

Qatar Company for
Airports Operation
and Management
MATAR

الشركة القطرية
لإدارة وتشغيل
المطارات
مطار



MAINTENANCE MANUAL **TRUCK DOCK 20FT AND 15FT**

	Prepared by:	Checked by:	Approved by:
Name	Mahesha Ramachandra	Norbert Mueller	Nenad Jovkovic
Designation	Supervisor	Deputy Maintenance Manager	Maintenance Manager
Signature			
Date Signed	01-June-2023	02-June-2023	02-June-2023



Title:	TRUCK DOCK 20FT AND 15FT	Page No.	Page 2 of 53
		Document No.	LSME-CRG-M-006
		Revision No.	00

Document History Record

Revision No.	Reason for Change	Implementation Date	Prepared by
00	First Issue	01-June-2023	Mahesha Ramachandra

Reviewed by

Name	Designation	Signature	Date Signed
Joel Misa	Supervisor		01-June-2023
Abdunaser Ahmed	Supervisor		01-June-2023
Rizardo Villalobos	Supervisor		01-June-2023
Ericson Victorino	Supervisor		01-June-2023
James Gabuin	HSE Senior Officer		01-June-2023

Reference Documents

Document Number	Document Title



Table of Contents

1. Safety Definitions.....	6
1.1 Symbols	6
1.2 Caution before inspection	8
1.3 Precautions during inspection	8
1.4 Precautions after inspection	8
1.5 Basic Safety PPE's.....	9
2. General assembly (basis structure)	10
2.1 Ram protection	11
2.2 Skirt& chain mails	11
2.3 Limit check	11
2.4 Load cell	12
2.5 Lower frame (20ft truck dock)	12
2.6 Upper frame.....	12
2.7 Hydraulic power pack	13
2.8 Hydraulic cylinders (Scissor lift) 140*530	13
2.9 Hydraulic cylinder (Side shift) 50/30*600.....	14
2.10 Scissor arms	14
2.11 Roller deck 20ft/15ft.....	14
3. Drive system for the roller deck	15
3.1 Sickle stop for 20ft truck dock & plate stop drive for 15ft	15
3.2 Winch with hydraulic motor	15
3.3 Machine data for 20ft &15ft	16
3.4 Drive data for long drive (Roller deck)	16
3.5 Long drive (Front roller).....	17
3.6 Drive for sickle stop for Truck dock 20ft & Plate stop for 15ft	17
3.7 Hydraulic power unit	18
3.8 Operating conditions	18
3.9 Sound level.....	18



Title: TRUCK DOCK 20FT AND 15FT	Page No.	Page 4 of 53
	Document No.	LSME-CRG-M-006
	Revision No.	00

4. Sensors and switches for Truck dock 20 feet	19
4.1 Sensor locations	20
4.2 Sensors and switches for Truck dock 15 feet.....	21
4.3 Functions of B40& B41 sensors in truck dock 20ft	22
4.4 Functions of B43& B44 sensors in truck dock 15ft	22
5. Performing Maintenance activities	23
5.1 Preventive maintenance procedures.....	26
6. Lubrication.....	27
6.1 Lubrication Points for 15ft Truck dock.....	27
6.2 Lubricating Procedure.....	27
6.3 Lubrication Points for 20ft Truck dock.....	28
6.4 List of lubricant using& locations.....	28
7. Bolt tightening torques	29
8. Replacement of components	30
8.1 Procedure to check roller chain elongation & Replacement of chain.....	30
8.2 How to remove the chain link from chain in Truck dock	31
8.3 How to replace the load cell	31
8.4 Replacing spring (sickle stop Truck dock 20ft).....	32
8.5 How to replace the stop plate for Truck dock 15ft.....	32
8.6 Replacing Plate stop spring for truck dock 15ft.....	33
8.7 Roller chain replacement $\frac{3}{4}$ ", 34 links	33
8.8 Flange bearing unit $\varnothing 40$ mm	34
8.9 Replacement of hand switching Clutch &Roller deck Gear motor 1.1 kW.....	36
8.10 Replacement of Gear motor 1.1 kW Front roller.....	37
8.11 Hand switching clutch for roller deck Truck Dock 20FT.....	37
9. Replacement of mechanical spare parts.....	38
9.1 Buffer 80x80 mm	38
9.3 Flange bushing $\varnothing 70/80/90 \times 70$ mm	39
9.4 Centre bolt $\varnothing 110$ mm (Part.No.1158784)	40
9.5 Bushing $\varnothing 110/125 \times 140$ mm	40
9.6 Cylinder bearing bolt.....	41



Title: TRUCK DOCK 20FT AND 15FT	Page No.	Page 5 of 53
	Document No.	LSME-CRG-M-006
	Revision No.	00

9.7 Replacement of Hydraulic cylinder Ø140	42
9.8 Running wheels	42
9.9 Bushing Ø70/80x60 mm	43
9.10 Replacement of Sliding plate	44
9.12 Contact strip truck dock	45
9.13 Roller chain 3/4", 38 links	46
9.14 Roller Ø133x7.1x2420 mm	47
10. How to perform the pipe brake valve test.....	48
11. Air vent procedure	49
12. Troubleshooting Guide.....	50
<i>Normal trouble shoot: Roller deck</i>	50
<i>Normal trouble shoot: Hydraulic Unit.....</i>	51
<i>Normal trouble-shoot: Hydraulic unit after repair maintenance.....</i>	52
13. How to measure the oil level in Hydraulic tank	53
<i>For Truck dock 20ft:</i>	53
<i>For Truck dock 15ft.....</i>	53



1. Safety Definitions

The prerequisite for the safe handling and a trouble-free operation of the transport equipment is the adherence to basic safety instructions and the knowledge of safety regulations.

Please obey all safety precautions and warnings found in the respective area. If in doubt, ask your respective supervisor and report if you found any unsafe condition or hazard in your working place.

1.1 Symbols

The symbols mentioned in this maintenance manual require special attention:



Risk levels that point toward hazardous situations that can cause personal injuries and possible damage to the transport equipment.

Danger

This symbol alerts to a potential accident if the instructions are not followed. Life-threatening injuries and/or severe damage to the transport equipment can occur. There are warnings that point to electrical hazards that can include the danger of contacting live components, and there are references to explosion hazards and the danger of fire. There are warnings that alert to the danger of poisonous gases, danger caused by moving parts (e.g., crushing), collision, or falling from higher elevations, etc.

Warning

This symbol alerts to a potential accident if the instructions are not followed. Life-threatening injuries and/or severe damage to the transport equipment can occur. There are warnings that point to electrical hazards that can include the danger of contacting live components, and there are references to explosion hazards and the danger of fire. There are warnings that alert to the danger of poisonous gases, danger caused by moving parts (e.g., crushing), collision, or falling from higher elevations, etc.

Caution

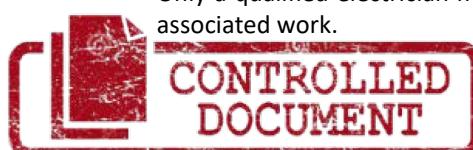
This symbol alerts to a potential accident if the instructions are not followed. Minor or light injuries and/or damage to the transport equipment can occur. It points to potential dangerous situations and warns about risks such as danger caused by moving parts (e.g., crushing), collision, or falling from higher elevations, etc.



Risk of Electrical shock

This symbol warns about electrical hazards that can lead to severe injuries and potential death due to electrical shock.

Only a qualified electrician must be permitted to proceed with any associated work.





Environmental protection information



Warning! Automatic start-up



Warning! Risk of crushing limbs



**Caution! Infrared ray
(light barriers)**



Warning! Hot surfaces - risk of burning



Caution! Trip hazard



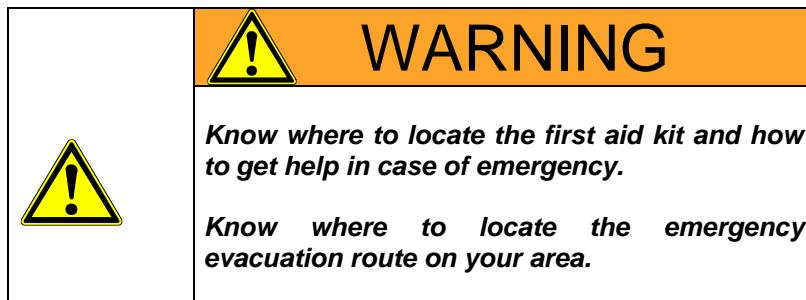
Warning! Stay clear of moving parts



No unauthorized personnel beyond this point



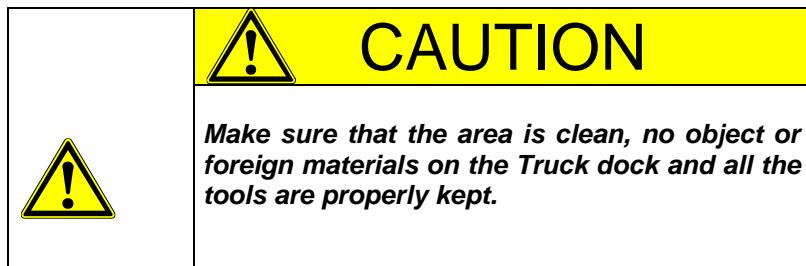
1.2 Caution before inspection



1.3 Precautions during inspection



1.4 Precautions after inspection



1.5 Basic Safety PPE's

All operating personnel must be supplied with the appropriate safety equipment, e.g.,



- ear protection



- safety goggles



- safety gloves



- safety footwear



- safety harness



- safety helmet

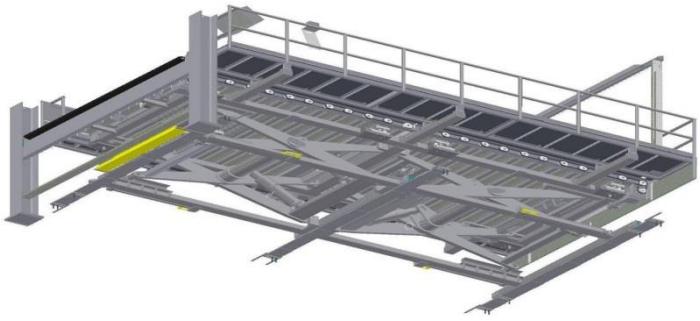
All personnel with loose clothing, jewellery including rings must not be worn as they risk being pulled into or getting caught by moving machine parts. Serious injuries are likely. Provide appropriate tools and supplies for the operation of the transport equipment, e.g., suitable means of transport.



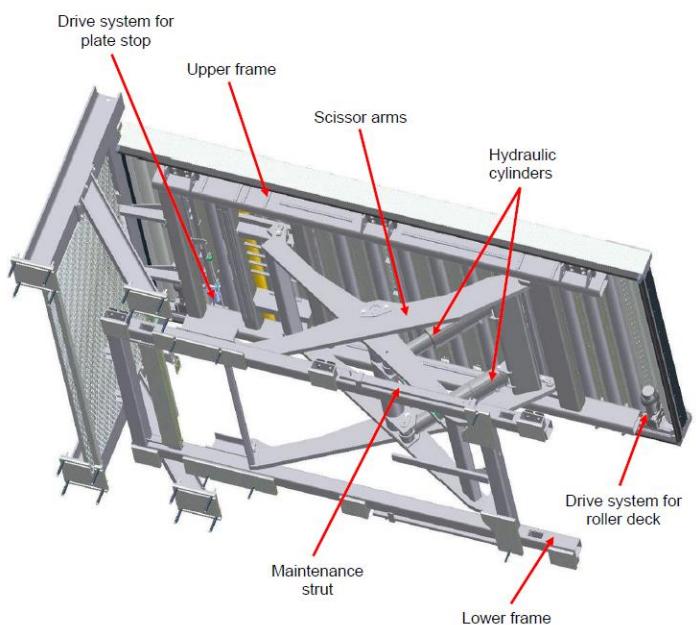
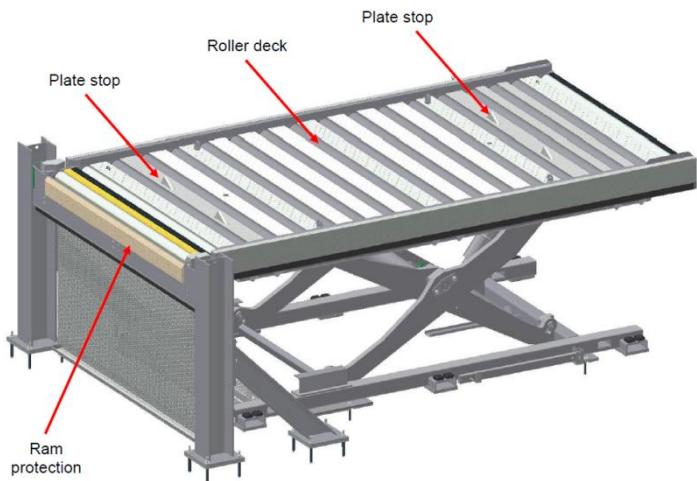
2. General assembly (basis structure)



Side View of 20ft & 15ft



Bottom View of 20ft & 15ft



Truck Dock 20ft MCC-11



Truck Dock 15ft installed in airside ULD



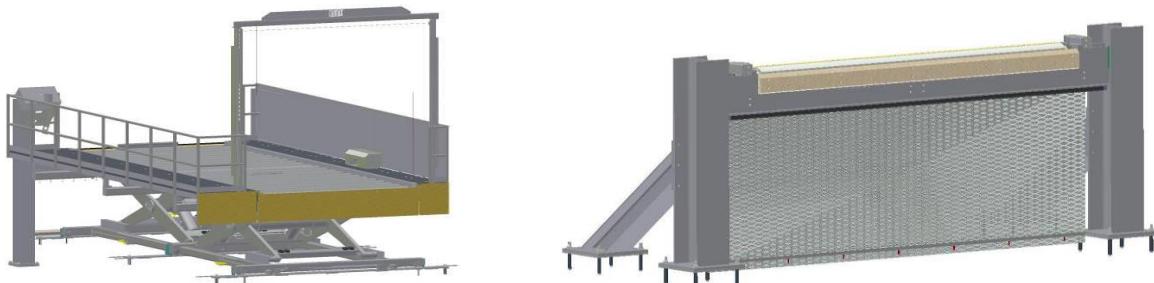
2.1 Ram protection

The ram protection absorbs light truck impact and protects the scissor lifting table. The lifting beam is guided by the two side beams. The side beams fixed with anchor bolts on the floor. The lifting of the ram protection is conducted by the lifting table. In 20ft truck dock the front side of the lifting beam is equipped with rubber pad & in 15ft equipped with wooden pad. The roller is motor driven. The power is transmitted by a sprocket and chain.



2.2 Skirt& chain mails

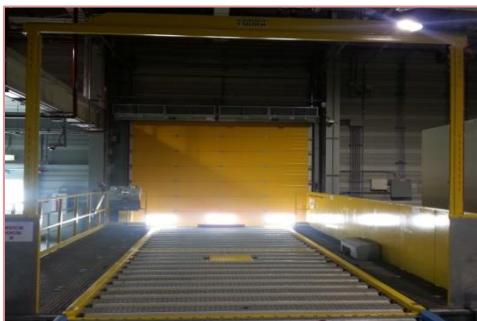
The skirt & chain mails is to protect the operator and to prevent moving of the objects below the scissor lifting table. In 20ft truck dock skirt is arranged at the rear end. (from roller deck side),& chain mails provided on the front side of the truck dock (Ram protection side).In 15ft truck dock instead of skirt, Chain mails provided.



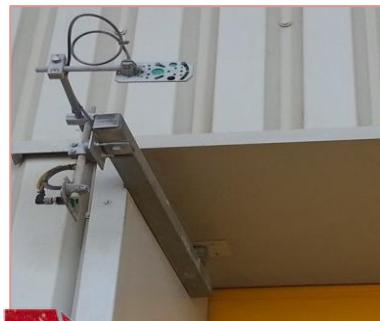
2.3 Limit check

The limit check, monitor the width and the height of the ULD, if any obstruction detected, the equipment create fault & stop immediately.

Limit check 20ft truck dock



Limit check 15ft truck dock



2.4 Load cell

In 20ft truck dock the load cell arranged at the each of the four corners of the both roller decks. To prevent damaging the transport system, the load cell are installed for detecting harmful overloads (Max permitted load=13,600 kg).measuring excess loads. Furthermore, the load cells detect the weight for process purposes.

Please note that in 15ft truck dock there is no load cell provided.

Load cell



Weighing scale monitor



2.5 Lower frame (20ft truck dock)

The lower frame is a strong structure carrying the lifting mechanism. The lower frame mainly consists of two components. One component connected to the foundation by anchor bolts. The other component is mounted movable onto the first one. This enables the side shifting of the equipment.



2.6 Upper frame

The upper frame is a welded sturdy structure to which the roller decks and the side walkways are bolted. The bottom side of the upper frame incorporates the bearings for the moveable (pivoted) connected outer pair of scissor arms. Furthermore the bottom side includes the running surfaces for the castor rolls of the inner pair of scissor arms.



2.7 Hydraulic power pack

The hydraulic power pack is a compact unit mounted in the pit on the lower frame with a drip pan in case of oil leakage. To prevent failures, two hydraulic pumps with two motors are provided.

The hydraulic unit provides the required operating pressure for the hydraulic cylinders; controlling is conducted by a control valve with 24 V DC magnetic coils. Further components are reactive valve, pressure excess release valve and rebound valve. In case of trouble, the scissor lift can be lowered to the lower limit position by an emergency lowering valve. Having the standard design, crossbeams which are arranged inside the base frame is used for supporting the hydraulic unit. In this case, the hydraulic unit is completely joined to the electrical and hydraulic connections.



Hydraulic power pack



2.8 Hydraulic cylinders (Scissor lift) 140*530

The hydraulic unit provides the hydraulic cylinder with pressure. The hydraulic cylinder is equipped with a mechanical limit stop and is protected against the penetration of foreign particles and moisture by a sealing system. There is a pipe rupture valve installed in 15ft truck dock that, in case of pipe break, attenuates the down movement of the scissor.

Note: - Pipe break valve not installed in 20ft truck dock because, it has 2 truck docks connect together. If one side of the truck dock pipe breaks, another one attenuates the down movement of the scissor.



2.9 Hydraulic cylinder (Side shift) 50/30*600

Please note that, all 15ft truck dock in ULD airside doesn't have side shift provision. Only MCC-11 land side has the provision for side shifting. The hydraulic unit provides two hydraulic cylinders with pressure. The hydraulic cylinder enables the side shifting of the transport equipment to compensate improper parking position of the truck. Maximum 300mm side shift can be possible from each side. Two Sensors provided to positioning the truck dock parallel to next deck



2.10 Scissor arms

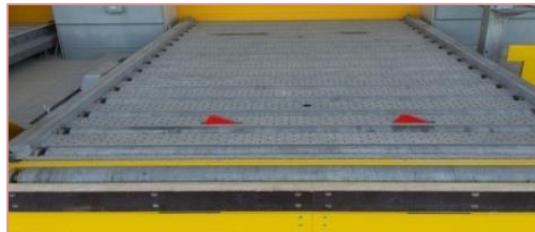
The scissor lifting system includes an outer and an inner pair of scissor arms. With the help of two cross beams each of the two pairs of scissor arms is connected in a torsion-free way. To transmit the power of hydraulic cylinder to the scissor arm pairs, the hydraulic cylinder is fixed eccentrically to the scissor centre bearing. At the bottom side the inner pair of scissor arms is movable (Pivoted) connected to the base frame. The top side is equipped with two castor rolls that compensate the height variations of the scissor lift by moving on the running surfaces of the upper frame.



2.11 Roller deck 20ft/15ft

The 20ft truck dock is equipped with two roller decks in line, & 15ft equipped with one. This enables the possibility to transport 20 ft. & 15ft ULDs respectively. Each roller deck consists of a support frame and the rollers bedded in the support frame. The support frame of the roller deck is 50 mm higher than the top of the rollers. This flange provides the guiding of the ULDs. A drive system, incorporating roller chains and sprockets, drives the rollers. The drive energy is exerted by a geared motor.

The roller deck is screwed to the upper frame of the scissor lifting table.



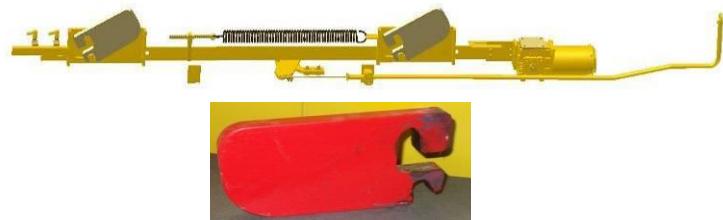
3. Drive system for the roller deck

The roller deck is motor driven. The power is transmitted by roller chains and sprockets. In case of emergency, the drive of the roller deck can be disconnected by a manual emergency actuation.



3.1 Sickle stop for 20ft truck dock & plate stop drive for 15ft

This device enables stopping the ULDs during transportation on the transport equipment. The stop is realized by the sickle stop in 20ft & plate stop in 15ft. The sickle stop/plate stop actuated with help of a geared motor and an eccentric actuation system. In case of emergency or trouble, the emergency manual override can be actuated by a hand lever. In doing so, the sickle stop is lowered and the ULD can be moved manually



3.2 Winch with hydraulic motor

Only the truck dock 20ft is equipped with a winch. The winch enables pulling out shifted or misaligned ULDs from the truck to the driven roller of the transport equipment. The winch is driven by a hydraulic motor which is provided with pressure by the hydraulic power pack.



3.3 Machine data for 20ft &15ft

Truck dock -20ft		Truck dock -15ft	
Self-weight	Approx. 10,000 kg	Self-weight	Approx. 6,000 kg
Length	7,551	Length	5,377mm
Width	4,222	Width	3.700mm
Height	4,040	Height	1.925 mm
Lowest position	800mm	Lowest position	508mm
Transfer height	1,608	Transfer height	1,808
Side shifting	± 300 mm	Operating voltage	415 V / 50 Hz
Operating voltage	415 V / 50 Hz	Horizontal conveyor speed(roller deck)	0.3m/s
Horizontal conveyor speed(roller deck)	0.3m/s	Lifting speed	50mm/s
Lifting speed	50mm/s	Load capacity	6,800kg
Load capacity	13,600kg		

3.4 Drive data for long drive (Roller deck)

Truck dock -20ft		Truck dock -15ft	
Manufacturer	Danfoss Bauer	Manufacturer	Danfoss Bauer
Motor Type	BG40-47-D09SA4-TOF-S/E008B8-SP	Motor Type	BG20-87-DSE08XA4-TOF-K/ESX010A8/C1-SP
Ratio	32.57	Ratio	23.22
Voltage	415 V	Voltage	415 V
Frequency	50 Hz	Frequency	50 Hz
Phases	3	Phases	3
Insulation Class	F	Insulation Class	F
Output speed	43 rpm	Output speed	61 rpm
Output torque	240 Nm	Output torque	172 Nm
power	1.1 Kw	power	1.1 Kw
Rpm	1,400 rpm	Rpm	1,400 rpm



3.5 Long drive (Front roller)

Truck dock-20ft

Truck dock-15ft

Manufacturer	Danfoss Bauer	Manufacturer	Danfoss Bauer
Motor Type	BG20-77/D08LA4-TOF-SE008B8-SP	Motor Type	BG20-77/DSE08XA4-TOF-S/ESX010A8/C1-SP
Ratio	23.22	Ratio	23.22
Voltage	415 V	Voltage	415 V
Frequency	50 Hz	Frequency	50 Hz
Phases	3	Phases	3
Insulation Class	F	Insulation Class	F
Output speed	61 rpm	Output speed	61 rpm
Output torque	240 Nm	Output torque	172 Nm
power	1.1 Kw	power	1.1 Kw
Rpm	1,400 rpm	Rpm	1,400 rpm

3.6 Drive for sickle stop for Truck dock 20ft & Plate stop for 15ft

Truck dock-20ft

Truck dock-15ft

Manufacturer	Danfoss Bauer	Manufacturer	Danfoss Bauer
Motor Type	BG06-31/DU4LA4-TOB-S/E003B4	Motor Type	BS04-64U/DU04LA4-TOF/C1-SP
Ratio	66.79	Ratio	102.9
Voltage	415 V	Voltage	415 V
Frequency	50 Hz	Frequency	50 Hz
Phases	3	Phases	3
Insulation Class	F	Insulation Class	F
Output Speed	20.5 rpm	Output Speed	13.5 rpm
Output Torque	27.5 Nm	Output Torque	27.0 Nm
Power	0.06 kW	Power	0.06 kW
rpm	1,350 rpm	rpm	1,350 rpm



3.7 Hydraulic power unit

Truck dock 20ft

Truck dock 15ft

Manufacturer	HOERBIGER	Manufacturer	HOERBIGER
Voltage	415 V	Voltage	415 V
Frequency	50 Hz	Frequency	50 Hz
Power	2 x 7.5 kW	Power	2 x 4.0 kW
Drive speed	1,450 U/min	Drive speed	1,450 U/min
Pressure	210 bar	Pressure	240 bar
Oil flow	2 x 23 l/min	Oil flow	11.5 l/min
Solenoid voltage	24 V / DC	Solenoid voltage	24 V / DC
Tank volume	120 l	Tank volume	120 l

3.8 Operating conditions

Ambient temperature zero degree to 35 degree

Max. Relative humidity is 65 %

Ambient illumination 150 lux



The transport equipment must never be operated in an explosion-hazard atmosphere.

3.9 Sound level

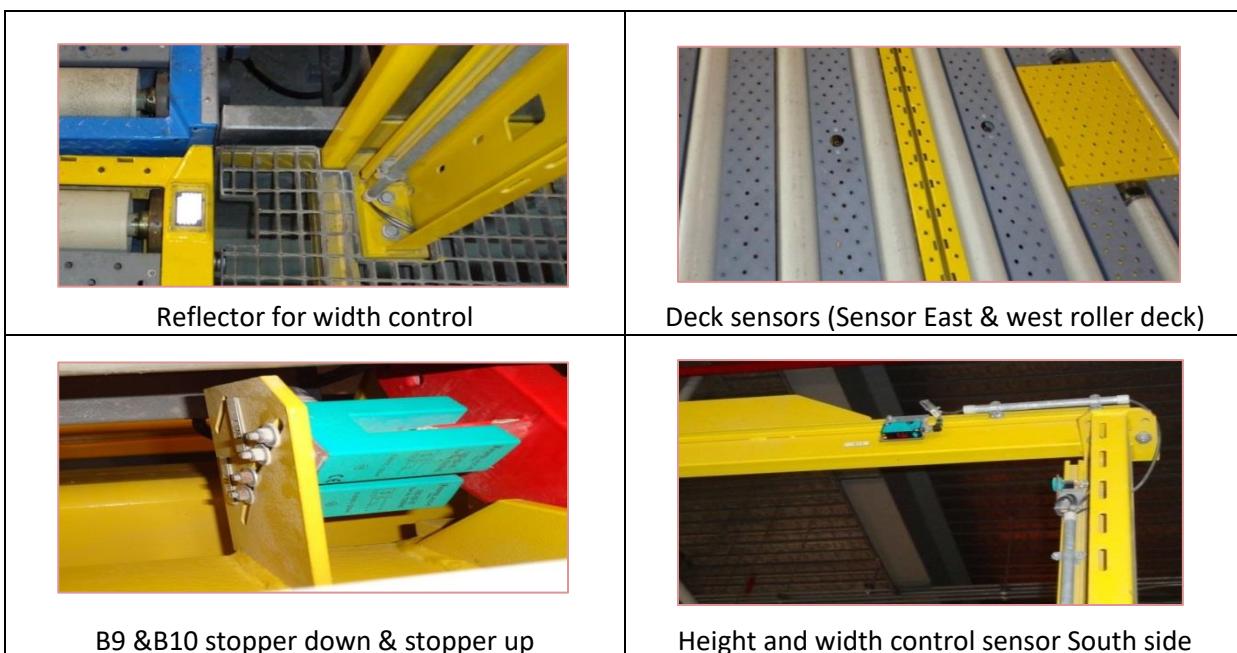
According to machine specification Sound level should be < 75 dB



4. Sensors and switches for Truck dock 20 feet

Switches	Modules
Sensor B30 Side shift North & B31 for South	Sensor B40 for System height above & B41 for below
Sensor B32 for safety cover closed	Safety cover in open condition
Sensor B32 for safety cover	Height and width control sensor north side





4.1 Sensor locations

Sensor Location 20ft truck dock		Sensor location 15ft truck dock	
B17,B18	Height control	B17 & B18	Height control
B21, B23	Width Control	22C & 24C	Width control
B40	System Height above,	B40 , B43	Above transfer position
B41	System Height Below	B41, B44	Below transfer position
B01,B05	Deck sensor East	B03 &B01	Deck sensor
B03,B07	Deck sensor west	B43& B44	Transfer position(If both sensor activate at same time)
B09	Stopper down	B09,&B12	Stopper down
B10	Stopper up	B10, B13	Stopper up
B30,B31	Side shift North & south centre	B19& B20	Over Hang control
B32	Cover closed for winch rope guide device	B42	Platform Up stop

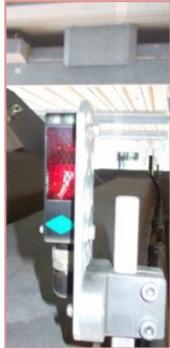


4.2 Sensors and switches for Truck dock 15 feet

Switches	Modules
Sensor Width control & height control	Sensor Width control & height control
Deck sensors B3&B1	Over hang sensor B19&B20
Limit switch for Platform up stop B42	Sensor for bellow transfer & above transfer B40&B41



Title: TRUCK DOCK 20FT AND 15FT	Page No.	Page 22 of 53
	Document No.	LSME-CRG-M-006
	Revision No.	00



Sensor for transfer position B43&B44



Sensor for stopper up& down B9&B10

4.3 Functions of B40& B41 sensors in truck dock 20ft

The truck dock in home position means, the truck dock and the parent roller decks should be in level. In this condition the sensor B40& B41 sense together. During lowering from home position, the truck dock will stop approximately 730mm lower from the home position. The stop command achieved because of deactivation of B40 signal. During the raise, above from home position, truck dock will stop once reaches around 200to 250mm from home position. The stop command achieved because of deactivation of B41 sensor. The System below & above from home position is identified by B40 & B41 sensor.

4.4 Functions of B43& B44 sensors in truck dock 15ft

The truck dock in transfer position means, the truck dock and its parent roller decks should be in level. In this condition the sensor B43& B44 sense together. While lowering from Transfer position, the truck dock will stop in its extreme lower end (Mechanical stop). When raise from the lower end, it will stop while reaching in transfer level. The stop command achieved because of sensing together of B43& B44 sensor. During the raise above from Transfer position, truck dock will stop after reaching approximately around 1800mm. The stop command achieved because of activation of B42 limit switch. The System above & below from Transfer position is identified by B43 & B44 sensor as well as B40&B41 sensor



5. Performing Maintenance activities

No.	Maintenance point	Maintenance Activities	Maintenance interval
1	General	Special occurrences , break downs, documentation	QC Check
2	Visual check	damage, corrosion, cleanliness, surroundings	
3	All Sensors	Clean as Required	
1	Function	Functional test of all drive units(manual)	1month Check
2	Cleanliness	Cleaning grease and oil.	
3	Ram protection	Gear motor abnormal noise Roller check clean, abnormal noise ,damage Guide rail abnormal noise, plastic bearing for wear ,damage Check gap of the guiderail max-4mm Wire mesh check function corrosion &damage	
3	HPP	Check for oil leakage check for abnormal noise when it is running check function of the emergency lowering valve Check pivot joint ,damage noise	
	Hydraulic Cylinder	Check for oil leakage noise and oil coating on the piston rod	
4	pivot point	Check for the damage, noise and easy pivoting	
5	Roller Deck gear motor	Check for abnormal noise	
6	Connections	check connections from motor and initiators	
7	All sensors/counter frame	functional test check fixing inspection adjustment, adjust if needed check for damage	
8	Limit switches	check for function , cleanliness	
9	Switches, push buttons, lamps	Functional test Check for the damage	



		Check for sign post	
10	Walkways	Check walkways damage, corrosion	
11	Pallet stop	Check damage, soft running, oiling if needed	
12	Scissors	Check bearing wear & abnormal noise& positioning	
13	Skirts	check for damages, corrosion ,gap adjustment	
14	Maintenance struts(Locking pillar)	check function, wear, damages, cracks	
15	Trip bar	check function and damage	
16	General safety device	Function test safety device/ switches Check for the damage Emergency E stop &Key switch	
17	Weight Scale 20ft truck dock	check for damages, function and dirt check expiry date of calibration is valid	
18	Side shift for 20ft truck dock	Guide rail, clean & check damage, corrosion Guide wheel ,abnormal noise, wear &damage driven wheels, check abnormal noise ,wear &damage Rail sweeper, check wear & cleanliness	
19	Winch for 20ft truck dock	Function test & abnormal noise fixing Rope, check for damage and wear Rope drum check for damage and wear Hydraulic motor check for oil leakage	
1	HPP	Check oil level Replace oil filter when indicator indicates for replacement clean accumulated dust on HPP no noise, heat increases, unusual Vibrations form HPP motor & pump pipe ,fixings &bearings check leakage, damage , corrosion	3month Check
2	Ram protection	Check gear motor oil leakage Sprocket & drive chain check for wear damage, lubrication	



3	Roller deck	<p>check for leakage oil of gear Motor</p> <p>check rollers for damages, and replace if necessary</p> <p>check rollers for abnormal noise when it is turning</p> <p>Inspection roller chain wear, damage, lubrication</p> <p>check chain, sprocket for wear, adjustment, damage</p> <p>Check roller bearings noise, heat increases, unusual vibrations</p> <p>Check level from the top of rollers</p>	
4	Weight Scale	<p>Check weight , if necessary calibration</p> <p>Check for guide wheels wear, abnormal noise bearing, positioning</p>	
5	General safety Device	Check limit switches for damage and wearing	
6	Scissors	<p>Check scissor platform, Frame for damage, cracks, corrosion & fixing</p> <p>Grease on required points</p> <p>Guide wheels abnormal noise bearings & positioning</p>	
1	HPP	<p>Air filter cleaned from compressed air</p> <p>Check Pipe and fixing connection for leakage , damage, corrosion</p> <p>look for lose bolts and fixings (torque)</p>	6month Check
2	Roller Deck	<p>Check Function of the gear motor brake. If braking effect decrease replace the brake</p> <p>Check Clutch function, wear, damage, lubrication</p> <p>Check chain elongation, max 3 %</p> <p>Look for lose bolts and fixings (torque)</p> <p>Check for damage and fixing</p>	
3	Maintenance Struts	Chuck it is functioning and lever present	
1	General	visual check of the supporting construction for cracks weld	12month Check
2	Sign posts	check for completeness, damage, readability	
3	HPP	<p>Change hydraulic oil if necessary</p> <p>Check Hydraulic hose pipe expiry date (printed on the tube) 6 years after manufacturing date. Replace if necessary</p>	

		Check functioning of emergency lowering valve Functional Test of pipe beak valve	
4	Roller deck/sickle stop gear motor	change oil as set out in lubrication chart	
5	Fence/doors(Truck dock 20ft)	check & clean	

5.1 Preventive maintenance procedures

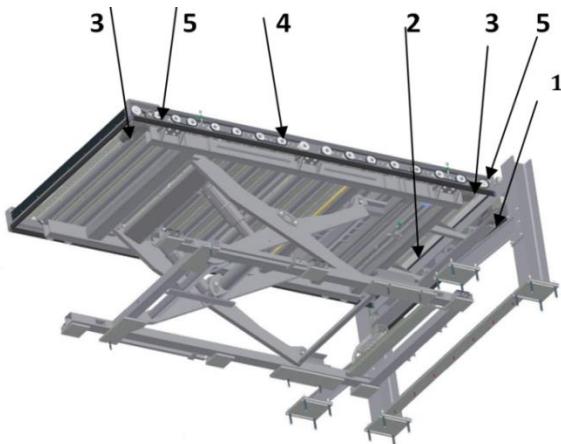
- After receiving the PM plan, arrange the materials, tool ,manpower and required PPE to perform the task
- Proceed to the proper location of the machine on your scheduled work order.
- Call control room operator and ask permission to perform maintenance task on that particular equipment. Inform control room the MCC to be maintained.
- Check the status of the equipment in RC01 cabinet. It shows that the green and white light indicator is illuminated and the key switch is in AUTOMATIC position for the two Function Groups.
- If the control room operator permitted you to take the equipment, switch the key switch to MANUAL MODE and you will noticed that the white light indicator is blinking/flashing and the orange indicator lit up while the green indicator turns OFF. This means that the equipment is ready to be access.
- Press the white light indicator or START button to start the equipment.
- Place the barricade tape maintenance chain in Function group 2 to secure the maintenance area.
- Perform the maintenance activity. Always switch OFF the isolator switch of HPP whenever you're working on EWS pit. Lockout/Tag-out must strictly implement on the HPP panel before performing the task. Only supervisor, Senior Technician, Lead Technician or Person In-charge is allowed to perform the lockout/tag-out procedure ([refer to LSME-MD-02-002 rev00 - Lock out/Tag-out Maintenance Manual](#)).
- Do not operate or rotate the roller decks while cleaning, lubricating or performing maintenance activity on the chain and sprocket.
- When the maintenance activity is completed, remove the barricade tape. Make sure that the isolator switch of HPP is switch ON the before covering the EWS pit.
- Switch the key to Automatic Mode and call the control room to inform them that you will hand over the equipment. Then, ask them to check the sensors if it is working fine and no fault indication in EDS.
- Leave the area if the equipment is in Automatic Mode.



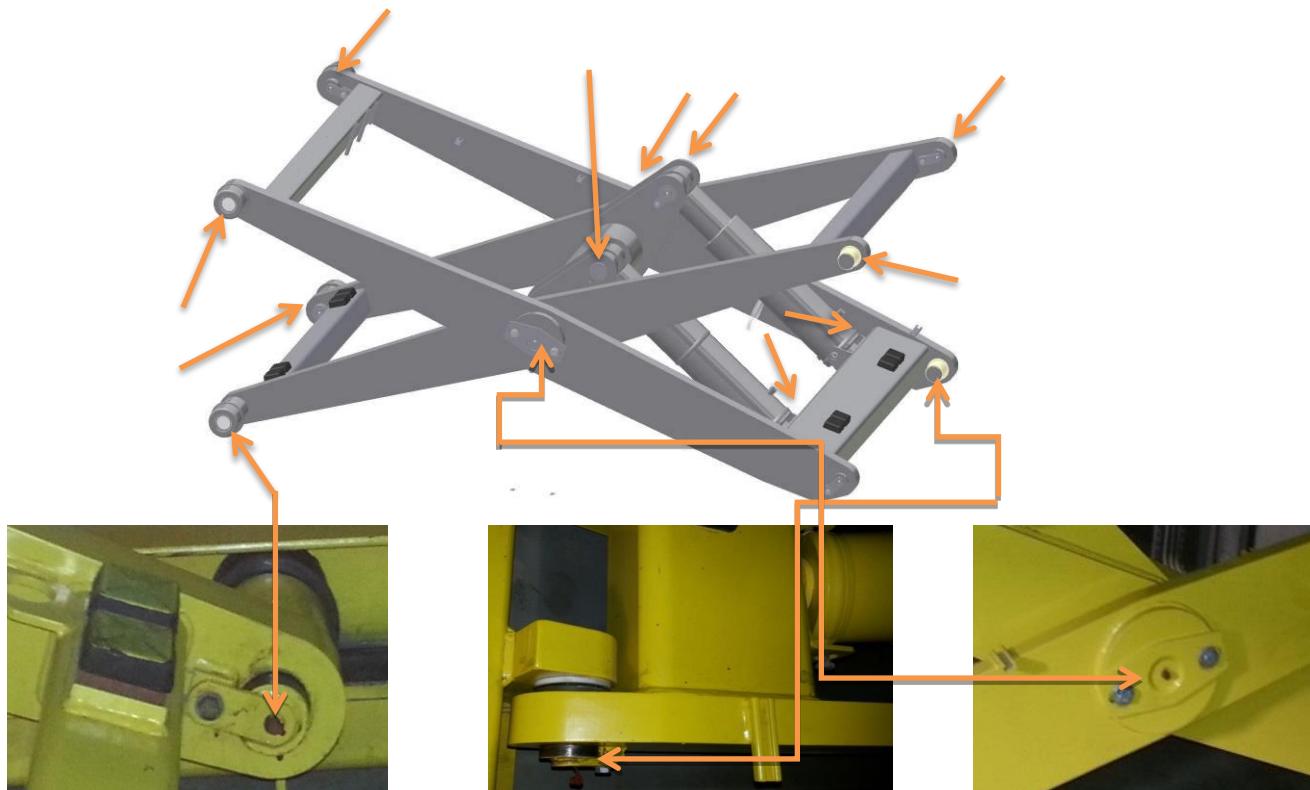
6. Lubrication

6.1 Lubrication Points for 15ft Truck dock

1. Gear motor – plate stop
2. Gear motor – roller deck
3. Gear motor – front roller
4. Roller chains
5. Disconnect clutch
6. Bearing points



Arrow mark showing the Bearing points (6) for Greasing for both 15ft &20ft



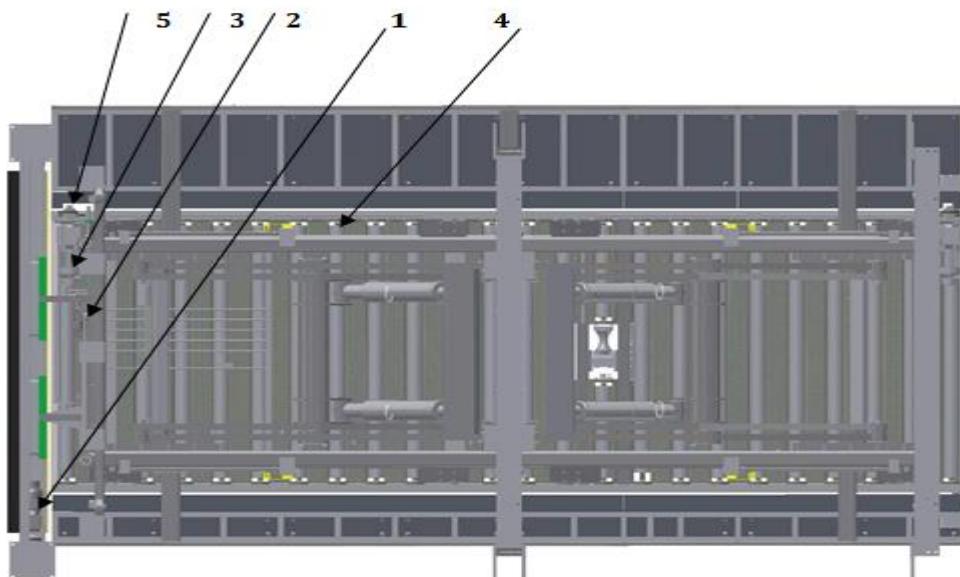
6.2 Lubricating Procedure

- Use the proper PPE, tools and lubricants for the job
- Clean the bearing nipple first to avoid any particles going inside that might cause clogging in the nipple and damage the bearing
- Apply appropriate and specified lubrication only, and make it sure that you pump out the old grease.
- After applying the lubrication, clean always the excess lubricants on the bearing, nipple and surface



6.3 Lubrication Points for 20ft Truck dock

1. Gear motor – front roller
2. Gear motor – sickle stop
3. Gear motor – roller deck
4. Roller chains
5. Disconnect clutch
6. Bearing points
7. Side shift wheels & Cylinder end bearing



Lubricating points of Side shift Wheels (7)



Lubricating point of side shift cylinder end



6.4 List of lubricant using& locations

Sr.no	Description	Name of the lubricant using
1	Roller deck chain oil	ISO-VG-100
2	Truck dock bearing points (Castor rollers) Grease	NLGI-GRADE-2
3	Roller deck Helical Gear motor oil	ISO-VG-220
4	Sickle stop/Plate stop Helical gear motor oil	ISO-VG-220
5	Hydraulic oil for HPP	ELFOLNA-DS-46
6	Side shift wheels & cylinder holding point(end bearing)	NLGI-GRADE-2
7	Disconnect Clutch	NLGI-GRADE-2

7. Bolt tightening torques

Please use the tightening torque values of bolts & nuts, listed in the table below

Size in mm	Screws and nuts made of steel with metric standard threading and connecting-surface measurements as DIN 912, 931, 934 etc.					Screws and nuts acc. to DIN 931/933/934 made of A2/A4, property class -70		HV-screw-connections DIN 6914/6915	
	Steel grade							Steel grade	
	4.6	5.6	8.8	10.9	12.9	galvanized	raw slightly oiled		
MA in Nm, coefficient of friction = 0.14 μ									
M4	0,9	1,2	2,7	3,9	4,6				
M5	1,8	2,4	5,3	7,8	9	3,8			
M6	3,1	4,1	9	13,5	16,2	6,6			
M8	7,6	9,9	23	32	39	15,8			
M10	15	20	44	65	75	31,5			
M12	26	35	77	112	130	54	90	108	
M14	41	56	121	180	211				
M16	64	85	189	279	328	130	225	315	
M18	87	117	270	387	450				
M20	124	166	382	550	639	253	405	540	
M22	167	225	522	740	864		585	810	
M24	211	283	657	945	1098	242	720	990	
M27	315	423	990	1395	1620		1125	1485	
M30	427	571	1305	1890	2205		1485	1980	
M33	580	778	1800	2520	3060		1980	2430	
M36	972	1296	2340	3330	3870		2520	3420	
M39	1197	1602	3060	4320	5040				

Torque for concrete bolt:-

Please follow the below chart for concrete bolts torque

	M8	M10	M12	M16	M20	M24	M27	M30
Torque in Nm	10	20	40	80	150	200	270	300



8. Replacement of components

8.1 Procedure to check roller chain elongation & Replacement of chain

- Prior to the replacement of components organize components & tools that are required to ensure a smooth workflow
- Use only suitable removal/installation tools
- Ensure that the workplace which use for removal of the parts should be neat & tide
- Before check the elongation & replacing the chain, check the chain size. It was written in the side plate of chain-link (Example:-B8, B10, B12 etc.)
- Chain size $B=1/2$ inch. $10B=5/8$, $12B=3/4$, $14B=7/8$, $16B=1$ inch
- Use suitable gauge to measure the elongation (Shown in figure below)
- Keep the tip of the gauge, between the chain rollers, if the tip of the gauge touches both side of roller, it means chain elongated up to 3%. Immediately replace the chain



Chain size ($12B=3/4$ inch)



Gauge size

Tip of the Gauge



Tip of the gauge, between the chain rollers



8.2 How to remove the chain link from chain in Truck dock

- Open the chain Cover of Truck docks 15ft airside by 4 mm Allen key. Please note that there is no chain cover provided in truck dock 20ft
- Find the chain connecting link & keep in good Position for easy removable
- Remove the spring clip from connecting link by screw driver or pliers
- Remove chain link from chain & remove chain. Replace if necessary.
- For assembling, do the step in reverse

Chain link



Link removing by plier



Link fixing by plier



8.3 How to replace the load cell

- Lift the relevant roller deck to free from load cell
- Remove Electrical connection from load cell
- Remove the hex head bolts M20 (4 pieces) at the relevant load cell
- Remove cylinder head screws M16 (4 pieces) at the base plate
- Remove the load cell
- Replace the removed load cell with a new load cell
- The assembly is carried out in reverse order

Load cell



Hexagon Bolt M20



8.4 Replacing spring (sickle stop Truck dock 20ft)

- Measure the length of Sickle stop from top of the Truck dock (should be > 50mm) Shown in figure
- Before working under the Truck dock, keep truck dock on the maintenance struts.
- Measure the distance of the stud before loose the counter nut(shown in figure)
- Loose the counter nut from 19 mm spanner to remove the surface tension of the spring
- Remove the spring & replace if necessary



8.5 How to replace the stop plate for Truck dock 15ft

- Loosen the dome head screw M6 (6pieces) at the relevant walk way (Shown in figure)
- Lift the stop plate in the shown direction out of the roller deck and remove the stop plate
- If you unable to remove the stopper in this position make the stopper down (Parallel to roller deck and push the stopper from bottom side & pull from up).
- Replace it if necessary, for assemble do the procedure in reverse order

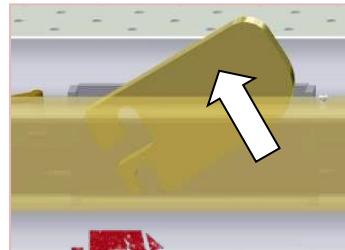
Dome head screw



Lift stop plate

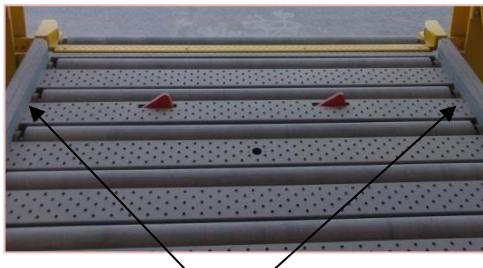


Stop plate parallel to roller deck



8.6 Replacing Plate stop spring for truck dock 15ft

- Remove the relevant walk ways by loosen the screws M6 (6 pieces)
- Measure I bolt length shown in figure
- Loose the nut M10 until there is no tension on the spring
- Unhook the spring at both loops and remove the spring
- Replace or remove spring if necessary



M6 dome head screw

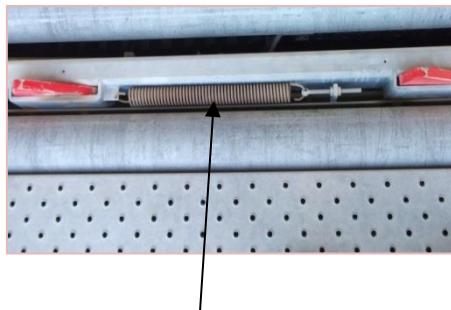


Plate stop Spring



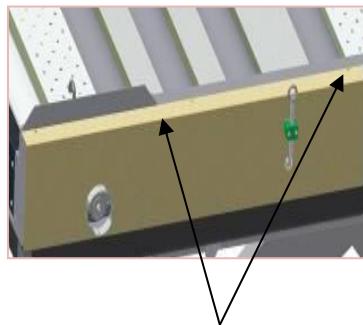
Hex nut M10

8.7 Roller chain replacement ¾", 34 links

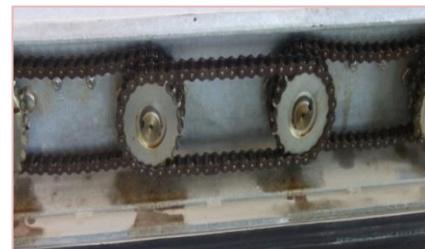
- Loosen the screws M6 (3 pieces) at the relevant cover and remove the screws in conjunction with the cover
- Open the relevant roller chain (explained in previous chapter how to remove the chain link) and remove the roller chain from the sprockets
- Replace the removed roller chain if necessary
- The assembly is carried out in reverse order



Roller chains ¾", 34 links
(Covers blanked out)



Dome head screws M6

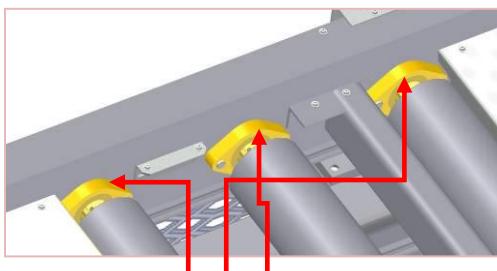


Roller Chain

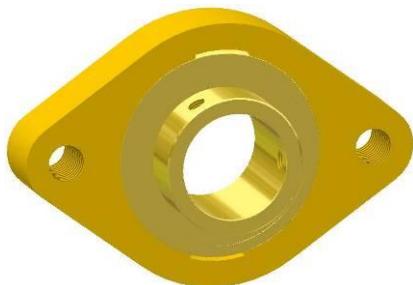
Note: - Replacement of spare parts showed in this manual, mostly from 15ft truck dock. There is not much more change in spare parts from 15 & 20ft. but might be replacement procedure changed based on the constructional designing of truck dock



8.8 Flange bearing unit Ø40 mm



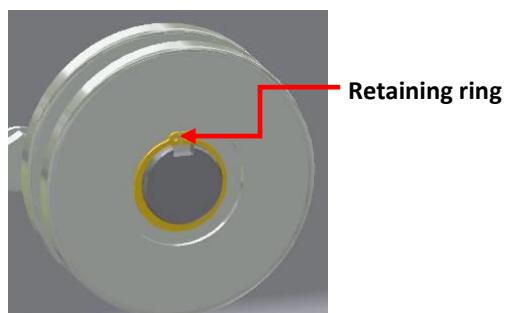
Flange bearings unit Ø40 mm
(walk ways blanked out)



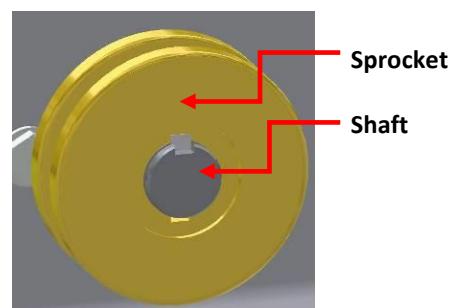
Flange bearing unit Ø40 mm

1. Before replacing the flange bearing, need to remove chain. It is explained in previous chapter how to replace the chain. After removing the chain from the sprocket, open the retaining ring DIN471 38x1.75 at the relevant roller with a cir-clip pliers and remove the retaining ring.

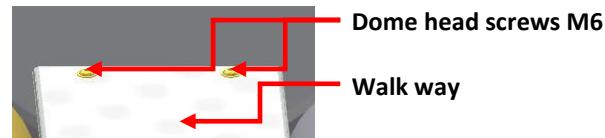
2. Open the retaining ring

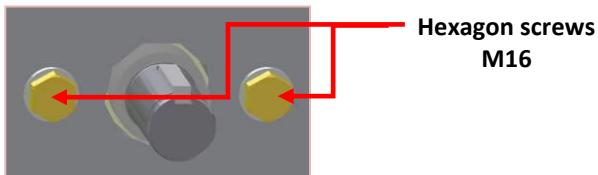


3. Draw off the sprocket from the shaft and remove the sprocket

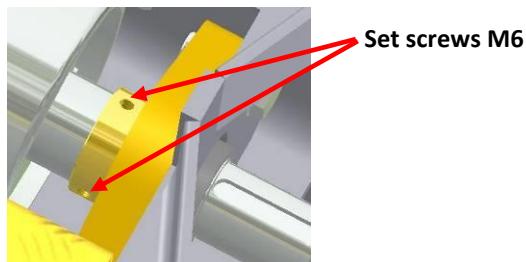


4. Loosen the dome head screws M6 (4 pieces) at the relevant walk way and remove the screws in conjunction with the walk way.

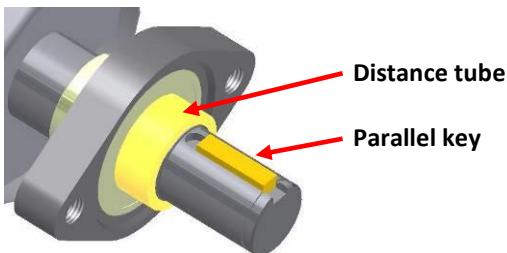




5. Loosen the hexagon screws M16 (2 pieces) at the relevant roller and remove the hexagon screws and washers.



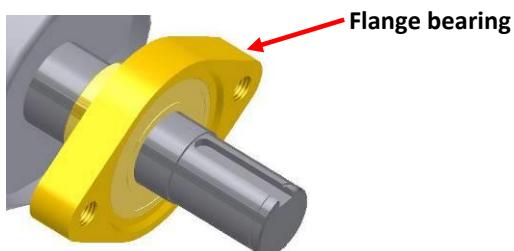
6. Loosen the set screws M6 (2 pieces) at the flange bearing and remove the set screws.



7. Repeat steps 5 and 6 at the opposite side of the roller.

8. Remove the complete roller out of the frame.

9. Remove the parallel key and the distance tube from the shaft.



10. Draw off the relevant flange bearing from the shaft and remove the flange bearing

11. Replace the removed flange bearing with a new flange bearing

12. The assembly is carried out in reverse order.



8.9 Replacement of hand switching Clutch &Roller deck Gear motor 1.1 kW

1. Before removing the clutch, need to remove chain. It is explained in previous chapter how to replace the chain
2. After removing the chain Loosen the hexagon socket screw M8 at the relevant clutch and remove the hexagon socket screw and washer
3. Draw off the shaft for drive unit, the bushing and the ring from the drive shaft and remove the items
4. Replace the removed hand switching clutch with a new hand switching clutch
5. Loosen the hexagon screws M8 (6 pieces) of the motor and remove the hexagon screws and washers
6. Remove the motor and replace it if necessary
7. For assembly, do the procedure in reverse
8. Please note that the type of hand switching clutch shown in figure is only installed in truck dock 15ft airside.

Hand switching clutch



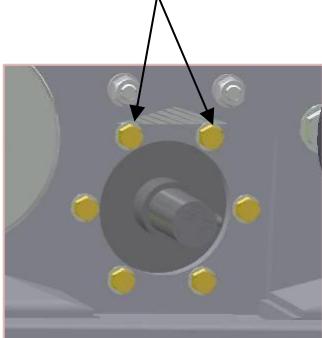
Hand switching clutch dis engaged



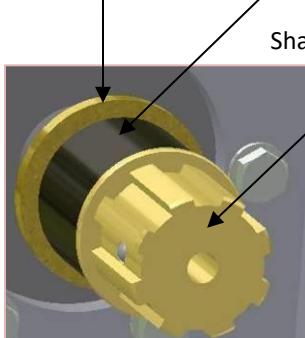
Gear motor roller deck



Motor Hexagon screw M8



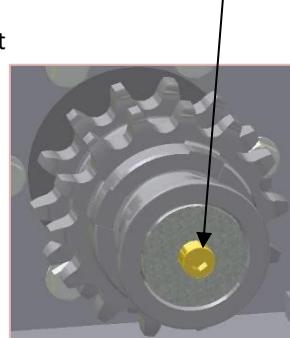
Ring



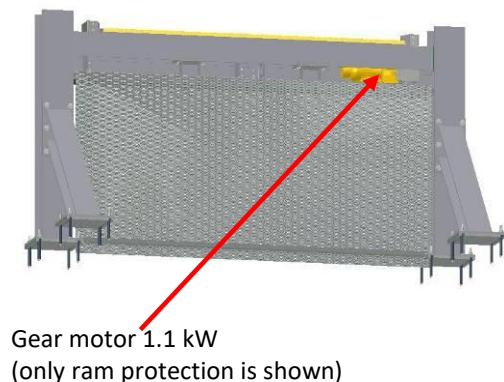
Bush

Shaft for driving Unit

M8 Screw

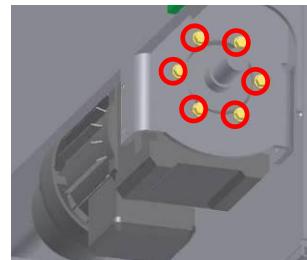


8.10 Replacement of Gear motor 1.1 kW Front roller



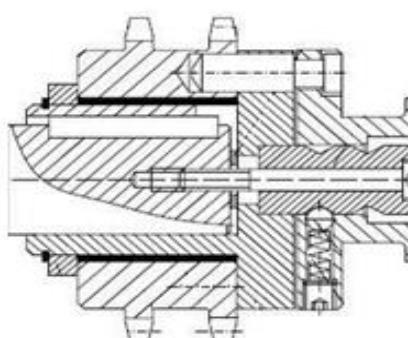
Gear motor 1.1 kW

1. Perform the disassembly processes described in section
2. Loosen the hexagon screws M8 (6 pieces) of the motor and remove the hexagon screws and washers.



3. Remove the gear motor (Part.No.1153579-A).
4. Replace the removed gear motor (Part.No.1153579-A) with a new gear motor (Part.No.1153579-A).
5. The assembly is carried out in reverse order.

8.11 Hand switching clutch for roller deck Truck Dock 20FT

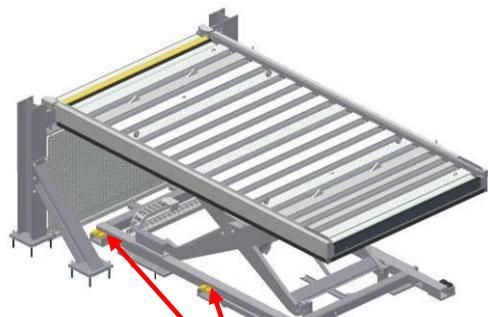


Clutch



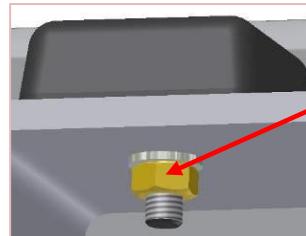
9. Replacement of mechanical spare parts

9.1 Buffer 80x80 mm



Buffers 80x80 mm
(built in condition)

1. Loosen the nut M12 at the relevant buffer and remove the nut and washer.

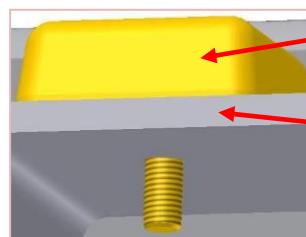


Nut M12



Buffer 80x80 mm

2. Draw the relevant buffer out of the bracket and remove the buffer



Buffer

Bracket

3. Replace the removed buffer with a new buffer

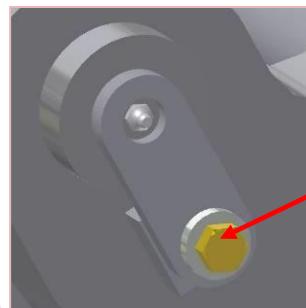
4. The assembly is carried out in reverse order.

9.2 Roller bearing bolt Ø70x165 mm



Roller bearing bolts Ø70x165 mm
(built in condition)

1. Loosen the hexagon screw M12 at the relevant roller bearing bolt and remove the hexagon screw and washer.



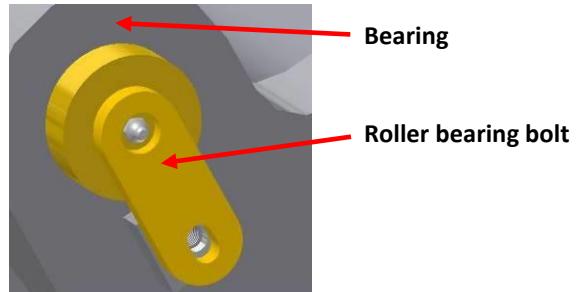
Hexagon screw M12





Roller bearing bolt Ø70x165 mm

2. Draw the relevant roller bearing bolt out of the bearing and remove the roller bearing bolt

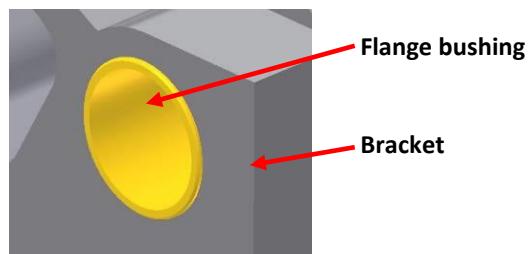


3. Replace the removed roller bearing bolt with a new roller bearing bolt
4. The assembly is carried out in reverse order.

9.3 Flange bushing Ø70/80/90x70 mm

Flange bushings Ø70/80/90x70 mm
(inside the brackets)

1. Perform the disassembly processes described in section in Previous chapter "Roller bearing bolt Ø70x165 mm"
2. Draw the relevant flange bushing out of the bracket and remove the flange bushing

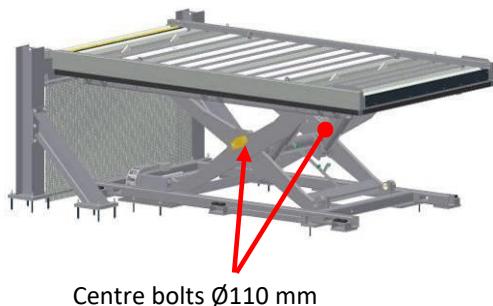


Flange bushing Ø70/80/90x70 mm

3. Replace the removed flange bushing with a new flange bushing
4. The assembly is carried out in reverse order.

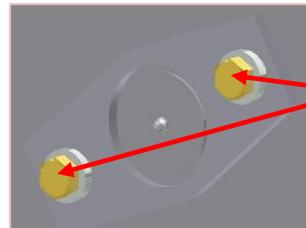


9.4 Centre bolt Ø110 mm (Part.No.1158784)

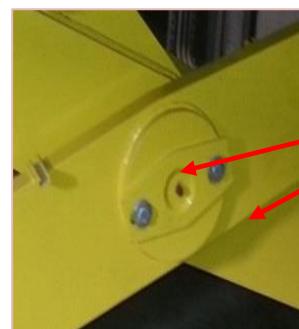


Centre bolt Ø110 mm

1. Loosen the hexagon screws M20 (2 pieces) at the relevant centre bolt and remove the hexagon screws and washers.



2. Draw the relevant centre bolt out of the scissor arms and remove the centre bolt



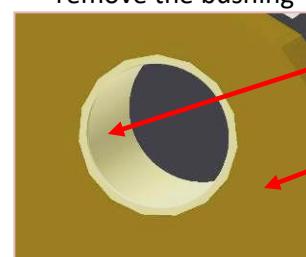
3. Replace the removed centre bolt with a new centre bolt
4. The assembly is carried out in reverse order.

9.5 Bushing Ø110/125x140 mm



Bushings Ø110/125x140 mm
(inside the scissor arms)

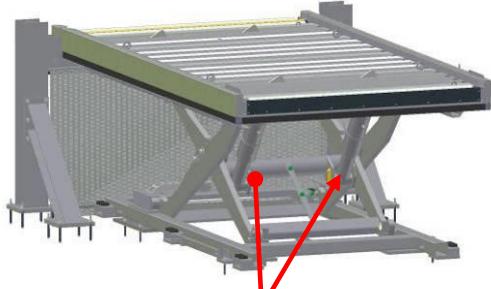
1. Perform the disassembly processes described in Privies chapter "Centre bolt Ø110 mm".
2. Draw the relevant bushing out of the scissor arm and remove the bushing



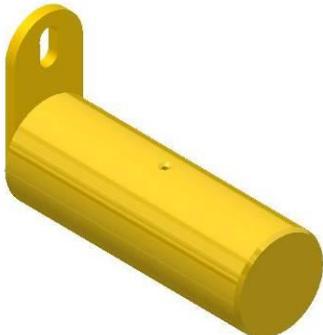
3. Replace the removed bushing with a new bushing
4. The assembly is carried out in reverse order.



9.6 Cylinder bearing bolt

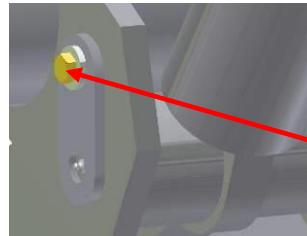


Cylinder bearing bolts
(built in condition)



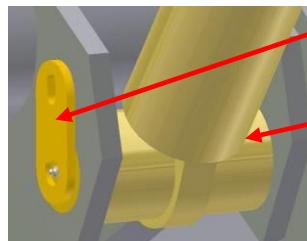
Cylinder bearing bolt

1. Loosen the hexagon screw M16 at the relevant cylinder bearing bolt and remove the hexagon screw and washer.



Hexagon screw M16

2. Draw the relevant cylinder bearing bolt out of the hydraulic cylinder and remove the cylinder bearing bolt.

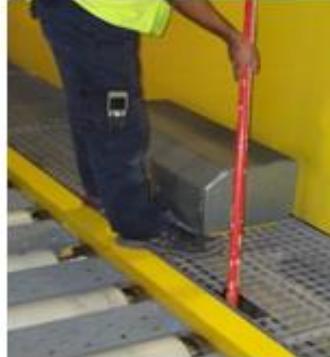


Cylinder bearing bolt

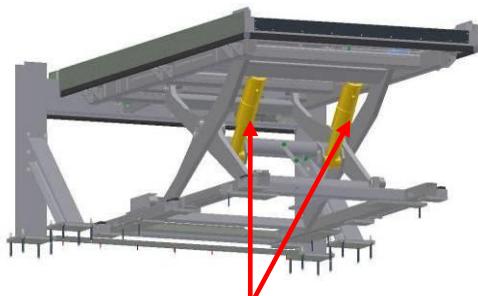
Hydraulic cylinder

3. Replace the removed cylinder bearing bolt with a new cylinder bearing bolt
4. The assembly is carried out in reverse order.

- Maintenance strut releasing lever & motor clutch releasing lever



9.7 Replacement of Hydraulic cylinder Ø140

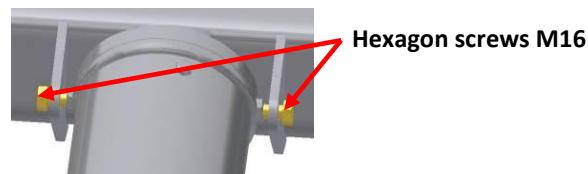


Hydraulic cylinders Ø140
(built in condition)

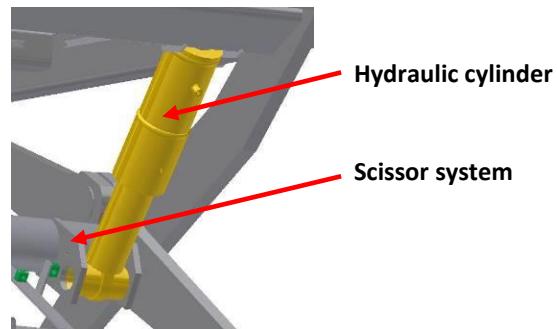


Hydraulic cylinder Ø140

1. Perform the disassembly processes described in previous chapter "Cylinder bearing bolt"
2. Loosen the hexagon screws M16 (2 pieces) at the relevant hydraulic cylinder and remove the hexagon screws.



3. Remove the relevant hydraulic cylinder out of the scissor system.



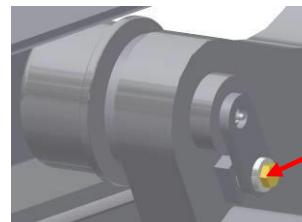
4. Replace the removed hydraulic cylinder with a new hydraulic cylinder
5. The assembly is carried out in reverse order.

9.8 Running wheels



Running wheels IPB160
(built in condition)

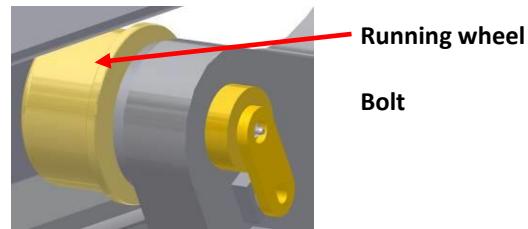
1. Loosen the hexagon screw M12 at the relevant running wheel and remove the hexagon screw and washer.





Running wheel IPB160

2. Draw the bolt out of the running wheel and remove the running wheel.



3. Open the retaining ring DIN472-J80x2.5 with Cir-clip pliers and remove the retaining ring.



4. Remove the running wheel
5. Replace the removed running wheel with a new running wheel
6. The assembly is carried out in reverse order.

9.9 Bushing Ø70/80x60 mm



Bushings Ø70/80x60 mm
(inside the running wheels)

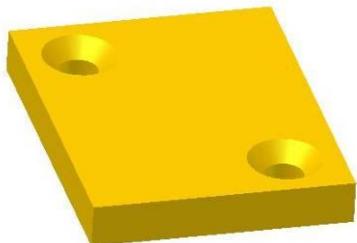
1. Perform the disassembly processes described in above chapter "Running wheel"
2. Remove the bushing
3. Replace the removed bushing with a new bushing
4. The assembly is carried out in reverse order.



9.10 Replacement of Sliding plate

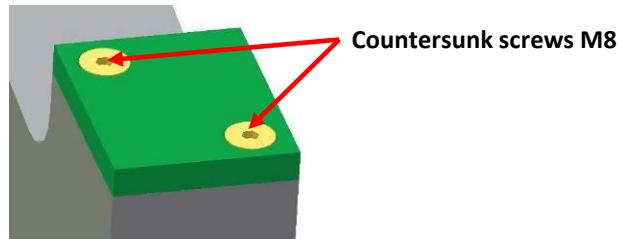


Sliding plates
(ram protection not shown)

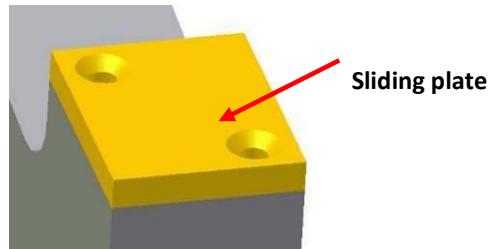


Sliding plate

1. Loosen the countersunk screws M8 (2 pieces) at the relevant slide plate and remove the countersunk screws.

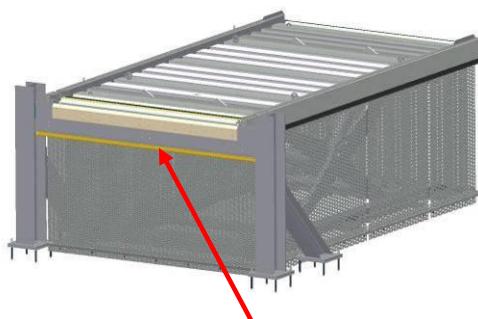


2. Remove the relevant sliding plate



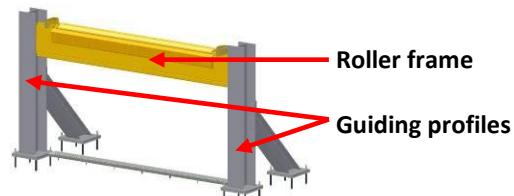
3. Replace the removed sliding plate with a new sliding plate
4. The assembly is carried out in reverse order.

9.11 Contact strip ram protection



Contact strip
(built in condition)

1. Lift the complete roller frame out of the guiding profiles.

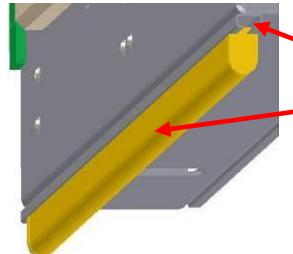


2. Draw the contact strip out of the C-profile and remove the contact strip



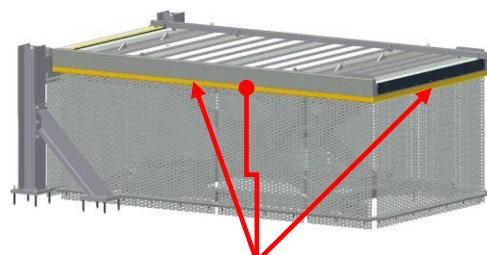


Contact strip



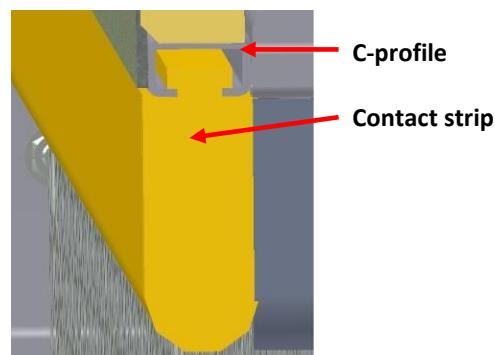
3. Replace the removed contact strip with a new contact strip
4. The assembly is carried out in reverse order.

9.12 Contact strip truck dock

Contact strips
(built in condition)

Contact strip

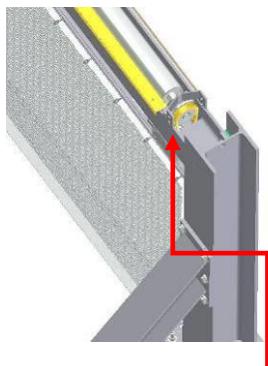
1. Draw the relevant contact strip out of the C-profile and remove the contact strip



2. Replace the removed contact strip with a new contact strip
3. The assembly is carried out in reverse order.



9.13 Roller chain 3/4", 38 links

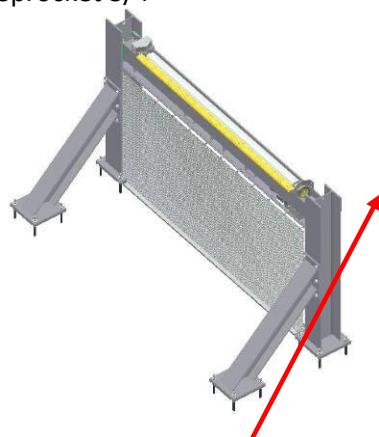


Roller chain 3/4", 38 links
(only ram protection is shown)



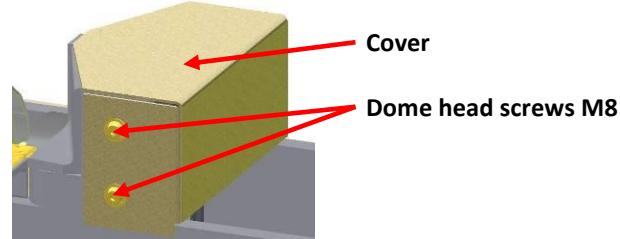
Roller chain 3/4", 38 links

Sprocket 3/4"

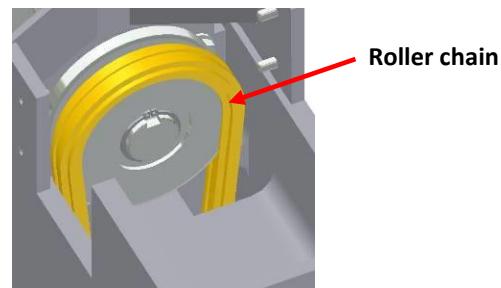


Sprocket 3/4", t = 20
(only ram protection is shown)

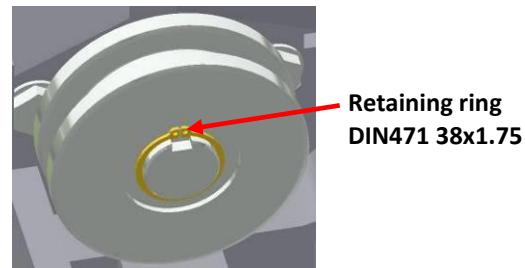
1. Loosen the dome head screws M8 (4 pieces) and remove the lens screws in conjunction with the cover.



2. Open the roller chain according and remove the roller chain from the sprockets.



3. Replace the removed roller chain with a new roller chain
4. The assembly is carried out in reverse order.
5. Open the retaining ring DIN471 38x1.75 with a circlip pliers and remove the retaining ring.

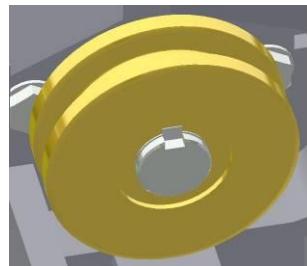


6. Draw off the sprocket from the shaft and remove the sprocket



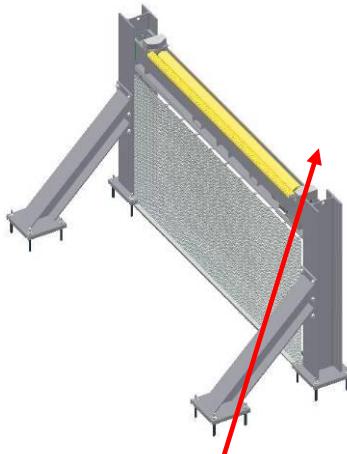


Sprocket 3/4", t = 20



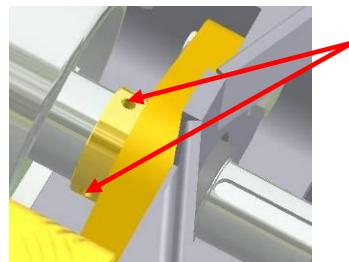
7. Replace the removed sprocket with a new sprocket
8. The assembly is carried out in reverse order.

9.14 Roller Ø133x7.1x2420 mm

Roller Ø133x7.1x2420 mm
(only ram protection is shown)

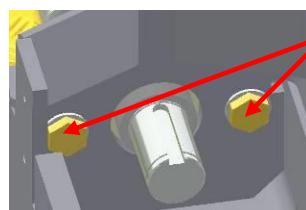
Roller Ø133x7.1x2420 mm

1. Loosen the set screws M6 (2 pieces) at the flange bearing and remove the set screws.



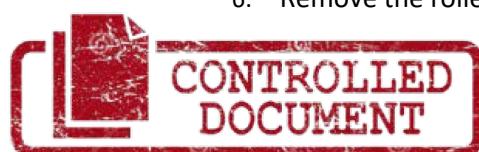
Set screws M6

2. Loosen the hexagon screws M16 (2 pieces) at the flange bearing and remove the hexagon screws and washers.



Hexagon screws M16

3. Repeat steps 2 and 3 at the opposite site of the roller.
4. Remove the roller in conjunction with the flange bearing out of the ram protection.
5. Draw off the flange bearings from the roller shaft and remove the flange bearings.
6. Remove the roller & replace it if necessary



10. How to perform the pipe brake valve test

- Please remember that, MCC-11 truck dock doesn't have pipe brake valve. Only truck dock 15ft airside provided with pipe brake valve.
- To perform the task, need 2 people. One should stand near the work station to operate & another one stands near the power pack to adjust the throttle valve
- Measure the return speed of the Truck dock from maximum up to transfer level by stop watch
- Bring the load on the top of the truck dock (at least load should be more than 2 tons)
- Keep truck dock in between maximum up and transfer level with load (approximately 900mm from the floor to top of the roller deck)
- Put the system in manual mode while performing pipe brake valve test
- Unlock the throttle valve screw & Turn 3 full round anti clock wise direction & lock it, by using 13 mm spanner & 4 mm Allen key.
- Rise up the Truck dock approximately 200 to 300mm.
- Press lowering button, when you start lowering immediately pipe brake valve activates
- Bring the throttle valve screw in its original position (Turn 3 round clockwise)
- Raise the Truck dock approximately 200mm, for deactivate the pipe brake valve
- Lower the Truck dock again
- Remove load on the equipment
- Check the speed ,adjust the throttle valve if necessary
- Don't raise the Truck dock, up to the maintenance position during the pipe brake valve test.

Throttle valve adjustment



11. Air vent procedure

Truck dock 15ft hydraulic power pack has the provision of removing air clogging in the system. Air inside the hydraulic system is one of possible courses of variation in speed or oil not pumping up.

- Put the machine in manual mode
- There is a 2 air vent connectors for each pump. Select the connector & open one by using 22 mm spanner.
- Open the filter cover(oil filling point)
- One end of the hose pipe connect with connector & another end of the hose pipe should keep in to hydraulic oil filling point(shown in figure)
- Hold the hose pipe firmly
- Press the contactor manually of the same pump motor up to 10 seconds, you can see the oil start flow from the hosepipe , if there is no oil flow please repeat the procedure once again
- Once the oil start flowing, stop the motor and remove the hose pipe & re fix the connector
- Do the procedure for next pump same as above
- Start the machine move up & down for 2 to 3 times.

Hydraulic Connectors for air vent



Removing Connector



Fixing hose pipe hydraulic



Oil filter



Hose connection



Motor contactor



12. Troubleshooting Guide

Normal trouble shoot: Roller deck

No	Fault	Possible Cause	Measures
1	Roller deck does not convey	No power supply	Check fuses and cables for interruptions Check and set motor protection Check limit switch and relay for faulty contact or mechanical defect Check main power supply Check power supply control system Check control cabinet
		Power drop	Check for low-resistance short
		Motor defective	Replace gearbox motor
		Roller chain(s) broken	Replace roller chain(s)
2	Roller deck drive runs, but roller deck does not convey	Coupling unlocked	Move eccentric to correct position and lock lever
3	Motor hums or is noisy	Bearing defective	Replace gearbox motor
4	Gear unit leakage	Defective radial shaft seal	Replace gearbox motor
5	Motor is too warm	Supply voltage exceeds the rated voltage by more than 5 % Short in the stator windings Incorrect quantity or type of lubricant in the gear unit Insufficient cooling air: cooling air channels blocked Fan defective	Check power supply Test rated current with ammeter Replace gearbox motor Check oil level Check that lubricant corresponds to the vendor's recommendations Clean cooling air inlet and outlet Replace motor
6	Motor runs too slowly; too fast or accelerates too rapidly	Frequency controller defective	Replace frequency controller
7	Motor runs, drive shaft does not turn	Gearing broken	Replace gearbox motor
8	Motor does not brake	Brake disc worn Brake is contaminated with brake dust	Replace gearbox motor Clean with vacuum cleaner
9	Brake does not release	Relay not switching	Check cable Check relay switching voltage
10	Load unit is not positioned exactly	Light scanner defective Light scanner dirty Light scanner set incorrectly	Replace light scanner Clean light scanner Adjust light scanner
		Deck drive defective or drive chain is broken	Check wheel deck drive; Check roller deck drive



Normal trouble shoot: Hydraulic Unit

No.	Fault	Possible Cause	Measures
1	Lift unit does not lift	No power supply	Check fuses and cables for interruptions Check and set motor protection Check limit switch and relay for faulty contact or mechanical defect Check main power supply Check power supply control system Check control cabinet
		Power drop	Check for low-resistance short
		Motor defective	Replace gearbox motor
2	Motor hums or is noisy	Bearing defective	Replace gearbox motor
3	Motor is too warm	Supply voltage exceeds the rated voltage by more than 5 % Short in the stator windings Incorrect quantity or type of lubricant in the gear unit Insufficient cooling air: cooling air channels blocked Fan defective	Check power supply Test rated current with ammeter Replace gearbox motor Check oil level Check that lubricant corresponds to the vendor's recommendations Clean cooling air inlet and outlet Replace gearbox motor
4	Pump is noisy	Hydraulic pump cavitation or penetration of air into the system Low oil level Wrong oil viscosity Suction filter jammed	Replace pump Refill oil Change oil Clean or replace filter
5	Oil heating up	Contaminants stuck in relief valve Low oil level Fan not running Dirty oil Excessive pump wear Relief valve set too low	Clean or replace the valve Refill oil Replace fan Change oil Replace the pump Replace the valve
6	Hydraulic pump not responding quickly enough or not enough flow present	Relief valve pressure set improperly or relief failing Low oil supply Hydraulic pump is worn or damaged Valve not shifting all the way	Replace the valve Clean or replace filter Replace the pump Replace the valve
7	Oil foaming, air in oil	Air leak in hydraulic pump suction side Oil level low Wrong oil in tank	Replace the pump Refill oil Change oil



Normal trouble-shoot: Hydraulic unit after repair maintenance

No.	Fault	Possible Cause	Measures
1	Motor does not start up or only with difficulty	Designed for delta circuit but connected in star	Correct circuit
		Voltage or frequency deviate considerably from rated value	improve mains conditions
2	Motor does not start up in star circuit, but starts in delta	Insufficient torque in star circuit	Switch on directly if delta circuit switch-on current not too high
		Contact fault on star / delta switch	Repair contact fault
3	Motor is too warm	Motor connected in delta	Switch circuit to star
		Supply voltage exceeds the rated voltage by more than 5 %	Set correct mains voltage
		Insufficient cooling air: cooling air channels blocked	Clean cooling air inlet and outlet
		Cooling air too warm	Ensure good supply of fresh air
		Bearing seized or stiff movement	Replace gearbox motor
		Supply line has loose contact (temporary failure of one phase)	Repair loose contact
		Fuse tripped	Reset fuse
4	Motor has incorrect direction of rotation	Motor connected incorrectly	Interchange two phases
5	Gear unit is too hot	Lubricant not refilled	Refill
6	Gear unit runs noisily	Lubricant not refilled	Refill
7	Malfunction	Incorrectly spare parts installed	Order original spare part from manufacturer
8	Assembly does not start	Incorrectly or not wired	Wire correctly
9	Assembly runs noisily or abnormally	Adjustment instructions not observed	Adjust correctly



13. How to measure the oil level in Hydraulic tank

For Truck dock 20ft:

- Always Measure the oil level when truck dock is in home position,
- There is a sight glass provided in Hydraulic power pack (shown in figure below) to measure the oil level. The sight glass is a red line on the bottom end & black on the top end
- If the oil level is above the red line, it means there is sufficient oil in the tank (Power pack)
- If oil level above the black lines it means excess oil in hydraulic tank
- If oil level below the red line, re fill the oil immediately
- During filling the oil, make sure that oil level not more than 30mm from the red line
- Make sure that hydraulic oil should be ELFOLNA-DS-46 grade.

Measure the oil level



Sight glass to check oil level



For Truck dock 15ft

- Always Measure the oil level when truck dock is below the transfer level position or in transfer level position.
- If oil level 40mm below the black line, then must fill the oil.
- During filling the oil, make sure that oil not to be fill more than the black line

