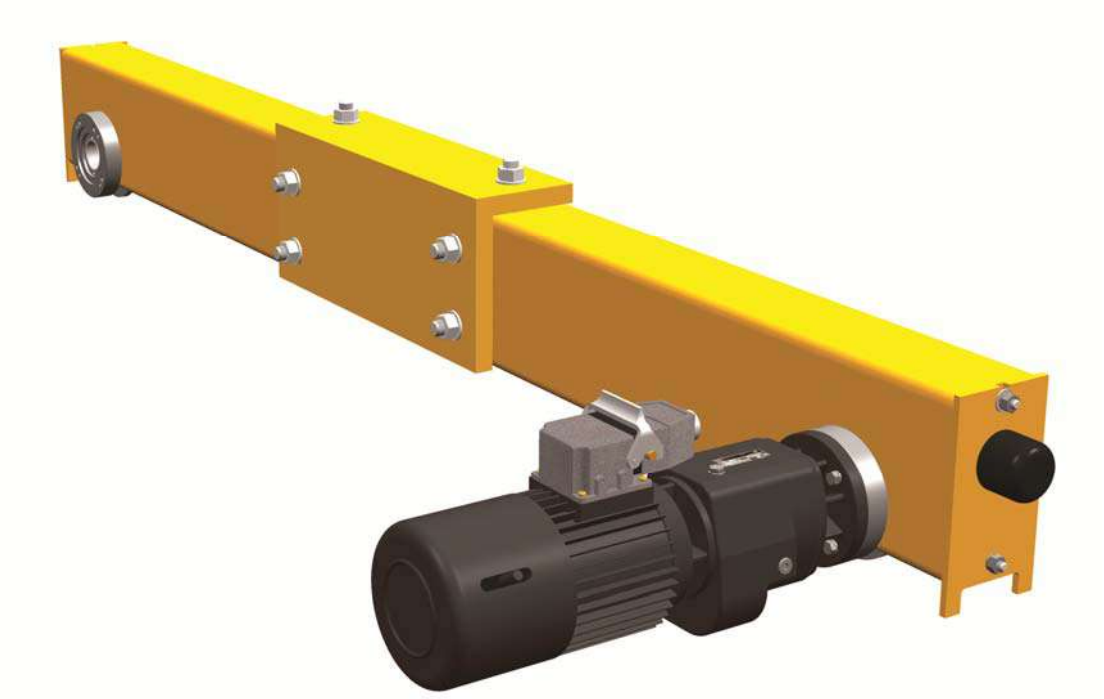
STREET ELECTRIC OVERHEAD TRAVELLING CRANE



INSPECTION AND MAINTENANCE TRAVEL EQUIPMENT (DIRECT DRIVE SK)

Street

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CONTENTS

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1 INSPECTION SCHEDULE

	Duty	A	B	C	D	E
BRAKES: Carry out a functional check of the motion brakes to ascertain that they operate efficiently. If not, dismantle, clean, adjust and renew worn parts where necessary.	M3		•			
	M4		•			
	M5	•				
	M6	•				
	M7	•				
	M8	•				
DRIVEN COMPONENTS: Check the condition of the wheels for signs of wear on the tread & flanges.	M3		•			
	M4		•			
	M5		•			
	M6		•			
	M7		•			
	M8		•			
BEARINGS Check wheel bearings for signs of damage or wear.	M3				•	
	M4				•	
	M5				•	
	M6				•	
	M7				•	
	M8				•	
WIRES AND CABLES: Inspect wires and cables for signs of damage and ensure that each wire is secure.	M3				•	
	M4				•	
	M5				•	
	M6				•	
	M7				•	
	M8				•	

Maintenance Intervals:- A = Weekly, B = Monthly, C = 3 Monthly, D = Annually, E = 2 Years

2 LUBRICATION SCHEDULE

	Duty	A	B	C	D	E	Qty	Lubricant Characteristics
GEARBOX : Check level via inspection plug and top up as required.	M3		•				As Req'd	Industrial gear oil :- ISO classification 220 Specific gravity 0.897 Pour point -18°C Closed flash point 205°C Viscosity @ 40°C 220.2cSt @100°C 19.5cSt Viscosity Index 100
	M4		•					
	M5		•					
	M6		•					
	M7		•					
	M8		•					
Drain and refill with new oil.	M3					•	As Req'd	
	M4					•		
	M5					•		
	M6					•		
	M7					•		
	M8					•		
GEARBOX AND MOTOR BEARINGS : Only applicable to frame sizes 225 or higher Apply via grease nipple.	M3					•	2 shots	EP Grease :- Drop point 175°C Pour point -10°C Flash point 280°C Timken OK load 45lbs Viscosity @ 40°C 175cSt Viscosity Index 80
	M4					•		
	M5					•		
	M6					•		
	M7					•		
	M8					•		

The above lubrication schedule is suitable for an ambient temperature range of -10 to +55°C

Lubrication Intervals:- A = Weekly, B = Monthly, C = 3 Monthly, D = Annually, E = 2 Years

3 DIRECT DRIVE WHEEL ASSEMBLY

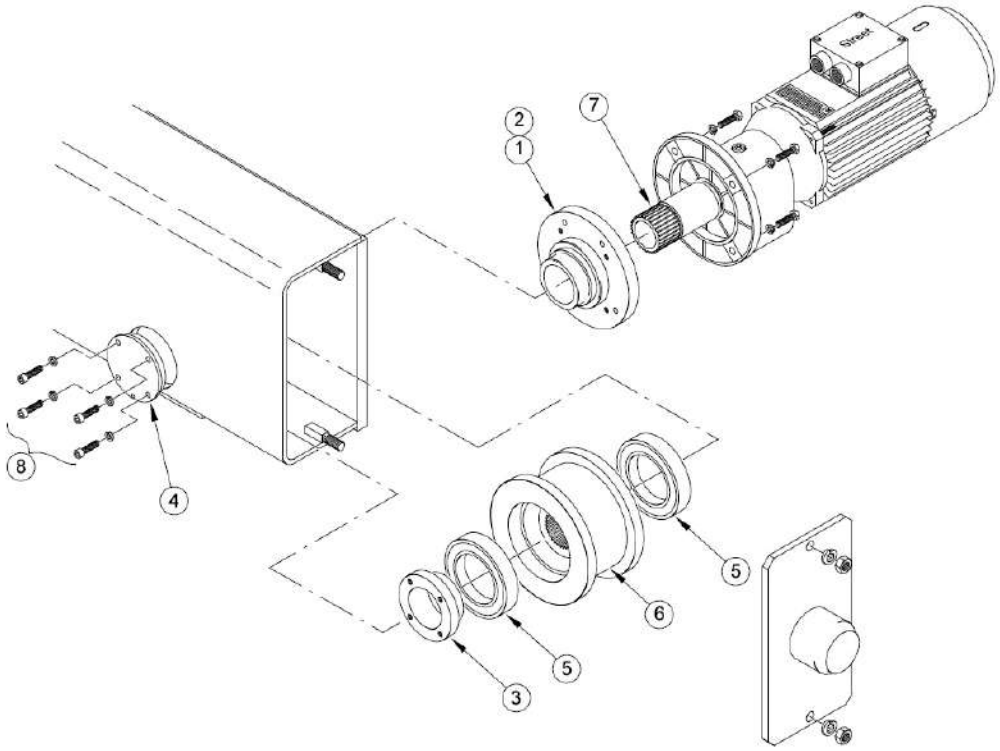


Fig 1.

Each wheel assembly comprises of the following components :-

Item	Quantity	Description
①	2 No.	Drive adaptor / bearing support (drive assembly only).
②	2 No.	Bearing Support (non-drive assembly only).
③	4 No.	Bearing Stub Shaft.
④	4 No.	Flanged Plug.
⑤	8 No.	Ball Bearings (Sealed For Life).
⑥	4 No.	Travel Wheels. (2 No. Driven / 2 No. Non-driven)
⑦	2 No.	Splined Drive Couplings (drive assembly only).
⑧		Fixings & Washers.

The travel drive assembly comprises of a double flanged wheel supported and running on bearing stubs. The travel brake is mounted on the rear of the motor shaft.

This assembly is generally maintenance free as the ball bearings are sealed for life. The only lubrication required is the lubrication of the travel drive unit gearbox, see lubrication schedule for details. Should the drive unit be removed for any reason then the coupling splines should be lightly greased with a copper grease prior to re-assembly.

Wheel should be replaced if :-

- Flange thickness is less than half of its original thickness.
- Flange is damaged or distorted.
- Wheel tread diameter has been reduced by max. of 5% of its original value.

Before removing a crane wheel check :

- That there is no load on the hook.
- That the hoist / crab unit is positioned at the opposite side of the crane from the side to be jacked.

3.1 WHEEL REMOVAL

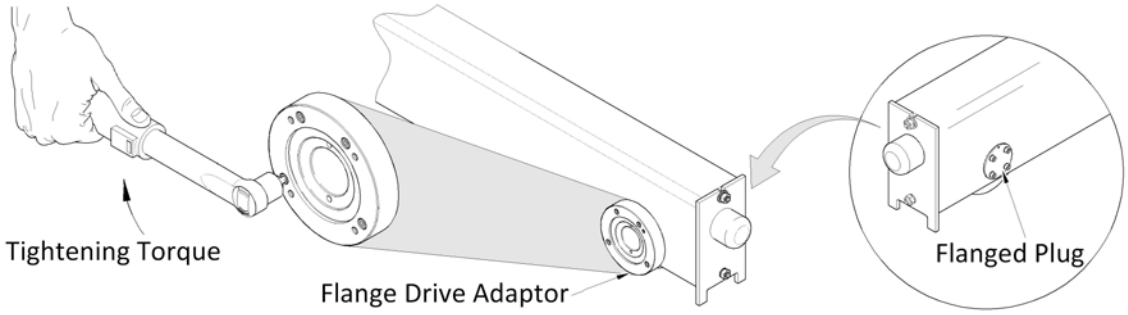
- Isolate power from the crane.
- Disconnect the power cables from the drive terminal box making notes of each cable and its relative terminal connection.
- Support the drive unit and remove the four bolts which fasten the drive to the drive adaptor (drive wheel only).
- Withdraw the drive unit, taking care not to invert the drive as this will cause oil to leak from the filler/breather plug.
- Unbolt and remove the end carriage end plate.
- Measure inside the end carriage to the first stiffening diaphragm and position the jack directly beneath this diaphragm.

Buckling of the end carriage may occur if this procedure is not followed.

- Jack up the end carriage just sufficient to allow the wheel to rotate freely.
- Insert packs between the rail and the carriage, positioning them as close to the diaphragm as possible.
- Unbolt and remove the bearing support / drive adaptor.
- Unbolt and remove the flanged plug.
- Withdraw the wheel along with the bearing stub shaft through the end of the end carriage.

3.2 RE-ASSEMBLY

- Position wheel (containing bearings and bearing stub shaft) in end carriage in line with flanged plug.
- Position flanged plug in line with end carriage fixing holes and bearing stub shaft.
- Bolt flanged plug through end carriage to bearing stub shaft (see bolt tightening torques).
- Position bearing support / drive adaptor to end carriage fixing holes.
- Bolt bearing support / drive adaptor to end carriage (see bolt tightening torques).



- Ensure wheel rotates freely.
- Remove packs, lower the end carriage onto track and remove jack.
- Whilst supporting the drive, insert the drive coupling into the drive adaptor, and fasten the drive unit to the adaptor using the four bolts (drive wheel only) (see bolt tightening torques).
- Attach and bolt the end carriage end plate.
- Reconnect the power cables in the drive terminal box.

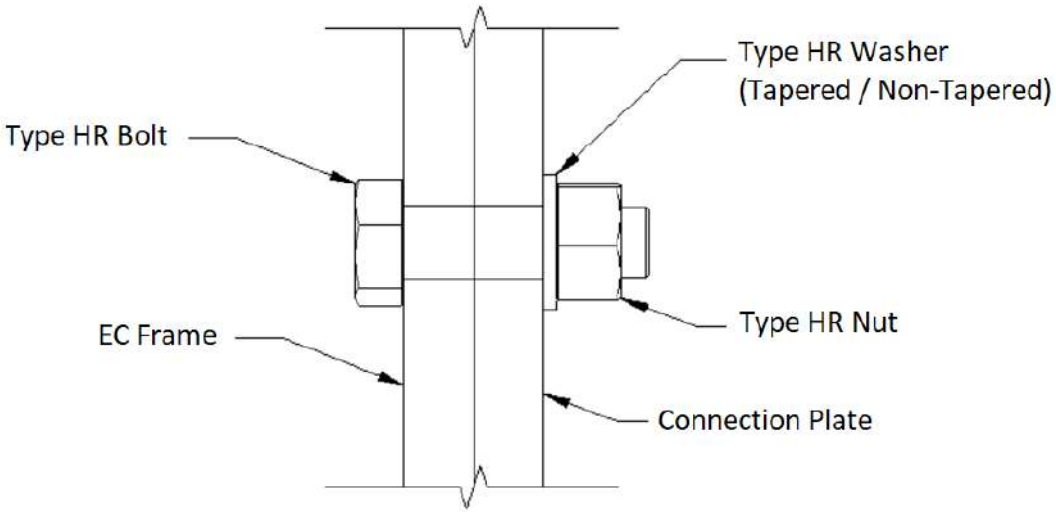
3.3 BOLT TIGHTENING TORQUES (END CARRIAGE)

AS Wheel Size	Flange Drive Adaptor		Flanged Plug		LT Drive	
	Bolt Size	Tightening Torque (Nm)	Bolt Size	Tightening Torque (Nm)	Bolt Size	Tightening Torque (Nm)
125	M6	13	M6	10	M8	20
160	M10	42	M8	26		
200					M10	38
250			M10	36	M12	66
315	M10	66		40		
400	M12	84	M12	69		

4 BEAM TO END CARRIAGE CONNECTION (WI-133)

A bolted connection is used for the connection between the crane beam and end carriage. Bolt assemblies supplied will be classification HR, grade 8.8 to BS EN 14399.

If beam(s) are supplied, the crane may be fitted with beam to end carriage connection plates, and transportation bolts. During installation, the transportation bolts should be removed and replaced with the installation bolts. For crane kits, the connection plates will be supplied loose, with installation bolts.

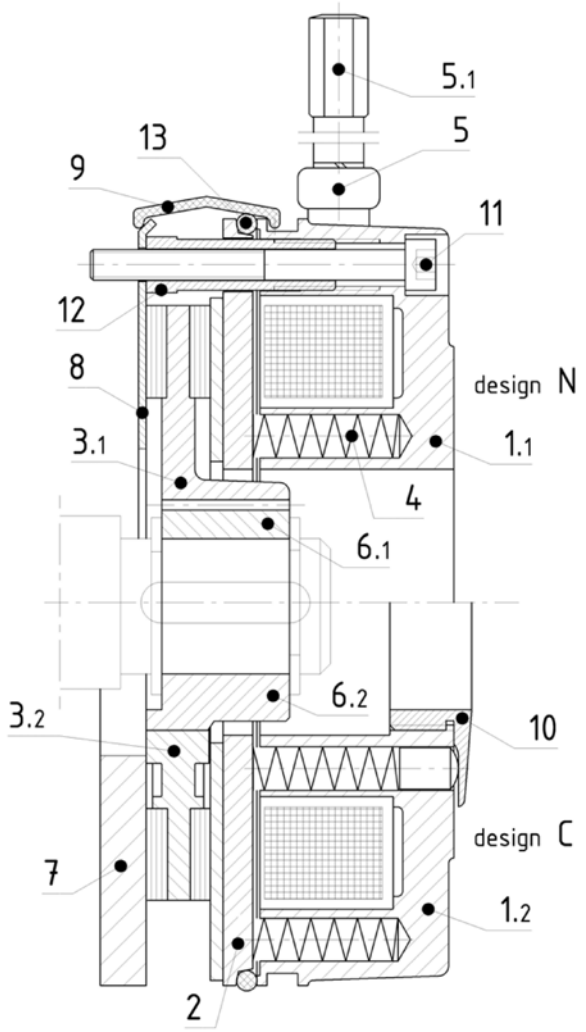


Unless otherwise specified, the torque values detailed in Table BEC/1 should be used to tighten the bolt assembly at the beam to end carriage connection. If bolt assemblies are to be removed or loosened, existing assemblies should be discarded and replaced with a new HR bolt assembly.

Bolt Diameter (mm)	Torque Value (Nm)
16	210
20	410
24	700
30	1420
36	2480

Table BEC/1 1

5 SK-F TRAVEL DRIVE



Item	Designation	Item	Designation
1.1	Magnet part cpl. design N	6.2	Hub for rotor 3.2
1.2	Magnet part cpl. design C	7	Flange
2	Armature plate	8	Friction plate
3.1	Rotor cpl. (Alu design)	9	Dust guard ring
3.2	Rotor cpl. (plastic design)	10	Adjusting ring
4	Springs	11	Fastening screw
5	Manual release cpl.	12	Hollow screws
5.1	Manual release lever	13	O-ring
6.1	Hub for rotor 3.1		

5.1 OPERATION OF THE BRAKE

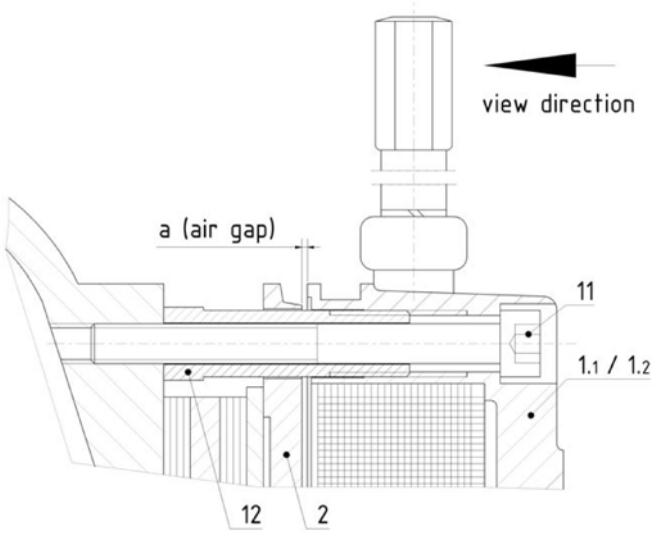
The brake is released by applying a DC current to the brake coil. The armature plate is pulled towards the stator. The rotor, connected to the drive shaft by a splined hub, is then released. When the brake coil is de-energised, the brake springs exert pressure between the armature plate, the rotor and the mounting flange, producing the braking torque. With power failure the brake is applied automatically, satisfying the fail safe braking principle. The brake can be overridden by operating the hand release mechanism.

5.2 MAINTENANCE OF THE BRAKE

To maintain a safe and efficient braking action, regular inspection of the brake is essential. Generally, a one monthly interval is sufficient, but for higher duty applications refer to the Inspection & Maintenance Schedule for specific frequencies. When inspecting the brake particular attention should be made to the air gap; Upon inspection check this dimension complies with the min. air gap, as outlined below.

5.3 CHECKING / SETTING THE AIR GAP (SEE TABLE PFDB1)

The air gap 'a' (between the stator and the armature plate) should be checked in at least three positions around the brake using non-magnetic feeler gauges. The air gap should not exceed the max.



- Viewing in the direction of the brake, loosen fastening screws (11) by turning half a rotation counter-clockwise.
- Turn the hollow screws (12) into the magnet body counter-clockwise.
- Turn the fastening screws clockwise, into the motor flange, until the nominal air gap is reached. Check the nominal air gap using a feeler gauge at three positions on the circumference (see table PFDB1).
- Reset the hollow screws by turning them clockwise, out of the magnet body, until locked against the counter-friction surface.
- Re-tighten the assembly fixings to the recommended torque value (see Table PFDB1).
- Re-check the air gap and repeat adjustment if necessary.

Braking Torque M_B	**[Nm]**	**5**	**10**	**20**	**40**	**60**	**100**
Power of coil P 20	**[W]**	22	28	34	45	55	85
Nominal air gap "a"	**[mm]**	0.2	0.2	0.3	0.3	0.3	0.4
Re-adjustment recommended at a_{max}	**[mm]**	0.6	0.7	0.8	0.9	1.0	1.1
Min. permissible lining thickness	**[mm]**	4.5	5.5	7.5	9.5	11.5	12.5

Table PFDB1

5.4 CHANGING THE ROTOR (BRAKE DISC)

Before changing the rotor, lower the bottom block to a suitable level (floor or platform) and allow it to rest on a solid support.

- Disconnect the supply to the brake.
- Loosen the fastening screws evenly and remove them (take care to support the brake body).
- Remove the brake body, taking note of its orientation.
- The old rotor (brake disc) will now be exposed. Withdraw the rotor from its hub by hand.
- Check the condition of the splining on the brake hub. If damaged, the hub should also be replaced.
- Check the braking surface on the mounting flange or friction plate. Replace where strong scoring is observed.
- Measure both the new rotor thickness and length of protrusion of the hollow screws from the back of the brake.
- Calculate the distance between the stator and the armature plate as follows: -

  Distance = Rotor thickness + Nominal Air Gap 'a' – hollow screw height

- The hollow screws should be unscrewed until the calculated distance between the stator and the armature plate is reached.
- Slide the new rotor onto the hub.
- Replace the brake assembly in the same orientation as originally.
- Replace the fastening screws and torque to the value stated in Table PFDB1.
- Check and adjust, if necessary, the Brake Air Gap 'a'.
- Re-connect the brake supply.

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