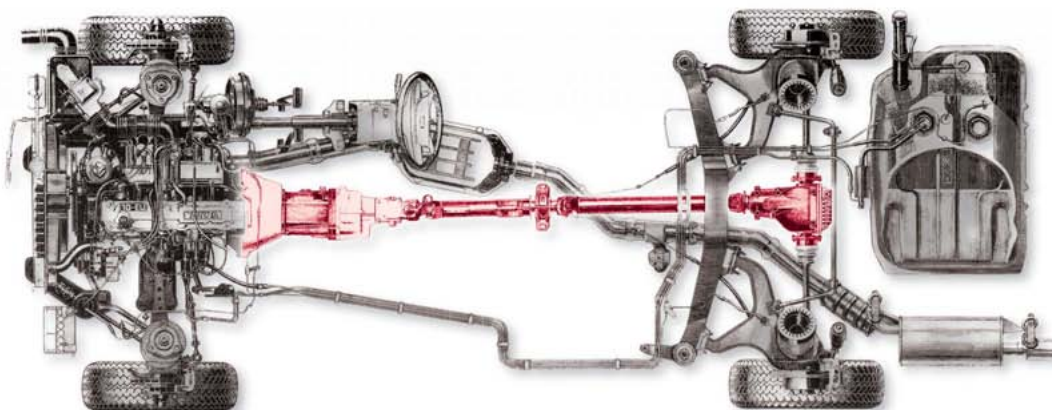


# Driveline System Mechanism

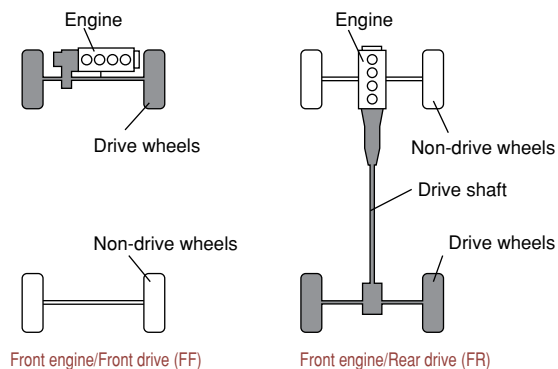


MECHANISM 1

### FF model and FR model

As there are many types of drive mechanisms available in vehicles today, the FF method and the FR method are representative of most of these. Engines that are placed at the front of the chassis and that have the main drive going through the front wheels are known as FF (Front Engine Front Drive). Engines that are placed on the front side of the chassis and have the drive going through the rear wheels are known as FR (Front Engine Rear Drive).

As FR types have the steering mechanism and the drive mechanism separate, the system is easy to work with. However, a drive shaft is necessary to transfer the power from the engine to the rear wheels. Therefore, the drive shaft protrudes from the inner center of the vehicle. On the other hand, FF systems do not need a drive shaft and therefore have the merit of having the inner center of the vehicle free. However, as the steering mechanism and the drive mechanism have to be placed together, the system is more complicated.



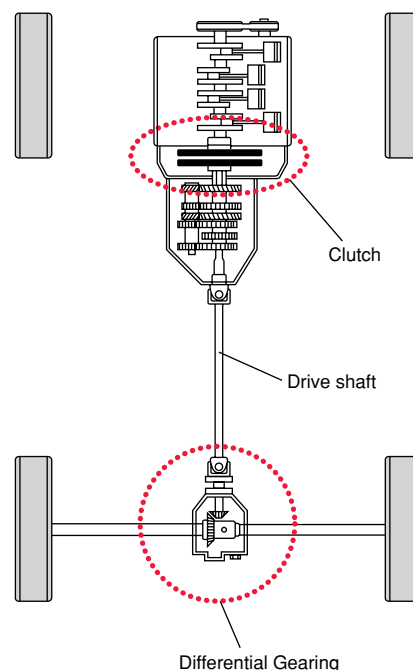
MECHANISM 2

### Clutch

If the engine power and the transmission are connected directly, there is a large burden placed on the engine on starting.

Therefore, at the time of engine start, it is necessary to sever the relation with the transmission. Another way of looking at it is, the engine would stop if the effort of starting the engine were immediately placed on the transmission. It is here that the load is gradually placed on the transmission through a necessary mechanism known as a clutch.

The clutch, or the clutch plate (clutch disc) is fixed to the engine's fly-wheel where it transfers and takes away power from the drive system as it is activated on and off.



MECHANISM 3

### Differential Gearing

The differential gearing plays the role of converting side directional rotation power towards forward motion, in other words, converting the power to forward motion when power is transferred to the rear wheels, it also helps in reducing speed and maximizing torque.

It also plays the role of adjusting the wheel speed on each side when driving around corners.

DRIVELINE

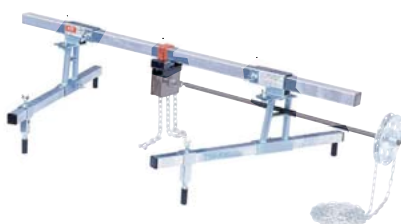
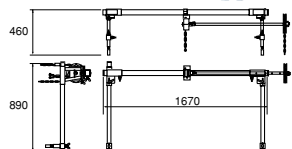
Transmission removal and attachment

1 Hanging Engine

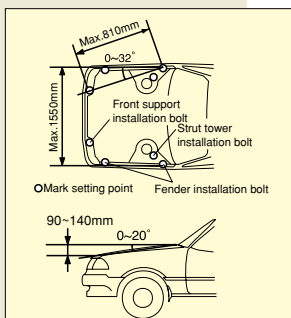
ENGINE HANGER



AE901



AE901K: Slide foot, Slide bar, Height adjustment foot x 2, Lifting tools, Connection plate x 1, and Installation bolts x 8



This product is available as a set of 4 of each vehicle fender installation bolt, front support installation bolt, and strut tower installation bolt. These sets are known as set-points.

ENGINE HANGER FOR SHOCK ABSORBING BODY

No.	Capacity (Max. Load)	Winch weight ▼kg	▼kg	☞
AE901	2,450N(250kgf)	6	16	1

Purpose

- Dedicated tool for lifting up and hanging an automobile engine block.

Applications

- Engine block of FF vehicles from mini-cars to medium sized passenger cars (not applicable to the engine of trucks, vans and motorcycles).
- Max usable load: Less than 2,450N (250kgf)

Characteristics

- In recent years, many vehicles have adopted impact absorbent bodies.
- Fenders have been designed so they can be adjusted back to be parallel with the ground even after they have been bent out of place in an accident.
- The tool has been designed to be able to deal with vehicles that have short fender ribs, and fenders that cannot be set correctly which conventional types have not been able to cope with to date.
- The tool can hold the engine in position whilst being able to move the chassis and also lift it up and down.
- The bridge can be set on an angle, and when carrying out belt replacement, the tool can be used to move the bridge from above the belt.
- This winch employs a rear type directional method. The drive area can be switched easily between the right and left sides that help movements to the desired position.
- Even with the chassis in a raised position, the winch can be used temporarily outside the garage by the use of a chain wheel.

\* This tool cannot be used on vehicles with resin set points.

\* Replacement parts are available. Check with your dealer for details.

Applicable details

Engine mass	Max usable load=2,450N (250kgf)
Chassis width	Max. slide width of bridge=1,550mm
Length of engine compartment	Foot max. slide width=810mm
Width of engine compartment area	Adjustment angle of slide bar=32° (To the side)
Difference between height and depth of engine compartment	Height adjustment foot retract/extension length=50mm
Incline angle of fender	Within 20°
Max. outer diameter of set point bolts	17.5mm
Max. height of set point bolts	20mm

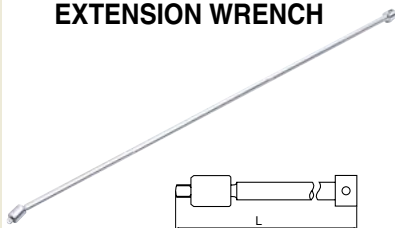
Engine mechanical hanger optional kit (Kit corresponding to the previous model)

No.	▼kg
AE901K	8.5

- An optional kit designed for use on previous engine machine hangers (ATH10) bridge (bar), and one that work with impact absorbent bodies.

2 Removing/Installing Transmission

3/8"•1/2"sq. NEW FLEX EXTENSION WRENCH



NEW FLEX EXTENSION WRENCH

No.	Square Drive	L	▼kg	☞
BEF3020-950	Indents 1/2"sq. Notches 3/8"sq.	950	1.0	5

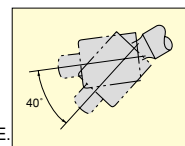
Purpose

- Removing/installing of clutch housing bolts.

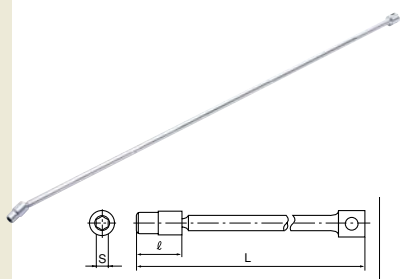
Features

- Tip is 3/8"sq. with flexible head.
- Turns smoothly within the range of 40 degrees.

CAUTION • DO NOT EXTEND THESE TOOLS WITH 2 PCS. OR MORE.



1/2"sq. NEW FLEX WRENCH (WITH MAGNET)



NEW FLEX WRENCH (WITH MAGNET)

No.	S	Socket ( ℓ )	L	▼kg	☞
BEF31-12H	12	39	950	1.0	5
-14H	14	41	955	1.1	5
-17H	17	44	955	1.1	5

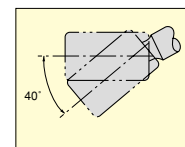
Purpose

- Suitable for disassembling/assembling transmission and clutches.
- Also convenient for dismounting/mounting manifolds or diff-flanges.

Features

- Can be used as T Shape wrench, too.
- Turns smoothly within the range of 40 degrees.

CAUTION • DO NOT EXTEND THESE TOOLS WITH 2 PCS. OR MORE.

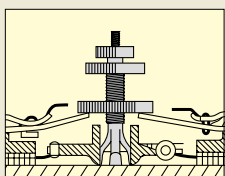


DRIVELINE

Disassembling Clutch

1 Installing Clutch Disc

CLUTCH ALIGNING TOOL

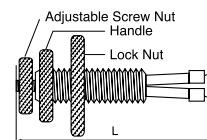


CLUTCH ALIGNING TOOL

No.	L	Applicable diameter	▼g	☞
CGP-1625	132	φ16~25	120	1

- Innovative Clutch Aligning tool.
- It can be used on the work table.
- Just install the assembled unit on the car. Easy and quick operation.
- Made of special plastic for light and durable body.
- Covers almost all types of cars.

\* Not for use on cars.



**CLUTCH ALIGNING TOOL SET**

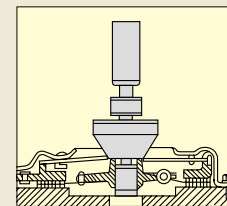
<b>No. CG617</b>	▼kg 3	📦1
Attachment	16, 17, 17.8, 20, 21.1, 22.9, 24.3	
Guide/ Center Shaft		
Metal Case	L185x95xH65	
<b>Purpose</b>	• For use on mini & compact cars without pilot bearings and metal bushes.	
<b>Features</b>	<ul style="list-style-type: none"> <li>• Centering of clutch disc possible, guided by the diaphragm of the clutch cover.</li> <li>• Easy operation by fixing the attachment only.</li> <li>• Can be used on the car.</li> </ul>	
Application List		
<b>Size of Attachment</b>	<b>Car Maker</b>	<b>Size of Attachment</b>
17.8	Nissan, Honda	22.9
20.0	Mitsubishi, Honda, Mazda	24.3
21.1	Toyota	

**●CLUTCH ALIGNING TOOL SET**



Installing Clutch Disc

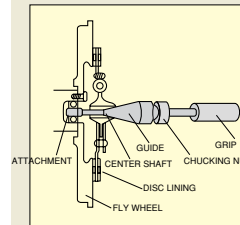
1



**CLUTCH ALIGNING TOOL SET**

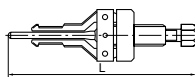
<b>No. CG67</b>	▼kg 1.1	📦1
Attachment	10, 12, 14, 15, 16, 17, 19	
Guide/ Center Shaft		
Metal Case	L265xW65xH40	
<b>Purpose</b>	• For centering of clutch disc of FR cars.	
<b>Features</b>	<ul style="list-style-type: none"> <li>• Different input shaft used to be required for each car model. <b>KTC</b> developed a clutch aligning tool set to facilitate the operation on FR cars.</li> </ul>	
Application List		
<b>Size of Attachment</b>	<b>Car Maker</b>	<b>Size of Attachment</b>
12, 15, 17	Toyota, Mazda, Mitsubishi	10, 12
12, 16	Nissan	10, 15
12, 15, 19	Honda	12, 14
16, 17	Isuzu	

**●CLUTCH ALIGNING TOOL SET**



**PILOT BEARING & BUSH PULLER**

<b>No. PBU-1219</b>	<b>Applicable Size</b>	<b>L</b>	<b>▼g</b>	📦
	Inner Dia. φ12~19	145	215	10
<b>Purpose</b>	• Light and compact body for easy handling.			
<b>Features</b>	<ul style="list-style-type: none"> <li>• Special claws offer firm gripping.</li> <li>• Can be operated on the car.</li> <li>• Wide application.</li> <li>• Replacement parts are available. Check with your dealer for details.</li> </ul>			

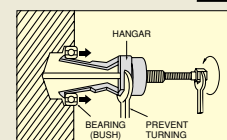


**●PILOT BEARING & BUSH PULLER**



Removing Pilot Bearing

2



**Transmission/differential oil replacement**

**DRIVELINE**

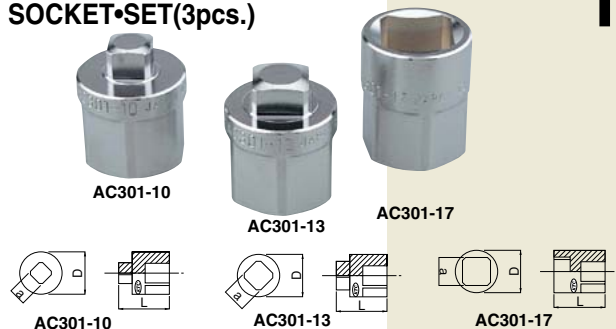
**DRAIN PLUG SOCKET • SET (3pcs.)**

<b>No. ATC3013</b>	▼g 245	📦1			
1/2"sq. Drain plug socket	AC301-10,13,17				
<b>No.</b>	<b>a</b>	<b>D</b>	<b>L</b>	<b>▼g</b>	📦
AC301-10	10.5	26.5	31	70	10
-13	13.1	26.5	31	85	10
-17	17.3	26.5	32	90	10

- Usage**
- A tool exclusively designed for tightening and loosening of drain plugs (filler) on transmissions, and differentials for Nissan and Subaru vehicles.
- Application**
- Mainly designed for Nissan FF types manual transmissions (AC301-10)
  - Mainly designed for Nissan manual transmissions, rear differentials, Subaru 4WD rear differentials (AC301-13)
  - Mainly designed for former Nissan FR types manual transmissions (AC301-17)
- Characteristics**
- By employing a 1/2" sq. drive, the tools can cope with drain plugs that have been tightened under heavy torque.
  - Due to its hexagonal shape, the tool can be used with 24mm offset wrenches.

**●DRAIN PLUG SOCKET•SET(3pcs.)**

1



**3/8"sq. HEX. BIT SOCKET DRAIN PLUG WRENCH**

<b>No. AE503-10</b>	<b>S</b>	<b>D</b>	<b>L</b>	<b>ℓ</b>	<b>▼g</b>	📦
	10	18	38	8	50	5

- 38mm length body enable to operate in a narrow space.
- Can be used for hexagon socket head type of TOYOTA and NISSAN.
- Less oscillation and stable operation.

POWERFIT

**●3/8"sq. HEX. BIT SOCKET DRAIN PLUG WRENCH**



**Disassembling Various Kinds of Transmissions**

**DRIVELINE**

**BALL BEARING PULLER SET**

<b>No. BU382</b>	▼kg 5	📦1
Body	1	
Claw	No.6004 3pcs. 6004	No.6204,5 3pcs. 6204,6205
No.6303 3pcs.(6303)	No.6304 3pcs. 6304	No.6305 3pcs. 6305
Chisel B	Bxone each	
Attachment	17,20,25 each1pcs.	
<b>No. BU381</b>	▼kg 3.5	📦1
Body	1	
Claw	No.6001,2,3 3pcs. 6001~6003	No.6201,2, 3pcs. 6201,6202
	No.6203 3pcs. 6203	
Chisel C	A · Cx one each	
Attachment	12,15,17 each1pcs.	
•Common Items	Handle · Metal Case (L325xW185xH55)	

- Usage**
- Removing ball bearings from equipment such as farm and industrial machinery.
- \* Standard parts are available. Check with your dealer for details.

**●BALL BEARING PULLER SET**

Disassembling Transmission

1



\*Please check the merchandise inventory for a product that is marked by before placing an order.