

THOMSON ENGINEERING DESIGN Ltd

UNIVERSAL LIFTING BEAMS

Operators Manual



Issue 08

November 2013

Index

Safety Information	3
<i>Safety Precautions</i>	4
<i>Risk Assessment</i>	5
Operating Instructions	11
<i>Attaching the Universal Beam</i>	12
<i>Setting the Beam for Use</i>	14
<i>Using the Universal Lifting Beam</i>	16
<i>Detaching the Universal Beam</i>	17
Routine Maintenance	18
<i>Maintenance Schedule</i>	19
<i>Setting and Testing Procedure</i>	20
<i>Setting the valve operating pad</i>	23
Data Sheets for Recommended Lubricants	24
<i>Panolin Biogrease 2</i>	25
<i>Panolin HLP Synth</i>	30
Technical Data	35
<i>Hydraulic Hose Schedule</i>	36
<i>Hydraulic Rotator</i>	37
Appendix A	
<i>Engineering Acceptance Certificate</i>	
Appendix B	
<i>Product Acceptance Certificate</i>	

Safety Information

Safety Precautions

Application of the Device

- The device is an attachment for use with a road/rail excavator or similar machine
- The device is a piece of lifting equipment.
- The jaws of the device are designed for gripping and lifting Railway rail in order to lift either track panels or individual rails according to the angle of the heads.
- The device is not designed to be used in any other application.

Risk of injury

- When attaching or detaching hydraulic connections
- When working on hydraulic system
- When lifting track panels
- When handling rail
- When releasing load
- When attaching or detaching the device to or from the road rail machine
- When close to moving parts

Environmental Warnings

- Hydraulic oil can be dangerous to the environment and must be handled with care. Waste oil should be disposed of properly in accordance with manufacturer's recommendations.
- Thomson Engineering Design recommends the use of PANOLIN biodegradable oils and greases.

Each of the risks listed above is described in more detail in the following pages.

UNIVERSAL LIFTING BEAM

Risk Assessment

Introduction

In compiling this risk assessment it was immediately obvious that there are three distinct sets of risks associated with a) operation, b) lifting and handling and c) repair and maintenance. It has therefore been decided to create this document as a three-part risk assessment with one section for each of the above.

For each risk identified there is a short explanation and the means of limiting this risk is described. Where these details relate to the construction of the machine there is no further documentation. Most of the operating risks, however, are also highlighted in the operator's manual supplied with the machine.

Great emphasis is placed on the use of warning markings, operator training and red paint colouring to reduce the risks associated with the operation of the machine. Guarding of moving parts might seem preferable but the work carried out by the Universal Lifting Beam, often at night and in poor weather conditions, by an operator who is already at some distance from the working parts and who must have as clear a view as possible of what he is doing is of a special nature. It was therefore decided to adopt a more basic approach to reducing the risk to personnel by using colour and visual warnings in order to keep personnel away from the machine.

It should be stressed that, whilst the risk assessments laid out below include some consideration of the risks of working the machine under on-site conditions this should not be taken as a thorough risk assessment of the site operation as other equipment and processes, not considered herein, may affect the overall risk profile of the operation.

Specific application risk assessments should be carried out for site operations and these should be identified in any method statements or pre-planned work notes.

Operating Risk Assessment

General

Hydraulic Leakage (personal injury)

High-pressure hydraulic systems are used on this machine. Damage or failure of hoses, pipes and fittings may cause a high-pressure jet of oil to be emitted from the system. This could be hazardous to eyes, skin, etc. Pools of leaked oil could lead to an increased risk of slips, trips or falls. Connecting and disconnecting the supply and return hoses to the hydraulic systems of the prime mover carries a risk that oil may be spilled.

All hoses fitted to this machine have a burst pressure in excess of twice the specified working pressure. Regular monitoring of the dimensions of the ferrules fitted to the hoses and careful training of the staff employed to make up hoses ensures that hose specifications are consistent.

All components used in the hydraulic system are CE marked.

Before working on the hydraulic system, minimise the pressure within the hydraulic system by setting the hydraulic cylinders to the mid point of their movement and disconnecting the device from the road/rail machine. Place a rag over any fitting whilst undoing it in order to help prevent a high-pressure jet being released towards skin or eyes.

Hydraulic Leakage (physical)

Exposure to hydraulic oil may cause dermatitis and may be a contributory factor in the development of skin cancer in certain individuals.

Leakage from high-pressure systems may be in the form of a high velocity jet with the power to penetrate skin and/or cause injury to eyes, etc.

Hydraulic oil is frequently very hot in use with consequent risk of burns or scalds.

Operators and service personnel should wear appropriate protective equipment, especially gloves, goggles and overalls. Skin exposed to hydraulic oils should be washed as soon as possible. The use of barrier creams is recommended.

All personnel should be made aware of the contents of the COSHH data sheets relating to the hydraulic fluid in use.

Hydraulic Leakage (environmental)

The potential environmental impact of oil spillage is considerable. Oil contamination is hard to treat and costly.

Thomson Engineering Design recommends the use of biodegradable oils and greases such as those produced by Panolin and the use of such products is part of the manufacturer's standard specification.

Falling Objects

With any lifting device there is a risk that failure of the device, improper use, lack of or ineffective maintenance or poor working practices may cause the load to be released with consequent risk of serious or fatal injury.

The Universal Lifting Beam is proof tested to 20 tonnes prior to despatch from the factory. It is strongly recommended that the device be re-tested at least every six months. A test procedure is included later in this documentation.

A hydraulic valve is fitted to the Universal Lifting Beams, which prevents the grab jaws from being opened whilst carrying the load. However, this valve may be bypassed by placing the control lever in the red position (see operating instructions later in this documentation). Whenever possible the control lever should be placed in the GREEN position.

All personnel must be kept well clear whilst lifting operations are in progress.

All personnel in the vicinity of lifting works must wear appropriate PPE including hard hats.

Falling Sleepers and Ballast

The Universal Lifting beam is commonly used to remove old track panels. It is possible that the rail fixings and/or sleepers may be so degraded that sleepers may fall from the track panel whilst it is elevated with consequent risk of serious injury.

Ballast lying on the sleepers may fall as the panel is lifted with consequent risk of injury.

All personnel must be kept clear whilst operating the device.

All personnel in the vicinity of lifting works must wear appropriate PPE including hard hats.

Moving Rail

When used for handling rail, the swinging and whipping of lengths of rail could cause serious injury.

Keep all personnel well clear of the work area.

Overturning of the Road/Rail Machine.

Use of the device to lift loads greater than the capacity of the machine to which the Universal Lifting Beam is attached, or failure or slippage of the ground or of the ground anchorage system, etc. may cause the whole machine to overturn.

All lifting operations must be carefully planned and proper risk assessments carried out taking ground conditions into account.

Safe Load Indicator must be used at all times.

Operator should use seat belt where appropriate.

Keep all personnel well clear of the work area.

Only experienced operators and crane controllers should use this equipment.

Take extra care when tandem lifting.

Revolving the Jaw Heads and Setting the Bypass Valve

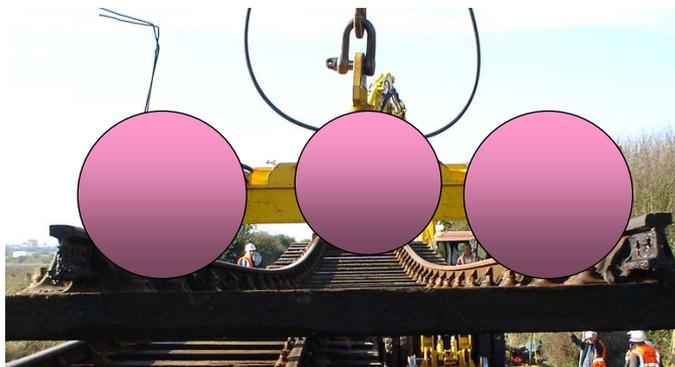
Inadvertent operation of the jaws or the rotator whilst the beam is being set up for use may cause serious injury to the personnel involved.

Switch off the engine of the road rail machine and/or disconnect the hoses when adjusting the Universal Lifting Beam.

Injury caused by moving parts

Movement of the jaws and other mechanisms could cause pinching, crushing or severance injury.

NEVER allow any person to come close to the beam under any circumstances unless and until the load has been lowered, released and the host machine engine has been stopped.



Danger Areas where moving parts can cause severe injury

Part 2: Lifting and Handling Risk

Personal Injury

Failure of lifting device, strops, chains, etc. when transporting or handling the universal beam causing the beam to fall or roll onto personnel with risk of serious or fatal injury.

Lift the beam by the head attachment pin using chains or strops of appropriate capacity. Check manufacturers plate for weight of beam.

Only properly trained personnel should attach, detach and operate lifting equipment.

Keep all personnel well clear of working area.

Carefully secure beams with appropriate restraining devices when transporting.

Attaching or Detaching the Beams

When fitting Universal beam to boom of Road/Rail machine or crane, beam may get knocked over causing injury.

Hands or fingers may become trapped between the boom and the attachment head as they are brought together.

Whilst attaching the hydraulic hoses connecting the Universal Lifting Beam to the machine, there is a risk of high-pressure oil being released.

Always carry out attachment or detachment of the device on firm level ground and keep personnel well clear when moving the boom of the machine or crane.

Wear appropriate PPE including gloves and goggles when attaching or detaching the hydraulic hoses.

Part 3: Repair and Maintenance

Damage to Machine

The Universal Lifting Beam has many precision machined parts and a number of precision hydraulic valves and components. Damage to these during repair or overhaul may cause the device to malfunction and increased risk to personnel or the railway infrastructure when in service.

Only competent staff to attempt any service procedure.

For advice on any aspect of the maintenance or repair of the Universal Lifting Beam, Thomson Engineering Design may be contacted on +44 (0) 1594 82 66 11.

Personal Injury

High pressure hydraulic system may have stored pressure even when disconnected from the road-rail machine.

Some components of the device, which may be removed for inspection and maintenance, for example the rotator, are over 25kg in weight and represent a risk of personal injury if manually handled.

Only competent repair staff should attempt maintenance or overhaul procedures.

Appropriate protective equipment must be used at all times.

Careful consideration should be given to the handling of all parts before commencing repair operations.

Incorrect Setting

The hydraulic system incorporates pressure reducing valves which limit the gripping force applied by the grab jaws. Setting this to too low a pressure may give insufficient grip to allow the beam to operate safely whilst too high a setting may cause damage to the hydraulic cylinders.

The pressure reducing valves must be set to between 150 and 175 Bar outlet pressure. This should be checked every six months or more frequently if resetting is found to be required every time a check is carried out.

A calibrated pressure gauge should always be used for setting the Universal Lifting Beam.

OPERATING INSTRUCTIONS

Attaching the Universal Lifting Beam

Beam fitted with Rotator



Ensure that the beam is resting on firm, level ground and attach the adapter head to the excavator boom by the attachment head pin.

Beam with Swivel Head



Suspend the beam from a hook, shackle or lifting device suitably rated for the weight of the beam and the imposed load combined.

Attaching the Hydraulic Hoses

The hydraulic hoses are normally connected to the machine using quick release couplings.

Before attempting to connect the hoses, stop the engine of the machine and release the pressure in the hydraulic system, see operating instructions for the machine.

Wear suitable protective equipment including gloves and eye protection when connecting hoses.

When the hoses are connected, lift the beam off the ground and, with the control lever in the RED position, operate the jaws three or four times to ensure that any air in the system has been expelled.

Before using the Universal Lifting Beam, check thoroughly for damage to hoses, pipes and fittings as well as for leakage. Do not use the beam if there is any sign of damage to any part of the hydraulic system.

SETTING THE BEAM FOR USE



Figure 3: Control Valves

Setting the Hand Operated Control Valve

The hand operated control lever illustrated in figure 3 (above) has two positions signified by coloured bands painted on the body of the device. This control sets the operating mode of the lifting beam.

Green Zone Operation

With the handle of the control valve set over the green band, the safety valve comes into operation. This special valve prevents the jaws from being opened or closed whilst the load is being carried above the ground, in other words, the beam and its load must be put down before the jaws can be moved.

To check the operation of the safety valve, place the beam on the ground and operate the jaws then lift the beam and try again. The jaws should not now operate.

Whenever possible, use the beam with the control lever set to the GREEN position to prevent inadvertent release of the load.

Red Zone Operation

Placing the handle of the control valve over the red band bypasses the safety valve and allows the operator complete control over the jaws of the Universal Lifting Beam at all times.

This is useful where, for example, the beam is being used to handle scrap rail and it is necessary to place the load into a lorry body or bin.

Only use the beam with the control handle in the RED position when this is absolutely necessary.

Setting the Jaw Position

Opening the jaws automatically locks them in position so, before setting them, first close the jaws. The jaw assemblies can now be rotated by hand to the desired position.



Figure 4: Panel Beam Mode



Figure 5: Rail Beam Mode

USING THE UNIVERSAL LIFTING BEAM

Always ensure that the machine to which the Universal Lifting Beam is attached is suitable for the combined weight of the Universal Lifting Beam and the load **BEFORE** attempting any lifting operation.

Once the jaw position and the hand operated control valve have been set, the Universal Lifting Beam is used by simply opening the jaws, lowering the jaws onto the rail or rails, closing the jaws and lifting.

The beams may be used in tandem lifting arrangements for handling track panels up to 18.3m (60ft) long or singly for panels up to half this length.

Beware, when using the device as a rail beam, not to damage long lengths of rail by moving part of a length of rail too far at once.

A competent crane controller should always be employed to assist the operator.

Keep all personnel well clear of the beam and load during lifting operations.

Never place hands or feet near the jaws of the beam as these are moving parts and may cause severe injury.

DETACHING THE UNIVERSAL LIFTING BEAM

Set the hand operated control lever to the red position and open the jaws fully. Place the device on a firm level surface and disconnect the hydraulic hoses.

Disconnect the device from the boom of the road/rail machine.

Warnings:

- High-pressure hydraulic system – risk of injury
- Hydraulic oil may be injurious to health. Consult relevant COSHH information
- Lifting Beam may topple over if not properly supported on level base – risk of injury

Routine Maintenance

Universal Lifting Beam

Daily Maintenance

Check:

By inspection:	Hoses	Operator / Fitter
	Leaks	Operator / Fitter
	Wear and damage	Operator / Fitter

Lubricate with oil:

Jaw and Cylinder Pins	Operator / Fitter
-----------------------	-------------------

Lubricate with grease:

Safety valve spring and shaft	Operator / Fitter
-------------------------------	-------------------

Weekly Maintenance

Perform daily maintenance plus:

Check:

By inspection:	Jaws and Body.	Fitter
	Tightness of all bolts.	Fitter
	Tightness of rotator clamp bolts.	Fitter
	Legibility of warning stickers	Fitter
	Adjustment of valve operating pas	Fitter

Lubricate with grease:

Turntable of jaw assemblies	Operator / Fitter
-----------------------------	-------------------

Six Monthly maintenance

Perform weekly maintenance plus:

Full and thorough examination in accordance with LOLER.

If, in the opinion of the LOLER examiner there is any question as to the beam's fitness for use the beam may be proof load tested in accordance with the factory approval test procedure:

Factory Setting and Testing Procedure for Universal Beams

TRTP/UB/270103

Requirement for Test Procedure

This test procedure must be carried out prior to despatch from the factory, after major repair work or at the discretion of a LOLER examiner.

Principles of Test Procedure

The setting and testing procedure set out below is designed to ensure that the product is safe and ready for use. The universal beam is first checked for hydraulic leakage, then the action of the check valves and the strength of the assembly are tested by using the jaws to grip and pull against pieces of rail mounted on a suitable test rig with no pressure in the supply system.

The hydraulic system incorporates two pressure-reducing valves, which control the maximum pressure supplied to the hydraulic cylinders. These valves must be set before any lifting test may safely be carried out.

Test Procedure

1. Connect hydraulic system to hydraulic supply and test for leaks by opening and closing grabs to full pressure five times then visually inspecting for signs of leakage.
2. Set the jaws half open, stop the engine of the hydraulic supply and operate the control lever to release any hydraulic pressure in the grabs.
3. Fit a T-piece and pressure gauge into the hose supplying oil to open one of the grab rams.
4. Restart the hydraulic supply and operate the control lever to pressurise the gauge and set the pressure-reducing valve controlling this line to give a reading of 150 to 175 bar with the machine constantly pumping.
5. Remove the pressure gauge and T-piece, replace the hose then repeat steps 2, 3 and 4 for the other hose line. The panel beam hydraulic system is now set and the beams are ready for testing.
6. Leaving the pressure gauge in the grab closing hose line, place the universal beam in the test rig so that its jaws will clamp on both outer rails.

7. Fit another pressure gauge between the hydraulic supply quick release coupling and the supply hose to the panel beam. Make sure that this is the hose which is pressurised when the jaws are clamped.
8. Operate the control in the hydraulic supply to clamp the jaws to the rail sections of the test rig.
9. Stop the hydraulic supply engine and operate the controls to release hydraulic pressure from the system. Check that both pressure gauges read zero pressure. **Note:** the jaws are now held closed by the check valves fitted to the rams themselves.
10. Check carefully for leakage throughout the system but particularly around the rams.
11. Couple the test rig load cell to the lifting lug on the universal beam and switch on the digital read out unit (DROU).
12. Wrap safety chains around the universal beam and the bottom beam of the test rig to restrain the beam should one of the jaws fail during lifting test. A specially designed test beam is available from Thomson Engineering Design.
13. Without applying any load to the panel beam zero the reading on the DROU.
14. Operate the test rig hand pump and SLOWLY a lift to the lifting lug until the reading on the DROU reaches 2000kg.
15. Maintain a reading of 2000kg for two minutes whilst observing the beam and checking for signs of strain or hydraulic leakage.
16. **Ensure all personnel are standing well clear.** Restart the hydraulic supply and re-pressurise the grabs.
17. Stop the hydraulic supply engine and release pressure from the hydraulic system. Check that both gauges read zero pressure.
18. Operate the hand pump on the test rig until the DROU shows a reading of 10,000kg.
19. Maintain the DROU reading of 10,000kg for ten minutes whilst watching for signs of failure from a **minimum distance of 1.5 metres.**
20. Increase lifting force to full proof load and maintain for five minutes.
21. Universal beam is considered fit for use if no faults are observed after the above procedure has been carried out.

22. Slowly release pressure in test rig and remove beam.
23. Remove pressure gauge from hose line to grab ram and refit hose to bulkhead fitting.
24. Operate grab jaws using hydraulic supply to ensure hose fitting is not leaking.
25. Record details of the inspection and date of next test.

Warning:

Failure of one or both check valves during this test may result in one or both jaws suddenly letting go of the rail sections in the test rig. This could result in the beam jumping up with risk of serious injury to persons standing close to the beam.

Do not stand closer than 1.5metres from the nearest point of the panel beam at any time whilst the test rig is in use.

High-pressure oil is used in the hydraulic system of the universal beams. Leakage of this oil could result in serious injury, particularly to eyes.

Do not stand close to any hydraulic equipment whilst it is being operated.

Moving machinery can cause death or serious injury.

Do not stand close to the HYDRAULIC SUPPLY or the universal beam whilst this equipment is being operated.

Ensure the correct PPE is worn during the setting and testing procedure.

Before use, always ensure that test equipment is calibrated and in good working order.

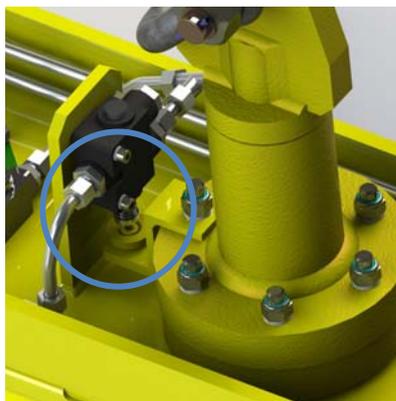
Setting the Valve Operating Pad

All Thomson Universal Lifting Beams are fitted with an adjustable pad which operates the spring detector valve when the beam is lifted to lock the jaws (when in 'green mode').



On Mk3a beams the pad is above the valve.

Set the pad so that there is gap of 2.5 to 4mm between the pad and the valve spool when the beam is LIFTED.



On Mk3b beams the pad is below the valve.

Set the pad so that there is a gap of 2.5 to 4mm between the pad and the valve spool when the beam is resting on the ground.

Data Sheets

For

Recommended Lubricants

SAFETY DATA SHEET

according to 93/112/EEC

PANOLIN BIOGREASE 2

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Synonyms	PANOLIN BIOGREASE 2
Chemical characterization	Grease contained natural and synthetic esters and Li/Ca soap.
Product code	7258
Supplier	PANOLIN AG Frau P. Lämmle Nallaseth Bläsimühle CH-8322 Madetswil Switzerland
Emergency telephone number	++41 (0)1 956 65 65

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components	The product contains no substances which at their given concentration, are considered to be hazardous to health.
-----------------------------	------------------------------------------------------------------------------------------------------------------

3. HAZARDS IDENTIFICATION

None.

4. FIRST AID MEASURES

Inhalation	Move to fresh air in case of accidental inhalation of fumes from overheating or combustion.
Skin contact	Wash with water and soap as a precaution.

Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Ingestion	Do not induce vomiting. Drink water as a precaution. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Foam, Dry chemical, Carbon dioxide (CO ₂).
Extinguishing media which must not be used for safety reasons	High volume water jet.
Special protective equipment for firefighters	In case of fire, wear a self contained breathing apparatus.
Specific methods	Do not use a solid water stream as it may scatter and spread fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Sweep up to prevent slipping hazard.
Environmental precautions	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	Take up mechanically and collect in suitable container for disposal.

7. HANDLING AND STORAGE

Handling	Spilling onto the container's outside will make container slippery. The product is flammable but not readily ignited.
Storage	Keep containers dry and tightly closed to avoid moisture absorption and contamination.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure

General industrial hygiene practice.

Personal protection equipment

Respiratory protection

No personal respiratory protective equipment normally required.

Hand protection

Rubber or plastic gloves.

Eye protection

Safety glasses with side-shields.

Skin and body protection

Remove and wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form

Paste.

Colour

Light green.

Odour

Characteristic.

Physical and chemical properties

NLGI: 2.

Penetration: 275 1/10mm.

Drop point: 170 °C.

Water solubility: insoluble.

10. STABILITY AND REACTIVITY

Stability

Stable at normal conditions.

Conditions to avoid

Fire or intense heat may cause violent rupture of packages.

Materials to avoid

Strong oxidizing agents.

Hazardous decomposition products

None under normal use. Thermal decomposition can lead to release of irritating gases and vapours.

11. TOXICOLOGICAL INFORMATION

Acute toxicity	Negligible.
Local effects	Negligible. Experience shows no unusual dermatitis hazard from routine handling.
Long term toxicity	Negligible.
Sensitization	Negligible.
Further information	The product contains no substances which at their given concentration, are considered to be hazardous to health. Health injuries are not known or expected under normal use. No persistent or cumulative effects were observed.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Ecological injuries are not known or expected under normal use.
Persistence / degradability	Biological degradability (CEC-L-33-T-82) >90 %.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products	Can be incinerated, when in compliance with local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. TRANSPORT INFORMATION

Further Information	Not classified as dangerous in the meaning of transport regulations.
----------------------------	----------------------------------------------------------------------

15. REGULATORY INFORMATION

Regulatory Information	The product does not need to be labelled in accordance with (national equivalent of EC-Directive 88/379).
Symbol(s)	None.
R-phrase(s)	None.
S-phrase(s)	None.

16. OTHER INFORMATION

Recommended use	According to the data sheet. Other use only in accordance with supplier.
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release. And it is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision Date	July 25, 1995
Printing Date	November 21, 2013
Edition	GB:7258/1.0

SAFETY DATA SHEET

PANOLIN HLP SYNTH

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Chemical characterization	Saturated, synthetic esters with additives
Supplier	PANOLIN AG Bläsimühle CH-8322 Madetswil Switzerland
Emergency telephone number	++41 (0) 1 / 956 65 65 (Mo. - Fr. 08.00 - 17.00)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components	The product contains no substances which at their given concentration, are considered to be hazardous to health. CAS-No: preparation EINECS: preparation.
-----------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------

3. HAZARDS IDENTIFICATION

None.

4. FIRST AID MEASURES

General advice	Wash contaminated clothing before re-use.
Inhalation	Move to fresh air in case of accidental inhalation of vapours.
Skin contact	Wash with water and soap as a precaution.

Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Ingestion	Do not induce vomiting. Drink water as a precaution. Obtain medical attention.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Foam. Dry chemical. Carbon dioxide (CO ₂).
Extinguishing media which must not be used for safety reasons	High volume water jet.
Specific hazards	During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds.
Special protective equipment for firefighters	In case of fire, wear a self contained breathing apparatus.
Specific methods	Do not use a solid water stream as it may scatter and spread fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Sweep up to prevent slipping hazard.
Environmental precautions	Do not flush into surface water or sanitary sewer system. Advise water authority if spillage has entered water course or drainage system.
Methods for cleaning up	Dam up. Soak up with oil absorbent material. Shovel into suitable container for disposal.

7. HANDLING AND STORAGE

Handling	Spilling onto the container's outside will make container slippery. The product is flammable but not readily ignited.
Storage	Keep containers dry and tightly closed to avoid moisture absorption and contamination. Keep out of reach of children. CEA F4 I Fu Y3.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure

General industrial hygiene practice.

Personal protection equipment

Respiratory protection

No personal respiratory protective equipment normally required.

Hand protection

Rubber or plastic gloves.

Eye protection

Safety glasses with side-shields.

Skin and body protection

Remove and wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form

Liquid.

Colour

Yellow-orange.

Odour

Mild.

Physical and chemical properties

Flash point (COC): > 210 °C.
 Relative density 0.92 g/ml.
 Viscosity: according to datasheet.
 Pour point: < - 35 °C.
 Water solubility: insoluble.

10. STABILITY AND REACTIVITY

Stability

No decomposition if stored and applied as directed.

Conditions to avoid

Fire or intense heat may cause violent rupture of packages.

Materials to avoid

Strong oxidizing agents.

Hazardous decomposition products

None under normal use. Thermal decomposition can lead to release of irritating gases and vapours.

11. TOXICOLOGICAL INFORMATION

Acute toxicity	LD50/oral/rat = > 2'000 mg/kg.
Local effects	Negligible. Experience shows no unusual dermatitis hazard from routine handling.
Long term toxicity	Negligible.
Sensitization	Negligible.
Specific effects	No data is available on the product itself.
Human experience	No data is available on the product itself.
Further information	The product contains no substances which at their given concentration, are considered to be hazardous to health. Health injuries are not known or expected under normal use. No persistent or cumulative effects were observed.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Ecological injuries are not known or expected under normal use.
Persistence / degradability	According to the results of tests of biodegradability this product is considered as being readily biodegradable. Readily biodegradable, according to appropriate OECD test.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products	Can be incinerated, when in compliance with local regulations. Where possible recycling is preferred to disposal or incineration. In accordance with local and national regulations.
----------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

14. TRANSPORT INFORMATION

Further Information	Not classified as dangerous in the meaning of transport regulations.
----------------------------	----------------------------------------------------------------------

15. REGULATORY INFORMATION

Regulatory Information The product does not need to be labelled in accordance with (national equivalent of EC-Directive 88/379).
Water Pollution Class WGK (self-assesment).

Viscosity (40 °C)	German Water Pollution Class (WGK)	
ISO VG	VCI conception	German VwVwS
15, 22, 32	0	nwg*)
46, 68 100	0	1

*) nwg: not water contaminating

Symbol(s) None.

R-phrase(s) None.

S-phrase(s) None.

16. OTHER INFORMATION

Recommended use According to datasheet.

Disclaimer The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Date 16.08.2000

Number 1

TECHNICAL DATA

Hydraulic Hose Schedule

Description	No. off	Hose Length	Fitting 1	Fitting 2
Rotator to cct	2	260 mm	Compact 90	12mm Standpipe
Cct to cylinder	2	1000mm	3/8" Banjo	12mm Standpipe
Cct to cylinder	2	1000mm	Compact 90	12mm Standpipe

Hydraulic System

Max inlet pressure:	250 Bar
Min inlet pressure:	150 Bar
Pressure Reducing Valve Setting:	150 to 175 Bar
Optional Rotator:	Baltrotor GR105
<i>Max. Pressure</i>	250 Bar

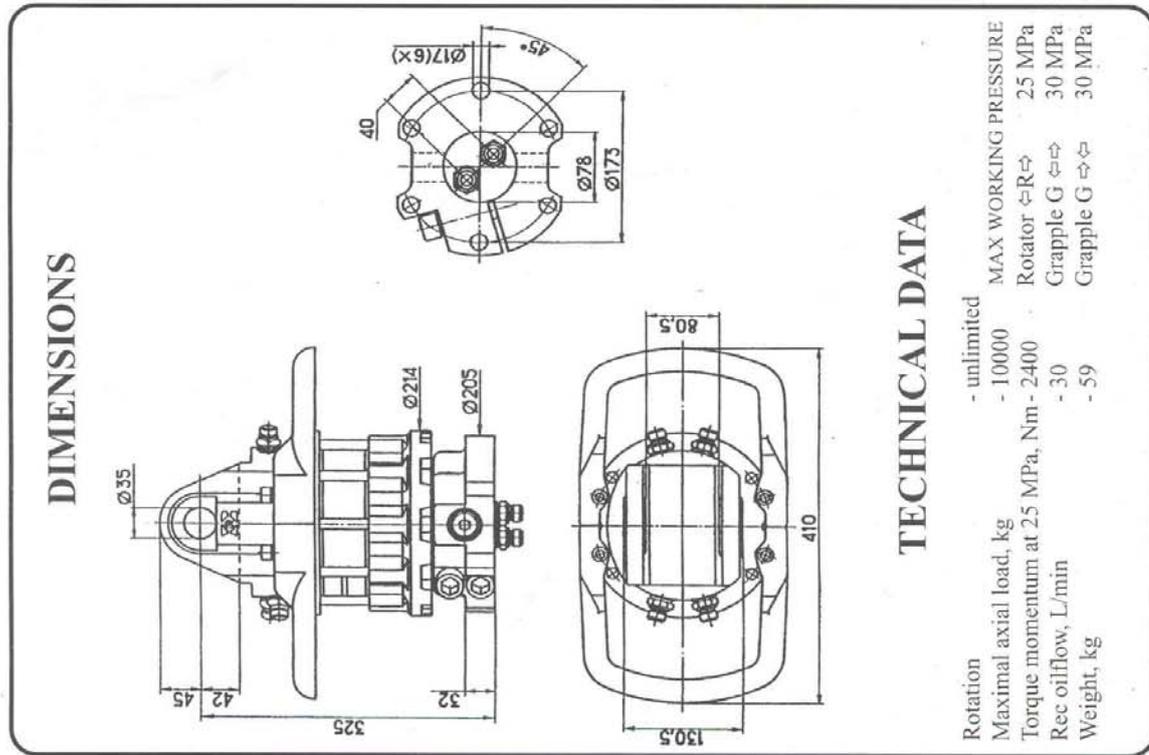
Warning Labels (Stickers)

Danger Keep Clear	Beam Sides
Hand Injury	Jaw Cylinders
Hand Injury	Beam ends
Foot Injury	Beam Ends

Livery Picture



Technical Data for Hydraulic Rotator



DESCRIPTIONS AND RULES OF USAGE

Rotator contains slow speed blade hydraulic motor having high torque momentum. It is designed to gripe or to work with other hydraulic mechanism.

The pressure canals of the hydraulic system connect to the corresponding marks on the housing and the rotor:

G <> - opening of the gripper

G >> - closing of the gripper

R < - rotator turning according to the direction of the pointer

R >

According to the features of the rotor design the pressure leading canal with marks G <> it is advisable to use the switched mechanism to work with smaller hydraulic pressure.

In order to get normal action of the rotator use only pure oil without any impurities of water, aggressive and abrasive substances. Sizes of filtered hydraulic oil particles have to be not more than 10 μm.

After the initial period of exploitation we recommend tightening up the 2 bolts M 20x90 (pos. 29) on the rotor flange. The torque shall be 600 Nm.

Because of the complexity of the rotator it is forbidden to dismantle it during the period of the action of the guarantee. In the case of need of repair the user must address directly to the distributor.

The rotator set contains:

- rotator with canals taps and gaskets - 1 piece
- technical certificate - 1 piece
- packing - 1 set

The rotator is produced, composed in set and tested according to technical documentation belonging to the company BALROTORS, and is in conformity with directives 89/392 EEC.

The company guarantees the rotator action without refusal during one year, if you follow its exploitation rules. The guaranteed period begins from the selling date (selling seal in the certificate).