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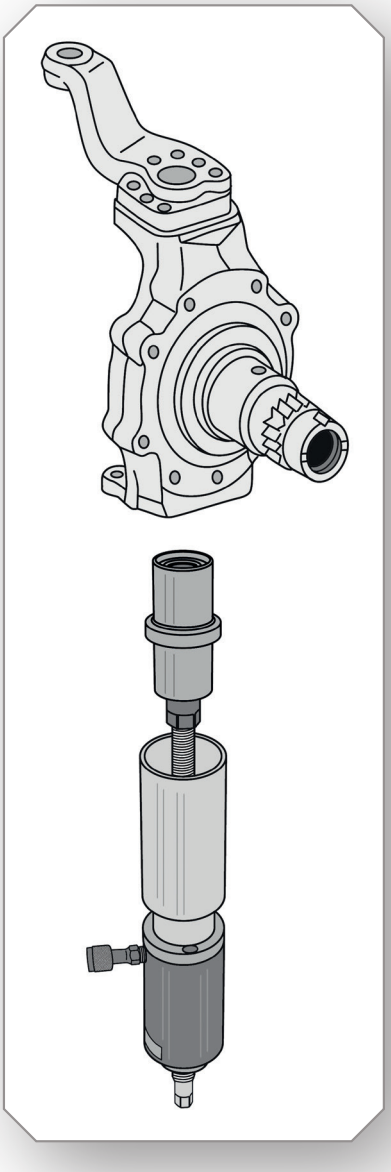
Operating instructions EN

KL-1000-502

Tension Bolt and Support Sleeve
(Pulling Device for Kingpin)







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TABLE OF CONTENTS

ⓘ This table of contents contains interactive elements with which the desired **chapters** can be accessed quickly and conveniently on digital devices with just one ***click*** .

1. READ AND UNDERSTAND FORSAFETY 4

1.1 Target group 4

1.2 Obligations of the owner 4

1.3 Intended use 4

1.4 Reasonably foreseeable misuse 4

1.5 Personal protective equipment 5

1.6 Labelling of the warnings 5

1.7 Working environment 5

1.8 Emissions 5

1.9 Basic safety, warning and handling instructions 6

1.10 Maintenance 7

1.11 Troubleshooting 7

1.12 Care / storage 7

1.13 Maintenance 7

1.14 Environmentally friendly disposal 7

2. PRODUCT DESCRIPTION 8

2.1 KL-1000-502 - Tension bolt and support sleeve 8

2.2 Scope of delivery / single part overview / drive parts 8

2.3 Technical data 9

3. PREPARATION 10

3.1 Prepare the vehicle 10

3.2 Prepare the tool 10

4. APPLICATION EXAMPLE 11

4.1 Pull out the kingpin 11

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1. READ AND UNDERSTAND FOR SAFETY



These Operating instructions are part of the **PULLING DEVICE** and are intended to familiarise you with this special tool. Read and understand these Operating instructions before using the special tool and follow all instructions, regulations and notes for safe use. Keep the Operating instructions in a safe place so that you or subsequent users can access them at any time. Be aware that misuse of the special tool can, in the worst case, lead to **DEATH** or **SERIOUS INJURY**! Stop work immediately if you are unsure how to use the special tool and contact **GEDORE-Automotive** if necessary.

1.1 Target group

These Operating instructions are intended **exclusively** for trained specialists with comprehensive expertise in the repair of motor vehicles = motor vehicles.

- The special tool **may only** be used in specialist automotive workshops by trained specialists who have the necessary expertise in handling special automotive tools and are familiar with the applicable regulations on occupational safety, accident prevention and environmental protection.
- The special tool **must never** be used by unauthorised, inexperienced, underage or physically, sensory or mentally impaired persons, **or** by persons who are tired or under the influence of medication, alcohol, drugs or similar intoxicating substances.

1.2 Obligations of the owner

According to the German Ordinance on Industrial Safety and *Health (BetrSichV)*, employers are obliged to provide their employees with safe work equipment! The special tools from GEDORE Automotive comply with the recognised rules of technology and relevant safety regulations at the time they are placed on the market.

- **The owner** of the special tool **must ensure that only** trained specialists in specialist vehicle workshops use the special tool!
- **The owner** of the special tool **must ensure** that the user has access to the associated instructions and has read and understood them in full **before** using the special tool!
- **The owner** of the special tool **must ensure** that the user has the necessary expertise in handling special automotive tools, is familiar with the applicable regulations on occupational safety, accident prevention and environmental protection and is provided with personal protective equipment!

1.3 Intended use

The PULLING DEVICE ...

... **may only** be used **to pull out kingpins with M24x1.5mm internal thread!**

... **may only** be used **on vehicles as specified in chapter 2** - Product description!

... **may only** be used **up to a maximum load of 17 tonnes**!

... **may only** be used **by hand using muscle power with a manual drive or a manually driven GEDORE Automotive** hydraulic cylinder/pump combination with pressure gauge for safe pressure control!

... **may only** be used **with GEDORE Automotive** original spare parts and accessories!

... **may only** be used **in the manner described in these operating instructions!**

⚠ Any other use may result in **DEATH** or **SERIOUS INJURIES** !

1.4 Reasonably foreseeable misuse

The PULLING DEVICE ...

... **must never** be used **to extract other parts or in any other way than intended!**

... **must never** be used **with an impulse or impact wrench!**

... **must never** be used **with a machine drive, a machine-driven hydraulic cylinder/pump combination or a drive other than that intended!**

... **must never** be used **for series processing with many constantly repeating work processes!**

... **must never** be used **with a bridged, modified or removed safety device!**

... **must never** be modified, converted or misused without authorisation!

⚠ **Always** use the special tool as intended. Any other use may result in **DEATH** or **SERIOUS INJURY** !

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1.5 Personal protective equipment

For your own safety, wear personal protective equipment when using the special tool! The special tool can cause mechanical hazards such as crushing, cuts and impact injuries.



Wear **EYE PROTECTION EQUIPMENT** *(e.g. DIN EN 166, OSHA 29 CFR 1910.133, ANSI Z87)* when using the special tool to protect against flying parts or particles!

- When using the special tool, flying parts or particles can cause **SERIOUS INJURY** to your **eyes** !



Wear **PROTECTIVE GLOVES** *(e.g. DIN EN 388, OSHA 29 CFR 1910.138, ANSI 105)* when using the special tool to protect against sharp edges and crushing between parts!

- When using the special tool, sharp edges and crushing between parts can cause **SERIOUS INJURY** to your **hands** !



Wear **SAFETY SHOES** *(e.g. DIN EN ISO 20345, OSHA 29 CFR 1910.136, ANSI Z41)* when using the special tool to protect against falling parts!

- When using the special tool, falling parts can cause **SERIOUS INJURY** to your **feet and toes** !

1.6 Labelling of the warnings

Warning notices indicate **potential dangers** which, if ignored, can lead to **DEATH** or **SERIOUS INJURY** in the worst case and must therefore be observed at all times. In these operating instructions, the warnings are classified as follows for better differentiation and recognisability:

Warning signs	Meaning
⚠WARNING	**Indicates** a **potentially hazardous situation** which, if not avoided, could result in **DEATH** or **SERIOUS INJURY**!
⚠CAUTION	**Indicates** a **hazardous situation** which, if not avoided, may result in **MEDIUM** or **LOW INJURY**!
ATTENTION	**Indicates** a **situation** which, if not avoided, can lead to damage to the tool or objects in its vicinity!
ⓘ	**Reference** to important information and useful tips.

1.7 Working environment

Only use the special tool in a safe working environment and **do not** expose it to extreme temperatures, direct sunlight, extreme humidity or moisture!

- The workplace **must** be clean and tidy.
- The workplace **must** be sufficiently large and well lit.
- The workplace **must** have a stable and non-slip surface.
- The workplace **must** be secured against access by unauthorised persons.
- The workplace **must** have a room temperature between -10 °C and +40 °C.

1.8 Emissions

Hydraulic oil and molybdenum disulphide paste can drip or leak when using the special tool and pose a risk to the environment.

- **Immediately** remove any leaking hydraulic oil and excess molybdenum disulphide paste, e.g. using an oil binding agent or a cleaning cloth.
- In the event of skin contact, clean the affected area **immediately** with degreasing soap and water.
- **Always** dispose of harmful substances such as hydraulic oil and molybdenum disulphide paste **in an environmentally friendly manner.**
- Safety data sheets *in accordance with Regulation (EC) No. 1907/2006* for hydraulic oil **(Alsus Hyd HLP 32 or 46)** and for molybdenum disulphide paste **(MOLYKOTE® G-N PLUS PASTE)** can be found on the manufacturer's website**(World Wide Web**) or contact **GEDORE Automotive** if necessary.

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1.9 Basic safety, warning and handling instructions

⚠WARNING **⚠CAUTION** **ATTENTION**

Disregarding this can lead to life-threatening situations, injuries and damage!

Always observe the following safety, warning and handling instructions when using the special tool and strictly adhere to all measures to avoid life-threatening situations, injuries and property damage due to hazards, misuse, abuse or improper handling.

- **Use only by specialist personnel:** The special tool may only be used in specialist vehicle workshops by trained specialists who have the necessary expertise and are familiar with the applicable regulations.
- **Do not use when tired or intoxicated:** The special tool must never be used by unauthorised or impaired persons or by persons who are tired or under the influence of intoxicating substances.
- **Read the instructions:** The special tool must be used in accordance with these Operating instructions and any instructions for accessories and all instructions, regulations and notes contained therein must be strictly observed.
- **Comply with the applicable safety regulations:** The special tool must always be used in accordance with the applicable regulations on occupational safety, accident prevention and environmental protection.
- **Wear personal protective equipment:** The special tool must always be used with the required protective equipment, such as safety goggles, protective gloves and safety shoes.
- **Only use original parts:** The special tool may only be used with original spare parts and accessories from GEDORE-Automotive**.**
- **Check before use:** The special tool must be checked for damage, loose parts, unauthorised modifications and suitability for the intended application before use.
- **Regular safety checks:** For safety reasons, the special tool should be subjected to a safety check every 24 months by authorised specialist personnel from GEDORE-Automotive.
- **Do not use if damaged or defective:** The special tool must not be used in the event of damage or other defects and must be checked and repaired before the next use.
- **Repairs or maintenance only by specialised personnel:** For safety reasons, the special tool may only be repaired or maintained by specially trained GEDORE-Automotive personnel.
- **Stop work immediately if handling is unsafe:** The special tool must not be used if it is unsafe to handle; if necessary, consult the instructions or obtain support from GEDORE-Automotive.
- **Clean and lubricate regularly:** The special tool, in particular the moving parts and spindle, must be checked regularly for contamination, cleaned if necessary and treated with approved lubricants.
- **Do not use mechanical drives:** The special tool must never be used with mechanical drives, but only after its intended use with a manual drive using muscle power.
- **Comply with vehicle-specific application procedures:** The special tool must always be used in accordance with the vehicle manufacturer's instructions and specifications for vehicle-specific application sequences.
- **Secure the immediate working area:** The special tool may only be used if there are no unauthorised persons in the immediate working area.
- **Ensure stability:** The special tool must generally be checked for stability and a secure hold, in particular the hydraulic cylinder must be secured against falling and being thrown about, e.g. by holding it firmly or using a safety holding strap or a holding device from GEDORE-Automotive.
- **Never exceed the maximum load:** The special tool must never be overloaded or operated with a higher load than the maximum permissible.
- **Never use for series production:** The special tool must never be used for series production, especially not for processes that are repeated quickly and carried out at short intervals.
- **Never leave unattended when under load:** The special tool must never be left unattended on the vehicle or component, especially when under load .
- **Avoid damaging effects of force:** The special tool must never be impaired by impacts, clamping or other damaging effects of force, especially not when under load .
- **Cleaning after use:** The special tool may only be cleaned after use with a clean, dry cleaning cloth; immersion in water, solvents or other cleaning fluids is strictly prohibited.
- **Environmentally friendly disposal:** The special tool and packaging material must always be disposed of in an environmentally friendly manner in accordance with the legal requirements; if in doubt, contact the local authorities.
- **Exclusion of liability, warranty and guarantee:** The special tool must always be used in compliance with the safety regulations; in the event of disregard or misuse, the user assumes sole responsibility and GEDORE-Automotive excludes any liability, warranty or guarantee claims.
- **Disclaimer regarding documentation:** The special tool and its use are carefully described in these instructions, but technical changes, errors, incompleteness, inaccuracies, mistakes and damage or consequences due to incorrect use or misuse can never be ruled out.

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1.10 Maintenance

Carry out maintenance on the special tool regularly and only when it is depressurised! Insufficient or improper maintenance can cause damage to the special tool and result in life-threatening situations, serious injuries and property damage during use.

Before each use:

- **Before each use ,** carefully check the special tool for damage, loose parts or unauthorised modifications and, in particular, check that the screw connections are tight.
- **Before each use** , check the moving parts and spindle on the special toolfor free movement and contamination; if necessary, clean and then lubricate them exclusively with molybdenum disulphide paste , e.g. **KL-0014-0030** from GEDORE-Automotive.

Recommended every 24 months:

- Have the special tool professionally checked for safety **every 24 months** by authorised GEDORE-Automotive specialists.

1.11 Troubleshooting

Only carry out troubleshooting on the special tool when it is depressurised!

Problem: Hydraulic oil is leaking from the hydraulic coupling between the hydraulic cylinder and hand pump.
Cause: Hydraulic coupling contaminated or loose.
Remedy: Clean and retighten the hydraulic clutch. Top up missing hydraulic oil **(HLP 32 or 46)** at the hand pump.

Problem: Hydraulic hand pump does not build up pressure or only very slowly.
Cause: Pressure release valve on the hand pump is open or hydraulic oil is missing.
Remedy: Close the pressure release valve on the hand pump completely and top upany missing hydraulic oil **(HLP 32 or 46)** on the hand pump.

Problem: Clamping nut of the mechanical drive runs stiffly on the spindle.
Cause: Clamping nut and spindle contaminated or insufficiently lubricated or incorrect lubricant used.
Remedy: Clean the clamping nut and spindle, check for damage and lubricate exclusively with molybdenum disulphide paste, e.g. **KL-0014-0030** from GEDORE-Automotive.

1.12 Care / storage

ATTENTION

Improper care and storage can lead to damage to the special tool.

- **Never** immerse the special tool in water, solvents or other cleaning fluids.
- **Only** clean the special tool with a dry and clean cleaning cloth.
- **Only** protect the special tool with special acid-free oils for tool care.
- **Always** store the special tool in a dry and clean place together with the corresponding Operating instructions.

1.13 Maintenance

⚠WARNING

Improper repair of the special toolcan lead to **DEATH** or **SERIOUS INJURY**.

- If damage, loose parts or unauthorised modifications are found on the special tool, it must no longer be used for safety reasons!
- Repairs may only be carried out by specially trained personnel at GEDORE Automotive!
- **Only** use original spare parts and accessories from GEDORE Automotive for the special tool!

If necessary, please contact us at GEDORE Automotive for a professional inspection and repair of the special tool.

1.14 Environmentally friendly disposal

Dispose of the special tool and packaging material in an environmentally friendly manner in accordance with the legal requirements. If necessary, ask your local authority about environmentally friendly disposal options.

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2. PRODUCT DESCRIPTION

2.1 KL-1000-502 - Tension bolt and support sleeve

Suitable for kingpins on commercial vehicles with all-wheel drive, e.g. MERCEDES-BENZ Actros (MP1, MP2, MP3), Atego, Axor 2, Arocs, Hexagon, NG and MAN TGA, TGM, TGS, E2000, L2000, M2000L, M2000M, F2000, M90, F90, F9.

- For quick and professional removal of the lower kingpin on the front axle.
- Simple disassembly by screwing in and pulling via a draw bolt.
- Developed for kingpins with an M24x1.5mm internal thread.
- Reduced labour costs thanks to removal directly on the vehicle.
- Especially for use on commercial vehicles with all-wheel drive.
- Additional drive parts are required for use!

2.2 Scope of delivery/single part overview / drive parts

ⓘ This table shows all components for the pulling device. Before using them, check that all the parts included in the scope of delivery are present and, if necessary, assemble the additional drive parts required, either mechanically or hydraulically.

Individual parts...		Pos.	Tool set... KL-1000-502
Basic tool...			
KL-1000-5002 - Tension bolt M24x1.5mm		A	●
KL-0039-1778 - Support sleeve Ø 78/70mm		B	●
Required drive parts... Z			
KL-0039-2020-1 - Pull spindle M20 x 395mm		Z1	+
...Hydraulic	KL-0039-1003 - Mounting adapter for hydraulic cylinder	$Z2^H$	$+^H$
	KL-0040-2500 - Hydraulic cylinder 17t	$Z3^H$	$+^H$
	KL-0215-35 M25 - Hydraulic hand pump 17t	$Z4^H$	$+^H$
...Mechanical	KL-0039-1011 - Mounting adapter for mechanical drive	$Z2^M$	$+^M$
	KL-0040-3009 - Collar nut M20mm	$Z3^M$	$+^M$

● = *Included in scope of delivery* / + = *Additional parts required* / $..^H$ = *Hydraulic drive parts* / $..^M$ = *Mechanical drive parts*

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2.3 Technical data

Inner diameter of the support sleeve: ..... Ø 70mm

Outer diameter of the support sleeve: ..... Ø 78mm

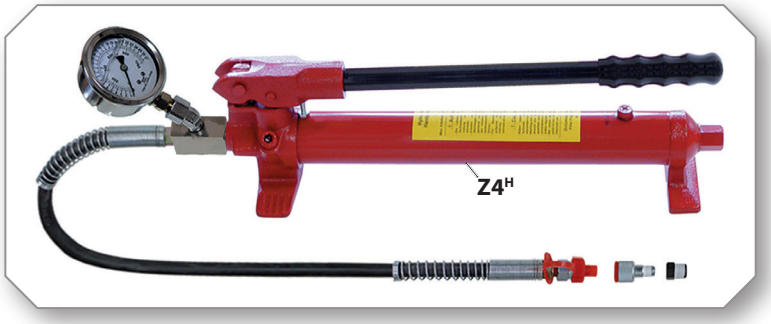
Mounting thread of the tension bolt: .....M24×1.5mm

Thread of the pull spindle: .....M20×2.5mm

Length of the pull spindle:.....395mm

Maximum load of the tool set:.....17t

Maximum load of the hydraulic cylinder:.....17t

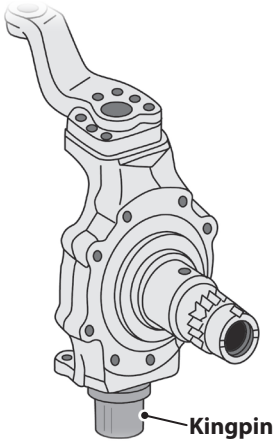


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3. PREPARATION

3.1 Prepare the vehicle

1: Prepare the front axle accordingly...



Kingpin



ATTENTION

Various cables can be damaged when the kingpin is pulled out! It is therefore essential to ensure that these are not subjected to tension during the subsequent work.

1. Lift the vehicle safely and prepare all parts required for removing the kingpin in accordance with the manufacturer's instructions.

3.2 Prepare the tool

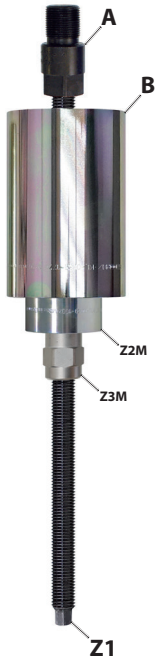
2: Prepare the pulling device accordingly...

WARNING

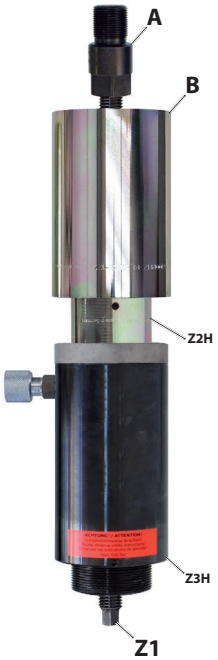
The pulling device can break and spin around when a mechanical drive is used. This can lead to DEATH or SERIOUS INJURY! Therefore, only drive the pulling device by hand using muscle power with a manual drive or a manually driven GEDORE Automotive hydraulic cylinder/pump combination with a suitable pressure gauge for safe pressure control!

The pulling device may fall down and fling around during use. This can lead to DEATH or SERIOUS INJURY! Therefore, always secure the pulling device, for example by holding on to it or using the safety harness - KL-0040-2590 - available as an accessory!

... with mechanical drive parts



... with hydraulic drive parts



1. Prepare the required drive parts, either **hydraulically (..^{H})** or **mechanically (..^{M})**, as shown.

For further drive parts and accessories, see also GEDORE-Automotive catalogue.

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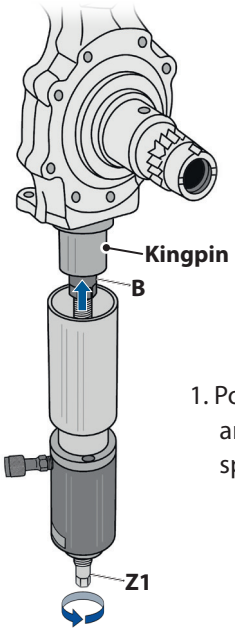
4. APPLICATION EXAMPLE

ⓘIn this application example, the extraction of the lower kingpin on the front axle of an all-wheel drive commercial vehicle is shown using the pulling device with hydraulic drive parts (..H).

When using mechanical drive parts (..M), this process is also carried out according to the same principle.

4.1 Pull out the kingpin

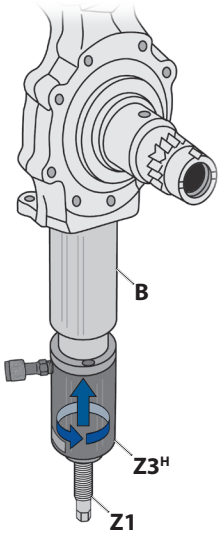
3: Attach the pulling device to the kingpin accordingly and screw in...



WARNING

The pull spindle [Z1] and the tension bolt [A] can break and cause the pulling device to spin around uncontrollably. This can lead to DEATH or SERIOUS INJURY! Therefore, always screw the pull spindle [Z1] and the pull bolt [A] fully into the kingpin!

1. Position the prepared pulling device as shown and screw it fully onto the kingpin via the pull spindle **[Z1]** or tension bolt **[A]** .



2. Then screw the hydraulic cylinder **[Z3H]** onto the pull spindle **[Z1]** until the support sleeve **[B]** is in full contact with the steering knuckle.

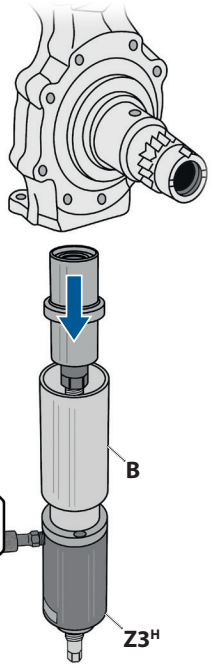
4: Pull the kingpin out of the steering knuckle in a controlled manner...

ATTENTION

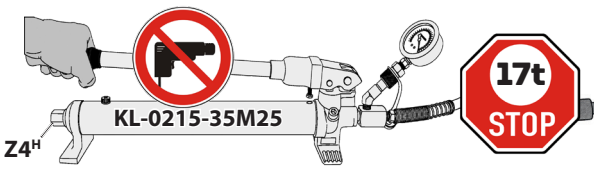
The pulling device can be damaged and break when the kingpin is pulled out! It is therefore essential to ensure that the support sleeve [B] is in full contact with the steering knuckle and is at right angles to the kingpin!

WARNING

The pulling device can break and fling around due to overloading or misuse. This can lead to DEATH or SERIOUS INJURY! Therefore, never overload the pulling device, never use it with a mechanical drive or in any other way than intended!



3. Connect the hydraulic hand pump **[Z4H]** to the hydraulic cylinder **[Z3H]**.



4. Operate the hydraulic hand pump **[Z4H]** with feeling , always observing the pressure on the pressure gauge and pressing out the kingpin in a controlled manner.

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