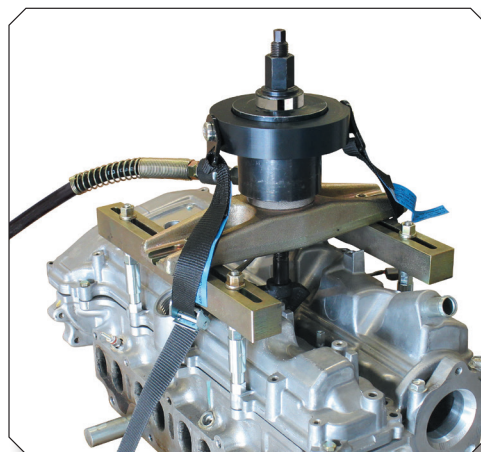


KL-0186-14 KB ..Series

Universal Injector Puller Kit



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**ENGLISH****EN**

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1. READ AND UNDERSTAND FOR YOUR SAFETY



Read and understand these operating instructions **before using** the injector puller and observe all safety and warning instructions. Misuse can result in **DEATH** or **SEVERE INJURIES** ! These operating instructions for use are an integral part of the injector puller. Keep them at a safe place for future reference, and always pass them on to subsequent users of the injector puller. The injector puller complies with the recognised rules of technology as well as the relevant safety regulations.

1.1 Target group

These operating instructions are **exclusively** intended for skilled personnel in specialised motor vehicle workshops!

The injector puller **may only be** used by skilled personnel in specialised motor vehicle workshops who are familiar with the basic regulations on work safety and accident prevention.

❗ **Never** allow unauthorised, inexperienced persons, minors and children, or persons with limited physical, sensory, and mental abilities to use the injector puller!

1.2 Obligations of the owner

Pursuant to the German Ordinance on Industrial Safety and Health (*BetrSichV*), employers are obliged to provide their employees with safe work equipment in accordance with the recognised rules of technology and the relevant safety regulations!

- ❗ The owner of the injector puller **must** ensure that **only** trained personnel in specialised vehicle workshops use the injector puller.
- ❗ The owner of the injector puller **must** ensure that the instructions for use are available to the user and that the user has completely read and understood the operating instructions for use **before** using the injector puller.
- ❗ The owner of the injector puller **must** ensure that the user is familiar with the basic regulations on work safety and accident prevention and that the personal protective equipment is available to him.

1.3 Intended use

The injector puller ...

- ❗ **may only** be used for pulling stuck injectors on diesel engines.
- ❗ **may only** be used to a **max. load of 12 tonnes!**
- ❗ **may only** be used with a manual drive or a manually operated **GEDORE Automotive** hydraulic cylinder / pump combination with a pressure gauge for safe pressure control!
- ❗ **may only** be used with **GEDORE Automotive** genuine spare parts and accessories!
- ❗ **may only** be used in the way described in these operating instructions!
- ⚠ Any other use can result in **DEATH** or **SEVERE INJURIES** !

1.4 Reasonably foreseeable misuse

The injector extractor ...

- ❗ **must never** be used for pulling other injectors or removing other parts than those intended for it!
- ❗ **must never** be used together with an impulse or impact screwdriver!
- ❗ **must never** be used with a machine-operated drive or a machine-operated hydraulic cylinder/pump combination!
- ❗ **must never** be used with a drive other than that intended for it!
- ❗ **must never** be used for batch processing with many pulling processes within a few minutes!
- ❗ **must never** be used with a bridged, modified, or removed safety device!
- ❗ **must never** be modified, converted, or used for other purposes without authorisation!
- ⚠ Use the injector puller **always** as intended. Any other use can result in **DEATH** or in **SEVERE INJURIES**!

1.5 Personal protective equipment

For your safety, **always** wear personal protective equipment when using the injector puller! The injector puller can bring about mechanical hazards such as crushing, cutting and shock injuries.



Always wear **EYE PROTECTION** (for example to DIN EN 166, OSHA 29 CFR 1910.133, ANSI Z87) when using the injector puller to protect yourself against flinging parts or particles!

When using the injector puller, flying parts or particles can cause **SEVERE INJURIES** to your **eyes**!



Always wear **PROTECTIVE GLOVES** (for example to DIN EN 388, OSHA 29 CFR 1910.138, ANSI 105) when using the injector puller to protect yourself against sharp edges and crushing between parts!

When working with the injector puller, sharp edges and crushing between parts can cause **SEVERE INJURIES** to your **hands**!



Always wear **SAFETY SHOES** (for example to DIN EN ISO 20345, OSHA 29 CFR 1910.136, ANSI Z41) when using the injector puller to protect yourself against falling parts!

When working with the injector puller, falling parts can cause **SEVERE INJURIES** to your **feet and toes**!

1.6 Labelling of the warnings

Warnings warn of potential **hazards**. **Always** observe these warnings to avoid **DEATH** or **INJURIES**!

For better differentiation, warnings in these operating instructions are classified as follows:	
Warning sign	Meaning
	Indicates a hazardous situation which, if not avoided, could cause DEATH or SEVERE INJURIES .
	Indicates a hazardous situation which, if not avoided, could cause MODERATE or MINOR INJURIES .
	Indicates a situation which, if not avoided, can cause damage to the tool or an object in its vicinity.
	Note on important information and useful tips.

1.7 Basic warnings

WARNING - Danger to life from MISUSE

MISUSE can cause the injector puller to slip, break, and thus drop or be hurled about. This can cause **DEATH** or **SEVERE INJURIES**!

Read and understand these operating instructions **before using** the injector puller, and observe all safety and warning instructions for **safe use**!

Always work with the injector puller in accordance with the basic regulations on work safety and accident prevention!

Only use the injector puller as intended and as described in these operating instructions!

Always observe the vehicle-specific application procedures in the vehicle manufacturer's repair guide!

Never use the injector puller if it is damaged or has loose parts or unauthorised modifications!

Never use the injector puller with an impulse or impact spanner!

Never use the injector puller with a machine-operated drive or any other drive than intended! Drive it only by hand and with muscle power; **only** use a manual drive or a manually operated **GEDORE Automotive** hydraulic cylinder / pump combination with a pressure gauge for safe pressure control!

Never use the injector puller for batch processing with many pulling processes within a few minutes!

Always wear your personal protective equipment (*safety goggles, protective gloves, safety shoes*) during work!

Never beat the injector puller with a hammer or anything similar.

⚠ WARNING - Danger to life from OVERLOAD

OVERLOAD can cause the injector puller to slip, break, and thus drop or fling around. This can cause **DEATH** or **SEVERE INJURIES**!

- ✔ **Never** exceed the **maximum loading capacity** of the injector puller!
- ✔ **Never** use the injector puller if it is damaged or has loose parts or unauthorised modifications!
- ✔ **Never** use the injector puller with an impulse or impact spanner!
- ✔ **Never** use the injector puller with a machine-operated drive or any other drive than intended! Drive it only by hand and with muscle power; **only** use a manual drive or a manually operated **GEDORE Automotive** hydraulic cylinder / pump combination with a pressure gauge for safe pressure control!
- ✔ **Never** use the injector puller for batch processing with many pulling processes within a few minutes!
- ✔ **Always** wear your personal protective equipment (*safety goggles, protective gloves, safety shoes*) during work!

⚠ CAUTION - Danger to life from DROPPING and FLINGING AROUND

There is a risk of the injector puller **DROPPING** or **FLINGING AROUND** during preparation and use. This can cause **DEATH** or **SEVERE INJURIES**!

- ✔ **Never** stand in axial extension of the injector puller when it is under load!
- ✔ **Always** secure the injector puller via the support bolts on the engine! When using the hydraulic cylinder, it **must** be additionally secured against being flung around with the safety retaining strap - **KL-0040-1790**!
- ✔ **Always** make sure that the injector puller is securely attached to the engine!
- ✔ **Always** deposit the injector puller *safely* against dropping, for example on a workbench.
- ✔ **Always** wear your personal protective equipment (*safety goggles, protective gloves, safety shoes*) during work!

ATTENTION - Risk of DAMAGE

There is a risk of **DAMAGING** the vehicle, the injector, and the injector puller.

- ✔ **Always** observe vehicle-specific application procedures in the vehicle manufacturer's repair guide.
- ✔ **Prior to each use**, check the moving parts and the spindle of the injector puller for sufficient lubrication. If necessary, lubricate them only with molybdenum disulphide paste (for example **GEDORE Automotive - KL-0014-0030**)!
- ✔ **Never** use the injector puller for batch processing with many pulling processes within a few minutes!
- ✔ **Always** support the injector puller straight and even on the engine using the appropriate support bolts!
- ✔ **Never** clamp the injector puller in a vice.

1.8 Basic safety instructions

For your own safety, **always** observe the following safety precautions when using the injector puller in order to avoid injuries and material damage caused by misuse or unsafe handling.

- ✔ Read and understand these operating instructions **before using** the injector puller, and observe all safety and warning instructions for **safe use**!
- ✔ **Always** observe the vehicle-specific application procedures in the vehicle manufacturer's repair guide!
- ✔ **Always** work with the injector puller in accordance with the basic regulations on work safety and accident prevention!
- ✔ **Never** use the injector puller when you are tired or under the influence of alcohol, drugs, or medication!
- ✔ **Before each use**, check the injector puller **carefully** for damage, loose parts, or unauthorised modifications. **Never** use it if you notice any such deficiencies!
- ✔ Use **only genuine GEDORE Automotive** spare parts and accessories!
- ✔ **Before using** the injector puller, ensure that **no** unauthorised persons are in the immediate environment!
- ✔ **Always** observe the **max. loading capacity** when using the injector puller, and **never** exceed it!
- ✔ **Never** stand in axial extension of the injector puller when it is under load!
- ✔ **Never** use the injector puller with any other drive than intended!

- ✔ **Always** wear your personal protective equipment (*safety goggles, protective gloves, safety shoes*) during work!
- ✔ Interrupt your work **immediately** if you are unsure about using the injector puller, and contact **GEDORE Automotive GmbH** if necessary!
- ✔ For safety reasons, ensure that a damaged injector puller is no longer used! Professional inspection and repair may only be carried out by specially trained personnel from **GEDORE Automotive GmbH**!
- ✔ **Always** use the injector instructor as intended. Non-compliance will invalidate any warranty claim and may significantly reduce its durability!

1.9 Work environment

For your safety, **only** use the injector puller in a safe working environment.

- ✔ The workplace **must** be clean and tidy.
- ✔ The workplace **must** be sufficiently large and illuminated.
- ✔ The workplace **must** be on a solid and non-skidding floor.
- ✔ The workplace **must** be safeguarded against access of unauthorised persons.
- ✔ The workplace **must** be at room temperature between -10°C and +40°C.

1.10 Emissions

Molybdenum disulphide paste and hydraulic oil can drip or escape when using the injector puller and thus pose a hazard to the environment.

- ✔ **Immediately** remove leaking hydraulic oil as well as excess molybdenum disulphide paste (using oil binding agents or a cleaning cloth, for example).
- ✔ In case of skin contact with hydraulic oil, clean the affected area **immediately** with degreasing soap and water.
- ✔ Dispose of pollutants 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**) as well as for molybdenum disulphide paste (**MOLYKOTE® G-N PLUS PASTE**) can be found on the manufacturer's site on the Internet (**World Wide Web**) or, if required, contact **GEDORE Automotive GmbH**.

1.11 Maintenance

Perform maintenance on the injector puller **at regular intervals** and **only** when the tool is tension-free and/or depressurised! Poor and improper maintenance can damage the injector puller, thus causing **DEATH** or **SEVERE INJURIES**!

Prior to each use:

- ✔ **Prior to each use**, check the injector puller **carefully** for damage, loose parts, or unauthorised modifications!
- ✔ Prior to **each use** of the injector puller, check the spindle for contamination and damage. If necessary, clean it, and subsequently lubricate it **only** with molybdenum disulphide paste! (For example, **GEDORE Automotive - KL-0014-0030**)

Recommended: Every 24 months:

- ✔ Have the injector puller professionally checked **every 24 months** by authorised **GEDORE Automotive GmbH** specialists!

1.12 Troubleshooting

Always perform troubleshooting on the injector puller when it is depressurised/tension-free.

Problem: The spindle's clamping nut on the injector puller is sluggish.

Reason: The spindle is contaminated or insufficiently lubricated, or wrong lubricant was used.

Remedy: Clean the spindles, check them for damage, and lubricate **exclusively** with molybdenum disulphide paste. (For example, **GEDORE Automotive - KL-0014-0030**)

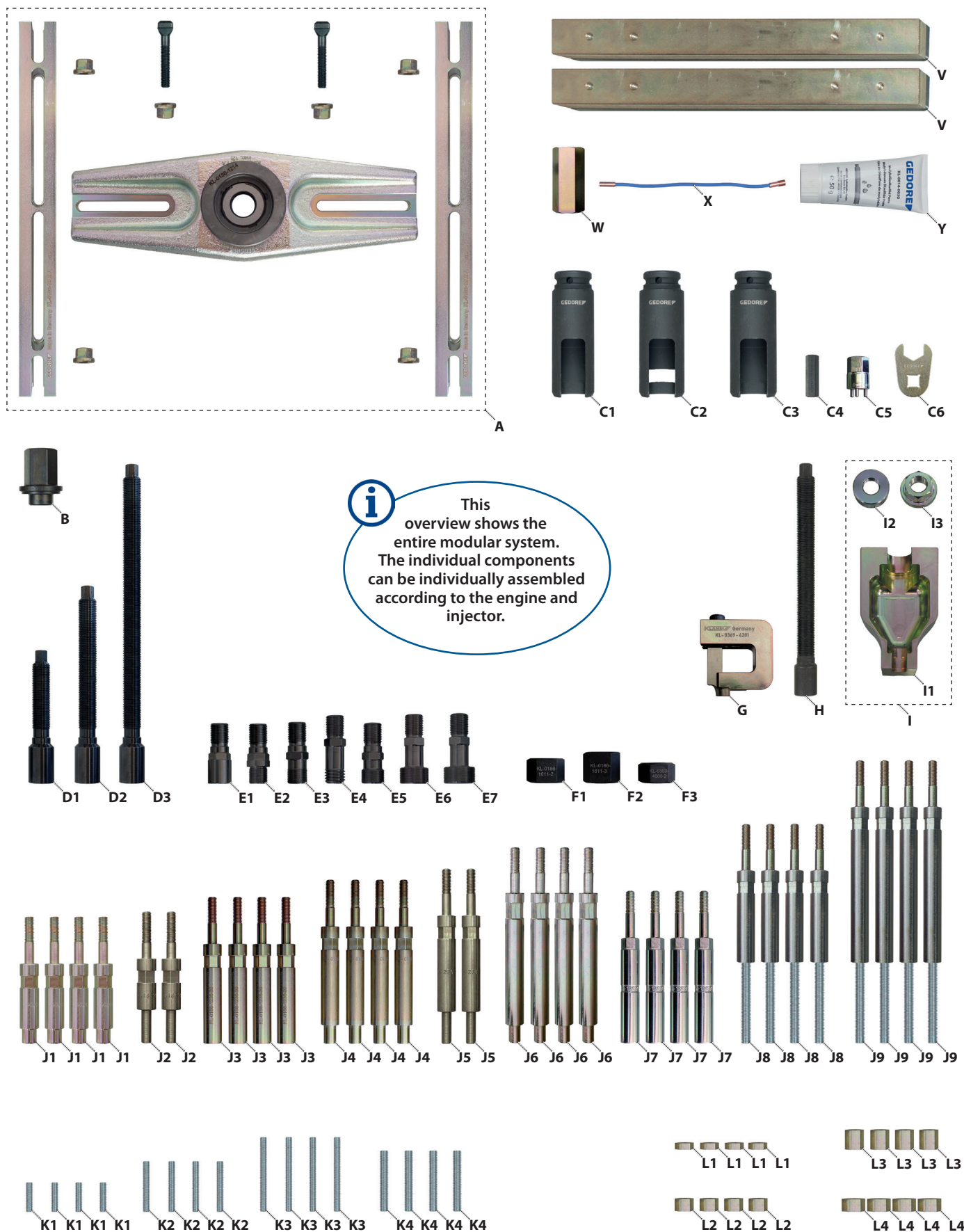
Problem: Hydraulic oil escapes from the hydraulic coupling between hydraulic cylinder and hand pump.

Reason: Hydraulic coupling contaminated or loose.

Remedy: Clean and retighten the hydraulic coupling. Top up lacking hydraulic oil (**HLP 32**) at the hand pump.

2. Product description - Modular system of the injector puller series..

Injector extractor basic kit		Supplementary kits													
		KL-0186-14 KB	KL-0186-130 A	KL-0186-132	KL-0186-1233	KL-0186-1234	KL-0186-1236	KL-0186-1238	KL-0186-1239	KL-0186-1240	KL-0186-1281 A	KL-0186-1282 A	KL-0186-1283 A	KL-0186-1284 A	KL-0186-1285 A
Basic tool:															
KL-0186-121 A - Pulling bridge (basic tool)	A	●													
KL-0186-1215 - Collar nut M16x1.5mm	B	●													
Tool [C..] for opening the injector:															
KL-1383-1022 - Socket spanner size 25mm	C1										●				
KL-1383-1222 A - Socket spanner size 27mm	C2											●		●	
KL-0369-461 A - Socket wrench size 29mm	C3	●													
KL-0369-4505 A - Special insert size 10mm	C4	●													
KL-0186-2201 - Special insert 3 journals	C5													●	
KL-4417-17 A - Socket wrench size 17mm	C6												●		
Draw spindles [D..]:															
KL-0186-1401 - Pull spindle 115mm	D1	●													
KL-0186-1402 - Pull spindle 170mm	D2														
KL-0186-1403 - Pull spindle 285mm	D3												●		
Pull adapter [E..]:															
KL-0583-1032 A - Pull adapter M14x1.5mm	E1	●													●
KL-0186-1612 A - Pull adapter M16x1mm	E2												●		
KL-0583-1005-1 A - Pull adapter M17x1mm	E3	●													
KL-0186-1711 A - Pull adapter M18x2.5mm	E4														●
KL-0186-1611-1 A - Pull adapter M20x1mm	E5													●	
KL-1383-1021 A - Pull adapter M25x1mm	E6										●				
KL-1383-1221 A - Pull adapter M27x1mm	E7											●			
Union nuts [F..] for pull adapters [E..]:															
KL-0186-1611-2 - Union nut M25x0.5mm	F1													●	
KL-0186-1611-3 - Union nut M25x0.75mm	F2													●	
KL-0369-4606-2 - Union nut M27x1mm	F3	●													
Special nozzle extractor [G] for DELPHI injector:															
KL-0369-420 - Nozzle extractor	G														●
Pull spindle [H] + pull hook [I] for heavily stuck BOSCH injectors:															
KL-0583-1032 - Pull spindle M14x1.5mm	H														
KL-0186-1321 - Draw hook	I1			●											
KL-0186-1322 - Knurled nut	I2			●											
KL-0186-1323 - Hexagon nut	I3			●											
Support bolts [J..]:															
KL-0186-1231-11 - Support pin 110mm, M6	J1	● 4x													
KL-0186-1234-10 - Support pin 113.5mm, M6	J2					● 2x									
KL-0186-1236-20 - Support pin 129mm, M6	J3						● 4x	● 4x							
KL-0186-1233-11 - Support pin 145mm, M6	J4				● 4x										
KL-0186-1234-20 - Support pin 153.5mm, M6	J5					● 2x									
KL-0186-1240-10 - Support pin 170mm, M6	J6									● 4x					
KL-0186-1239-10 - Support pin 128.5mm, M7	J7								● 4x						
KL-0186-1232-1 - Support pin 120 mm, M8	J8		● 4x												
KL-0186-1232-1 L - Support pin 175mm, M8	J9			● 4x											
Grub screws [K..]:															
KL-0186-1235-2 - Grub screw M6 x 25mm	K1	● 4x			● 4x	● 4x		● 4x		● 4x					
KL-0186-1235-3 - Grub screw M6 x 45mm	K2	● 4x													
KL-0186-1235-4 - Grub screw M6 x 65mm	K3						● 4x								
KL-0186-1235-6 - Grub screw M7 x 55mm	K4								● 4x						
Spacer nuts [L..]:															
KL-0186-1251-1 - Spacer nut M6 x 5mm	L1	● 4x					● 4x								
KL-0186-1252-1 - Spacer nut M6 x 10mm	L2	● 4x													
KL-0186-1253-1 - Spacer nut M6 x 15mm	L3	● 4x													
KL-0186-1261-1 - Spacer nut M8 x 10mm	L4		● 4x												
Miscellaneous parts:															
KL-0186-122 - Support bar kit	V														
KL-0369-4111 - Adapter (for impact extractor)	W														●
KL-0126-221 - Magnetic lifter, flexible	X	●													
KL-0014-0030 - Molybdenum disulphide paste	Y	●													



2.1 KL-0186-14 KB - Universal injector puller kit

Universally suitable for diesel injectors, for example for BOSCH injectors with M17x1 internal thread, and also for BOSCH and DELPHI injectors with M14x1.5 external thread.

Particularly suitable for Mercedes, for example: OM611, OM612, OM613, OM628**, OM629**, OM639, OM640, OM642**, OM646, OM646 EVO, OM647, OM648 (**V engines: for reasons of space, you may have to lower the engine); Peugeot, Citroën, Fiat, Lancia, Suzuki: DV6 16V (not on Euro 5 [8V] engines); Ford: 1.6 TDCi (G8DA, G8DB, HHDA, HHJA, HHJB); VW-Audi: 2.0, 2.5, 2.7, 3.0 Common Rail TDI; Volvo: 1.6 D (D4164T), 2.2 D; Mazda: Y6 DV6 16V (not on Euro 5 [8V] engines)

The injector puller kit enables fast and powerful pulling of severely stuck injectors directly on the vehicle without having to remove the cylinder head. Depending on the injector, the special 2-part pull spindles with pull adapter can be universally combined in terms of length and connection diameter.

① The injector puller can also be universally used for many other common rail diesel engines by using the optionally available support bolts, pull adapters, and supplementary kits. (👁 **Chapter 7.** - Support bolts/Supplementary kits)

2.2 Scope of delivery / overview of the single parts

Item	Part no.	Description	Qty.
A	KL-0186-121 A	Pull-off bridge (basic tool)	1
A1	KL-0186-1211	Base plate	1
A2	KL-0186-1212 A	Support bar	2
A3	KL-0206-1011	Collar nut M8	6
A4	KL-0186-1213	Screw for T-groove M8	2
A5	KL-0186-1214	Adapter with axial bearing	1
A5.1	KL-0186-1214-1	Adapter without axial bearing	1
A5.2	KL-0021-0006	Axial bearing	1
A5.3	KL-0040-3005	Circlip	1
B	KL-0186-1215	Collar nut M16x1.5mm	1
C3	KL-0369-461 A	Socket spanner size 29mm	1
C4	KL-0369-4505 A	Special insert size 10mm	1
D1	KL-0186-1401	Pull spindle 115mm	1
D2	KL-0186-1402	Pull spindle 170mm	1
E1	KL-0583-1032 A	Pull adapter M14x1.5mm	1
E3	KL-0583-1005-1 A	Pull adapter M17x1mm	1
F3	KL-0369-4606-2	Union nut M27x1mm	1
J1	KL-0186-1231-11	Support pin 110mm, M6	4
K1	KL-0186-1235-2	Grub screw M6 x 25mm	4
K2	KL-0186-1235-3	Grub screw M6 x 45mm	4
L1	KL-0186-1251-1	Spacer nut M6 x 5mm	4
L2	KL-0186-1252-1	Spacer nut M6 x 10mm	4
L3	KL-0186-1253-1	Spacer nut M6 x 15mm	4
X	KL-0126-221	Magnetic lifter, flexible	1
Y	KL-0014-0030	Molybdenum disulphide paste	1
-	KL-4990-2001	Plastic box 53 x 107 x 18mm	2
-	KL-0186-1492 B	Foam insert	1
-	KL-4990-9474	Plastic case	1
-	KL-0186-14/80	Laminated insert	1

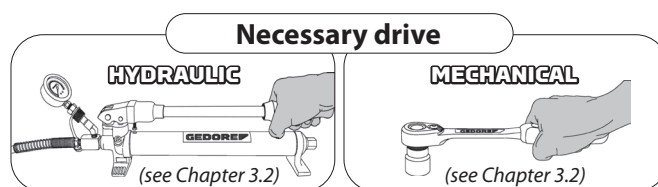
2.3 Specifications

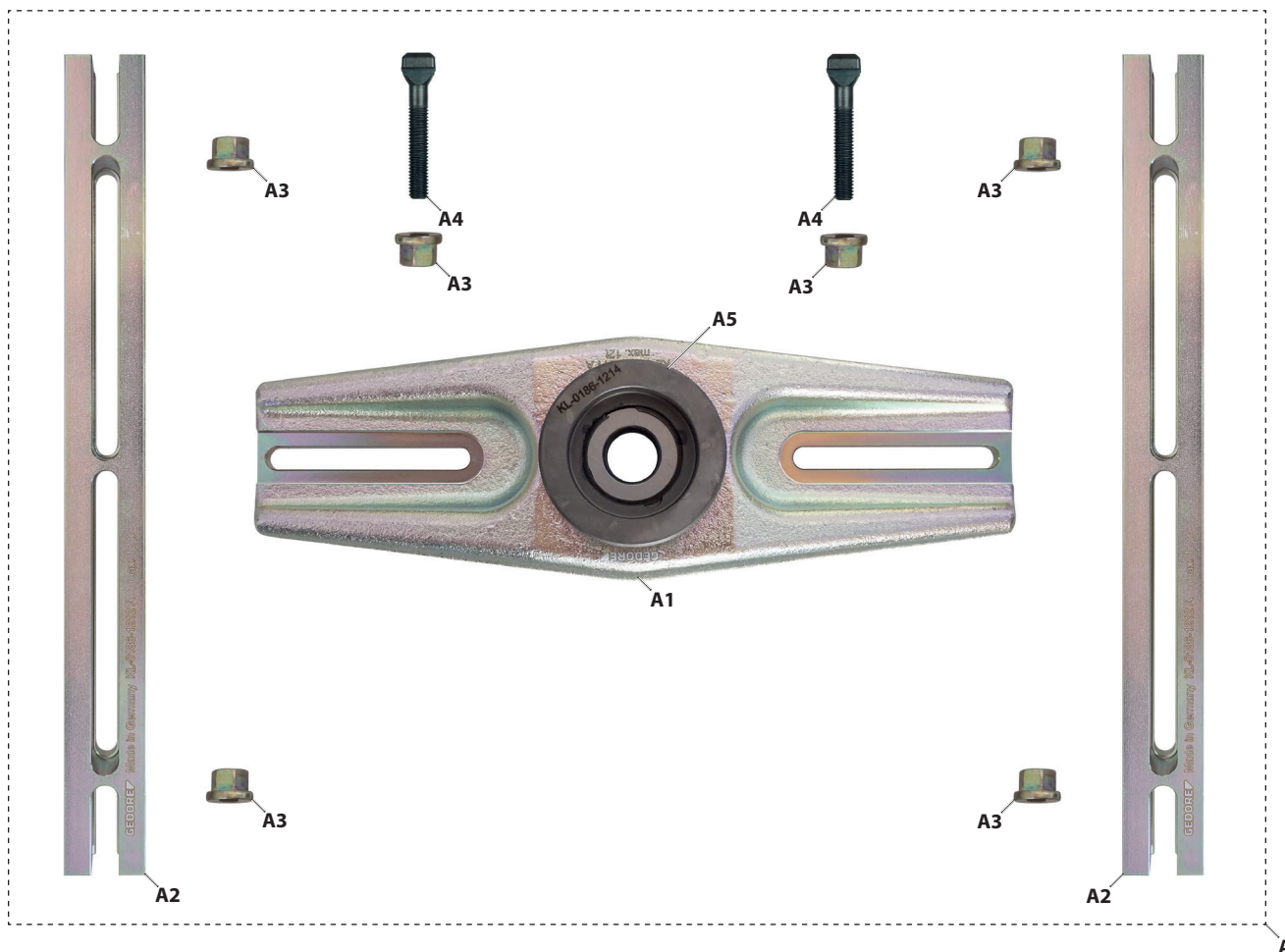
Mounting thread of pull adapter [E1]:M14x1.5mm

Mounting thread of pull adapter [E3]: M17x1mm

Mounting thread of union nut [F3]: M27x1mm

Max. load of pull-off bridge [A]: 12t





2.4 Component overview

This overview shows a typical application with the basic components of the injector puller.
 The individual components can be assembled universally depending on the engine and injector.

Pull spindle + collar nut

Screwed in or on the injector, to pull out the injector by turning the **collar nut**.

Alternative drive
 with the 17t **hydraulic cylinder**.

Basic tool

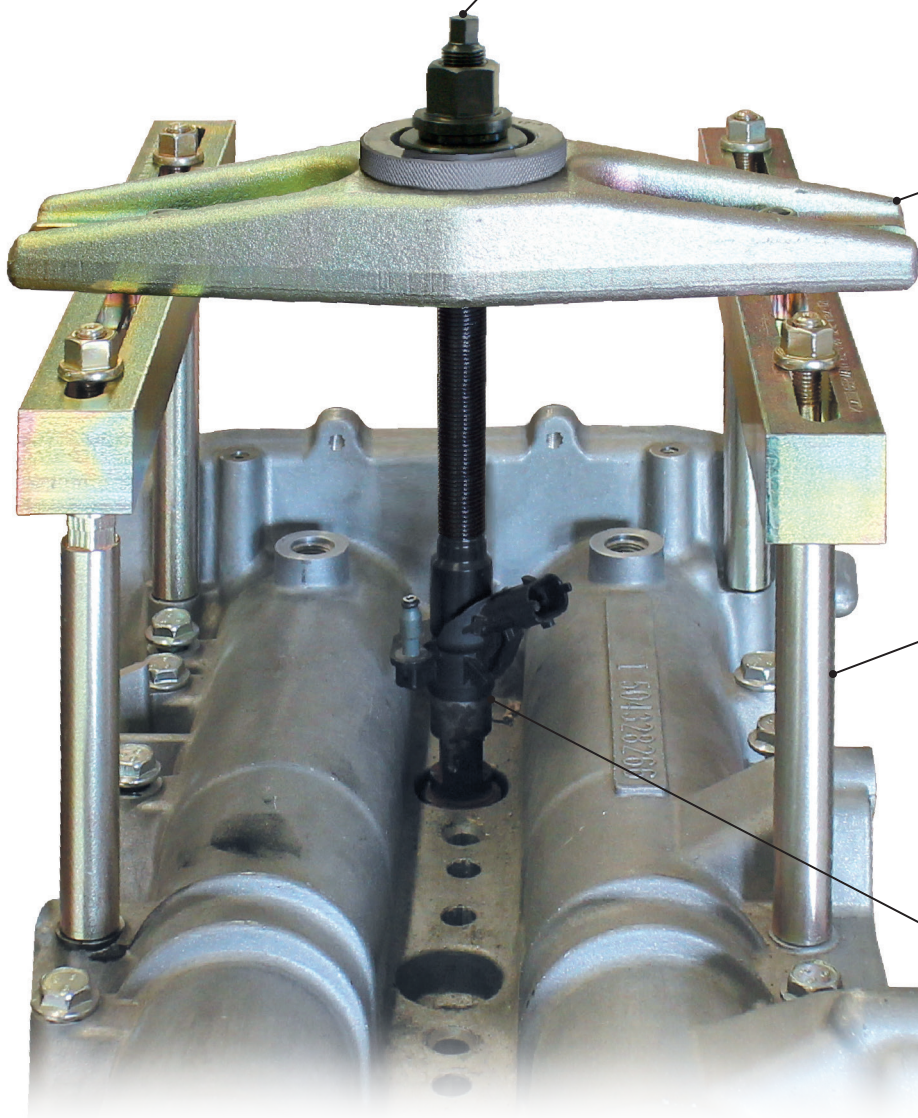
To take up the pull spindle and distribute the load to the **four support bolts**.

4 support bolts

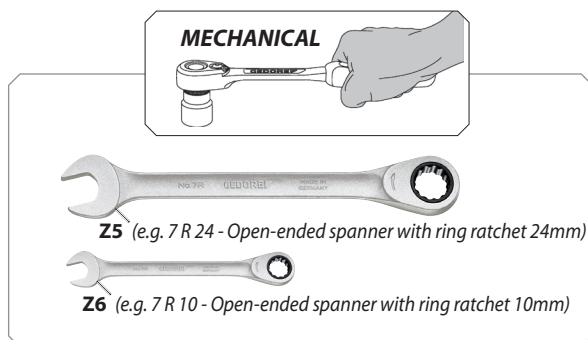
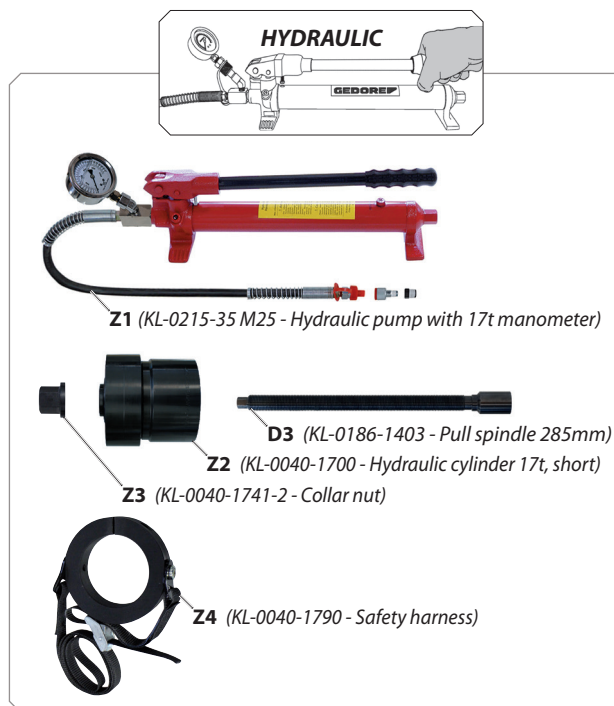
Adjusted accordingly in length and screwed into four holes on the cylinder head, to distribute the load across the cylinder head.

Injector

Depending on the design, prepare or disassemble it accordingly for removal.



❶ 1: Required drive parts



❷ 2: Prepare the engine according to the manufacturer's specifications.



3. PREPARATION

⚠ WARNING

Misuse or overloading the injector puller can cause it to slip, break, and thus drop or fling around. This can cause **DEATH** or **SEVERE INJURIES**!

- ❗ **Prior to using** the injector puller, read and understand **all** safety instructions and warnings listed in **Chapter 1**, and **always observe** them **for safe use**!
- ❗ Use the injector puller **as intended** and **always** carry out maintenance and repair work in compliance with the regulations on occupational safety and accident prevention as well as the vehicle manufacturer's instructions!
- ❗ **Prior to each use**, check the injector puller **carefully** for damage, loose parts, or unauthorised modifications. **Never** use it if you notice any such deficiencies!
- ❗ **Always** wear your personal protective equipment (for example *safety goggles, protective gloves, safety shoes*) when working!

3.1 Checking the scope of delivery

Prior to preparing or using the injector puller, check that all parts of the scope of delivery are available (*see chapter 2.*), and follow the instructions below.

3.2 Assembling drive parts

⚠ WARNING

Using a machine-operated drive can cause the injector puller to break, and thus fragments and various parts be hurled about. This can cause **DEATH** or **SEVERE INJURIES**!

- ❗ **Never** use the injector puller with an impulse or impact spanner!
- ❗ **Never** use the injector puller with a machine-operated drive or any other drive than intended! Drive it only by hand and with muscle power; **only** use a manual drive or a manually operated **GEDORE Automotive** hydraulic cylinder / pump with a pressure gauge for safe pressure control!

1. Assemble the required drive parts for the injector puller as shown in ❶ 1.

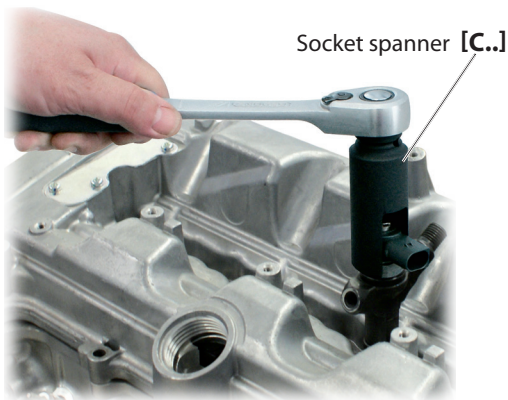
❶ For other pressure plates see the *GEDORE Automotive catalogue*.

3.3 Preparing the engine

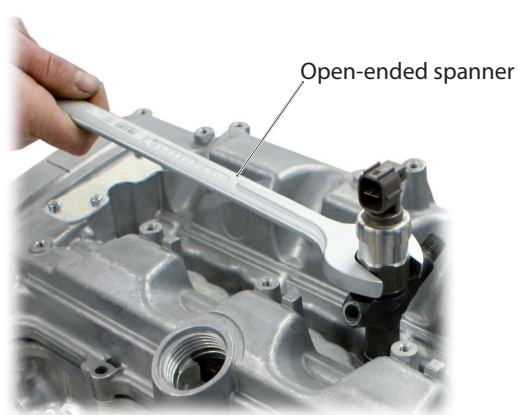
1. Prepare the engine for the injector removal according to manufacturer's instructions. Dismantle the high-pressure line on the injector, for example, remove the injector fastening, and detach the cable connector ❷ 2.

📷3: Loosen and remove the locking nut on the injector.

(A)

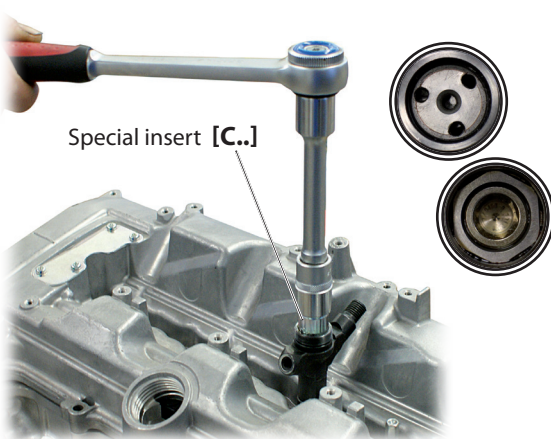


(B)

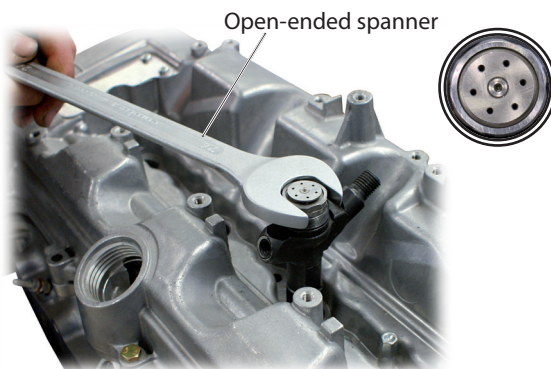


📷4: Loosen the screw ring on the injector and remove it.

(A)



(B)



4. TYPICAL APPLICATION

This typical application describes how to pull a jammed injector on the cylinder head. In general, both the **mechanical** or **hydraulic** procedures follow the same principle.

4.1 Preparing the injector

1. Depending on the injector, it may have to be opened and disassembled beforehand in order to screw in a pull adapter [E..]. Select the appropriate tool using the table **📷5**.

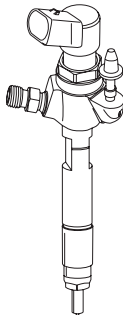
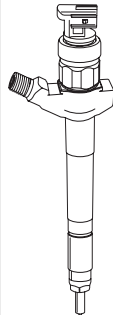
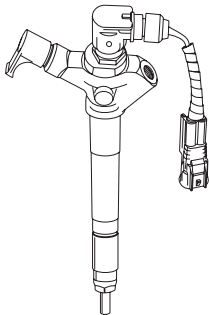
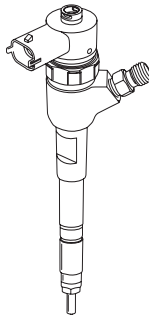
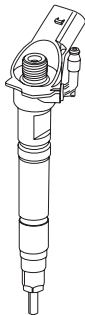
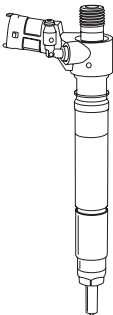

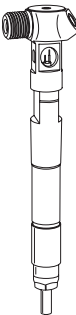
❗ An opened injector must be returned to the manufacturer and checked for reuse.

2. Loosen and remove the lock nut on the injector as shown in **📷3A** or **B** after using a suitable socket spanner [C..] or open-ended spanner.

❗ It may be necessary to turn the cable connection on the injector slightly so that the socket spanner [C..] fits onto the lock nut!

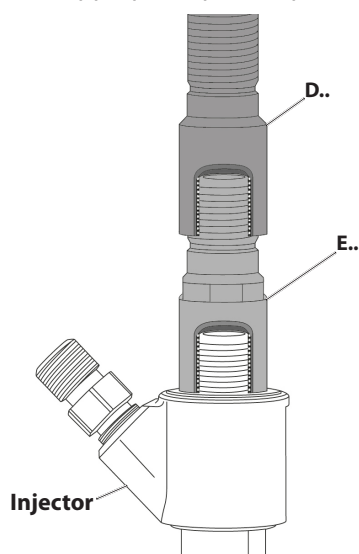
3. 1.2 Loosen and remove the screw ring on the injector as shown in **📷4A** or **B** using a suitable special insert [C..] or open-ended spanner. Then remove all loose internal parts with the magnetic lifter [X].

5: Depending on the injector use the appropriate tool for opening and disassembling.

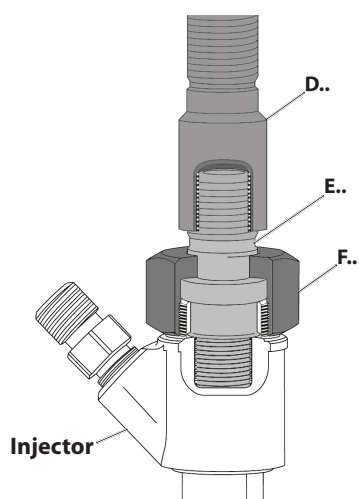
Manufacturer:		Continental Siemens VDO	Denso		Bosch		Delphi		
Injector:									
<u>Open injector with ..</u>	Item								
KL-1383-1022 Socket spanner size 25mm	C1	●*							
KL-1383-1222 A Socket spanner size 27mm	C2	●*	●						
KL-0369-461 A Socket spanner size 29mm	C3				●	Opening and disassembling not necessary!			
KL-4417-17 A Socket spanner size 17mm	C6			●					
<u>Disassemble injector with ...</u>	Item								
KL-0369-4505 A Special insert size10mm	C4				●				
KL-0186-2201 Special insert 3 journals	C5		●*			Opening and disassembling not necessary!			
Open-ended spanner size 22mm (Not in the scope of delivery!)	-		●*						
* Optionally depending on the spanner size of the injector.									

❶6: Mount the appropriate pull adapter with spindle.

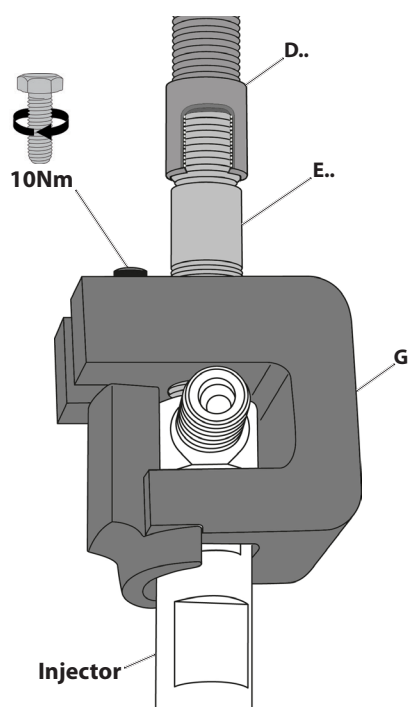
A



B



C



4. Depending on the mounting thread on the injector, select a suitable pull adapter [E..] or nozzle extractor [G] using table **❶7**.

❶ When using the pulling hook [I] with pulling spindle [H], continue with **chapter 4.2!**

5. Screw the appropriate pull adapter [E..] completely on the injector **❶6A** or screw it in **❶6B**.

For injectors with lateral fuel connection (angled by 90°), fix the nozzle extractor [G] on the injector in combination with the pull adapter [E4] as shown in **❶6C**.

6. Depending on the injector, completely screw on a suitable union nut [F..] where possible and as shown in **❶6B** for better force transmission.

❶ By screwing on the union nut [F..], the force is additionally distributed evenly across both threads when pulling out heavily stuck injectors.

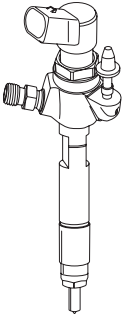
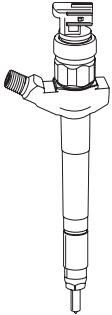
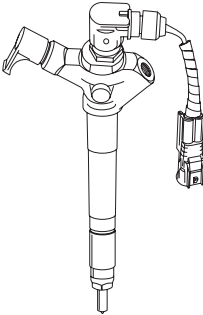
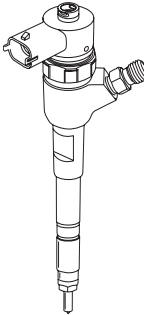
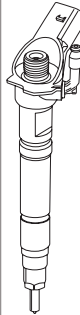
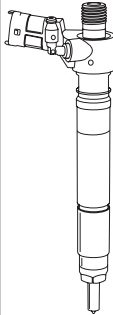
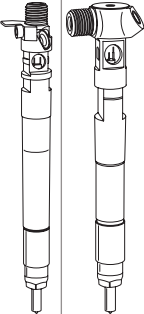
7. Select a pull spindle with a suitable length [D..] and screw it completely onto the pull adapter [E..] as shown in **❶6**.

❶ The pull spindles [D1] and [D2] are provided for the mechanical drive, and the long pull spindle [D3] for the hydraulic drive!

8. Continue with **chapter 4.3**.

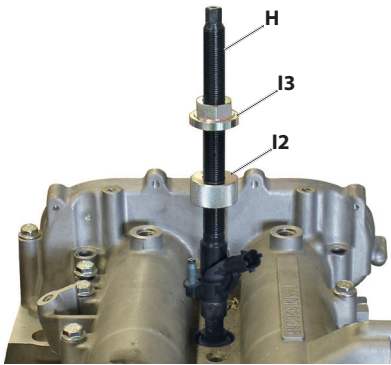
❶ When using the pulling hook [I] with pulling spindle [H], continue with **chapter 4.2!**

📷7: Depending on the injector, use the following pull adapter [E..].

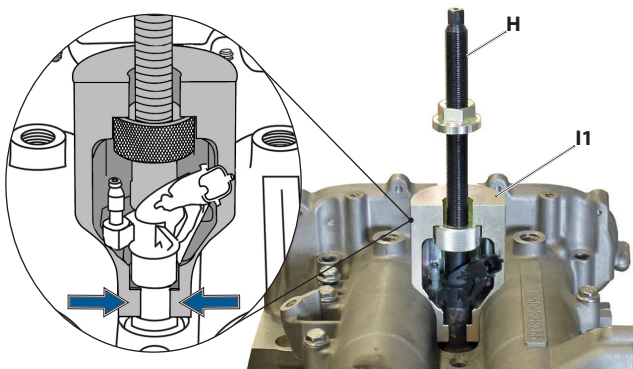
Manufacturer:			Continental Siemens VDO	Denso		Bosch		Delphi	
Injector:									
Thread:	Pull adapter:	Item	📷6A				📷6B		📷6C
M14x1.5	KL-0583-1032 A	E1					•	•	•
	KL-0583-1032* + KL-0186-132*	H I					•*	•*	
M16x1	KL-0186-1612 A	E2			•				
M17x1	KL-0583-1005-1 A	E3				•			
M18x2.5	KL-0186-1711 A + KL-0369-420	E4 G							•
M20x1	KL-0186-1611-1 A	E5		•					
M25x1	KL-1383-1021 A	E6	•						
M27x1	KL-1383-1221 A	E7	•						
Thread:	Union nut:	Item	📷6A				📷6B		📷6C
M25x0.5	KL-0186-1611-2	F1		•**					
M25x0.75	KL-0186-1611-3	F2		•**					
M27x1	KL-0369-4606-2	F3				•			

* Optional; **only** required for heavily stuck injectors. / ** Optional; depends on the thread on the injector.

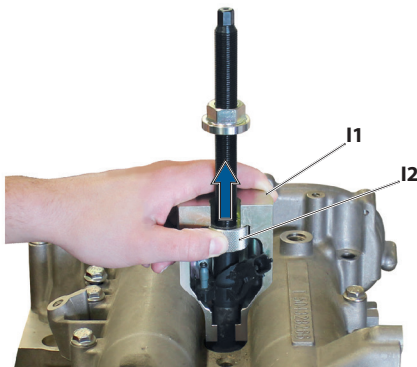
📸 8: Screw on the knurled screw [I2] and hexagon nut [I3].



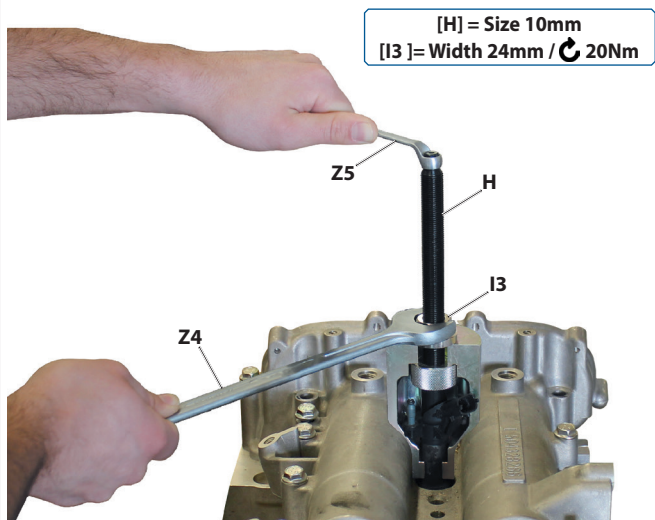
📸 9: Insert the pull hook [I1] on the injector.



📸 10: Pretension the pull hook [I1] with the knurled nut [I2].



📸 11: Fix the pull hook [I1] with the hexagon nut [I3].



4.2 Installing the pull hook

❗ This step is **only necessary when using** the pull hook [I1] and pull spindle [H]; otherwise, continue with **chapter 4.3**.

The use of the pull hook [I1] distributes the force evenly to both the pull spindle [H] and the pull hook [I1] when removing extremely tight-fitting injectors.

1. Screw the pull spindle [H] completely onto the injector 📸 8.

2. Screw the knurled nut [I2] and the hexagon nut [I3] onto the pull spindle [H] as shown in 📸 8.

CAUTION

The pull hook [I1] and the injector may be damaged.

➡ Fully insert the pull hook [I1] on the injector.

3. Insert the pull hook [I1] on the injector and the pull spindle [H] as shown in 📸 9.

CAUTION

The pull hook [I1] and the injector may be damaged.

➡ Fully pretension the pull hook [I1] in the direction of pull (UPWARDS) by turning the knurled nut [I2].

4. Pretension the pull hook [I1] in the direction of pull (UPWARDS) as shown in 📸 10 using the knurled nut [I2].

CAUTION

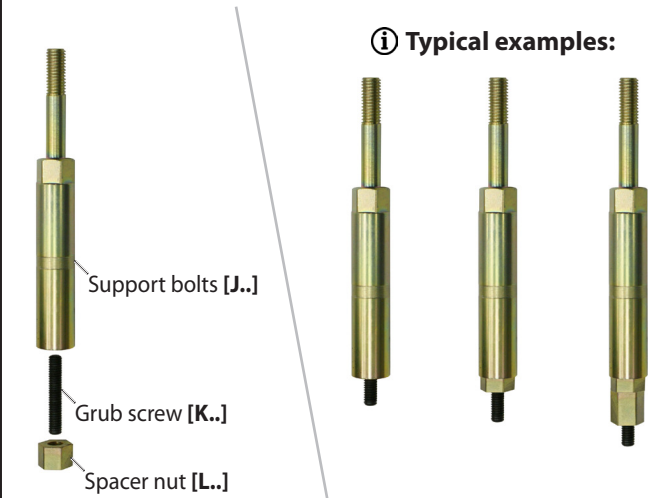
The injector may be damaged when tightening the hexagon nut [I3].

➡ Counterhold the pull spindle [H] when tightening the hexagon nut [I3].

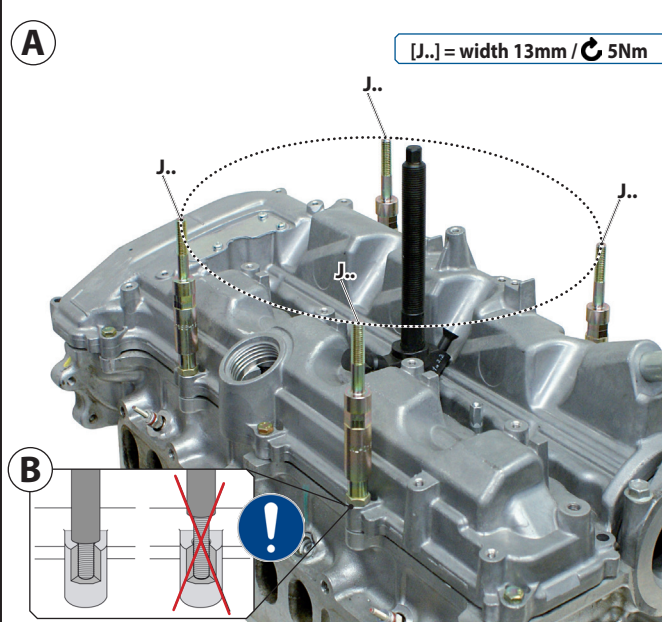
5. Fix the pull hook [I1] by tightening the hexagon nut [I3] with 20 Nm as shown in 📸 11.

6. The pull hook [I1] is no longer shown below, but the rest of the procedure basically follows the same principle.

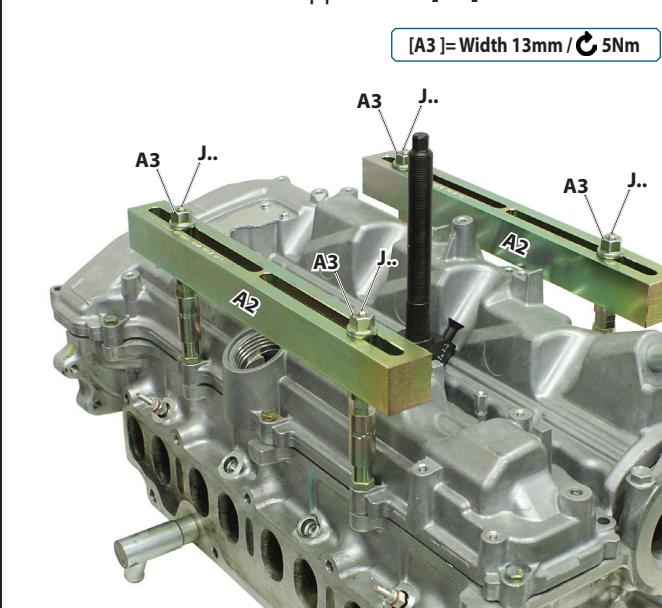
📷 12: Assembling support pin [J..].



📷 13: Screwing in support bolt pin [J..].



📷 14: Fit and secure the support bars [A2].



4.3 Preparing the pull-off bridge

CAUTION

The cylinder head and the injector puller may be damaged.

➤ Select support holes which are around the injector and seated stably in the solid material of the cylinder head.

1. To pull out the injector, insert four support bolts [J..] to take up the load on the cylinder head 📷 13.

To do this, unscrew 4 valve cover screws evenly around the injector on the cylinder head.

① If no support is possible on the holes for the valve cover bolts, but the cylinder head has smooth and stable contact surfaces, for example after removing the valve cover, you can use the support bars [V] as an alternative for screwing in the support bolts.

CAUTION

The cylinder head and the injector puller may be damaged.

➤ Compile the support bolts [J..] on the cylinder head such that they are all exactly at the same height after inserting! This is prerequisite for straight removal of the injector!

➤ You must screw the support bolts [J..] completely into the cylinder head 📷 13B!

2. Depending on threaddiameter of the valve cover screws and the height required to remove the injector, compile the support bolts [J..], grub screws [K..], and any spacer nuts [L..] required for height compensation 📷 12.

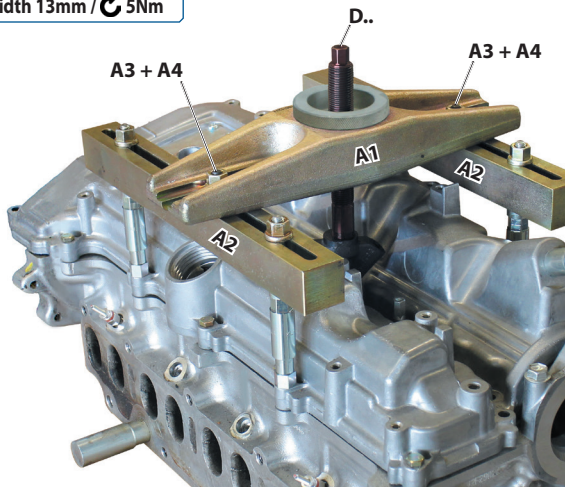
Insert the four support bolts [J..] into the cylinder head as shown in 📷 13A uniformly around the injector and tighten them with 5Nm.

① The length of the support bolts [J..] can also be adjusted using the different grub screws [K..] and spacer nuts [L..] 📷 12.

3. Mount the support bars [A2], as shown in 📷 14, on the support bolts [J..] and secure them with the collar nuts [A3] fastened with 5Nm.

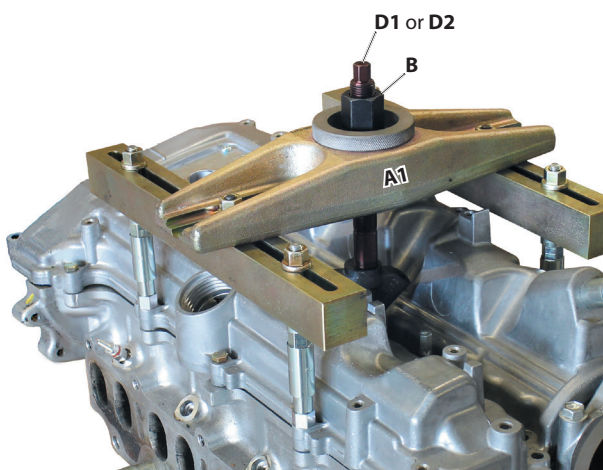
📷 15: Fit and secure the base plate [A1].

[A3] = Width 13mm / ⚙️ 5Nm

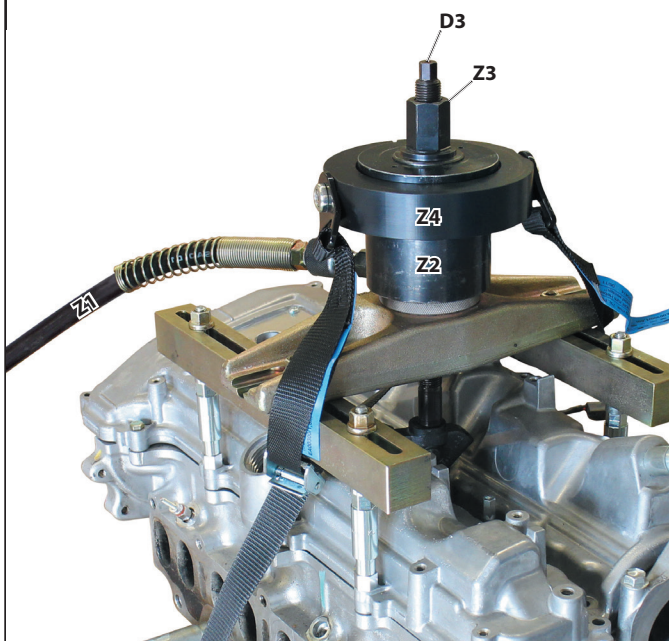


📷 16: Prepare as follows, depending on the drive type:

A Mechanical drive



B Hydraulic drive



4. Mount the base plate [A1] as shown in 📷 15 over the traction spindle [D..] on the support bars [A2], and secure it by tightening the screws [A4] and collar nuts [A3] with 5Nm.

⚠️ WARNING

Using a machine-operated drive can cause the injector puller to break, and thus fragments and various parts be hurled about. This can cause **DEATH** or **SEVERE INJURIES**!

❗ **Never** use the injector puller with an impulse or impact spanner!

❗ **Never** use the injector puller with a machine-operated drive or any other drive than intended! Drive it only by hand and with muscle power; **only** use a manual drive or a manually operated **GEDORE Automotive** hydraulic cylinder / pump with a pressure gauge for safe pressure control!

❗ When using the hydraulic cylinder [Z2], secure it against flinging around by using the safety retaining belt [Z4] and attach it to the engine!

⚠️ CAUTION

The pull spindle [D.] can seize up when using the mechanical drive and thus be damaged.

❗ Before each use, lubricate the pull spindle [D..] with molybdenum disulphide paste (e.g. KL-0014-0030).

5. Preparing the injector puller with ...

... mechanical drive:

As shown in 📷 16A, Screw the collar nut [B] onto the pull spindle [D..] by hand until it contacts the base plate [A1].

... hydraulic drive:

Mount the hydraulic cylinder [Z2] as shown in 📷 16B, ⓘ in the **correct position** over the pull spindle [D..] and secure it to the engine using the safety harness [Z4].

ⓘ Observe the direction of pull/pressure on the hydraulic cylinder [Z2]!

Then screw the collar nut [Z3] by hand on the pull spindle [D..] until it contacts the hydraulic cylinder [Z2].

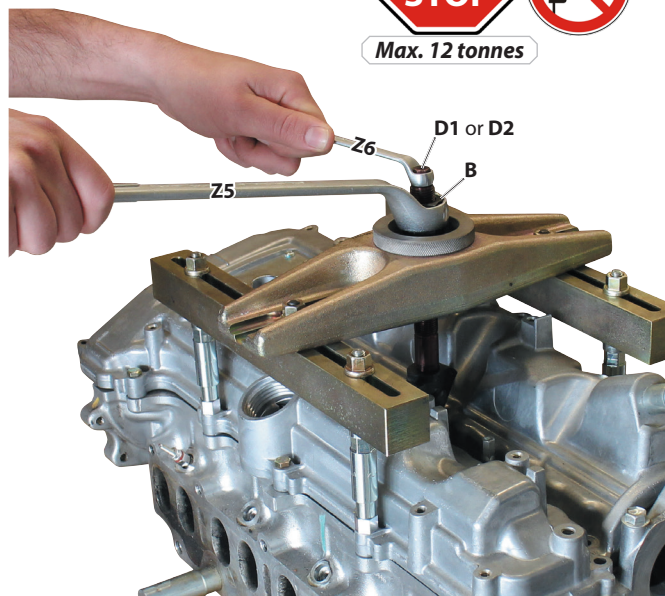
📷 16B.

Connect the hydraulic pump [Z1] to the hydraulic cylinder [Z2].

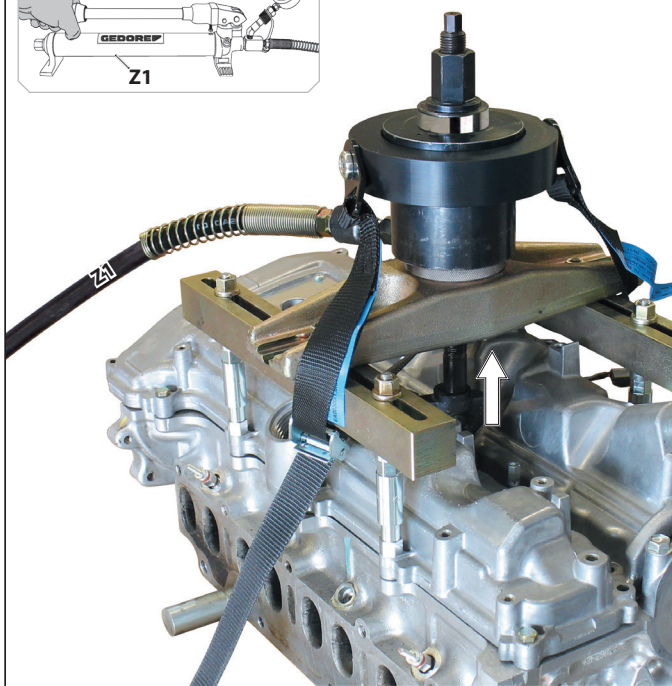
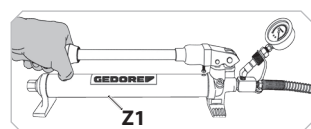
17: Depending on the drive type, remove the injector accordingly:

A Mechanical drive

[D..] = Size 10mm
[B] = Size 24mm



B Hydraulic drive



4.4 Removing the injector

⚠ WARNING

When removing a stuck injector, there is a risk of breaking the pull spindle [D..] and/or the injector; therefore, there is a risk of parts flying about. This can result in **DEATH** or **SEVERE INJURIES**!

❗ Never stand in axial extension of the pull spindle [D..] while it is subject to tension!

❗ Never exceed the maximum load of **12 tonnes**!

❗ If you use a mechanical drive for the collar nut [B], counterhold the pull spindle [D..].

❗ Finish the disassembly procedure at the latest when the pull spindle has reached the stop!

1. Removing the injector with a...

... mechanical drive:

Unscrew the collar nut [B] clockwise onto the pull spindle [D..] and pull out the stuck injector **17A**.

... hydraulic drive:

Operate the hydraulic pump [Z1], observe the pressure at the pressure gauge, and pull out the stuck injector **17B**.

Expert's tip: If the injector is extremely stuck, first treat it with rust solvent and subject it to tension for a while with **approx. 8t** using the injector puller. Alternately loosening and re-applying tension should release the injector.

2. Clean the injector hole on the cylinder head before installing a new injector; use cleaning tool - **KL-0186-50 B**, for example.

5. CARE / STORAGE

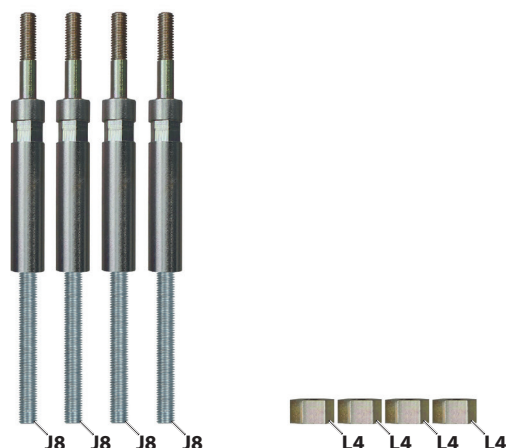
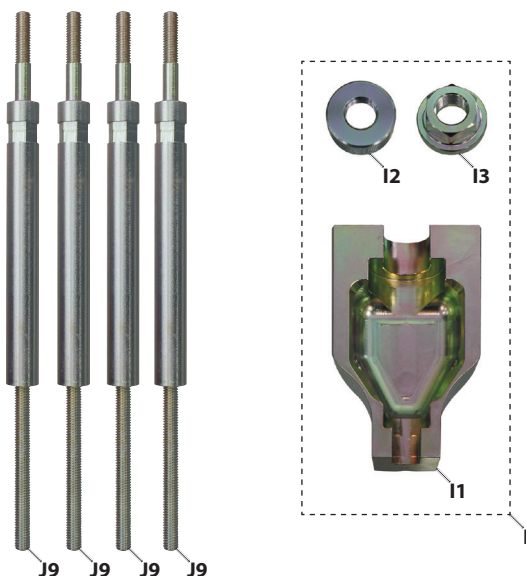
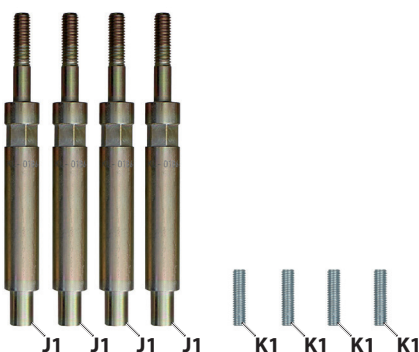
CAUTION

Improper care and storage can damage the injector puller. Therefore, **never** immerse the injector puller in water, solvents, or other cleaning fluids. After use, clean all parts **only** with a dry and clean cleaning cloth. To protect against corrosion, rub all metal parts with a tool care oil or wax. Store the injector puller and the operating instructions at a dry and clean place.

6. REPAIR

⚠ WARNING

For safety reasons, ensure that a damaged injector puller is no longer used! Professional inspection and repair may only be carried out by specially trained experts from **GEDORE Automotive GmbH**. Improper repair can result in **DEATH** or **SEVERE INJURIES**.

18: KL-0186-130 A

19: KL-0186-132

20: KL-0186-1233


7. ACCESSORIES / COMPLETIONS

By using the optionally available support bolts/supplementary kits, the injector puller is also suitable for many other common rail diesel engines.

- Select the **support bolt kit** according to the **engine**.
- Select the **supplementary kit** according to the **injector**!

KL-0186-130 A - Support pin / supplementary kit (Fiat, Citroën, Peugeot, Iveco)

Fits Fiat Ducato, Citroën Relay/Jumper III, Peugeot Boxer III, and Iveco 2.3; 2.4 and 3.0 JTD / HDI common rail Diesel engines (engine code: F1CE3481E, F1CE3481M, F1CE3481N, F30DTE [F1CE3481D, F1CE3481DM, F1CE3481E, F1CE3481N] - as per Euro 5), as well as Alfa Romeo 1.9 JTD (Engine code: 937A5.000).

Necessary accessories:

Depending on the injector, the supplementary kit - **KL-0186-128..** may be required.

Item	Part no.	Description	Qty.
J8	KL-0186-1232-1	Support pin 120mm, M8	4
L4	KL-0186-1261-1	Spacer nut M8 x 10mm	4

KL-0186-132 A - Support pin / supplementary kit (Fiat, Citroën, Peugeot)

Fits **strongly tight-fitting injectors** on Fiat Ducato 3.0 JTD (Euro 5), Citroën Relay/Jumper III, and Peugeot Boxer III 3.0 HDI (Euro 5) common rail diesel engines. (Engine code: F1CE3481E, F1CE3481M, F1CE3481N, F30DTE [F1CE 3481D, F1CE 3481DM, F1CE 3481E, F1CE 3481N])

By inserting the special pull hook, the injector is unlikely to break and can be pulled out in one piece.

Item	Part no.	Description	Qty.
J9	KL-0186-1232-1 L	Support pin 175mm, M8	4
I1	KL-0186-1321	Draw hook	1
I2	KL-0186-1322	Knurled nut	1
I3	KL-0186-1323	Hexagon nut	1

KL-0186-1233 - Support pin kit (VW-Audi, Seat, Škoda, Mercedes, Opel, Chevrolet, Peugeot, Citroën, Fiat, Ford)

Fits diesel engines on VW-Audi, Seat and Škoda 2.0 TDI (CFFB); Opel & Chevrolet 2.0 + 2.2 CDTi/VCDi (Z20DM, Z20DMH, Z20S, Z20D1, Z22DMH); Mercedes 1.8 + 2.1 CDI (OM651); Ford 2.2 TDCI (4HM, 4HU, 4HV), and Peugeot, Citroën, Fiat, PSA 2.2 HDI (CYFA, CYFB, CYFC, DRFA, DRFB, DRFC, P22DTE, P8FB, PGFA, PGFB, SRFA, SRFB, SRFC, SRFD, SRFE, UHFA, USRA).

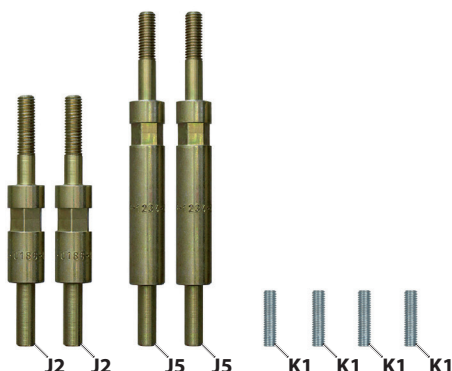
For example installed on VW Golf VI (5K), Eos (1F), Sharan (7N), Passat V (3C), Passat VI (36), Jetta (16), Passat CC (35), Tiguan (5N); Audi A3 (8P), Q3 (8U); Seat Alhambra (71); Škoda Superb II (3T); Opel Antara; Chevrolet Cruze (J300), Captiva, Orlando (J309), Nubria, Lacetti; Mercedes C-Class (W204 / S204 from 2007), E-Class (W212 from 2009), E-Class Coupé / Cabriolet (W207 / C207 from 2009), GLK (X204 from 2008) and Sprinter II (906 from 2006); Ford Transit (from 2006), Tourneo; Fiat Ducato (between 2006 and 2012); Citroën Relay/Jumper III; Peugeot Boxer III.

Necessary accessories:

Depending on the injector, the supplementary kit - **KL-0186-128..** may be required.

Item	Part no.	Description	Qty.
J1	KL-0186-1232-10	Support pin 120mm, M8	4
K1	KL-0186-1232-2 A	Grub screw M8 x 88mm	4

21: KL-0186-1234



KL-0186-1234 - Support pin kit (Renault, Nissan, Opel)

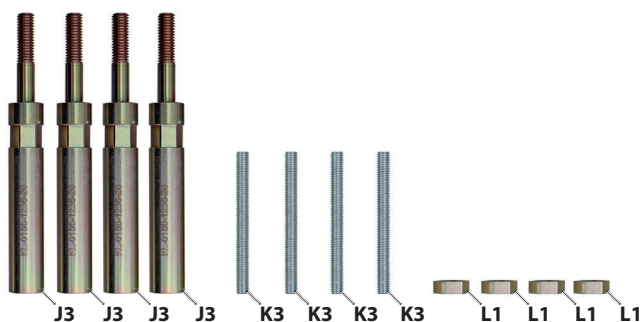
Fits Renault, Nissan, Opel 2.2 and 2.5 dci diesel engines. (Engine code: G9T and G9U) For example, installed on Renault Avantime, Espace III, Espace IV, Laguna II, Master II, Master III, Traffic II, Vel Satis; Nissan Interstar, Primastar, and Opel Movano, Vivaro.

Necessary accessories:

Depending on the injector, the supplementary kit - **KL-0186-128..** may be required.

Item	Part no.	Description	Qty.
J2	KL-0186-1234-10	Support pin 113.5mm, M6	2
J5	KL-0186-1234-20	Support pin 153.5mm, M6	2
K1	KL-0186-1235-2	Grub screw M6 x 25mm	4

22: KL-0186-1236



KL-0186-1236 - Support pin kit (Renault, Nissan, Opel)

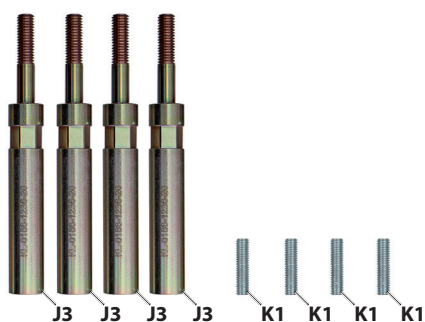
Fits Renault, Nissan, and Opel 2.0 dci diesel engines. (Engine code: M9R)

Necessary accessories:

Depending on the injector, the supplementary kit - **KL-0186-128..** may be required.

Item	Part no.	Description	Qty.
J3	KL-0186-1236-20	Support pin 129mm, M6	4
K3	KL-0186-1235-4	Grub screw M6 x 65mm	4
L1	KL-0186-1251-1	Spacer nut M6 x 5mm	4

23: KL-0186-1238



KL-0186-1238 - Support pin kit (Opel, Renault)

Suitable for diesel engines on Opel 1.7 + 3.0 CDTi (A17DT, A17DTC, A17DTJ, A17DTR, Z30DT, Y30DT) and Renault 3.0 dCi (P9X* - V-engines: engine removal may be necessary for space reasons)

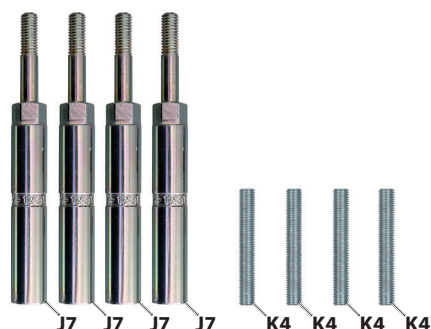
For example, installed on Opel Astra H, Astra J, Meriva B, Zafira B, Vectra C, Signum; Renault: Espace (IV), Vel Satis.

Necessary accessories:

Depending on the injector, the supplementary kit - **KL-0186-128..** may be required.

Item	Part no.	Description	Qty.
J3	KL-0186-1236-20	Support pin 129mm, M6	4
K1	KL-0186-1235-2	Grub screw M6 x 25mm	4

24: KL-0186-1239



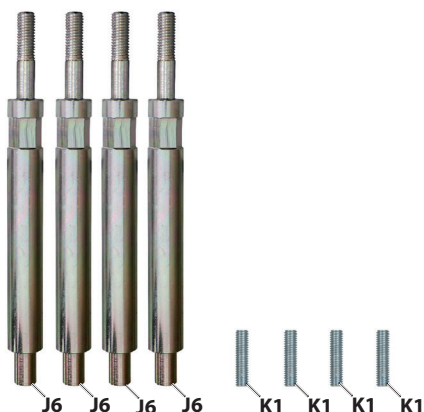
KL-0186-1239 - Support pin kit (Opel, Fiat)

Fits Opel and Fiat 1.3 common rail diesel engines. For example, installed on Opel Agila, Corsa C, Corsa D, Meriva A, Meriva B, Tigra B; Fiat Punto (188), Idea (135), Doblò (223), Doblò (263). (Engine code: Z13DT, Z13DTH, Z13DTC, Z13DTJ, 188A9.000)

Necessary accessories:

Depending on the injector, the supplementary kit - **KL-0186-128..** may be required.

Item	Part no.	Description	Qty.
J7	KL-0186-1239-10	Support pin 128.5mm, M7	4
K4	KL-0186-1235-6	Grub screw M7 x 55mm	4

25: KL-0186-1240

26: KL-0186-1281 A

27: KL-0186-1282 A

28: KL-0186-1283 A

KL-0186-1240 - Support pin kit (BMW, MINI)

Fits BMW 1.6, 2.0 (N47) and 3.0 (N57) as well as MINI 1.6 and 2.0 (N47) common rail diesel engines. For example, installed on BMW 1 series (E81, E82, E87, E88; F20, F21), 2 series (F22), 3 series (E90, E91, E92, E93; F30, F31; F34), 4 series (F32), 5 series (E60, E61; F10, F11; F07), 6 series (F06, F12, F13), 7 series (F01, F02, F04), X1 (E84), X3 (E83; F25), X5 (E70; F15), X6 (F12, E72), and MINI Clubman (R55), Clubvan (R55), Countryman (R60), Paceman (R61), Coupé (R58), Roadster (R59), etc.

Necessary accessories:

Depending on the injector, the supplementary kit - **KL-0186-128..** may be required.

Item	Part no.	Description	Qty.
H6	KL-0186-1240-10	Support pin 170mm, M6	4
i1	KL-0186-1235-2	Grub screw M6 x 25mm	4

KL-0186-1281 A - Supplementary kit

(Continental/Siemens/VDO injector with M25x1 internal thread) (VW, Audi, Seat, Škoda)

Fits Continental/Siemens/VDO injectors with an internal thread of M25x1 and a spanner size of 25 mm. Particularly suitable, for example, for VW, Audi, Seat, Škoda 1.6 TDI (CAYA, CAYB, CAYC, CAYD, CAYE, CLNA) and PSA 2.0 HDI (DW10) etc. Particularly suitable, for example, for W, Audi, Seat, Škoda 1.6 TDI (CAYA, CAYB, CAYC, CAYD, CAYE, CLNA)

Necessary accessories:

Depending on the injector, the supporting pin kit **KL-0186-12../-13..** may be required.

Item	Part no.	Description	Qty.
E6	KL-1383-1021 A	Pull adapter M25x1	1
C1	KL-1383-1022	Socket spanner size 25mm	1

KL-0186-1282 A - Supplementary kit

(Continental/Siemens/VDO injector with M27x1 internal thread)

Fits Continental/Siemens/VDO injectors with an internal thread of M27x1 and a spanner size of 27mm. Particularly suitable e.g. for PSA 2.0 HDI 90 HP (DW10 TD), etc.

Necessary accessories:

Depending on the injector, the supporting pin kit - **KL-0186-12../-13..** may be required.

Item	Part no.	Description	Qty.
E7	KL-1383-1221 A	Pull adapter M27x1	1
C2	KL-1383-1222 A	Socket wrench size 27mm	1

KL-0186-1283 A - Supplementary kit

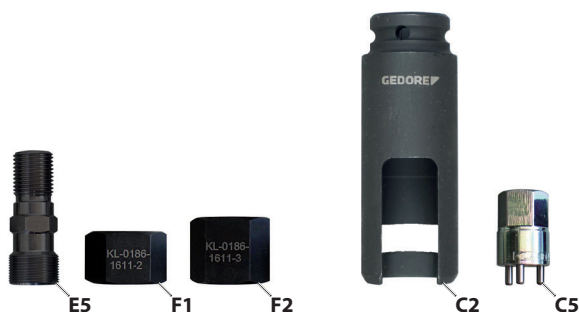
(Denso injector with M16x1 internal thread)

Fits Denso injectors with an internal thread of M16x1 and a spanner size of 17mm. Particularly suitable, for example, for Toyota and Lexus 2.2, 2.5 and 3.0 common rail diesel engines (1KD-FTV, 2AD-FHV, 2AD-FTV, 2KD-FTV H, 2KD-FTV L), etc.

Necessary accessories:

Depending on the injector, the supporting pin kit - **KL-0186-12../-13..** may be required.

Item	Part no.	Description	Qty.
E2	KL-0186-1612 A	Pull adapter M16x1	1
C6	KL-4417-17 A	Socket spanner size 17mm	1

29: KL-0186-1284 A


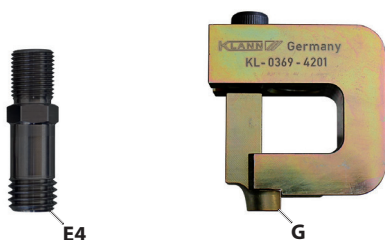
KL-0186-1284 A - Supplementary kit (Denso injector with M20x1 internal thread)

Fits Denso injectors with an internal thread of M20x1 and an external thread of M25x0.5 / M25x0.75 and a spanner size of 27mm. Particularly suitable, for example, for Toyota and Lexus 2.2, 2.5 and 3.0 common rail diesel engines (1KD-FTV, 2AD-FHV, 2AD-FTV, 2KD-FTV H, 2KD-FTV L), etc.

Necessary accessories:

Depending on the injector, the supporting pin kit - **KL-0186-12../-13..** may be required.

Item	Part no.	Description	Qty.
E5	KL-0186-1611-1 A	Pull adapter M20x1	1
F1	KL-0186-1611-2	Union nut M25x0.5mm	1
F2	KL-0186-1611-3	Union nut M25x0.75mm	1
C2	KL-1383-1222 A	Socket spanner size 27mm	1
C5	KL-0186-2201	Special insert, 3 journals	1

30: KL-0186-1285 A


KL-0186-1285 A - Supplementary kit (Delphi + Bosch injectors with M18x2 internal thread)

Suitable for Delphi / Bosch injectors with lateral fuel connection (90° angle to the injector). Particularly suitable, for example, for Mercedes-Benz 1.8 and 2.1 Common Rail diesel engines (OM651), etc.

Necessary accessories:

Depending on the injector, the supporting pin kit - **KL-0186-12../-13..** may be required.

Item	Part no.	Description	Qty.
E4	KL-0186-1711 A	Pull adapter M18x2.5	1
G	KL-0369-420	Nozzle extractor	1

31: KL-0186-1286


KL-0186-1286 - Supplementary kit for impact extractor

Suitable for BOSCH und DELPHI injectors with external thread M14x1.5mm.

For extracting injectors which are slightly stuck, in conjunction with an suitable impact extractor with M18x2.5mm mounting thread.

Necessary drive parts:

Impact extractor **KL-0049-300** (4.8kg) or **KL-0369-4100** (1.5kg).

Pos.	Part no.	Description	Qty.
W	KL-0369-4111	Adapter (for impact extractor)	1
E1	KL-0583-1032 A	Pull adapter M14x1.5mm	1

32: KL-0040-175 C

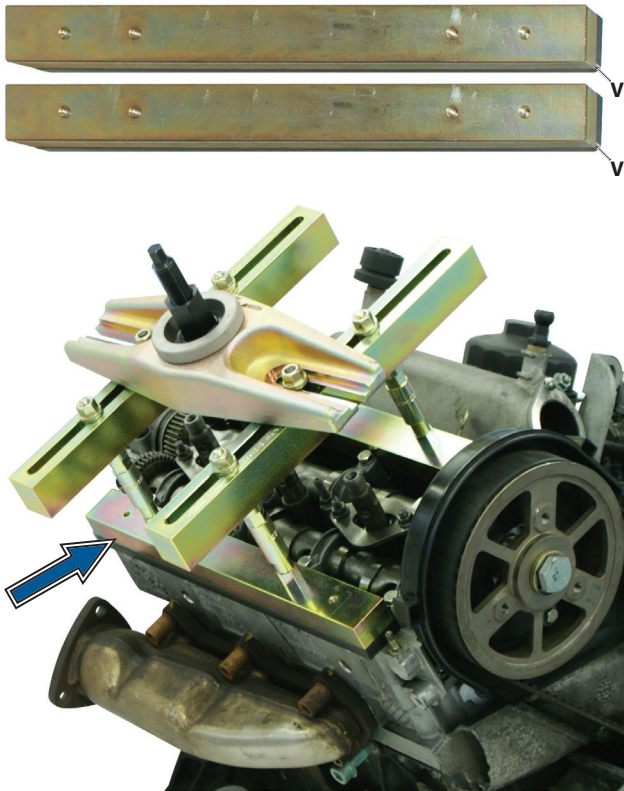

KL-0040-175 C - Hydraulic drive kit

In combination with the nozzle extractor series - **KL-0186-14 KB**, the hydraulic drive kit enables fast and controlled pulling of heavily stuck injectors. For this purpose, it is simply connected to the pull bridge on the nozzle extractor instead of the mechanical drive.

Necessary drive parts: KL-0215-35 M25 - Hydraulic pump

Item	Part no.	Description	Qty.
Z2	KL-0040-1700	Hydraulic cylinder 17t, short	1
Z3	KL-0040-1741-2	Collar nut M16x1.5	1
Z4	KL-0040-1790	Retaining belt for hydraulic cylinder	1
Z5	KL-0040-1751	Spacer ring 20mm	1
D3	KL-0186-1403	Pull spindle 285mm	1

33: KL-0186-122



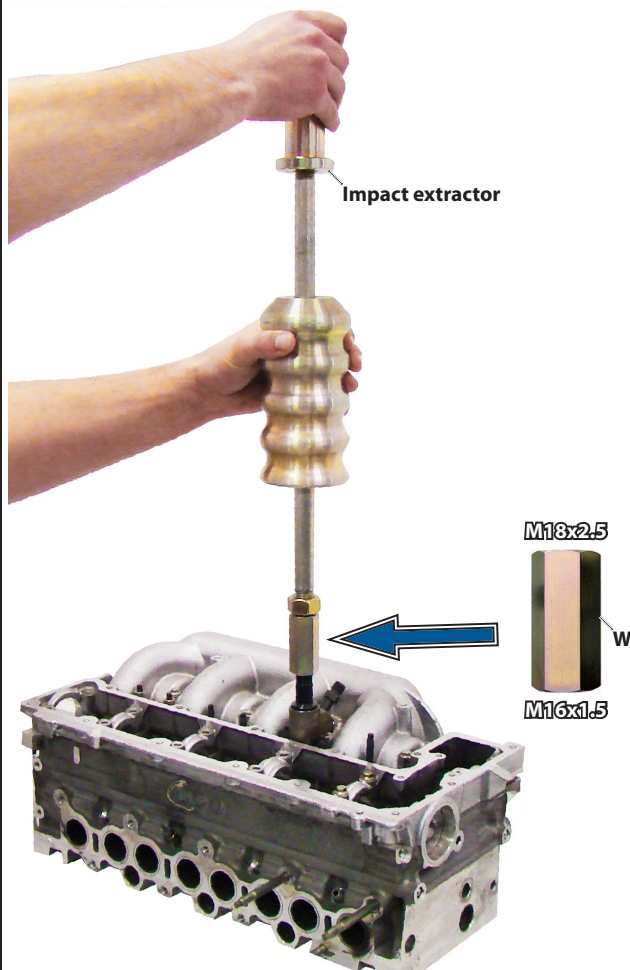
KL-0186-122 - Support bar kit

Allows the injector puller - **KL-0186-14 KB** to rest on a smooth surface.

If no support is possible on the holes for the valve cover bolts, but the cylinder head has smooth and stable contact surfaces, for example after removing the valve cover, you can use the support bars - **KL-0186-122** as an alternative for screwing in the support bolts.

Item	Part no.	Description	Qty.
V	KL-0186-1220	Support bar	2

34: KL-0369-4111



KL-0369-4111 - Injector extractor adapter

For extracting injectors which are slightly stuck, in conjunction with a suitable **GEDORE** pull spindle and an impact extractor.

Specifications:

Mounting thread for impact extractor:M18x2.5mm

Mounting thread for pull spindle:M16x1.5mm

Necessary accessories:

Matching pull spindle of the **KL-0186-..series**, **KL-0583-..series**, or **KL-1383-..series**.

Necessary drive:

Impact extractor **KL-0049-300** (4.8kg) or **KL-0369-4100** (1.5kg)

8. ENVIRONMENTALLY COMPLIANT DISPOSAL

Dispose of the injector puller and the packaging material in an environmentally compatible way in accordance with the legal requirements. If necessary, ask your local authorities about environmentally friendly disposal options.



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