



Document Ref. YPM-BAU-MS-04_RevA

Page No.16

Date: 19.05.2017

Contract Title: NORTH YORKSHIRE POLYHALITE PROJECT –
WOODSMITH MINE

Made By: AK

Checked by: JAG

Work Scope: Mobilisation and Demobilisation

APPENDIX B – RISK ASSESSMENT

BAUER Technologies Ltd.
General Risk Assessment Mobilisation and Demobilisation Rev 0
Project: North Yorkshire Polyhalite Project – 25/05/2017



Likelihood	Consequence				
	Insignificant (1)	LIKELIHOOD	Insignificant (1)	LIKELIHOOD	Insignificant (1)
Almost Certain (5)	M (5)	H (10)	E (15)	E (20)	E (25)
Likely (4)	M (4)	H (8)	H (12)	E (16)	E (20)
Possible (3)	L (3)	M (6)	H (9)	E (12)	E (15)
Unlikely (2)	L (2)	L (4)	M (6)	H (8)	E (10)
Rare (1)	L (1)	L (2)	M (3)	M (4)	M (5)

RISK RATING (RR)			
Score	colour	Action	Responsibility
1 – 4	Low	PROCEED – Daily Revision	Acceptable with continued data collection and trending for continuous improvement
5 – 12	Medium	MANAGE RISK – CONTINUE WITH CAUTION	Acceptable after review of the operation. Requires continued tracking and recorded action plans.
13 – 19	High	MANAGE RISK – CONTINUE WITH PROJECT MANAGERS PERMISSION	Manageable under risk control & mitigation. Requires Project Managers permission
20 – 25	Extreme	STOP ! STOP ! STOP !	Unacceptable under existing circumstances requires immediate rectification action

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Task Description	Hazard	Risk Rating			Control	Residual Risk			Action
		L	C	R		L	C	R	
Supervisor to brief all staff on safe work procedures	Misunderstanding / communication breakdown	2	4	8	<ul style="list-style-type: none"> Ensure correct and up to date information has been passed to all staff prior to work commencing. Use competent, ticketed operator and other personnel. Operator to undergo familiarisation training. 	1	4	4	Supervisor Operator
Preparation to commence operations	Suitability of working platform	2	5	10	<ul style="list-style-type: none"> Properly designed and installed working platform based on rig loadings. Area fenced and signed. Signed off platform certificate prior to commencement of works. Visual inspection and monitoring of the platform daily to ensure integrity of platform is maintained throughout lifting operations. 	1	4	4	Supervisor Operator
Loading / Unloading the equipment	Unsuitable lifting devices and / or incorrect loading / unloading can result in the lifting device, the equipment or the transport vehicle tipping over or the load falling off. This can cause severe or fatal injury to people near the equipment.	4	4	16	<ul style="list-style-type: none"> As a rule, the area under suspended loads must be free at all times. Only use authorised and undamaged lifting devices. Attach lifting slings only to provided lifting points. Please note the change in weight distribution and centre of gravity with suspended loads. 	2	4	8	Supervisor, Operator, Banksman
Slips trips and falls	Untidy and/or poor lighted workplaces can lead to injuries of personnel.	3	2	6	<ul style="list-style-type: none"> Clear the working area of all trip hazards before daily work commences. Maintain a clean working area. Maintain a well-lit working area at night time or in poor visibility. Remove and clean all spills of support fluid immediately. 	2	2	4	Supervisor, Foreman

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Task Description	Hazard	Risk Rating			Control	Residual Risk			Action
		L	C	R		L	C	R	
Slips trips and falls	Lines, pipes and electrical cables	3	2	6	<ul style="list-style-type: none"> Proper laying of cables and pipes in conduits or shifted outside of walkways. Crossovers shall be placed in areas where pipes and cables are crossing walkways. Good housekeeping has to be maintained at all times. 	2	2	4	Supervisor, Foreman
Equipment Movement	Equipment moves on the platform	4	4	16	<ul style="list-style-type: none"> Banks man to direct machine movement as required Remove unnecessary personnel from works area. Delineate works area. 	2	4	8	Supervisor, Banksman
Equipment Movement	Slewing machinery - crushing of personnel / impact with other plant platform.	3	4	12	<ul style="list-style-type: none"> Adequate clearance to be maintained around the turning radius of the machine. Machine to be operated clear of obstacles. Banksman to direct movement of machine. 	2	4	8	Operator, Banksman
Equipment Movement	Risk of accident if driver does not have an all-round view from the cab!	3	4	12	<ul style="list-style-type: none"> The driver of the machine must be assisted by a person giving hand signals during travel. 	2	4	8	Operator, Banksman
Work area protection	Errant vehicles / people entering and leaving the works area.	2	4	8	<ul style="list-style-type: none"> Prestart meeting daily prior to commencement of work. No plant or materials to traverse on to works area. 	1	4	4	Supervisor
Operating controls	Repetitive strain injury	3	3	9	<ul style="list-style-type: none"> Carry out stretching exercises prior to operating. Stretch and exercise hands as much as possible. When not operating, take a break from the cab. 	1	3	3	Operator

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Task Description	Hazard	Risk Rating			Control	Residual Risk			Action
		L	C	R		L	C	R	
Check hydraulics above cutter pump	Trapping of fingers / hands	2	3	6	<ul style="list-style-type: none"> Ensure that descent of cutter is controlled. Keep minimum amount of hand within cutter at all times. Do not place fingers / hand in areas where trapping could occur. Maintain contact between operator and mechanic during these essential checks. Have a spotter in place to check for any unintended movement. 	1	2	2	Operator Mechanic
Equipment	Oil or diesel spill can cause environmental damage	4	4	16	<ul style="list-style-type: none"> MSDS provided. Spill kit to be kept on site. Refuelling by mobile tanker. 	2	4	8	Supervisor
Electricity	Improper and/or defect electrical connections, tools or cables can cause electrification of personnel.	3	4	12	<ul style="list-style-type: none"> Inspect leads and socket for damage prior to use. Check current tag attached. Ensure sockets securely coupled (tight) and suspended above ground. Check leads placed in secure location away from potential damage. Ensure RCD's functional. 	2	4	8	Electrician
Rigging / Derigging	Risk of damaging components!	4	4	16	<ul style="list-style-type: none"> Always keep the rope and hoses lightly tensioned. Avoid pull on the cutter. Set down the guider for auxiliary crane 2. Auxiliary crane must never pull on the boom head through the guy strand. Avoid collision of the rocker with other components. Raise the cutter while slowly travelling towards the cutter with the base machine to prevent horizontal tension 	2	4	8	Operator

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Task Description	Hazard	Risk Rating			Control	Residual Risk			Action
		L	C	R		L	C	R	
Site Traffic / Equipment Movements	Ground workers or vehicles can be injured by reversing, slewing or moving equipment on site.	4	4	16	<ul style="list-style-type: none"> ▪ Daily briefings will be conducted in order to explain the daily tasks and special risks to all people involved in the construction of the platform. ▪ Keep out general site traffic from the working area as good as possible. ▪ Banksman shall safeguard reversing or slewing machines. 	2	4	8	Supervisor, Banksman
Working height	People falling from height during assembly, operation and disassembly of the plant	3	4	12	<ul style="list-style-type: none"> ▪ Address 'Working at Height' topic regularly during briefings. ▪ Use always man-rider baskets, MEWP, ladders and/or fall arrests when working at height. ▪ Install rigid fences and handrails at all plant walkways, ladders and stairways. 	2	4	8	Supervisor
Workplace Lighting	People tripping, slipping and falling due to insufficient lighting of workplace	3	3	9	<ul style="list-style-type: none"> ▪ Ensure proper general lighting is sufficient for the complete plant area. ▪ Install task lighting wherever specific, greater demand of lighting is required. 	2	3	6	Supervisor
Manual handling	Incorrect lifting of heavy or awkward loads could result in musco-skeletal injury	4	2	8	<ul style="list-style-type: none"> ▪ Carry out assessment for awkward lifts - generally over 25Kg; Assess load prior to lifting, protect sharp edges wherever possible; Use mechanical means where possible; Only carry loads which are comfortable for you to do so; Ask for help if need be; Keep load close to your body; Ensure that hand protection is worn; Wear foot protection and suitable gloves; If in shared lifting operation ensure that clear commands are given 	2	2	4	Foreman

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Task Description	Hazard	Risk Rating			Control	Residual Risk			Action
		L	C	R		L	C	R	
Substances hazardous to health	Failure to identify SHH Personal injury / longer term ill health	3	4	12	<ul style="list-style-type: none"> Material safety data sheets (MSDS) shall be requested for all products at the procurement stage COSHH Assessment shall be generated for all hazardous substances Unsafe work with hazardous substances shall be stopped until the necessary precautions are implemented 	1	4	4	PM
Substances hazardous to health	Issue / unsafe handling of substances hazardous to health without information / instruction Personal injury / longer term ill health	3	4	12	<ul style="list-style-type: none"> COSHH Assessments shall be retained in the relevant stores. Workers issued with hazardous substances shall be verbally advised of the handling precautions and issued relevant PPE as necessary 	1	4	4	PM
Substances hazardous to health	Failure to store substances hazardous to health in line with manufacturers' guidelines Personal injury / longer term sickness Fire	3	4	12	<ul style="list-style-type: none"> Hazardous and / or flammable substances shall be stored separately from general materials. COSHH / Flammable stores shall be locked to prevent unauthorized access COSHH stores shall be temperature controlled should the local conditions / environments prevent safe storage at local temperatures COSHH stores shall be clearly marked with appropriate, highly visible signage 	1	4	4	PM

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		L	C	R		L	C	R	
Oil / fuel spills	<p>Broken hydraulic hoses can lead to considerable damage of the environment</p> <p>Oil / fuel spillage during re-fuelling of equipment and / or maintenance can lead to environmental damages</p>	2	4	8	<ul style="list-style-type: none"> ▪ Preventive: <ul style="list-style-type: none"> ○ Proper maintenance of the equipment has to be documented in the maintenance reports ○ Daily pre-use equipment inspections have to be carried out by the machine operator and to be documented ○ Organize a physical check of delivery hoses ○ Drip trays shall be placed below the machine in order to hinder oils / fluids from penetrating soil. ▪ Corrective: <ul style="list-style-type: none"> ○ Immediate measures should be taken to contain the spill and prevent potential migration of contamination in accordance to the COSHH sheet ○ Oil spill response shall be carried out in accordance to AMC UK's Environmental Emergency Response Plan. ○ Contaminated materials / soil have to be disposed in accordance with local regulations. 	1	4	4	

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		L	C	R		L	C	R	
Spills of materials hazardous to health	Spills of solid or liquid materials can lead to Environmental damages	2	4	8	<ul style="list-style-type: none"> Handle hazardous materials with care and in accordance with the applicable MSDS Spills of solid material - shovel excess and place contaminated material into an approved drum, cover and label Small Liquid Spills - absorb with sorbent material, including sand or clean fill. Place contaminated material into an approved drum, cover and label Large Liquid Spills - immediately dike the area surrounding the spill or create some type of obstruction to prevent the spill migration. Absorb the spill with a sorbent material, including sand or clean fill. After all free liquid is absorbed, remove the material and any contaminated soil. Place contaminated material into an approved drum, cover and label. All bags, containers, drums, etc. containing contaminated materials must be labelled. 	1	4	4	
Establish site access	Traffic collisions or hold-ups	2	4	8	<ul style="list-style-type: none"> Suitable traffic management to be in place. 	1	3	3	Supervisor
	Road/ramp access	2	4	8	<ul style="list-style-type: none"> Prior check of road/ramp access required. Ramp gradient to be maximum of 1:10. 	1	3	3	
Off-loading & tracking equipment	Striking personnel	3	5	15	<ul style="list-style-type: none"> Equipment to be operated by competent, experienced, licensed personnel only. 	1	3	3	Operator Banksman
	Damage to property	3	5	15	<ul style="list-style-type: none"> Operator only to move machine when directed to do so by signalman 	2	2	4	
	Damage to equipment	3	5	15	<ul style="list-style-type: none"> Appropriate traffic management to be in place. All lifting equipment must be visually checked by competent, experienced, certified signalman prior to use 	2	2	4	

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		L	C	R		L	C	R	
Attaching / Removing chains & slings	Falls from height	4	5	20	<ul style="list-style-type: none"> Use secured ladder / harnesses where applicable, with ladder footed or tied off. 3 points of contact when using ladders. Use certified man-box. 	1	4	4	Supervisor
Operation of excavator / service cranes	Striking personnel	3	5	15	<ul style="list-style-type: none"> To be operated by competent, experienced, ticketed personnel only. Authorized personnel only, check sheet signed off prior to use. All lifting operations shall be carried out on levelled grounds. All operations to be controlled by the experienced, competent ticketed banksman. Use tag lines when lifting large, bulky objects. All lifting points to be certified. 	1	3	3	Operator Banksman
	Damage to property	3	5	15		2	2	4	
	Damage to equipment	3	5	15		2	2	4	
Delivery of materials	Struck by reversing delivery vehicle.	3	5	15	<ul style="list-style-type: none"> Delivery trucks to be directed by signalman at all times. All personnel involved in operations to wear appropriate PPE. Minimise reversing wherever possible. Exclusion zones, barriers and spotters to be used. A forklift will be utilised for bulk material handling on site. 	1	3	3	Supervisor Banksman



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APPENDIX C – BAUER POLICY FOR HEALTH, SAFETY AND WELFARE

Staying Safe & Healthy

Bauer Technologies is committed to ensuring the safety and health of our employees is not affected by the work they do. In order to ensure this we have implemented the following policies:

- Working Safely
- Working Hours
- Drugs and Alcohol
- Driving Safely



Policy Booklet

Drugs & Alcohol

We are committed to a healthy & safe working environment for our people. Accordingly the consumption or sale of alcohol or drugs at our places of work is prohibited. In order to ensure that everyone is aware of the acceptable standards and to ensure employees are treated in a fair and consistent manner we have put in place the following policy.

Employees should:

- Not present themselves for work if, due to alcohol or drugs, they are unfit,
- Not present themselves for work if they have just consumed or taken drink or drugs.
- Not be in possession of drink or drugs in the workplace (this includes in any company vehicles).
- Not consume or take drink or drugs whilst at work

If employees are on prescribed medication or are taking medicines that may make them drowsy, e.g. cold cures, Solpadine, hay fever remedies, etc. they should advise their Doctor to seek alternatives AND report the fact to the Health & Safety Manager who can check the possible effects of any medicines using the 'Chemist on Call' service provided by Healthcare Connections.

If employees are considered unfit for work then we have a legal duty to test their blood, urine or breath for drink or drugs.

For the purpose of 'general' works the drink drive limits will be adopted as the limits for detection of testing unless the work is classified as safety critical (e.g. when working on Network Rail infrastructure or similar) in which case the limits shall be:

- More than 29 milligrams per 100ml of blood;
- More than 13 micrograms of alcohol in 100ml of breath; or
- More than 39 milligrams of alcohol in 100ml of urine.

Any traces of illegal drugs, such as Cannabis, Cocaine, Amphetamines, Barbiturates, Methadone's etc. found will be deemed a positive test result.

If an employee is taking any medication they must declare this at the time of testing. If laboratory analysis reveals the presence of prohibited substances consistent with a therapeutic dosage of undeclared medication the employee will be interviewed to establish the reason for non-declaration. If the Medical Officer is satisfied a 'negative' result may be given. If the Medical Officer is not satisfied this will be recorded as a No Result and the employee must be re-tested immediately and will not be allowed to work until a negative (pass) result is achieved.

Any employee who is tested and is identified as positive for alcohol or drugs shall be subject to disciplinary action. A refusal to submit to test shall be subject to the same disciplinary action as a positive result.

All employees who hold PTS certification or are holders of Safety Critical Work posts should be aware that while working on Network Rail Managed Infrastructure, additional legislation is applicable to them and their work. In particular the Transport and Works Act 1992 Part 2 Section 27 specifically notes the need for employees to be free from the effects of Alcohol and Drugs. The requirements of Network Rail Company Standard **NR/L1/OHS/051** applies. If proved positive the individual's NCCA card will be removed and they will be immediately suspended, removed from the Contract and possibly the Company and reported to NCCA & Network Rail. Testing will be carried out by Link-Up approved medical providers.

The Company will not victimise employees who admit to having a drink or drug related problem if they approach the Company for help and are prepared to undergo an agreed form of treatment. We offer to assist any employee who voluntarily declares an alcohol or drug related problem. This will include confidential support and guidance to employees and their families. If you have or think that you may be developing an alcohol or drug related problem



Policy Booklet

then you must advise the Managing Director immediately so that the help procedures can be applied. Disclosure or discovery of a problem prompted by a positive test result or an impending test is not acceptable.

All employees are strongly advised to leave 12 hours between drinking and commencing a shift. Don't forget to take into account any on-call, weekend or night shift work. Unannounced drug & alcohol testing will be carried out annually on a random selection of staff and operatives and our sub-contractors on a no-notice basis.

All new employees (and those existing employees who wish to start work on Network Rail Managed Infrastructure) will be required to undertake full screening for drugs and alcohol before employment. We will not knowingly employ people who are either recreational or habitual users of drugs.

For-cause screening will be carried out with no notice if there are reasonable grounds to suspect that an individual is under the influence of alcohol or drugs, or if their behavior prompts it, or if there has been an incident or accident in the work area.

Many of our clients also have a policy of unannounced screening for which no notice will be given.

Martin Blower
Managing Director
January 2015



Policy Booklet

Working Hours

In order to safeguard our employees and ensure they can work safely in accordance with procedures we have implemented the following policy in relation to the hours which our employees work.

- No person shall work more than 13 consecutive turns of duty
- No person shall spend more than 72 hours at the workplace in any consecutive 7 day period.
- No turn of duty shall be rostered to consist of more than 12 hours at the workplace
- The minimum time away from the workplace between turns of duty shall be 12 hours except that a short break of 8 hours between shifts is permitted: -
 - When changing turns at weekends or
 - When there are short breaks between no more than 2 consecutive shifts
- The maximum permitted traveling time is limited such that the total time of travel plus planned shift length does not exceed 14 hours. In any case travelling time prior to the start of the shift must not exceed 3 hours.

Note: the 'time' at the workplace does not include traveling time incurred by relief staff, redundancy traveling time, or 'wash up' or 'handover' time incurred by staff in some functions. The workplace means the site of work or it's booking on point.

Where staff are called out after completing a normal day of duty then providing the call out ends before 22:30 hours with at least 9 hours rest after call out then this will not prevent the individual from taking up their normal day turn at the normal booking on time. It is not expected that these circumstances should apply more than twice during a week.

Changes to working time patterns which introduce a need to work outside of the stated limits must be subjected to a formal risk assessment. Consultation with the staff affected by the change allows an opportunity for fatigue to be discussed.

DISPENSATION FROM LIMITS

The above limits will be observed in all cases. It is recognised however that in exceptional circumstances where owing to adverse weather, emergency, equipment failure, accident or other incident, extended working exceeding these limits may be necessary in order to avoid or reduce risk to people or significant disruption to services and it is not reasonably practicable to make alternative arrangements.

If any of the above circumstances occur the Supervisor will inform the Construction Manager and the Project Manager and complete an incident form detailing the circumstance. Where required the shift supervisor will ensure that all documentation has been completed and copied to the site file.

RECORDING

For each job a working hours (timesheet) form will be completed. The form will be completed per shift by the Supervisor and will detail:

- The member of staff
- The total travel time for the day
- The total working time – including any standing time

The form when completed will be returned to the Operations Manager for review, filing and where appropriate collating into a report. The form will be reviewed by the Project Manager, signed off and filed as appropriate. Where required by the Principal Contractor this information will be made available.

Where the records show that members of staff have exceeded the working time regulations this will be recorded



Policy Booklet

and the data made available for the regular management meetings.

MONITORING AND REVIEW

In view of the increased risk potential of staff accidents resulting from staff exceeding the working time limits it is necessary, as part of the monitoring process for the management to review the working hour reports. The statistics provided will be reviewed at management meetings and where appropriate regular exceedences are subject to discussion at this meeting.

The requirements of the Working Hour Regulations must be considered when compiling work rotas. The job sheet relating to a particular job is to be signed off in the relevant section to signify it has been reviewed and resourced for Working Hour Regulations by the Project Manager.

This policy conforms to the Working Time Regulations and Network Rail Standards NR/GN/INI/001 & NR/L2/ERG/003

Martin Blower
Managing Director
January 2015



Policy Booklet

Driving for Work

Driving is one of the most hazardous activities which many of us undertake on a daily basis. A Company Car Handbook is provided to all employees who have access to a company car. However over and above this all employees who drive are required to consider the following points in order to minimise the risk of being involved in an accident.

- Plan your journey to include a 15 minute break approximately every two hours of driving.
- Allow plenty of time for your journey.
- Plan your route well in advance.
- Try to avoid peak hour traffic and areas with heavy traffic congestion where possible.
- Plan your workload carefully & raise any schedule conflicts with your line manager
- Do not undertake unnecessary journeys if there is specific risk of adverse weather conditions.

If you feel tired or drowsy, find a safe place to take a stop and take a break. Feeling tired at the wheel can affect your ability to concentrate, correctly perceive, assess and respond to road hazards and to make safe driving decisions.

It is your responsibility to ensure your car is properly maintained to comply with the manufacturer's recommendations, relevant laws and regulations. You should arrange routine vehicle servicing and carry out routine checks in line with the vehicle manufacturer's recommendations.

It is illegal to use a hand held mobile phone while driving. The definition of a 'hand held phone' will include any electronic device used for accessing oral, text or pictorial communications (including the internet) if the device is hand held during at least part of its operation. The definition of 'holding a phone' does not include operating a phone that is held in a cradle. You will be regarded as 'driving' if the engine is running – even if the vehicle is stationary. The law also states that drivers must have a proper control of their vehicles at all times. You can be prosecuted for careless or inconsiderate driving, or even dangerous driving, if using a phone causes you to drive in this manner.

If you are not an 'essential car user' you will not be expected to take calls when driving, but you will be expected to stop at the most convenient point within your journey and return the call. You must at all times drive with your own and others safety in mind. Essential car users are defined as those who have the use of a company vehicle or receive a car allowance.

Any accident which occurs whilst driving on company business should be reported regardless of whether the vehicle is a company car or not. Driving on company business does not include driving to or from your regular place of work.

You are required to inform your line manager if you have been convicted of a driving offence or banned from driving a vehicle. Failure to do so may lead to disciplinary action.

Martin Blower
Managing Director
January 2015





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APPENDIX D – COSHH ASSESSMENTS

COSHH Assessment Form



COSHH Assessment Number	BTL 107		
Product/Substance Name(s)	Diesel oil		
Uses	Fuel oil		
Risks to health	Irritant Harmful Toxic		
Storage precautions	Store in double bunded diesel containers		
Transport precautions	Transport in double bunded bowsers		
Manual Handling precautions	None moved in double bunded containers		
Factors which increase risks	Mixing with other substances		
Name, address and telephone number of supplier of substance: Murco Petroleum Ltd St Albans			
HARMFUL EXPOSURE ROUTES (tick relevant options)			
Eye Contact	<input checked="" type="checkbox"/>	Ingestion	<input checked="" type="checkbox"/>
Skin Contact	<input checked="" type="checkbox"/>	Skin Absorption	<input type="checkbox"/>
Inhalation	<input checked="" type="checkbox"/>	Injection / sharps	<input type="checkbox"/>
Symptoms of over exposure	Drowsiness and dizziness		
Personal protective equipment: (state type and when to be worn) Gloves Safety Boots Overalls General purpose safety glasses (EN166 F) Hard Hat Hi Visibility Clothing			
EMERGENCY ACTIONS			
Emergency action: first aid	Eyes <wash out Skin <wash with soap and water Ingestion <DO NOT INDUCE VOMITING. seek medical advice Inhalation <remove to fresh air seek medical advice		
Emergency action: fire	Carbon dioxide, dry powder or foam		
Emergency action: spillage	Spillage will be limited due to less than 5 litres held Contain spillage, do not allow into water course Treat as environmental spillage		
Disposal precautions:	Via licenced waste remover		
Emergency action: contact person	R. Ayres – HSEQ Systems Manager		
Authorized by		Date approved	23/08/12

COSHH Assessment Form











COSHH Assessment Number	BTL 108		
Product/Substance Name(s)	WD40		
Uses	Anti squeak, moisture repellent, releasing agent		
Risks to health	Irritant		
Storage precautions	Store in containers provided		
Transport precautions	Transport in containers provided		
Manual Handling precautions	None when used in aerosol containers		
Factors which increase risks	Mixing with other substances		
Name, address and telephone number of supplier of substance: WD40 Company Milton Keynes			
HARMFUL EXPOSURE ROUTES (tick relevant options)			
Eye Contact	<input checked="" type="checkbox"/>	Ingestion	<input checked="" type="checkbox"/>
Skin Contact	<input checked="" type="checkbox"/>	Skin Absorption	<input type="checkbox"/>
Inhalation	<input checked="" type="checkbox"/>	Injection / sharps	<input type="checkbox"/>
Symptoms of over exposure	Drowsiness, headache, nausea and dizziness		
Personal protective equipment: (state type and when to be worn) Gloves Safety Boots Overalls General purpose safety glasses (EN166 F) Hard Hat Hi Visibility Clothing			

EMERGENCY ACTIONS

Emergency action: first aid	Eyes ?wash out Skin ?wash with soap and water Ingestion ?DO NOT INDUCE VOMITING. seek medical advice Inhalation ?remove to fresh air seek medical advice		
Emergency action: fire	Foam, water spray, dry chemicals, sand		
Emergency action: spillage	Contain spillage, do not allow into water course Treat as environmental spillage		
Disposal precautions:	Via licenced waste remover		
Emergency action: contact person	R. Ayres		
	Authorized by	R. Ayres	Date approved
			17.06.13

COSHH Assessment Form



COSHH Assessment Number	BTL 136		
Product/Substance Name(s)	Lithium Grease		
Uses	Lubricating grease		
Risks to health: <input type="checkbox"/> Flammable  <input checked="" type="checkbox"/> Harmful  <input type="checkbox"/> Biohazard  <input type="checkbox"/> Corrosive  <input type="checkbox"/> Oxidising  <input type="checkbox"/> Toxic  <input checked="" type="checkbox"/> Environmental  <input checked="" type="checkbox"/> Irritant 			
Storage precautions	Store away from strong oxidizing agents and elevated temperature. Keep container tightly closed		
Transport precautions	Not classified as dangerous for transport		
Manual Handling precautions	As per standard manual handling procedures		
Factors which increase risks	Avoid extreme heat, strong oxidizers and sources of ignition		
Name, address and telephone number of supplier of substance:			
Solent Lubricants, Osbourne Works, Leicester, England, LE18 1AT,			
HARMFUL EXPOSURE ROUTES (tick relevant options)			
Eye Contact	<input checked="" type="checkbox"/>	Ingestion	<input checked="" type="checkbox"/>
Skin Contact	<input checked="" type="checkbox"/>	Skin Absorption	<input type="checkbox"/>
Inhalation	<input checked="" type="checkbox"/>	Injection / sharps	<input type="checkbox"/>
Symptoms of over exposure	Mild inflammation and irritation of skin		
Personal protective equipment: (state type and when to be worn)			
<input checked="" type="checkbox"/> Hard Hat <input checked="" type="checkbox"/> Hi Visibility Clothing <input checked="" type="checkbox"/> Safety Boots <input checked="" type="checkbox"/> Overalls <input checked="" type="checkbox"/> Gloves <input checked="" type="checkbox"/> Safety Goggles			
Notes:			

EMERGENCY ACTIONS

COSHH Assessment Form



Emergency action: first aid	Eye Contact AFlush eyes with water. Skin Contact AIf burned by hot material, cool skin with large amounts of water. Wash exposed skin with mild soap and water. Ingestion ARinse out mouth with water but DO NOT induce vomiting.
Emergency action: fire	Use dry chemical, foam, CO2 or water fog extinguishers. Combustion may cause toxic gases to be released.
Emergency action: spillage	Absorb spilt material with earth, sand etc and place in waste containers. Prevent area into waterways.
Disposal precautions:	Disposal in line with local regulations for hazardous material.
Emergency action: contact person	R. Ayres – HSEQ Manager Tel:

Authorized by		Date approved	15 th July 2013
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Date: 19.05.2017

Contract Title: NORTH YORKSHIRE POLYHALITE PROJECT –
WOODSMITH MINE

Made By: AK

Checked by: JAG

Work Scope: Mobilisation and Demobilisation

APPENDIX E – PLANT REGISTER



NORTH YORKSHIRE POLYHALITE PROJECT - DIAPHRAGM WALL WORKS

Plant register (environmental)

Author: JAG
 Update: 26-May-17
 Stage: Pre-construction phase

Notes: The listed plant is indicative and may change due to operational requirements and available types of equipment at the time of construction.
 The shown durations are indicative / based on the latest time schedule and may change.

Construction phase	Activity ID	Activity	Location	Plant	Numbers	Type	Sound power level LWA [db(A)]	Sound pressure level LpA [db(A)]	Power rating [kW]	% on-time	Start	Finish	24 hour working	Comments
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	D-wall cutter base crane	1	Bauer MC 128	117	80	709	70	July 2017	August 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	D-wall cutter base crane	2	Bauer MC 96	112	80	570	70	July 2017	August 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Crawler crane, 90t	2	Kobelco CKE900G or similar	110	80	213	50	July 2017	August 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Crawler crane, 160t	2	Liebherr LR1160 or similar	105	70	230	50	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Mobile crane, 110t	1	Liebherr LTM 1100 or similar	110	80	350	70	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Desander (incl.) desilter	4	MAT BE 250	104	84	59	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Desander (incl.) desilter	2	MAT BE 275	92	72	73	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Decanter	3	BD 90	88	78	115	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Slurry pumps	12	Various	85	80	25	90	July 2017	March 2018	Yes	Estimated average values
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Dry silo	3	Euromix 20t	n/a	n/a	2	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Slurry Tank	8	500m3 Bauer silo	n/a	n/a	5	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Slurry mixer	3	SK 11/15	n/a	n/a	30	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Screw feed	3	Bauer	n/a	n/a	8	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Water tank	3	MAT, 3m3	n/a	n/a	3	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Slurry agitation tank	3	MAT, 3m3	n/a	n/a	3	90	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	MEWPs	3	Z45D or similar	85	80	36	25	July 2017	March 2018	Yes	
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Delivery Lorries	Estimated: 25 per day	various: 20' rigid, 45' artic, low loaders	85	80	150	25	July 2017	March 2018	Yes	Estimated average values
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Welding set	3	Miller	82	70	35	50	July 2017	March 2018	Yes	Estimated average values
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Compressor	2	2 tool	80	70	35	25	July 2017	March 2018	Yes	Estimated average values
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Jet wash	3	With water bowser	80	70	35	25	July 2017	March 2018	Yes	Estimated average values
Diaphragm wall construction	D-WALL	Construction of diaphragm walls	Entire work area	Small plant and hand tools	Various	Various	Various	Various	Various	Various	July 2017	March 2018	Yes	Estimated average values



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Date: 19.05.2017

Contract Title: NORTH YORKSHIRE POLYHALITE PROJECT –
WOODSMITH MINE

Made By: AK

Checked by: JAG

Work Scope: Mobilisation and Demobilisation

APPENDIX F – PERSONNEL HISTOGRAM



NORTH YORKSHIRE POLYHALITE PROJECT - GUIDE WALL AND DIAPHRAGM WALL WORKS

Personnel histogram

Author: JAG
 Update: 16-May-17
 Stage: Pre-construction phase

Notes: The listed numbers are indicative and may change due to operational requirements and final construction programme.
 Percentage of local labour is likely to be <5% as the availability of local skilled diaphragm wall operatives is very limited
 Day shift working hours: 07am - 07pm, start Monday morning at 07am.
 Night shift working hours: 07pm - 07am, finish Saturday morning at 07am.
 If instructed, diaphragm wall construction working hours may be extended to 24/7 working.

Construction phase	Activity ID	Month	Site Management (DAYSHIFT)	Site Management (NIGHTSHIFT)	Site Operatives (DAYSHIFT)	Site Operatives (NIGHTSHIFT)	Suppliers / subcontractors (DAYSHIFT)	Suppliers / subcontractors (NIGHTSHIFT)	Total (DAYSHIFT)	Total (NIGHTSHIFT)	TOTAL
Mobilisation	MOB	Jul-17	6	4	15	15	15	0	36	19	55
Diaphragm wall construction	D-WALL	Aug-17	10	4	35	35	2	2	47	41	88
Diaphragm wall construction	D-WALL	Sep-17	10	4	35	35	2	2	47	41	88
Diaphragm wall construction	D-WALL	Oct-17	10	4	35	35	2	2	47	41	88
Diaphragm wall construction	D-WALL	Nov-17	10	4	35	35	2	2	47	41	88
Diaphragm wall construction	D-WALL	Dec-17	10	4	35	35	2	2	47	41	88
Diaphragm wall construction	D-WALL	Jan-18	10	4	35	35	2	2	47	41	88
Diaphragm wall construction	D-WALL	Feb-18	10	4	35	35	2	2	47	41	88
Diaphragm wall construction	D-WALL	Mar-18	10	4	35	35	2	2	47	41	88



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Date: 19.05.2017

Contract Title: NORTH YORKSHIRE POLYHALITE PROJECT –
WOODSMITH MINE

Made By: AK

Checked by: JAG

Work Scope: Mobilisation and Demobilisation

APPENDIX G – MC96/128 AND BC40 ASSEMBLY INSTRUCTIONS

4 Assembly/mounting

⚠ WARNING Danger of accident!

- Improper use can cause an accident. This could result in serious or fatal injuries to persons.
- △ Please read and observe the following chapter on safety in the "General Safety" chapter before performing tasks or processes according to this chapter:
 - Danger area and safety distance
 - Safety when handling ropes
 - Safety during assembly/mounting and dismantling/removing
 - Safety when handling suspended loads and during transport

⚠ WARNING Danger of equipment tipping over!

- Rotational movements of the upper carriage during assembly work can cause the equipment to tip over. This could result in serious or fatal injuries to persons.
- △ Only unlock the upper carriage and undercarriage when assembly work is complete.

⚠ WARNING Danger of equipment tipping over!

- Working on or with the equipment with the telescoping cylinders of the crawlers retracted can lead to the equipment tipping over. This could result in serious or fatal injuries to persons.
- △ Extend the telescoping cylinders of the crawlers immediately after unloading the equipment and before any further assembly work.

⚠ WARNING Danger of getting crushed, danger of getting cut!

- Crushing surfaces and cutting edges are produced, primarily during raising and lowering of the cutter, turning and swinging of the cutter, movement of the hose guide wheel, and slewing and tilting of the Boom. If persons get between these edges, they can receive serious or fatal injuries.
- △ Do not insert any body parts between moving components.
 - △ Maintain adequate safety distance.

4.1 General

4.1.1 Assembly sequence / Mounting sequence

The following table shows whether the respective activity to be performed is described in the associated instruction manual or in this supplement.

Task	Instruction manual	Supplement
• General	•	•
• Mounting the undercarriage.	•	
• Mounting the upper carriage.	•	
• Mounting the boom.	•	
• Adjusting the boom.		•
• Mounting the boom top.		•
• Mounting guard rails on the boom.		•
• Mounting guy ropes.	•	
• Adjusting the guy rope and backstay strand.		•
• Establishing electrical connection.	•	
• Establishing hydraulic connection.	•	

4 Assembly/mounting



Task	Instruction manual	Supplement
• Mounting the cutter rope.		•
• Mounting the mud hose drum.		•
• Mounting the hydraulic hose drum.		•
• Mounting the flow rate meter.		•
• Raising the boom.		•
• Mounting the Remote control - Cutting.		•
• Mounting the cutter on the pulley block.		•
• Raising the cutter.		•

✓ Assembly procedure/mounting procedure is complete and correctly performed.

4.2 Attachment

4.2.1 Adjusting the boom

- 1 Boom top
- 2 Boom insert
- 3 Boom butt

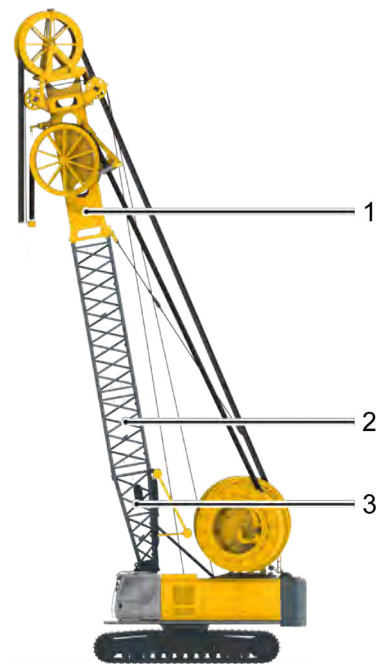
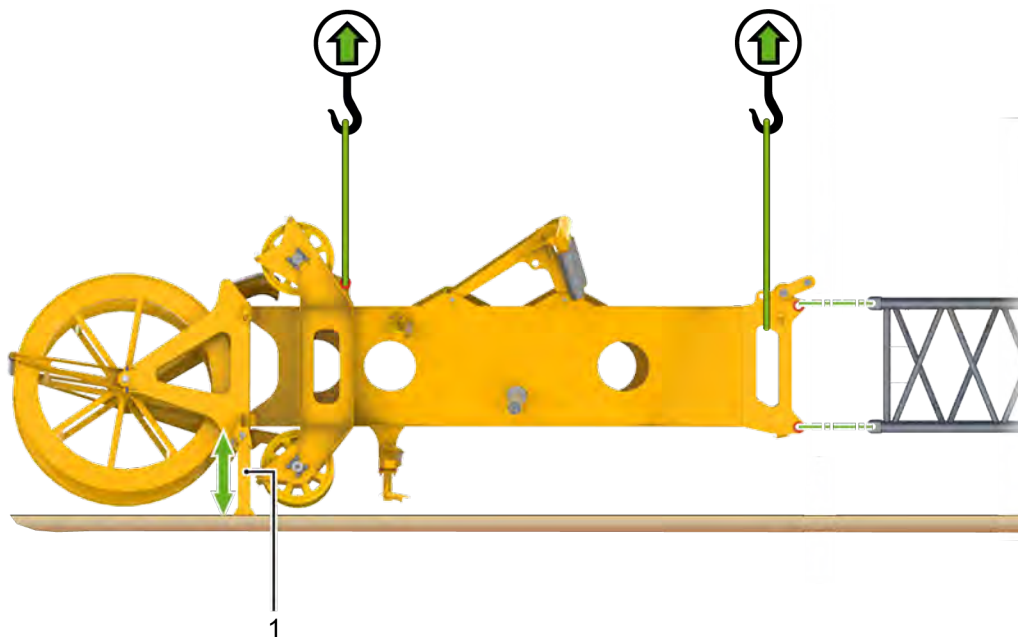


Table of boom segments:

HDS T				
Cutting depth [m]	Boom butt (quantity)	Boom insert [m]		Boom top (quantity)
100	1	6 (1 piece)	3 (1 piece)	1

4 Assembly/mounting

4.2.2 Mounting the boom top

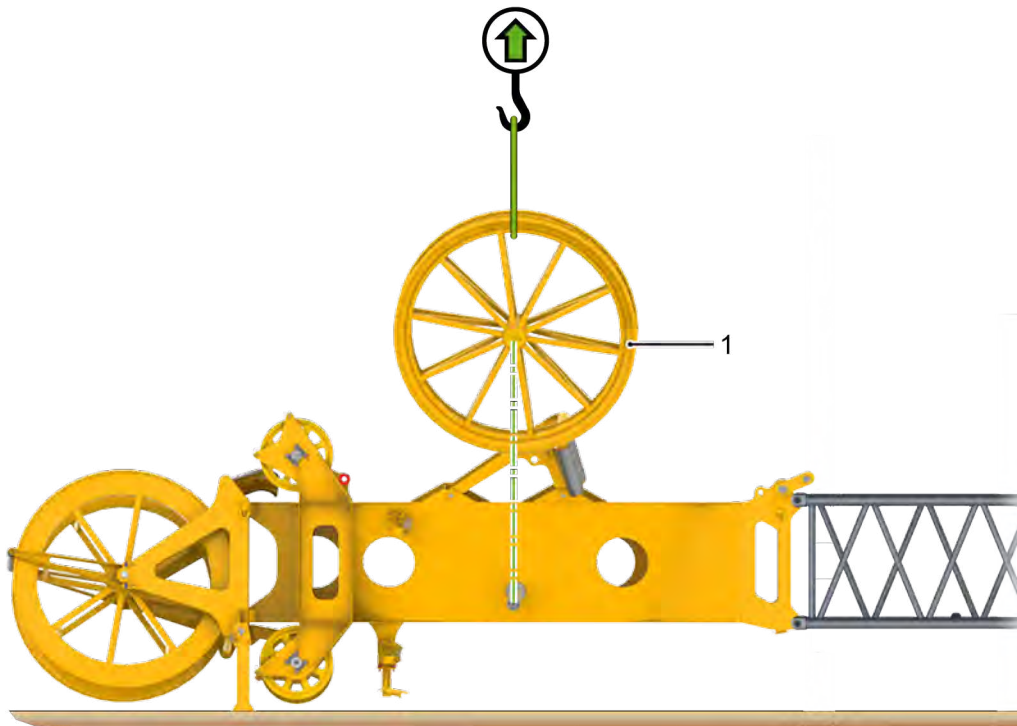


- Mount a suitable lifting device on the boom top.
 - Lift the a boom top onto the boom insert.
 - Mount the specially provided locking elements on the plug connections.
 - Swing out the support (1).
 - **NOTICE** Risk of causing damage to components! If the support is fully extended and the boom top is set down on the ground, the support may become damaged. Mount boom top on the boom insert before extending the support.
 - Adjust the length of the support (1).
 - Lower the boom as far as possible.
 - Remove all lifting devices.
- ✓ Boom top is mounted.

4 Assembly/mounting



Mounting the hose guide wheel

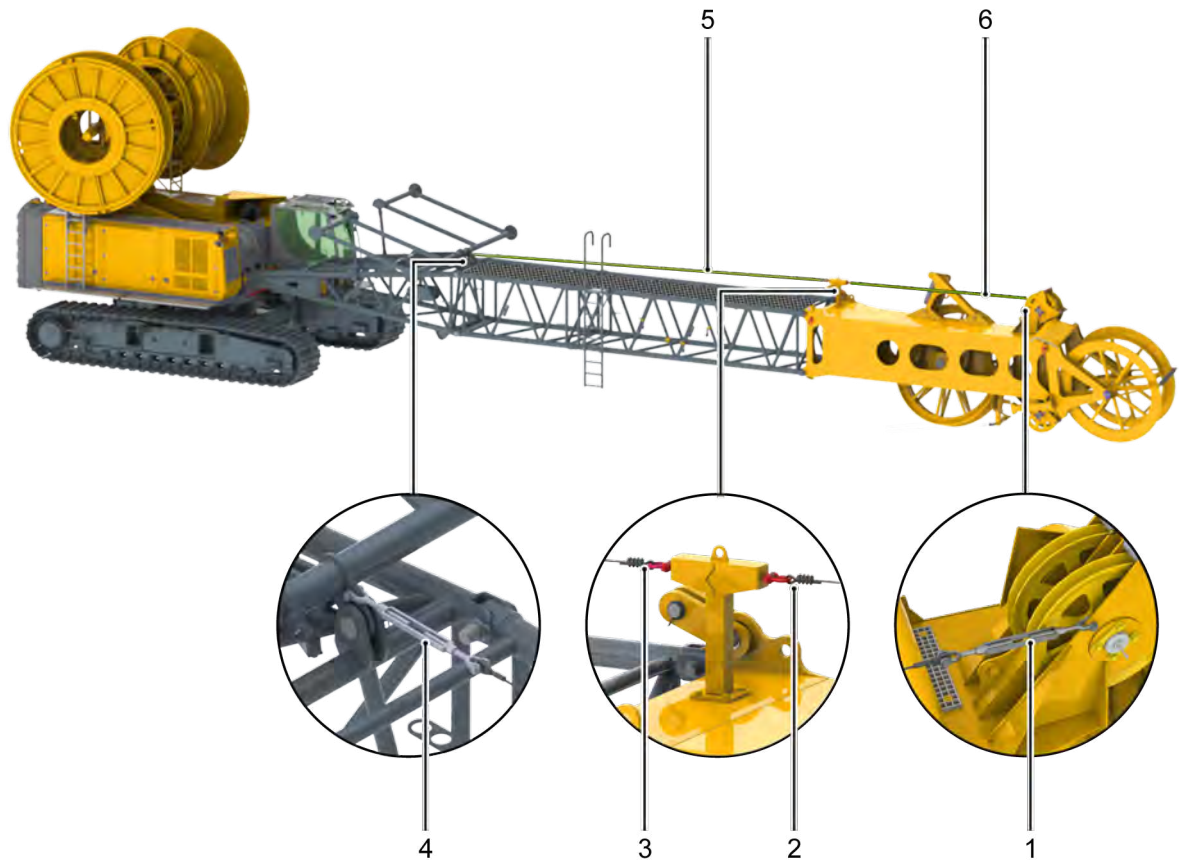


- Attach a suitable lifting device to the hose guide wheel (1).
- Mount the hose guide roller (1) to the boom top with the specially provided screw connections.
- Remove the lifting devices from the hose guide roller (1).
- ✓ Hose guide roller is mounted.

4 Assembly/mounting



4.2.3 Mounting guard rails on the boom



Prerequisite:

– The boom is mounted.

- Mount slinging rope (5) on the hose guide (4).
- Mounting the holding bracket on the boom top.
- Mount slinging rope (5) on the holding bracket (3).
- Mount slinging rope (6) on the holding bracket (2).
- Mount slinging rope (6) on the boom top (1).
- Tension both slinging ropes (5) and (6) appropriately.

✓ Guard rail is mounted on the boom.

4.2.4 Adjusting the guy rope and backstay strand

Adjusting the backstay strand

The length of the backstay strand depends on the base machine and on the process equipment. In order to adapt the backstay strand to the process, an extension can be mounted. Whether and which extension must be installed can be found in the table "Mounting the backstay strand extension".

4 Assembly/mounting



If the backstay strand extension is not required can be mounted on the holding bracket on the boom butt.

The symbols listed below have the following meanings:

"-" = backstay strand extension must **not** be mounted.

"●" = backstay strand extension must be mounted

Table Mounting the backstay strand extension

Base machine	Process equipment HDS	Process equipment HTS	Length of backstay strand extension [mm]
MC 64	-	-	-
MC 96	-	●	1110
MC 128	-	-	-

NOTICE

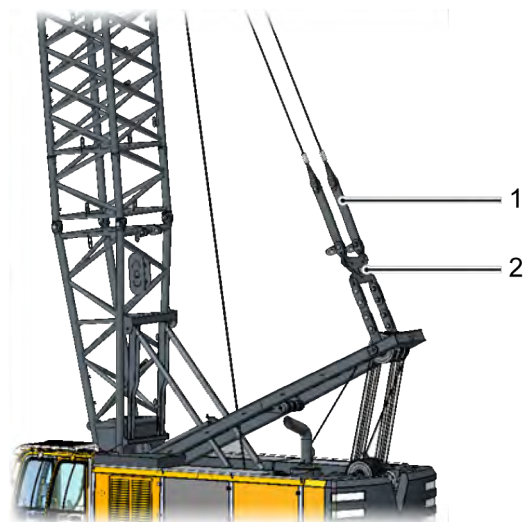
Risk of causing damage to the equipment or the components!

Improperly mounting the backstay strand extension can damage the equipment components.

△ Mount the backstay strand extension as shown in the table "Mounting the backstay strand extension".

Prerequisite:

- Boom is fully lowered.
 - The guy ropes are removed from the backstay strand.
 - Mount the backstay strand extension (1) to the backstay strand (2) using the plug connections provided for this purpose.
 - Mount the corresponding locking elements on the plug connections.
 - Mount the guy rope (see base machine instruction manual).
- ✓ The backstay strand extension is mounted.



Adjusting the guy rope

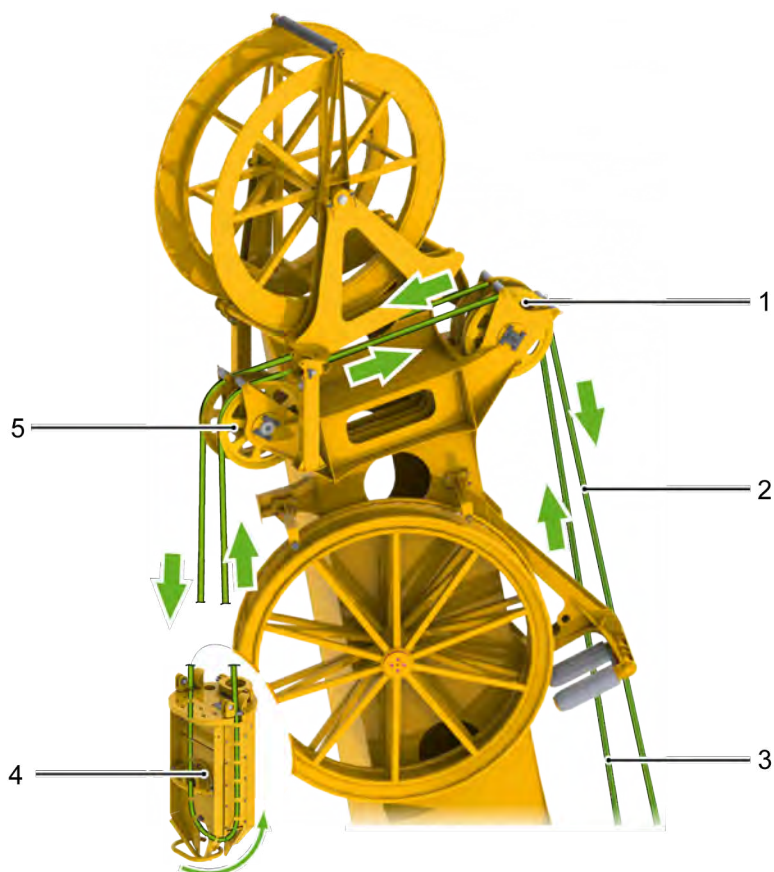


Further information can be found in the associated instruction manual.

4 Assembly/mounting

4.3 Process fitting

4.3.1 Mounting the cutter rope



Rope is mounted in the following sequence:

- Cutter winch 1 (3)
- Rope sheave on the boom head (1) and (5)
- pulley block (4)
- Rope sheave on the boom head (5) and (1)
- Cutter winch 2 (2)

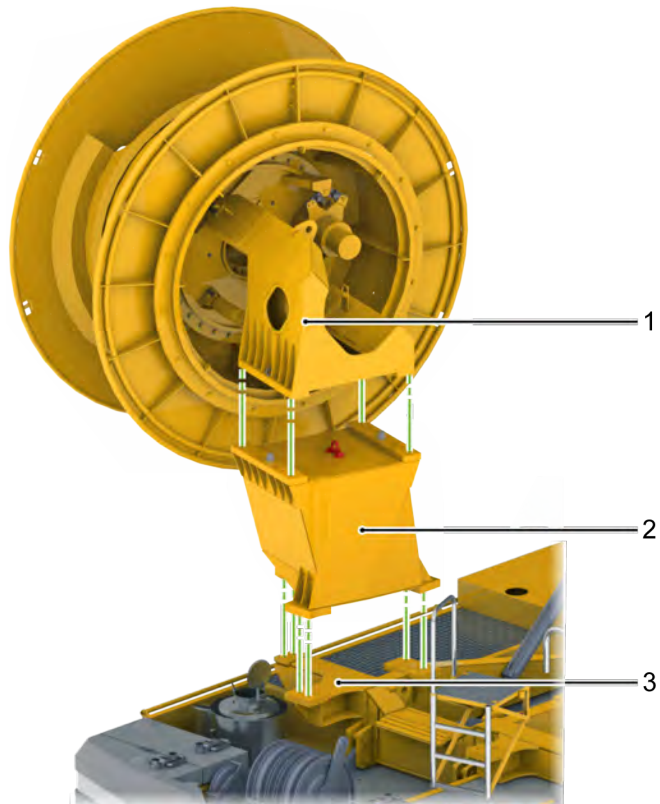
4 Assembly/mounting



4.3.2 Mounting the mud hose drum

Mounting the mud hose drum on the base machine

- Attach a suitable lifting device to the box (2).
- Mount the box (2) on the base frame (3) using the specially provided screw connections.
- Remove all lifting devices from the box (2).
- Attach a suitable lifting device to the mud hose drum (1).
- Mount the mud hose drum (1) on the box (2) using the screw connections provided for this purpose.
- Remove all lifting devices from the mud hose drum (1).
- Establish electrical and hydraulic connections to the base machine.



✓ The mud hose drum is installed.

Mounting the mud hose on the mud hose drum

Table of mud hose segments

HDS 100 T							
Cutting depth [m]	Operating position	Segment lengths of the mud hose [m]					
		100	Cutter lateral to the upper carriage	Cutter	7 (1 piece)	16.5 (6 piece)	33 (1 piece)
100	Cutter parallel to the upper carriage	Cutter	7 (1 piece)	16.5 (6 piece)	33 (1 piece)	-	Mud hose drum

4 Assembly/mounting

- Establish connection between the mud hose segment (see table "Mud hose segments").
- Mount the mud hose on the rotary union of the mud hose drum.
- Wind the mud hose belt onto the mud hose drum.
- ✓ Mud hose is mounted onto the mud hose drum.



Mounting the mud hose on the boom



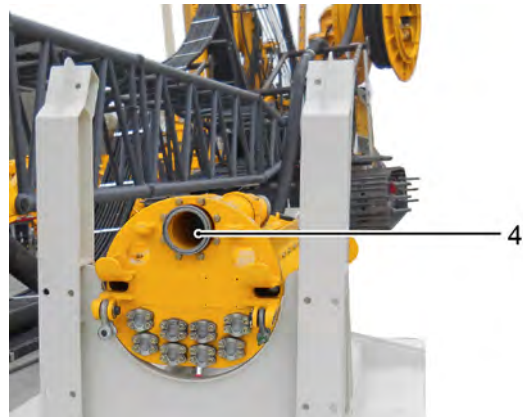
Prerequisite:

- Boom is lowered.
- Mud hose is wound onto the mud hose drum.

4 Assembly/mounting

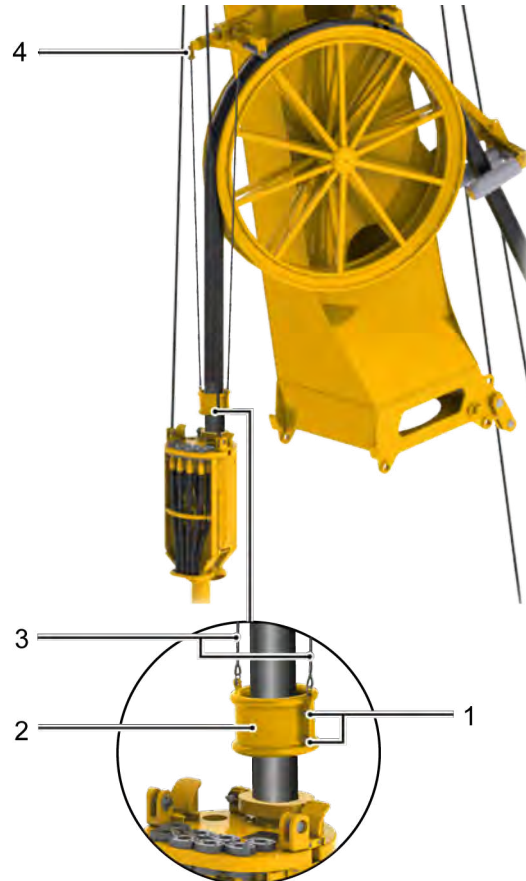


- Remove the locking element (3).
 - Attach suitable lifting devices to the mud hose (2).
 - Slowly unwind the mud hose (2) from the mud hose drum.
 - Pull the mud hose (2) through the guide (3).
 - Pull the mud hose (2) over the house guide wheel.
 - Attach the mud hose (2) to the auxiliary winch rope (1).
 - Mount the locking element (3).
 - Mount the mud hose (2) on the pulley block (4).
 - Remove all lifting devices from the mud hose (2).
- ✓ Mud hose is mounted.



Mounting the weight for the hoist limit switch

- Mount the weight (2).
 - Mount the screw connection (1).
 - Mount the rope (3) on the weight (2).
 - Mount the rope (3) on the hoist limit switch (4).
- ✓ The weight for the hoist limit switch is mounted.

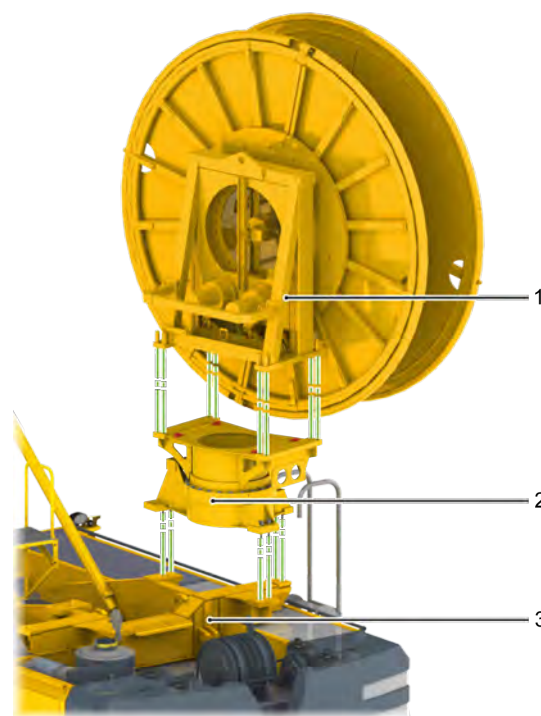


4 Assembly/mounting

4.3.3 Mounting the hydraulic hose drum

Mounting the hydraulic hose drum on the base machine

- Attach suitable lifting devices to the box (2).
 - Secure the box (2) to the base frame (3) with the specially provided screw connections.
 - Remove all lifting devices from the box (2).
 - Attach suitable lifting devices to the hydraulic hose drum (1).
 - Mount the hydraulic hose drum (1) on the box (2) using the screw connections provided for this purpose.
 - Remove all lifting devices from the hydraulic hose drum (1).
 - Establish electrical and hydraulic connections to the base machine.
- ✓ Hydraulic hose drum is mounted.



Mounting the hydraulic hose belt on the hydraulic hose drum

Table of hydraulic hose segment lengths

HDS 100 T							
Cutting depth [m]	Operating position	Segment lengths of the hydraulic hose belt [m]					
100	Cutter lateral to the upper carriage	Cutter	22 (1 piece)	19.0 (6 piece)	-	-	Hydraulic hose drum
100	Cutter parallel to the upper carriage	Cutter	22 (1 piece)	19.0 (6 piece)	-	-	Hydraulic hose drum



More detailed information on pivoting the hydraulic hose drum can be found in section "Operating the HDS"

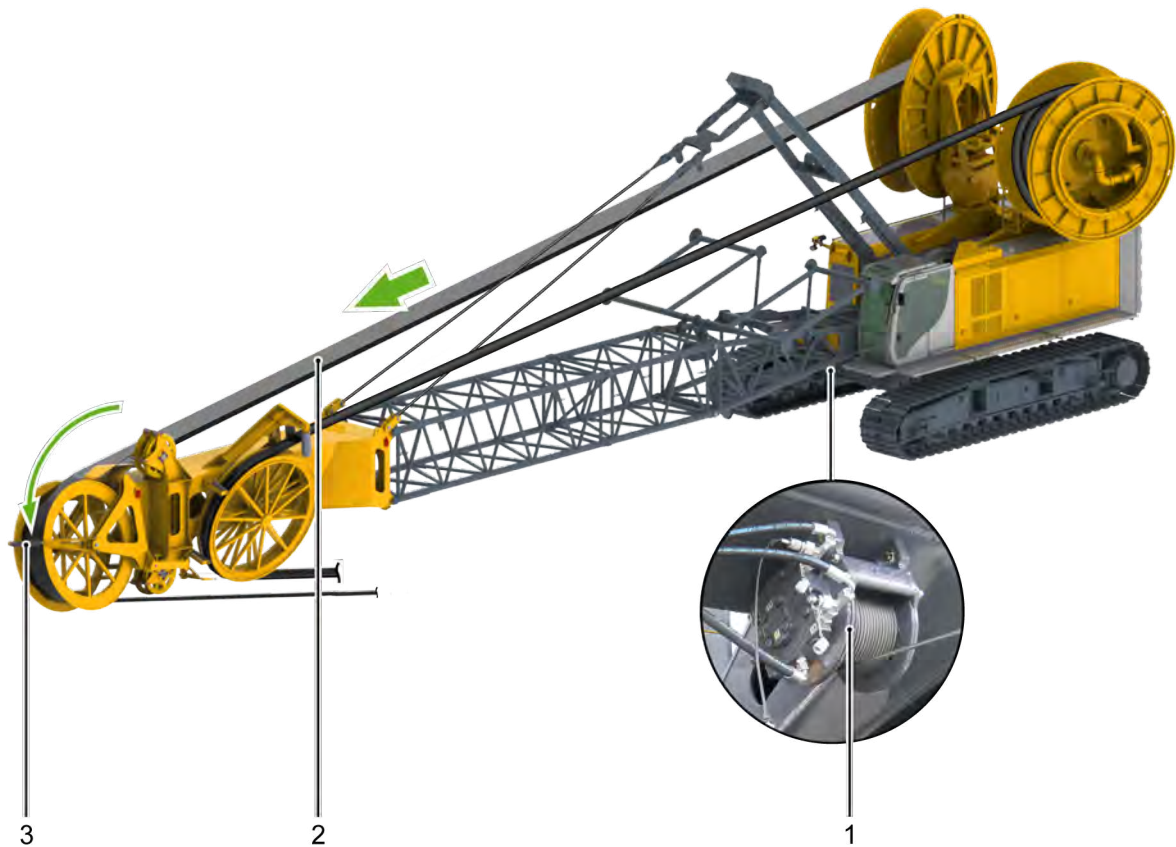
Prerequisite:

- Hydraulic hose drum is in the rigging position.
 - Establish connection between the hydraulic hose belts (see table "Hydraulic hose segments").
 - Establish connections between the hydraulic hose drum and hydraulic hose belt.
 - Wind the hydraulic hose belt onto the hydraulic hose drum.
- ✓ Hydraulic hose belt is mounted on hydraulic hose drum.

4 Assembly/mounting



Mounting the hydraulic hose belt on the boom



Prerequisite:

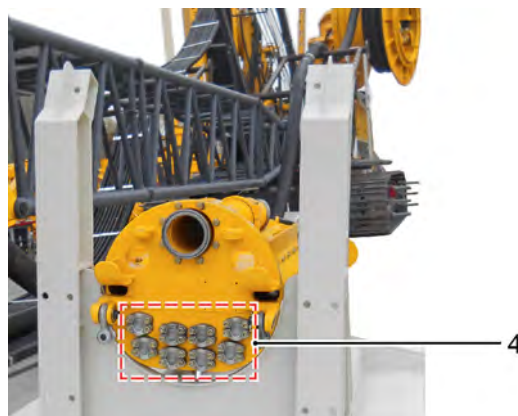
- Boom is lowered.
- Hydraulic hose belt is wound onto the hydraulic hose drum.
- Hydraulic hose drum is in the rigging position.



More detailed information on pivoting the hydraulic hose drum can be found in section “Operating the HDS”

4 Assembly/mounting

- Remove the locking element (3).
 - Attach suitable lifting devices to the hydraulic hose belt (2).
 - Slowly unwind the hydraulic hose belt(2) from the hydraulic hose drum.
 - Pull the hydraulic hose belt (2) through the guide (3).
 - Pull the hydraulic hose belt(2) over the hose belt guide wheel.
 - Attach the hydraulic hose belt (2) to the auxiliary winch rope (1).
 - Mount the locking element (3).
 - Mount the hydraulic hose belt (2) on the pulley block (4).
 - Remove all lifting devices from the hydraulic hose belt (2).
- ✓ The hydraulic hose belt is mounted.



4.3.4 Mounting the flow rate meter

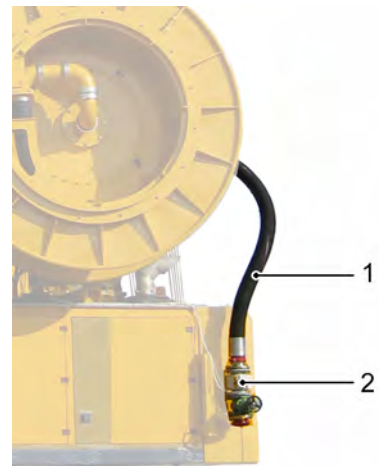
- Mount the mud hose (1) on the rotating union (3).



4 Assembly/mounting



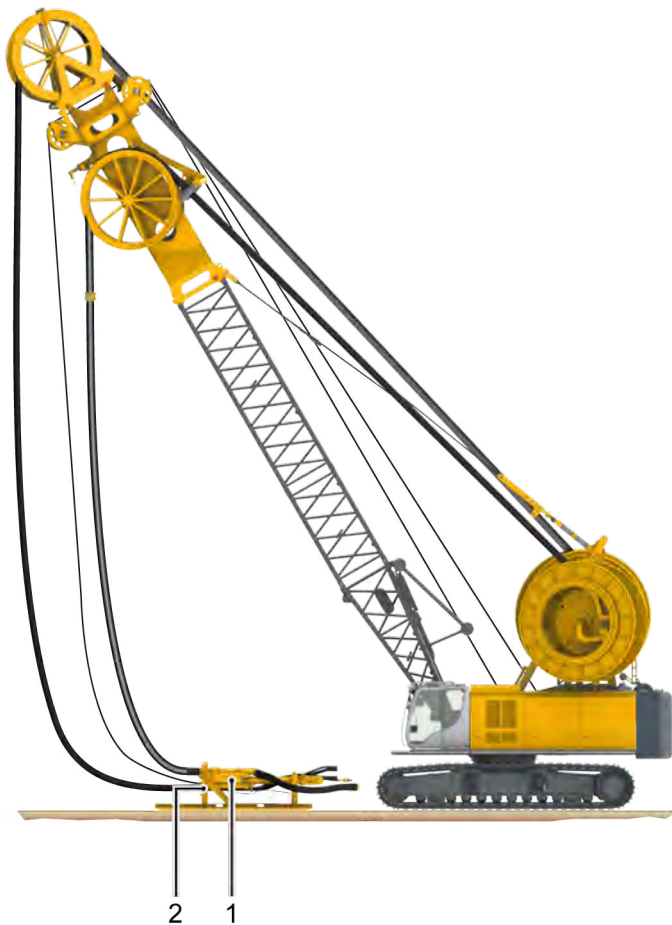
- Mount the flow rate meter (2) on the base machine.
 - Mount the mud hose (1) on the flow rate meter (2).
- ✓ Flow rate meter is mounted.



4.3.5 Raising the boom



Further information can be found in the enclosed instruction manual for the base machine.



Prerequisite:

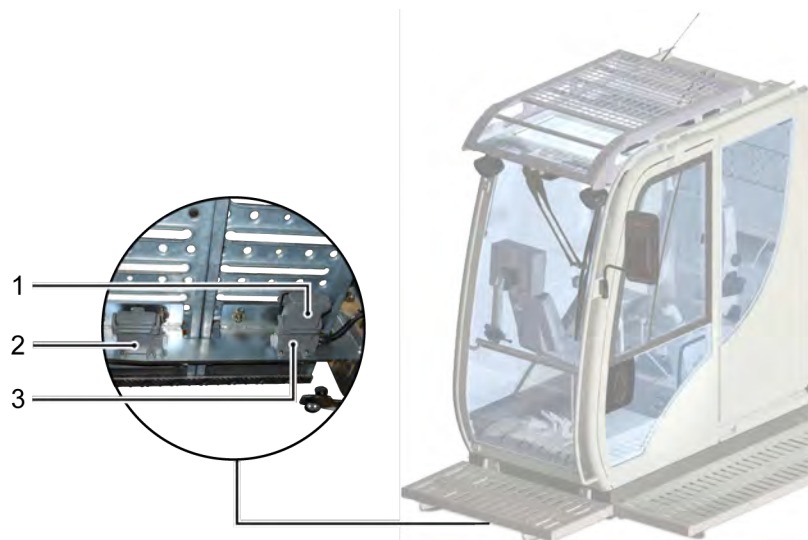
- The pulley block is mounted on the hydraulic hose belt and the mud hose.
- The pulley block is in the transport rack.

4 Assembly/mounting



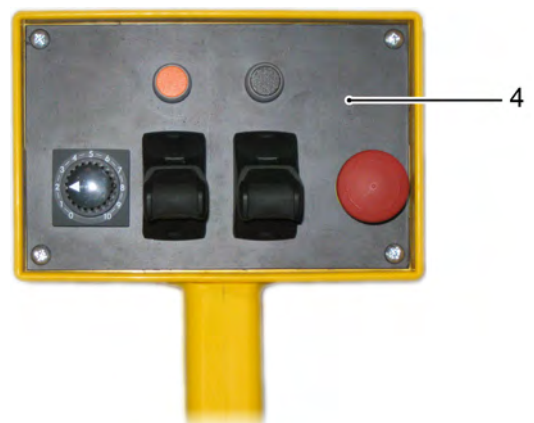
- Raise the boom and simultaneously slowly wind the cutter rope onto the rope winch.
 - **NOTICE** Risk of causing damage to components! Manually winding the hydraulic hose belt and the mud hose onto the hose drums can exert excessive force on the process equipment. This can damage HDS components. Do not apply tension to the hydraulic hose belt and mud hose when raising the boom.
 - If necessary wind in the hydraulic hose belt and mud hose.
 - Lift the pulley block (1) out of the transport rack (2).
- ✓ Boom is raised.

4.3.6 Mounting the Remote control - Cutting



Prerequisite:

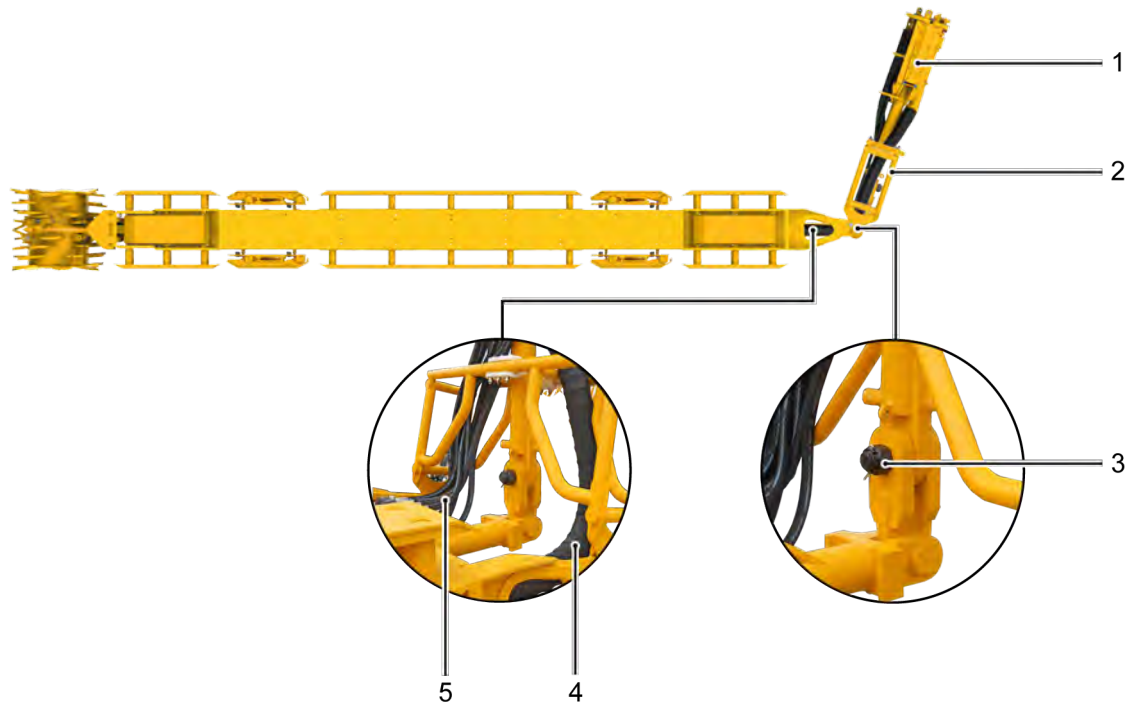
- The diesel engine is switched off.
 - Hydraulic pilot control is switched off.
- Remove the plug (1) from the coupling (3).
 - Insert the plug (1) in the coupling (2).
 - Insert the plug of the remote control (4) in the coupling (3).
- ✓ The remote control is properly mounted.



4 Assembly/mounting

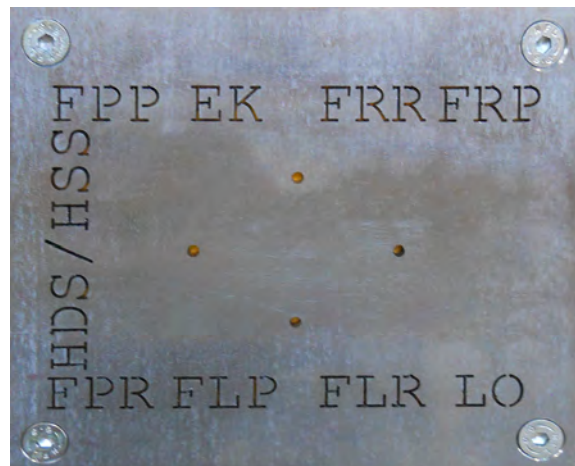


4.3.7 Mounting the cutter on the pulley block



Prerequisite:

- The cutter is laid down in front of and parallel to the base machine.
- The pulley block is mounted.
- Mount the hose guide frame (2) using the specially provided screw connections.
- ✓ Hose guide frame is mounted.
- Mount the pulley block(1) o the cutter using the specially provided screw connections (3).
- Establishing electrical connection.(4).
- Mount the mud hose (4) on the cutter.
- Establish the hydraulic connections (5) according to the bulkhead pate layout.
- ✓ Cutter is mounted.



Abbreviation	Designation
FPP	Mud pump: Feed
FPR	Mud pump: Return
EK	Electrical cable
FRR	Right cutter wheel: Return
FRP	Right cutter wheel: Feed
FLR	Left cutter wheel: Return

4 Assembly/mounting



Abbreviation	Designation
FLP	Left cutter wheel: Feed
LO	Leak oil

4.3.8 Raising the cutter



Prerequisite:

- The cutter is mounted on the pulley block.
- HDS automatic mode is activated .
- Slowly wind the cutter rope onto the rope winch.
- Raise the cutter as shown in the figure and slowly approach the cutter with the equipment at the same time.
- If necessary wind in the hydraulic hose belt and mud hose.
- ✓ Cutter is raised.