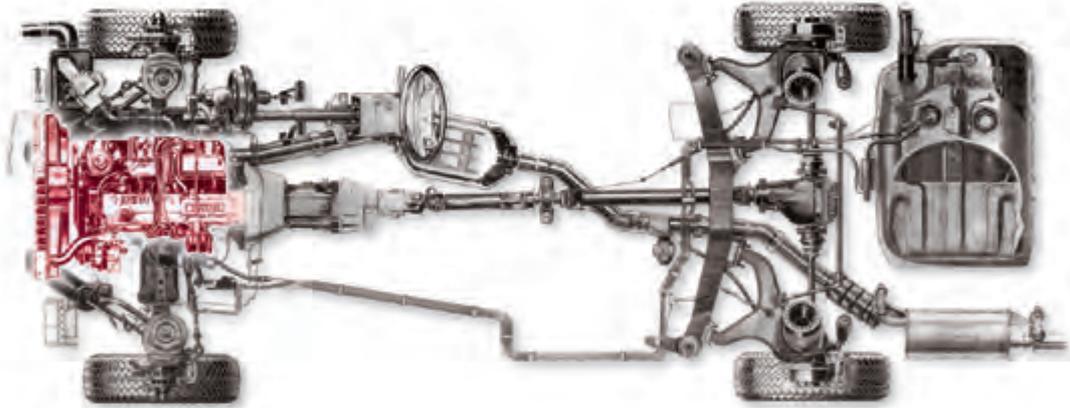


5. AUTOMOTIVE SPECIAL TOOLS

ENGINE	
DRIVELINE SYSTEM	
STEERING SYSTEM	
SUSPENSION SYSTEM	
TIRE & WHEEL	
BRAKE SYSTEM	
ELECTRIC SYSTEM	
BODY	

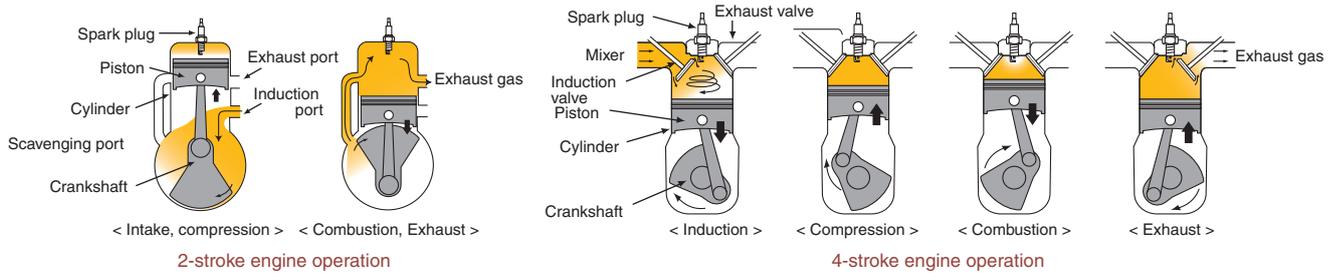
Mechanism of Engine



MECHANISM 1

Combustion setup

Most vehicles nowadays use gasoline engines. However, depending on the combustion type, gasoline engines are divided into "2-stroke" and "4-stroke" categories. Gasoline is burned in the cylinder to create heat energy. Heat energy is then turned into kinetic energy as it is transferred from piston to crankshaft. One engine movement can be divided into 4 steps - induction, compression, combustion, and exhaust. 2-stroke engines only have a two-step up/down piston movement ("Induction and Compression" step and "Combustion and Exhaust" step). 4-stroke engines have four piston movements as previously mentioned. With the same displacement, a 2-stroke has a larger output than a 4-stroke. However, most cars use a 4-stroke engine due to the increased fuel economy and exhaust capability.



MECHANISM 2

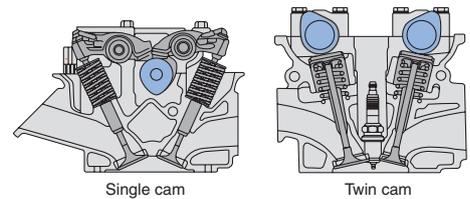
Engine Makeup

When viewed externally from top to bottom, the engine is divided into an upper cylinder head, a cylinder block, and an oil pan. Many cylinder heads and cylinder blocks are made from cast iron or aluminum alloy. A gasket is placed between the two and they are locked together. This head gasket increases air tightness, and prevents gas, and oil & coolant leaks, as it is a sheet type of packing. The cylinder head is made up of a combustion chamber together with pistons and an intake/exhaust valve & camshaft is built in. A water jacket is provided to circulate coolant around the combustion chamber. In addition, the cylinder block is the main part and houses the pistons. The lower part is made up of a shaft bearing area that holds the crankshaft.

MECHANISM 3

Valve System

The system that drives the engine intake/exhaust can be a single cam (SOHC) driving the valve with a cam shaft, or a twin cam (DOHC) that separately drives the induction and exhaust valves with two cam shafts. Timing adjustments can be carried out easily to the camshaft as it is of a singular design. However, the operation of the parts situated midway along the shaft is sluggish. Although smooth, high-speed RPM is possible by using just one twin cam for the two camshafts, the structure is complicated and adjustments are difficult.



MECHANISM 4

Crankshaft

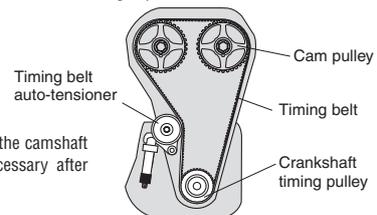


The crankshaft is a component that allows the pistons up/down movements inside the cylinder into a rotary motion, and is built into the lower part of the cylinder block. The crankshaft consists of a crank journal that is on the crankshaft's main axle, a crank pin that connects the piston's connecting rod (con-rod) and a crank arm that connects the crank pin and the crank journal. The crankshaft has been made out of special steel and cast iron for wear resistance, sturdiness and strength, so that large amounts of power can be transferred from the pistons and turned into high speed RPM.

MECHANISM 5

Timing belt

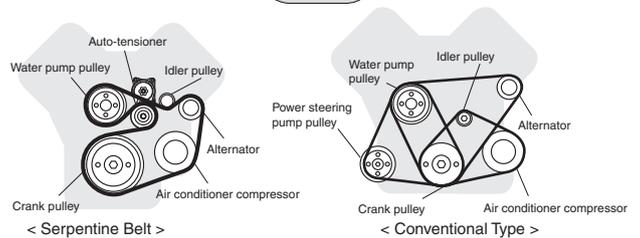
The role of the timing belt (a device with a chain instead of a belt is called a "timing chain") is to transfer power to the camshaft through the cam pulley for valve open/close operation. If the belt system is being used, replacement is necessary after approximately one hundred thousand kilometers.



MECHANISM 6

Role of the Belt and Auto-tensioner

On the exterior of the crankshaft timing pulley there is another belt that transfers crankshaft power to the alternator (generator), the air conditioner's condenser, and to the water pump that sends coolant around the engine. Conventionally, a number of belts were used. However, nowadays it has become mainstream to have a single Serpentine Belt driving all the devices at once. An auto-tensioner is installed to adjust the tension of this belt.



Changing Engine Oil

ENGINE

●SCREWDRIVER ●T-SHAPED WRENCH ●SOCKET ●CLIP CLAMP TOOL

Remove the undercover **1**

●OFFSET WRENCH ●OTHER TOOLS

Remove the drain plug **2**

Change the oil easily and effectively with a **KTC** oil drainer.

Use a tray to catch the waste oil.

- Use a large wide hat type funnel to catch the waste oil.
- Use a funnel with an attached net to prevent debris such as drain plug from falling into the tank.
- Remove the wide hat for use in hard to reach areas.
- Offsetting is possible from the unit and the pipe making work easy. (*This pack (Orirukun) is not included)

Air pressure for easy discharge of used oil.

- Discharge is possible without a complex operation.
- Discharged hose can be stored when it is not being used.

A large tank with a level gauge attached.

- The tank's free capacity can be seen and calculated.
- Large amounts of oil can be stored safely in large capacity tanks.

Moveable parts tray

- Convenient for temporarily storing tools, i.e. draining plug, etc. Size: 95 x 150 x 45

Pipe handles allow for easy movement.

- Large castors provide easy movement and stability.
- Curbs and steps pose no problems. (2 front wheels)

The castor wheels are equipped with a double brake mechanism that prevents both travel and swivel.

- The machine can be held steady during operation. (1 rear wheel and both front wheels of the machine (Oriru-kun))

Oil drainer



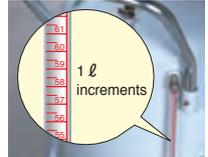
Discharge hose



Parts tray



Handle

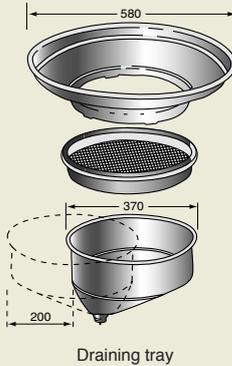


Level gauge



Castors

Drain the oil **3**



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

No.	S	D	L	ℓ	▼g	☞
AE503-10	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.

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



OIL DRAINER

No.	Draining Tray		Castor's Diameter		Air Coupler Draining for Input	Draining Hose	Draining by Air Pressure	▼kg
	Full Capacity	Wide Pad	Front (fixed)	Rear (moving)				
GOD80B	12 ℓ	●	φ 150	φ 80	20PM by Nitto Koki	φ 19 2m	●	32

- Draining Tray Size: Large Diameter 580 (Small Diameter 370) x Height 300mm

*Comes in packs of 3

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

*Only use engine oil. Do not use any other type of oil.

Tank 80 ℓ

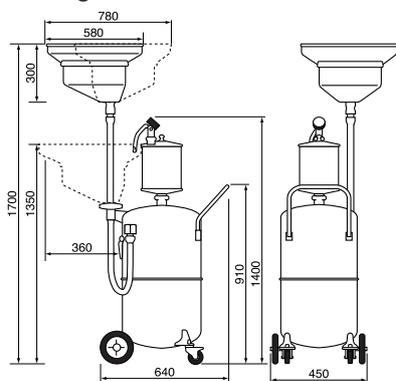
●OIL DRAINER



Multi-functional

The transparent cylinder shows the state of draining clearly.

Talk to customers while checking the waste oil.



Suction Adaptor

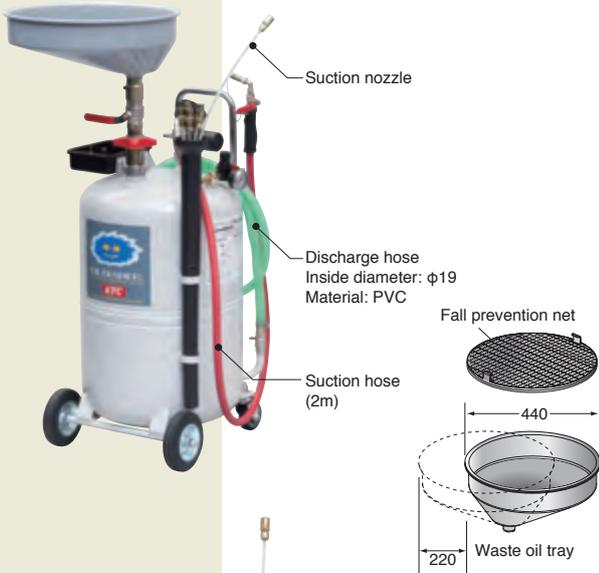
Suction Adaptor A	For Volkswagen
Suction Adaptor B	For BMW

Suction nozzle (detachable)

Flexible suction nozzle	Made of resin	Outer diameter φ 5×700mm
Flexible suction nozzle	Made of resin	Outer diameter φ 6×700mm
Flexible suction nozzle	Made of resin	Outer diameter φ 8×700mm
Metal suction nozzle	Copper ore	Outer diameter φ 5×700mm
Metal suction nozzle	Copper ore	Outer diameter φ 6×700mm
Flexible suction nozzle	Made of resin	Outer diameter φ 7×1,000mm

3 Drain the oil

●OIL DRAINER [STANDARD TYPE]



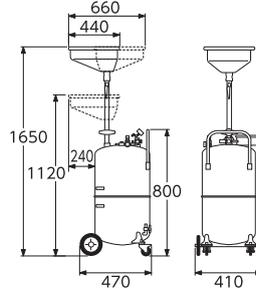
OIL DRAINER

No.	Waste oil tray total capacity	Caster diameter		Input air coupler	Drain hose	Air pressurized oil discharged	▼kg
		Forward (fixed)	Backward (free)				
GOD80E	12 ℓ	φ150	φ80	Nitto Kohki 20PM	φ19 2m	●	29

• Waste oil tray size: 440 diameter × 160mm height
 * Spare parts are configured. Please contact your dealer for details.
 * Do not use it for oils and fats other than engine oil.

Tank 80 ℓ

Standard Type Budget model that supports upward and downward draining
 Suppressing the overall height, it is safe even in lifting up 1Box type.
 Space-saving storage with the adoption of straight handle.



Suction Adapter

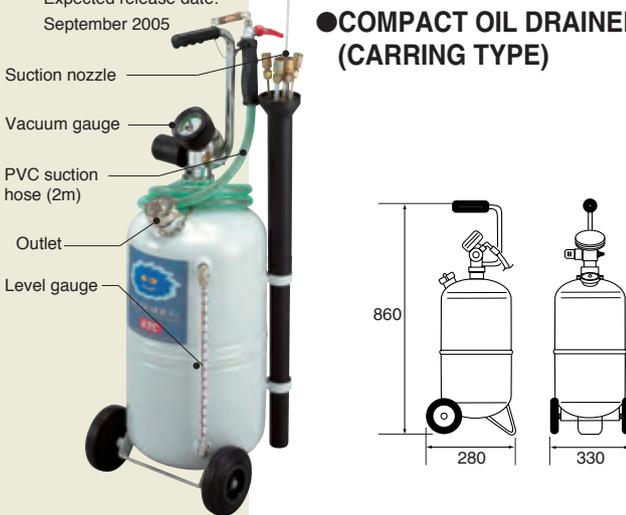
Suction Adapter A	For Volkswagen
Suction Adapter B	For BMW

Suction Nozzle (for Draining)

Suction Nozzle	Material	Outside diameter
Flexible Suction Nozzle	Resin	φ5×700mm
Flexible Suction Nozzle	Resin	φ6×700mm
Flexible Suction Nozzle	Resin	φ8×700mm
Flexible Suction Nozzle	Resin	φ7×1,000mm
Metal Suction Nozzle	Copper alloy	φ5×700mm
Metal Suction Nozzle	Copper alloy	φ6×700mm

Expected release date:
September 2005

●COMPACT OIL DRAINER (CARRING TYPE)



OIL DRAINER

No.	Tank		Castor's Diameter Fixed	Air Coupler Draining for Input	Induction Hose	Oil Discharge Methods	▼kg
	Full Capacity	Available Capacity					
GOD24B	24 ℓ	20 ℓ	φ 125	20PM by Nitto Koki	φ 19 2m	manual	13.7

*Only use engine oil. Do not use any other type of oil.

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

Tank 24 ℓ

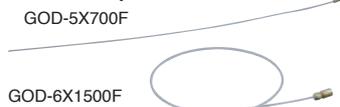
Movable model

Small, movable, lift-out type.
 Convenient for providing outside services

Suction nozzle (detachable)

Suction nozzle	Material	Outer diameter
Flexible suction nozzle	Made of resin	φ 5×700mm
Flexible suction nozzle	Made of resin	φ 6×700mm
Flexible suction nozzle	Made of resin	φ 8×700mm
Metal suction nozzle	Copper ore	φ 5×700mm
Metal suction nozzle	Copper ore	φ 6×700mm
Flexible suction nozzle	Made of resin	φ 7×1,000mm

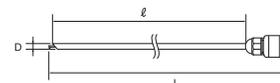
●FLEXIBLE SUCTION NOZZLE FOR OIL DRAINER (GOD24B · GOD80B · GOD80E)



NYLON SUCTION TUBE (for GOD24B/GOD80B/GOD80E)

No.	D	L	ℓ	Nozzle Material
GOD-5X700F	5	750	700	Nylon (Reinforced with Metal Core)
GOD-6X700F	6	750	700	
GOD-6X1500F	6	1,550	1,500	
GOD-7X1000F	7	1,050	1,000	
GOD-8X700F	8	750	700	

• GOD-6X1500F has a convenient length for 1BOX cars and the like.

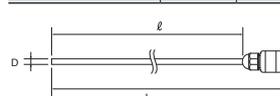


●METAL SUCTION NOZZLE FOR OIL DRAINER (GOD24B · GOD80B · GOD80E)



BRASS SUCTION TUBE (for GOD24B/GOD80B/GOD80E)

No.	D	L	ℓ	Nozzle Material
GOD-5X700M	5	750	700	Brass
GOD-6X700M	6	750	700	



●SUCTION ADAPTOR FOR OIL DRAINER (GOD24B · GOD80B · GOD80E)



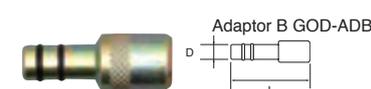
SUCTION ADAPTOR (for GOD24B/GOD80B/GOD80E)

No.	D	L
GOD-ADA	5	57
GOD-ADB	13	52

• Adaptor is for mounting on the oil level gauge without the use of nozzle.

GOD-ADA: For Volkswagen

GOD-ADB: For BMW



4 Remove and replace the oil filter



KTC Oil Filter Wrench Series

There are four KTC wrenches available to deal with the various types of oil filters - cup type, chain type, band type and adjustable type. In particular, there are 31 sizes in total for the cup size - 12 sizes for domestic cars, 13 sizes for imported cars and 6 sizes for larger vehicles.



● Characteristics of **KTC** Oil Filter Wrenches

● **A low height, easy fit, non-slip large design**

A design that is restricted in height, easy to operate, and has a large area for the oil filter wrench and the oil filter to work in (depth of the fitting area).

● **Improved operation!**

With its gripped outer shape, slippage when fitting the oil filter by hand is reduced.

● **The aluminum tool weighs only 60% of conventional steel products.**

Through aluminum die-casting, the wrench has been molded into a single entity* to weigh just 60% of conventional steel products.

*With a large diameter, an insert manufacturing method is employed that has applied steel onto the driving angles (Structural steel).

● **Drive tool choice**

Depending on the working requirement, an inserting type or a hexagonal type is available. (For domestic and imported vehicles: Use the driver 3/8"sq. hexagonal 2-faced width 24mm) (For larger diameters: Use the 1/2"sq. hexagonal 2-faced width 27mm)

CUP TYPE OIL FILTER WRENCH SET

Cup type oil filter wrench set (12 sets)

No. AVSA12A	▼kg 4.1
Oil filter wrench	AVSA-063, 064, 067, 073, 074, 079, 080, 089, 092, 095, 099, 101
Metal case (390x245x75)	

Cup type oil filter wrench set (8 sets)

No. AVSA08A	▼kg 3.7
Oil filter wrench	AVSA-064, 067, 073, 079, 080, 095, 099, 101
Metal case (390x245x75)	



● **CUP TYPE OIL FILTER WRENCH SET D.PAT.**



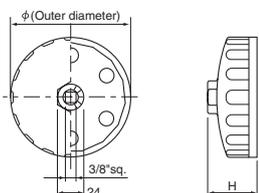
AVSA08A



AVSA12A

Japanese cars CUP TYPE OIL FILTER CARTRIDGE WRENCH

No.	Interior measurement	φ (Outer diameter)	H	Shape	▼g	⊞
AVSA-063	63	72	35	14 Sides	80	10
-064	64	72	35	14 Sides	80	10
-067	66.5	74	35	14 Sides	80	10
-073	72.5	80	35	14 Sides	90	10
-074	74	82	35	15 Sides	90	10
-079	79	86	40	15 Sides	100	10
-080	79.5	86	40	15 Sides	110	10
-089	89	96	40	15 Sides	120	10
-092	92	99	40	15 Sides	130	10
-095	94.5	102	45	15 Sides	140	10
-099	99	106	45	15 Sides	140	10
-101	100.5	108	45	15 Sides	150	10



● **CUP TYPE OIL FILTER WRENCH D.PAT.**



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

4 Remove and replace the oil filter

● CUP TYPE OIL FILTER WRENCH DESIGNED FOR AMERICAN & EUROPEAN CARS D.PAT.



3/8" sq.

● Designed to grip tightly even when the filter has been expanded by heat. To deal with an oil filter cover made of resin that is heat expanded, the AVSA-074C and 087 version grips the whole length of the filter unlike conventional types. This wrench has been designed to hold the filter tightly even when the filter is heat expanded.

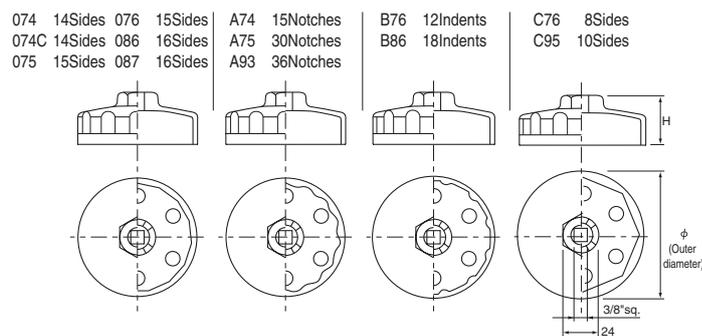


Wax paper replacement type for the replacement of the Volvo oil filter cap

CUP TYPE OIL FILTER CARTRIDGE WRENCH For American & European cars

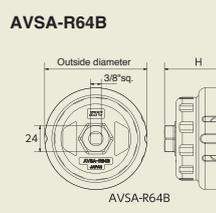
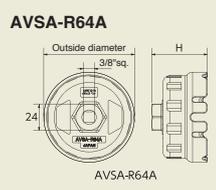
No.	Size dimensions	φ (Outer diameter)	H	Shape	▽g	☐
AVSA-074	74	82	35	14 Sides	90	10
-074C	74C	82.5	50.5	14 Sides	100	10
-075	75	81	35	15 Sides	90	10
-076	76	82	35	15 Sides	90	10
-086	86	95	46.5	16 Sides	120	10
-087	87	96	68	16 Sides	210	10
-A74	A74	81	35	15 Notches	90	10
-A75	A75	82	35	30 Notches	90	10
-A93	A93	100	40	36 Notches	140	10
-B76	B76	83	35	12 Indents	90	10
-B86	B86	93	40	18 Indents	120	10
-C76	C76	86	35	8 Sides	90	10
-C95	C95	103	40	10 Sides	120	10

● A wrench for removing/installing oil filters in imported cars.



● OIL FILTER WRENCH FOR FILTER PAPER

3/8" sq.



For Filter Paper Replacement OIL FILTER WRENCH FOR FILTER PAPER

No.	Inside diameter	φ (outside diameter)	H	▽g	☐
AVSA-R64A	71	81	50	410	1
AVSA-R64B	81	91	59	540	1

Usage ● For the attachment and removal of the filter paper replacement type.
 Application ● Aluminum/resin filter paper replacement type oil filter cup that's used for Toyota, etc.
 * Example: Prius · VOXY · Vitz, etc.
 Features ● It is a dedicated tool for the attachment and removal of the aluminum/resin filter paper replacement type oil filter cup that's used for Toyota, etc.
 ● Since it drives with the protrusion (rib) of the filter cap, biting and slipping can be prevented.
 ● Main Application Small (AVSA-R64A): Prius · VOXY · Vitz, etc., Large (AVSA-R64B): Mark X, Crown, Hiace, etc.



Supports the aluminum/resin filter paper replacement type oil filter cup that's used for Toyota, etc.

CAUTION * Do not use it for cartridge type oil filters.
 * This product is for manual use. Do not use power tools such as impact wrench.

● Correspondence Table of Oil Filter Wrench for Filter Paper

●AVSA-R64A

	Car Name	Model Year	Engine Type	
ALUMINIUM (Small) Item Number: 15620-40030	bB	2006 to 2014	K3VE 3SZVE	
	COO (Daihatsu)	2006 to 2014		
	DEX (Subaru)	2008 to 2014		
	IQ	2008 to 2014		
	VITZ	2005 to 2014	1KR 1NR	
	PASSO/BOON (Daihatsu)	2004 to 2014	1KR 1NR K3VE	
	PASSO SETTE	2008	3SZVE	
	RACTIS	2010 to 2014	1NR (1.3L)	
	TREZIA			
	PORTE			
SPADE	2012 to 2014	1KR		
COROLLA AXIO				
BELTA	2005 to 2012			
PLASTIC (Small) Item Number: 15620-37010	IST	2007 to 2010	2ZR(1.8L)	
	COROLLA AXIO / FIELDER	2006 to 2014		
	RUMION	2007 to 2014		
	WISH	2009 to 2014		
	AURIS	2008 to 2014		
	PRIUS	2005 to 2014		
	PRIUSa/MEBIUS (Daihatsu)	2011 to 2014		
	CT200H	2010 to 2014		
	PREMIO	2007 to 2014		
	ALLION	2011 to 2014		3ZR
	ISIS			
	AVENSIS			
	2009 to 2014			
	NOAH	2007 to 2014		
VOXY				

●AVSA-R64B

	Car Name	Model Year	Engine Type
ALUMINIUM (Large) Item Number: 15620-31050	IS250 / 350	2005 to 2014	4GR 2GR
	MARK X	2004 to 2014	4GR
	MAJESTA	2003 to 2008	3GR 4GR
	CROWN	2008 to 2014	
	CROWN COMFORT	2007 to 2014	1TR
	GS430/ 350	2005 to 2012	3UZ 2GR
	GS250 / 350 / 450h	2012 to 2014	4GR 2GR
	HILUX SURF	2004 to 2005	2TR
	LAND CRUISER PRADO	2004 to 2014	
	HIACE	2004 to 2014	1TR 2TR
	REGIUSACE		
	DYNA		
	TOYOACE	2007 to 2014	2GR
	VELLFIRE	2008 to 2014	
ALPHARD	2008 to 2014		
ESTIMA	2006 to 2014		
VANGUARD	2007 to 2012		
PLASTIC (Large) Item Number: 15650-38020	LS600h/LS600nl	2008 to 2014	2UR
	LS460/460l	2006 to 2014	1UR
	GS460	2007 to 2012	
	MAJESTA	2009 to 2014	1GR
	FJ CRUISER	2010 to 2014	
LAND CRUISER PRADO	2009 to 2014		

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

1. Remove the undercover → 2. Remove the drain plug → 3. Drain the oil → 4. Remove and replace the oil filter → 5. Refit the drain plug → 6. Refit the undercover

CUP TYPE OIL FILTER CARTRIDGE WRENCH

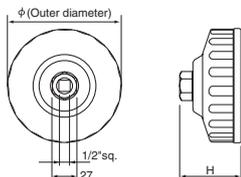
No.	φ (Outer diameter)	H	Shape	▼g	☞
AVSA-101B	117	64	15 Sides	550	10
-106B	124	64	16 Sides	570	10
-108B	125	66	16 Sides	610	10
-110B	125	68	17 Sides	610	10
-118B	135	68	16 Sides	650	10
-125B	142	70	18 Sides	750	10

Usage

- Removal of the engine oil filter cartridge for 2-4t class trucks/buses, etc.

Characteristics

- By employing the insertion method, iron (steel materials) has been used for the drive parts and the thickness of the aluminum section has been increased for improved durability.



1/2" sq.

●BIG SIZE CUP TYPE OIL FILTER WRENCH D.PAT.



Remove and replace the oil filter

4



CUP TYPE OIL FILTER CARTRIDGE WRENCH SET

No. AVSA5	▼kg 4.0
Oil filter wrench metal case	AVSA-101B, 106B, 108B, 110B, 118B (430×285×76)

1/2" sq.

●BIG SIZE CUP TYPE OIL FILTER WRENCH SET (5 sets) D.PAT.



Oil Filter Wrench Application Table for Japanese Car

- KTC oil filter wrench (AVSA) has the size that matches the genuine oil filter.
- Size may not match when using market goods or the like (rattling, biting, etc.).
- Even with the same engine model, size may vary depending on the model year and supply period of genuine parts.
- Do not use anything other than the box end oil filter wrench for the filter paper replacement type oil filter cap.

Manufacturer	Engine Model	Oil Filter Wrench
Toyota	1AZ-FSE, 1NZ-FE, 1NZ-FNE, 1NZ-FXE, 1SZ-FE, 1TR-FE, 1TR-FPE, 1ZZ-FE, 2AZ-FE, 2AZ-FSE, 2AZ-FXE, 2E, 2NZ-FE, 2SZ-FE, 2ZZ-GE, 3AR-FAE, 3E, 3S-FE, 3S-FSE, 3S-GE, 3S-GTE, 4A-FE, 4A-FHE, 4A-GE, 4A-GZE, 4E-F, 4E-FE, 4E-FTE, 4S-FE, 5A-FE, 5A-FHE, 5E-FE, 5E-FHE, 5K, 5K-J, 5K-U, 5S-FE, 7A-FE, 7K, 7K-E, EJ-DE, EJ-VE, HC-EJ, K3-VE2, K3-VET, KF, KF-DET, KF-VE	AVSA-064
	1G-FE, 1G-GE, 1G-GEU, 1G-GP, 1G-GPE, 1G-GTEU, 1G-GZE, 1GR-FE (~2009), 1JZ-FSE, 1JZ-GE, 1JZ-GTE, 1KD-FTV, 1MZ-FE, 1N, 1ND-TV, 1RZ, 1RZ-E, 1UR, 1UR-FE, 1UR-FSE, 1UZ, 1UZ-FE, 2JZ-FSE, 2JZ-GE, 2JZ-GTE, 2KD-FTV, 2MZ-FE, 2RZ-E, 2TZ-FE, 2TZ-FZE, 2UZ-FE, 3MZ-FE, 3RZ-FE, 3RZ-FP, 3RZ-FPE, 3UZ-FE, 3VZ-E, 3VZ-FE, 4VZ-FE, 5V-EU, 5VZ-FE, 7M-GE, 7M-GTEU, 1N-T (Available for -099)	AVSA-073
	2Y, 2Y-J, 2Y-PU, 2Y-U, 3Y, 3Y-E, 3Y-EU, 3Y-P, 3Y-PE, 3Y-U, FA20	AVSA-079
	1C, 3B, 3F, 3F-E, 5V-EU, B	AVSA-095
	1FZ-FE, 2L, 2L-T, 2L-TE, 2L-THE, 11B, 14B, 14B-T, 15B-CNG, 15B-F, 15B-FP, 15B-FT, 15B-FTE, 15B-LPG, 1BZ-FNE, 1BZ-FPE	AVSA-095 or -099
	1HD-FT, 1HD-FTE, 1HD-T, 1HZ, 1KZ-TE, 1N, 1PZ, 5L	AVSA-099
	2C, 2C-T, 3C-E, 3C-T, 3C-TE, 3L, 4B	AVSA-099 or -095
	1GZ-FE, 1GZ-FNE	AVSA-110B
	(Filter paper replacement type) 1KR, 1NR, 1NR (1.3L), 2ZR (1.8L), 3SZ-VE, 3ZR, K3-VE	AVSA-R64A
	(Filter paper replacement type) 1GR (2009-), 1TR, 1UR, 2GR, 2TR, 3GR, 4GR	AVSA-R64B
LEXUS	(Filter paper replacement type) 1UR, 2GR, 2UR, 3UZ, 4GR	AVSA-R64B
Nissan	CA16D, CA16DE, CA16S, CG10DE, CG13DE, CGA3DE, CR10DE, CR12DE, CR14DE, HR12DDR, HR12DE, HR15DE, HR16DE, K6A, KA20DE, KA24DE, KA24E, MR16DDT, MR18DE, MR20DD, MR20DD-SM23, MR20DE, MRA8DE, QG13DE, QG15DE, QG18DD, QG18DE, QG18DEN, QR20DD, QR20DE, QR25DD, QR25DE, R06A, R2, RF (2005-), SR16VE, SR18DE, SR18Di, SR20DE, SR20DET, SR20DT, SR20VE, SR20VET, TB45E, TB48DE, VG20DET, VG20DT, VG20E, VG20P, VG30D, VG30DE, VG30DET, VG30DETT, VG30DT, VG30E, VG30ET, VG33E, VH41DE, VH45DE, VK45DD, VK45DE, VQ20DE, VQ23DE, VQ25DD, VQ25DE, VQ25DET, VQ25HR, VQ30DD, VQ30DE, VQ30DET, VQ35DE, VQ35HR, VQ35HR+HM34, VQ37VHR, VR38DETT, Z20	AVSA-064
	RB20D, RB20DE, RB20DET, RB20DT, RB20E, RB20P, RB25D, RB25DE, RB25DET, RB26DETT	AVSA-064 or -080
	3G83, 4A30, F8, L8, RF (2003-)	AVSA-067
	A12, A15, CA18DE, CA18DET, CA18DT, CA18ET, CA18i, CA20, CA20P, CA20S, GA13DE, GA13DS, GA15DE, GA15DS, GA15E, GA15S, GA16DE, GA16DS, MA09ERT, MA10ET, MA10S, NA16, NA16S, NA20, NA20P, NA20PE, NA20S	AVSA-080
	4JG2, R2	AVSA-089
	BD30, CD17, CD20, CD20E, CD20ET, CD20ETi, CD20T, CD20Ti, D5, ED35, FD42, FD46, LD20, LD20T, QD32, QD32ETi, RD28, RD28E, RD28ETi, RD28T, TB42E, TB42S, TD23, TD25, TD27, TD27ETi, TD27T, TD27Ti, TD42, TD42T, Z18P	AVSA-092
	3A90, 3B20, 3G83, 4A30, 4A31, 4A90, 4A91, 4B10, 4B11, 4B12, 4G13, 4G15, 4G19, 4G63, 4G64, 4G91, 4G92, 4G93, 4G94, 4J10, 4J11, 4J12, 6A10, 6A11, 6A12, 6A13, 6B31, 6G7, 6G72, 6G73, 6G74, CR12DE, F8, FE, G13B, G15B, G63B, HR15DE, HR16DE, K12B, MR18DE, R2, RF, VQ25HR, VQ35HR, VQ37VHR	AVSA-064 or -067
	3G83, 3G83	AVSA-067
	4B11, 4G15, 4G32, 4G37, 4G61, 4G63, 4G64, 4G67, 4G69, 4G93, 6A12, 6A13, 6G71, 6G72, 6G72, 6G73,	AVSA-079
	4D56, 4D65, 4D68, R2, WL	AVSA-101B
4M40, 4M41	AVSA-101B or -106B	
4M40 (Delica · Space Gear)	AVSA-106B	
MAZDA	13B, 13B-MSP, 20B, B3, B5, B6, BP, CR12DE, D5, E3, E5, F6A, F8, FE, FP, FP-DE, FS, FS-DE, GA13DE, GA13DS, GA15, GA15DE, GA15DS, HR15DE, J20A, J5, JE, JF, K6A, K8, KF, KJ, KL, MR18DE, P3-VPS, PE-VPR, PE-VPS, PN, PY-VPR, QG13DE, QG15DE, QG18DE, QG18DEN, R06A, SR18DE, Z5, ZJ-VE, ZJ-VEM, ZL, ZY-VE	AVSA-064 or -067
	PE-VPS	AVSA-067
	LF-VD	AVSA-074
	H20A, H25A	AVSA-079
	RF	AVSA-064 or -067, -079, -089
	R2	AVSA-089 or -101B, -064
	CD17, CD20	AVSA-092
	VS, WL, XA	AVSA-101B
	YJ (4HF1), YM (4HG1)	AVSA-108B
	AJ, AJ-DE, GY	AVSA-A93
HONDA	B16A, B16B, B18B, B18C, B20A, B20B, B21A, C35A, D12A, D13B, D13C, D15B, D16A, D17A, E07A, E07Z, ECA, F18A, F18B, F20A, F20B, F20C, F22A, F22B, F22C, F23A, G20A, G25A, H22A, H23A, J25A, J30A, J32A, J35A, J37A, K20A, K20B, K24A, L13A, L15A, LDA, LDA-MF5, LDA-MF6, LEA-MF6, P07A, PA07, R18A, R20A, S07A, ZC	AVSA-063
	4JG2 (1995-), 4JX1, 6VD1, 6VE1, C30A, C32A, C32B, G32A	AVSA-080
	4JG2 (~1995)	AVSA-089
SUZUKI	F6A, F6B, G10, G13B, G15A, G16A, J18A, J20A, J24B, K10A, K10A, K12B, M13A, M15A, M16A, M18A, MR20DE	AVSA-064
K6A, K6A revised	AVSA-064 or -063	
DAIHATSU	CB, CL, EF-CK, EF-CL, EF-CS, EF-DEM, EF-DET, EF-EL, EF-ES, EF-FL, EF-GL, EF-GS, EF-HL, EF-JL, EF-KL, EF-NS, EF-RL, EF-RS, EF-SE, EF-TS, EF-VD, EF-VE, EF-VN, EF-VS, EF-XL, EF-XS, EF-ZL, EF-ZS, EJ-DE, EJ-VE, HC, HC-EJ, HD, HD-EP, HE, HE-EG, JB-DET, JB-EL, JB-JL, JC-DET, K3-VE2, K3-VET, KF-DET, KF-VE	AVSA-064
	(Filter paper replacement type) 1KR, 1NR, 2ZR (1.8L), 3SZ-VE, K3-VE	AVSA-R64A
SUBARU	EA71, EA82, EF10, EF12, EJ15, EJ16, EJ18, EJ20, EJ22, EJ25, EL15, EN07, ER27, FA20, FB16, FB20, FB25, GA15DE, GA15DS, K3-VE, KF, KF-DET, KF-VE, QG15DE, QG18DE	AVSA-064
	6VD1, EG33, FA20	AVSA-079
	EZ30, 4JB1, 4JG2	AVSA-080
	CD17, CD20	AVSA-092
(Filter paper replacement type) 3SZ-VE, K3-VE	AVSA-R64A	
ISUZU	CD17, CD20	AVSA-092
	4XC1, 4XE1, 4XF1, 4EC1, 4EE1, 4ZB1	AVSA-079
	4FC1, 4FC1-T, 4JB1, 4JG2	AVSA-089

* Data is from September 2013.

Oil Filter Wrench Application Table for American & European Car

Manufacturer	Car (Engine) Model	Oil Filter Wrench	
Volkswagen	Gasoline car	AVSA-074	
AUDI	Gasoline car	AVSA-074	
Opel	Vita, Astra, Vectra, Calibra, Omega Former Omega AVSA-092	AVSA-075	
BMW	3 Series Late E30 Model 4-Cylinder	AVSA-074	
	3 Series 4-Cylinder (filter paper replacement type) before '02	AVSA-074C	
	N-Series Engine (N42 · N45 · N46 · N52 · N54)	AVSA-086	
Mercedes	Gasoline 4, 6, 12-Cylinder *1	AVSA-074	
	Class C 272, 273	AVSA-074C	
PORSCHE	All current cars	AVSA-074	
	Before 93 Model of 911	AVSA-092	
Peugeot *2	All cars	AVSA-B76, B86	
Citroen *2	GS, GSA, CX2400, CX2500 Diesel	AVSA-B76	
	CX2500, AX, BX, ZX, XM-V6	AVSA-B86	
	Xantia		
Renault *2	Twingo, Lutecia, Megane	AVSA-B76, B86	
	Panda, Uno	AVSA-C76	
FIAT	Tipo, Coupe Fiat	AVSA-C95	
	Lancia		
Lancia	Thema V 3.0L	AVSA-B86	
	Thema 2.0L, Delta, Dedra, Prisma	AVSA-C76	
Alfa Romeo	164, 147	AVSA-C76	
	155, 75, Spider, 145, 156	AVSA-C95	
Ferrari	328	AVSA-095	
	348	AVSA-B86	
Saab	All cars	AVSA-075	
GM	Cadillac Fleetwood Brougham, former Trans-Am, former Camaro, Chevy G-20	AVSA-092	
	Grand-Am	AVSA-075	
	Cadillac Concours, Allante, Eldorado, Seville, Fleetwood Elegans Sedan, Fleetwood 60 Special, Fleetwood Regal, Astro, Bonneville, S-10 Blazer, Blazer Silverado Camaro Sports '94 Model or later, Park Avenue, current Corvette, Cadillac Escalade, Hummer H3	AVSA-A74	
	Saturn	AVSA-076	
	Ford		
Ford	Taurus, Seven, Mustang 3.8L, Thunderbird, Lincoln Continental 3.8L, Probe 2.5L · 3.0L	AVSA-A75	
	Thunderbird, Mustang 5.0L · V8 4.6L · 5.8L all models, Explorer, Escape XLT (V6) Mustang GT (V8 2005~)	AVSA-A93	
	Probe 2.2L	AVSA-092	
	Laser gasoline cars, Telstar gasoline cars, Festiva	AVSA-064	
	Focus, Escape XLT (direct 4)	AVSA-067	
	Ka, Lincoln SL, Mondeo V6	AVSA-074	
	Laser diesel cars	AVSA-076	
	Telstar diesel cars	AVSA-079	
	Mustang GT (V8 2005~)	AVSA-089	
	Mondeo	AVSA-092	
	Escape 3L (V6) AJ type	AVSA-095	
	Escape 2L (L4)	AVSA-A74	
	Chrysler	Grand Cherokee, Cherokee	AVSA-A93
	Rover	Mini M/T, 100 Series, 200 · 400DOHC1.6L 200 · 400 · 600 · 800SOHC2.0L	AVSA-092
		Sterling 4-Door Sedan	AVSA-079
200 · 400DOHC 2.0L, 600 · 800DOHC, 2.3L Discovery, Range Rover, MGF1.8L E-RD18K		AVSA-095	
Jaguar	Former V6	AVSA-A75	
	Direct 6, V12	AVSA-095	
	V8	AVSA-076	
Volvo	V40, S40, S60, C70, V70, S80, Cross Country * It cannot be used for the round head oil filter of the former 70 Series ('98 model or earlier).	AVSA-087	

*1. Since the parts for 190E '94 model have been changed, applicable product may not be available.

*2. For Renault, Peugeot and Citroen, size may vary in new car parts, long-life, etc.
Purchase of both AVSA-B76 and B86 is recommended.

● Design that securely hooks onto the filter even in thermal expansion

AVSA-074C and 087 are designed with longer total length than normal type, larger allowance with the oil filter and to firmly hang onto the filter even in thermal expansion to support the resin oil filter cover that expands with heat.

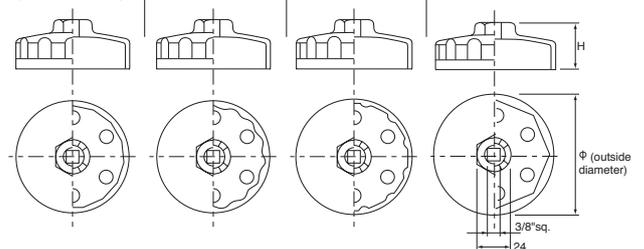


Oil filter cap and replacement filter paper for VOLVO



● Shape of cup-type oil filter wrench for imported cars

- | | | | | |
|----------------|---------------|----------------|----------------|---------------|
| 074, 14-angle | 076, 15-angle | A74, 15-convex | B76 12-concave | C76, 8-angle |
| 074C, 14-angle | 086, 16-angle | A75, 30-convex | B86 18-concave | C95, 10-angle |
| 075, 15-angle | 087, 16-angle | A93, 36-convex | | |



Oil Filter Wrench Application Table for Large Size Car

Car Name	Car Model	Engine Model	Model Year	Filter Size
Toyota	DYNA-TOYOACE	XZU130, 140	J05C	AVSA-108B
		RX4J	J05CT	AVSA-118B
		RX4JET	J05C	
		XZU3□	S04	AVSA-101B
	Coaster	XZB50	N04C	
Hino	Ranger	BU212M	15B-F	AVSA-099
		HV116HU	14B	
		FC3J	J07C-NA	AVSA-101B
		FB2W	W04D	
	Rainbow	AB2W	W04D	
	Dutro		S05C, S05D	
	Ranger	FC, FD, FF, FT, GD17 □	H07C	AVSA-108B
	Rainbow	KG, RJ, RR, RT, RU17 □	H07C	
	Ranger-Liesse (Bus)	FD, FF, GD, RR, SD2H	H07C	
		RB, RH1W, RH160	W04C	
		FC, FD3W, CH16 □	W06E	
		FB, FC, RH, RX4J	J05C	
		XZU130, 140	J05C	
		FC3J	J07C	
		FD7J	J07E	
				J05E
	Ranger	FC, FD, FF, FT, GD3H	H07D	
		CH, RJ, RR, RU, RU3H	H07D	
		FD, FE, FF, FT, FX1J	J08C	
		GD, GK, GX, CH, RJ1J	J08C	
RU, RR1J, FC, FD2J		J08C		
FD, FG, GK, RU1H		H06C		
FC5J, FJ5J		J07CT		
FC7J		J07ET		
			J08C	AVSA-118B
			J08C	
Ranger	FC1J, FD1J, FE1J	J08C		
	FG1J, FJ1J, FT1J	J08C		
	FX1J, GD1J, GK1J	J08C		
Rainbow	GX1J, CH1J, HR1J	J08C		
	HU1J, RJ1J, RR1J	J08C		
Rainbow	RU1J	J08C		
	RH4J, RX4J	J05CT		
Ranger	RH4J, RX4J	J05C		
	HU8J, RU8J	J08E		
Ranger	FD8J, FE8J, FG8J	J08E		
	GD8J, GK8J	J08E		
Profia	FH1A, FN1A, FR1A, FW1A	A09C		
	GN1A, PR1A, SH1A	A09C		
Poncho II	BDG-HX6	J05D	AVSA-108B	
ISUZU	Elf	U · KC · KK-NKR66		H2/6~
		KC · KK · KR-NKR71 · 72 · 75		H7/3~
		KR · PB · AFG-NKR81 · 82		H14/5~
		KC · KK-NPR66		H7/3~
		KC/KK/KR/PA/PB-NPR70 · 71 · 72 · 75 · 81		H7/3~
		KR-NKS81E		H14/6~
		PB-NKS81A		H16/6~
	Forward	ADG · PKG-FRR90 (Engine 4HK1-T)		H17/7~
Nissan	Atlas	KC · KK · KR-AKR66 · 71 · 81		H7/6~
		KC/KK/KR/PA/PB/PDG-APR66 · 70 · 71 · 72 · 75		H7/6~
		PB-APS81A		H16/6~
UD	Condor	KC · KK-BKR66 · 71		H7/6~
		KC · KK · PB · PA-BPR66 · 70 · 71 · 72 · 75 · 81		H7/6~
			MD92	AVSA-125B
		GH5	MK Series, LK Series	AVSA-118B
Mitsubishi Fuso	Canter	FE□	4D30	AVSA-101B or -089
		FE□, FG□	4D32	
		FE□, FG□	4D33	~H4, 5
		FE□, FG□	4D33	H4, 5~
		FE□, FF□	4D34	
		FE□, FG□	4D35	
		FE□	4D36	
		FE□	4M51	
		FE□	4M42	AVSA-106B
		FE□, FG□	4M50	
	FE□	4M51		
	Canter · Guts	FB□, FD□	4M40	AVSA-101B or -106B
		FB70B	4M42	AVSA-106B
	Challenger	K94W	4D56	AVSA-101B
K94WG				
	K97WG	4M40	AVSA-101B or -106B	

* "□" in the table represents multiple models.

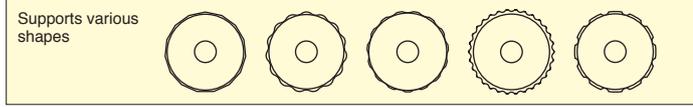
*Please check the merchandise inventory for a product that is marked by  before placing an order.

ADJUSTABLE OIL FILTER WRENCH

No.	Applicable Dia.	D	W	H	▽g	📦
AVSA-6379	φ63~79	56	66	41	300	1

- Usage** ● Cartridge type oil filter removal of light ~ standard-sized vehicles.
Application ● Up to φ63~79 oil filter equipped vehicles (excluding filter paper replacement type).
 ● Special size oil filter equipped vehicles such as Mazda.
 ● Imported cars with special shape oil filter.
Features ● Removal dedicated tool for cartridge type oil filters up to φ63~79. (excluding filter paper replacement type)
 ● It is an adjustable type that supports oil filters of various shapes.

* Spare parts are configured. Please contact your dealer for details.



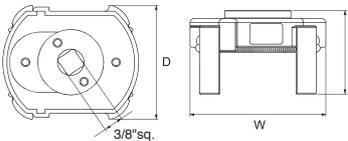
Firmly catches with 3-stage claw. Can easily be mounted by one hand. Work in tight spaces is possible with low height when mounted.

CAUTION ● It is dedicated for removal. It cannot be used to attach oil filters.
 ● Please do not use it for the filter paper replacement type.

Supply Parts (Drive Set for Adjustable Double Oil Filter Wrench)

No.	Square	Set Contents	📦
AVSA-6379-K	3/8"sq.	Drive x1, Plate · Steel Spacer · Button Bolt with Hex. Socket (M5xL8) · with Hex. Socket Button Bolt (M4xL5) 2pcs. each	1

ADJUSTABLE OIL FILTER WRENCH



Remove and replace the oil filter **4**

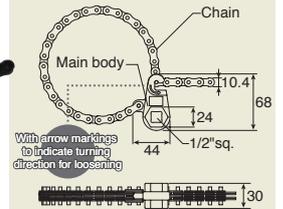


CHAIN TYPE OIL FILTER WRENCH

CHAIN TYPE OIL FILTER WRENCH

No.	Applicable Dia.	▽g	📦
AE502	φ89~142	600	1

- Usage** ● For removal of cartridge type oil filters from standard~heavy vehicles
Application ● For cartridge type oil filters with outer diameter of 89~142mm (nominal soze 89-125mm).
Characteristics
 ● Light and compact
 The tool can operate in a narrow space.
 ● Drive tools can be chosen according to work condition.
 A 1/2"sq spinner handle or an off-set wrench (with 24mm width across flat) can be used to operate this tool.
 ● Loosening can be done securely.
 This tool is structured to prevent chain from coming off.



CHAIN TYPE CARTRIDGE WRENCH

No.	Applicable Dia.	L	▽g	📦
CW-90140	φ90~125(Effective Dia. φ90~140)	140	530	10

- Purpose**
 For removing and replacing oil filter cartridge and fuel filter.
 ● Applicable to light and medium size cars up to 4t.
Special Features
 ● Give little damage on filters.
 ● Original flex band mechanism avoids concentrated load on cartridges.
 ● Wide application.
 ● Can be used on cartridge type filter (φ90~125) and fuel filter.
 * Due to the thickness of the chain (10.4mm), cannot be used for some types of filters with narrow niches.

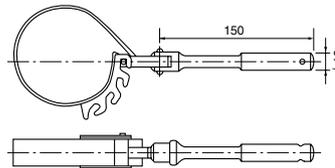
CHAIN TYPE CARTRIDGE WRENCH



OIL FILTER CARTRIDGE WRENCH

No.	Applicable Dia.	▽g	📦
FF-8095	φ80~95	400	10
FF-90110	φ90~110	410	10

- Adjustable band type.
 ● Easy for squeezing and slip resistance.



OIL FILTER CARTRIDGE WRENCH



STAINLESS SCRAPER

Refit the drain plug **5**

- OFFSET WRENCH ● DRAIN PLUG WRENCH ● OTHER TOOLS
 ● DIGITAL RATCHET

- ① Stripping the packing
 ② Attaching the drain plug
 ③ Measuring the tightening torque

- SCREWDRIVER ● T-SHAPED WRENCH ● SOCKET ● OTHER TOOLS

Refit the undercover **6**

OIL SERVICE STATION

This service station helps you replace the oil with good efficiency.

- On the top cover you can place various parts in order, such as oil container, filters and tools.
- To avoid mixing different kinds of oil, oil jug hooks help you drain oil completely.
- Variety of tools and kits in addition to side pockets. (Endurable load of the side pockets; pocket for packing : 1kg, Small and middle size pockets for AVSA : 1kg each, Large one : 3kg.)
- Oil pan is removable. Use it for draining oil. (See photo-1.)
- Large castors facilitates smooth moving of the station. (Castor size: $\phi 127 \times 32$ for fixed type; $\phi 100 \times 51$ for movable type with stopper)
- Drawers are pulled out in two directions, so two stools can be laid out for this station.(See photo-2)

OIL SERVICE STATION SET

No. SKR823 System-F-Full set

Number of components included in set:72 ▼kg 50 ☞ 1(3package)

No. SKR822 System-S-Standard set

Number of components included in set:67 ▼kg 48 ☞ 1(3package)

No. SKR811A System-B-Basic set

Number of components included in set:34 ▼kg 40 ☞ 1(2package)

No. SKR81 Unit + Pocket

Number of components included in set:5 ▼kg 33 ☞ 1(1package)

Contents

Description	No.	SKR81	SKR811A	SKR822	SKR823	
3/8"sq.Socket(6pt.) <i>POWERSIT</i> (except inch size)	B3-08			●	●	
	-10		●	●	●	
	-11		●	●	●	
	-12		●	●	●	
	-13		●	●	●	
	-14		●	●	●	
	-15		●	●	●	
	-17		●	●	●	
	-19		●	●	●	
	-21		●	●	●	
	-22		●	●	●	
	-24		●	●	●	
	-3/16		●	●	●	
1/2"sq.Socket(6pt.) <i>POWERSIT</i>	B4-26		●	●	●	
	-27		●	●	●	
	-32		●	●	●	
B4-1-1/8		●	●	●		
3/8"sq.Ratchet Handle(Flex-Head)	BRF3		●	●	●	
3/8"sq.Spinner Handle	BS3E		●	●	●	
3/8"sq.Extension Bar	BE3-075		●	●	●	
	-150		●	●	●	
3/8"sq.-Adapter (Indents 1/4"sq × Notches3/8"sq.) (Indents 3/8"sq × Notches1/2"sq.)	BA23		●	●	●	
	BA34		●	●	●	
3/8"Hex.Wrench	BT3-08S		●	●	●	
	-10S		●	●	●	
1/2"sq.Hex. Wrench	BT4-17		●	●	●	
3/8"TORX.Wrench	BT3-T45S		●	●	●	
45°×10"Long Offset Wrench	M5-1012		●	●	●	
	-1417		●	●	●	
	-1921		●	●	●	
	-2224		●	●	●	
T.Shape Wrench With Short Handle	TH-10N		●	●	●	
Screwdriver(Flat)	D1M2-6		●	●	●	
	-8		●	●	●	
Screwdriver(Cross)	D1P2-2		●	●	●	
	-3		●	●	●	
Heavy Duty Screwdriver(Flat)	FD-250		●	●	●	
Stainless Scraper	KZ1-22		●	●	●	
Boxend Oil Filter Cartridge Wrench	AVSA-063		●	●	●	
	-064		●	●	●	
	-067		●	●	●	
	-073		●	●	●	
	-074		●	●	●	
	-079		●	●	●	
	-080		●	●	●	
	-089		●	●	●	
	-092		●	●	●	
	-095		●	●	●	
	-099		●	●	●	
	-101		●	●	●	
	Boxend Oil Filter Wrench	AVSA-074		●	●	●
		-074C		●	●	●
-075			●	●	●	
-A75			●	●	●	
-076			●	●	●	
-B76			●	●	●	
-C76			●	●	●	
-086			●	●	●	
-B86			●	●	●	
-087			●	●	●	
-A93			●	●	●	
-C95		●	●	●		
Boxend Oil Filter Wrench for Big Size	AVSA-101B		●	●	●	
	-106B		●	●	●	
	-108B		●	●	●	
	-110B		●	●	●	
	-118B		●	●	●	
	-125B		●	●	●	
	Chain Type Cartridge Wrench	CW-90140		●	●	●
Fender Cover	AYC-2		●	●	●	
Oil Jog(5e)	AE501		●(2pcs.)	●(2pcs.)	●(2pcs.)	
	SKR-55S	●	●	●(2pcs.)	●(2pcs.)	
Oil Service Station	Pocket (small) for AVSA	●	●	●(2pcs.)	●(2pcs.)	
	Pocket (medium) for AVSA	●	●	●(2pcs.)	●(2pcs.)	
	Pocket (large) for AVSA	●	●	●(2pcs.)	●(2pcs.)	
	Pocket for packing	●(2pcs.)	●(2pcs.)	●(3pcs.)	●(3pcs.)	
	Pocket for waste cloth	●	●	●	●	
Oil Service Station		●	●	●	●	

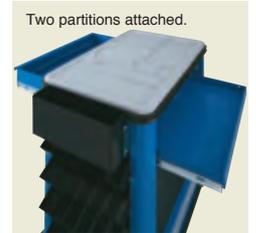
OIL SERVICE STATION

Photo-1 Removable oil pan



Oil pan size:
520(L) × 330(W) × 80(H)

Photo-2 Drawers pulled out in two directions.



Two partitions attached.



Oil Service Station System-F (Full set) SKR823

●OIL SERVICE STATION SET



Oil Service Station (Main body and pockets)

●Pockets



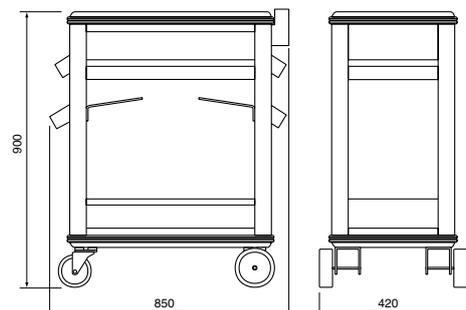
Pocket (large)for AVSA SKR-55L

Pocket for waste cloth SKR-55W

Pocket (medium)for AVSA SKR-55M

Pocket for packing SKR-55P

Pocket (Small)for AVSA SKR-55S



Note : 6pt. Sockets are shown in blue letters. *Please check the merchandise inventory for a product that is marked by before placing an order.

COOLANT CHARGER

No. AE401	▼kg 4.5
L×W×H	420×300×450mm
Hose length	2.5m
Effective tank capacity	15 liters
Tank material	Polyethylene
Max. vacuum	Approx. 0.09 Mpa
Air consumption	Approx. 120~190 liters/min~
Applicable air pressure	0.6~1.0 MPa
Ambient temperature	7~50°C

Air removal is unnecessary after injection coolant! Can be used for two coolants by exchanging tanks.

Purpose

- Injection of automobile engine coolant.

Application

- For mini-cars, compact cars, and small trucks up to the 1.5-t class. (A cone plug L-size adapter (sold separately) is necessary for some non-Japanese cars.)

Features

- Injects coolant efficiently, without mixing in air.
- Tank and body are separable. Two types of coolant (red / green) can be injected by using a spare tank (sold separately).
- Pressure adjustment for injected air is not necessary.
- The switch for alternating between vacuum and injection is close to hand.



Spare Tank Set (Tank & caps)

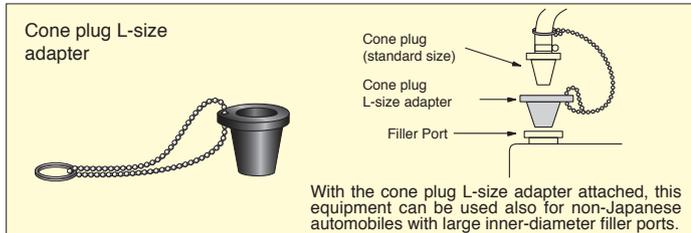
No. AE401-ST	
Total length	420mm(Base length: about 360)
Width	220mm
Height	370mm

Cone Plug L-Size Adapter

No. AE401-CPL	
Total length	-
Width	63mm
Height	45mm

Application Table for Cone Plug L-Size Adapter

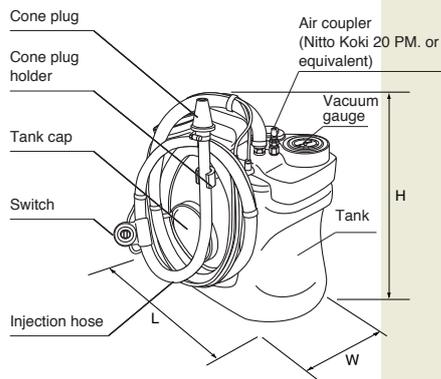
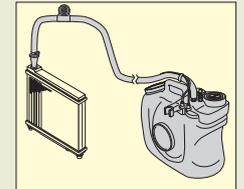
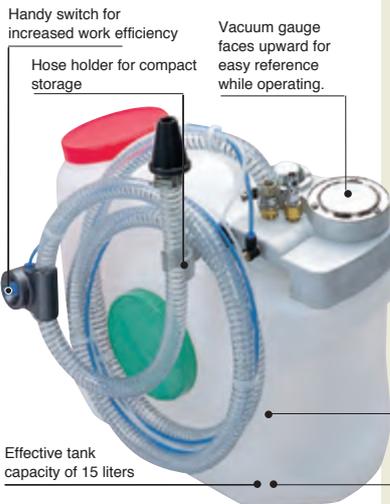
Inner diameter of radiator cap	Main makers & models
34~40mm	Volkswagen (all models) Audi (all models) Volvo (all passenger cars) Rover (200~600 , FREELASDER) Fiat (all models)



COOLANT CHARGER

Replacing fluid Injecting LLC

1



1 Replacing fluids
Injecting LLC
*Closing the hose when using the coolant charger

●PINCH OFF PLIERS

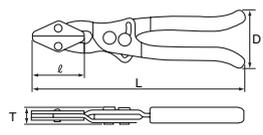


PINCH OFF PLIERS

No.	L	ℓ	D	T	Opening rate	▽g
PSA34	140	33	48	5	23	75
PSA57	233	57	65	18	50	340

- Usage**
- Car hose closing operations.
- Characteristics**
- This tool is convenient when closing hoses in the cooling system, especially when using the coolant charger produced by KTC.
 - Closing the brake hose when removing the strut, etc.
 - Closing the ATF hose when removing/installing the AT.
 - Closing the vacuum hose when inspecting the auxiliary instruments under deceleration, etc.
 - Closing the fuel hose when changing the fuel filter.
 - Closing the fuel and oil hose for motorcycles.
 - The multi-level automatic lock function is employed, enabling the tool to lock the pliers position simply by grasping, allowing for speedy operation.
 - Opening the grip will release the locked pliers position.

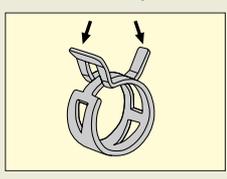
CAUTION • Check that the pliers are firmly locked into position before use.



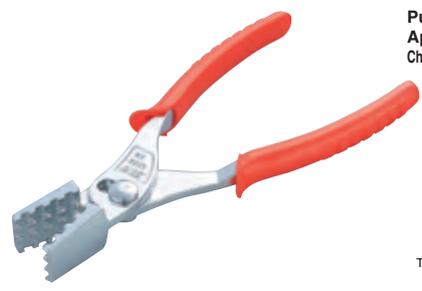
Outer diameter of applicable hose

PSA34	Outer diameter	φ 19mm
PSA57	Outer diameter	φ 41mm

2 Hose replacement
① Removing the hose clip.



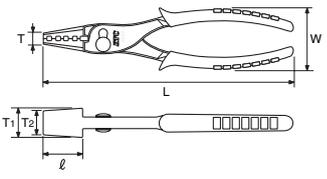
●HOSE CLIP PLIERS



HOSE CLIP PLIERS

No.	L	ℓ	W	T	T ₁	T ₂	▽g
AE92	210	32	50	9	25	20	300

- Purpose**
- Removing/installing hose clips.
- Application**
- Hose clips with diameter of 12-47mm.(except for screw types)
- Characteristics**
- The teeth edges are designed for firm grasping, preventing the hose clip from sliding out of the pliers, this is useful in confined or hard to reach areas. (Fig. 1)
 - The shape (trapezoidal) of the teeth allows grasping from vertical, horizontal, diagonal, and other various positions.
 - A hilt equipped resin grip allows easy gripping and prevents slippage.



Examples of use

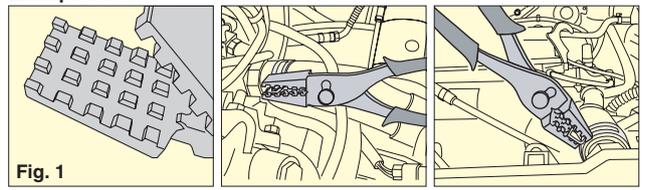


Fig. 1

2 Hose replacement
② Since the drive area is 3/8"sq., it can be used together with other power tools.



Example in use: AE921+BE3-150+BE3-Q

●HOSE CLIP TOOL (for mini-vehicles)

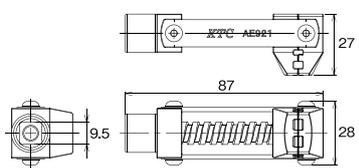


HOSE CLIP TOOL

No. AE921	▽g150	1
-----------	-------	---



- Application**
- Hose clip fixing the cooling system hose of Suzuki vehicles (Wagon R, etc.) (Vehicle type with the lock position facing side or downward)
 - Vehicle type that shows difficulty in work with pliers type tool
- Features**
- Work can be conducted without removing sensors, duct, hose, etc. near the hose clamps.
 - Since the tool is a screw type, it can be held with hose clamps loosened. Assembly/removal can be conducted at a narrow work space.
 - Since the tool has the same end shape as that of AE92, the hose clip does not slip and the tool does not come off abruptly.



* BE3-Q in the photo is not included in the price.

SET RADIATOR HOSE PLUCKER

No. AE45T	▼g 300	
RADIATOR HOSE PLUCKER AE45-1, 2, 3		

No.	d	D	ℓ	L	▼g	
AE45 -1	6	26	90	185	100	10
-2	6	26	90	185	100	10
-3	6	26	90	185	100	10

Purpose

- Pulling out hoses and removing stickies.

Special Feature

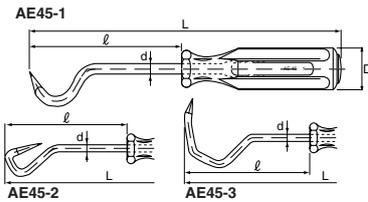
- 3 kinds of pluckers with specially shaped tips for use in narrow spaces.
- Specially angled tip for covering even back side of a hose.



●RADIATOR HOSE PLUCKER

Hose replacement
 ③ Pulling out hoses and removing stickies

2



About the LLC

● The role of the engine radiator and water

The engine is continuously exposed to heating from the combustion of fuel, and will naturally overheat if left in this state. The radiator plays the role of sustaining the optimum temperature by cooling the engine.

Cooling devices are divided into air-cooled and water-cooled types. Most cars commonly use the water-cooling system. The water-cooled type circulates cooled water (coolant) throughout the engine system using a water pump in order to cool the engine. The water that is heated from this process is directed back to the radiator for cooling, and is circulated back to the engine. This process is repeated.



Fluid tester (AG601)
 P.192

● LLC

Because the liquid used in the radiator is mainly water, freezing will occur in temperatures less than 0°C, and boiling and evaporation will occur in temperatures over 100°C. Both of the above situations will cause engine trouble. LLC is a product that lowers the water freezing point, and raises the boiling point.

Previous coolants were known as anti-freeze, however, improvements have been made to these products giving them a longer useful life. These are now known as LLC (Long Life Coolant). One of the disadvantages of using anti-freeze was that it would have to be replaced after winter whereas the LLC can be used all year around. One of the disadvantages of using LLC is that the radiator can become blocked causing damage to the water pump and cause overheating and then possible engine trouble.

LLC concentration and freezing temperatures standards

LCC concentration	Freezing temperatures
30%	-15°C
35%	-20°C
40%	-24°C
45%	-28°C
50%	-36°C
55%	-41°C
60%	-54°C

● LLC concentration

There is a 30% concentration ratio of LLC in new vehicles. Because the freezing temperature is lowered when the concentration is high, the concentration ratio is increased in cold areas. However, the concentration ratio should not exceed 60%. LLC concentration ratios relating to cold temperatures are shown above. Current temperatures can be tested with the fluid tester (P. 227).

● LLC color

LLC main ingredient, ethylene glycol, is a poisonous product. The coolant is colored to help prevent mistaken use. The coolant is red mainly in Toyotas and green mainly in Nissan vehicles. However, the color does not affect performance. However, avoid using two different colored coolants.

● LLC toxicity

LLC main ingredient is ethylene glycol and is poisonous to humans. Drinking LLC may lead to death. The recently introduced PRTR law is specific to special chemical substances. Care must be taken when handling.

Tool basics

PRTR Law

PRTR (Pollutant Release and Transfer Register): This law deals with waste matter (pollutants) entering the environment and aims to improve the management of the environment. This law has been designed to build a system that carries out strong control of chemical substances and environmental protection. The law was put into practice in 2001, and obligates those who deal in pollutants, which can endanger the health of others, to understand their actions and report to the Government.

● KTC's CO₂ emission cutting proposal

Presently, problems concerning the cutting of CO₂ emissions have been getting much attention. However, KTC believes that CO₂ emissions can be reduced over and above maintenance alone.

This is believed to be the eliminating of idling after LLC is injected when carrying out the air bleeding process. By using the KTC's Coolant Charger (No. AE401), the air bleeding process can be completed without idling after the LLC has been added. This means that if the Coolant Charger was to be utilized in every service center that over 30 million cars (*1) that have their LLC replaced annually when renewing their fitness certificate, would not need to be idling while the process was carried out. In other words, the air bleeding process time for each vehicle is around 30 minutes. This calculates to about 0.4 liters of fuel and in CO₂ emission terms, around 270 g (*2). By this calculation, there is around 8,100t of CO₂ being emitted into the atmosphere every time the renewal process is carried on the vehicles out there today.

*1 The actual figure may be different to what is stated here as the figure of 30 million yearly fitness certificate checks includes light weight, as well as diesel powered vehicles.

*2 This data has been supplied by the Environmental Department

Replacing various belts

ENGINE

5 AUTOMOTIVE SPECIAL TOOLS

Can reach a wide range of locations.

FREE POSITION WRENCH SET

Usage

- Can be used to tighten and loosen nuts and bolts in confined areas.

<Example>

- Vehicle engine starters on automobiles, on engine mounts, on manifolds, fitting air conditioners
- Bolts, adjusting bolts on various types of belts, around drive shafts, flanges, and around piping

Characteristics

- Can be used on a wide range of different sized nuts and bolts. (Photo 1)
- Because the wrench and wrench handle are separate entities, they can be combined at the rear side of the wrench socket to be used in a variety of ways. (Photo 2)
- The wrench itself can be set in 24 different positions at 15° intervals off the handle so that work can be carried out at a variety of different angles.
- If the wrench bit and the exclusive handle are used in the "free" state, the wrench may be operated at a high speed. (Photo 3)
- The wrench is a compact, flat ratchet type (15°)

FREE POSITION WRENCH SET PAT.P. D.PAT.



Belt replacement 1



<Example>
Wagon R
Compressor Removal/Installation

(Photo 1)
Wide variation of sizes



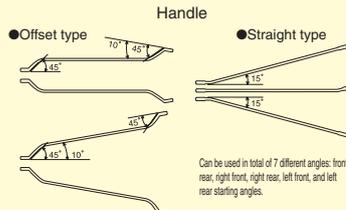
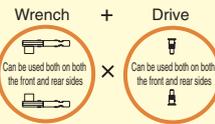
(Photo 2)
Wrench and handle are separate for combination as required



(Photo 3)
Fast operation is possible with crank motion.



The wrench, drive and handle combination makes any job possible.



2 × 2 × 7 × 24 = 672 different wrench positions are possible.

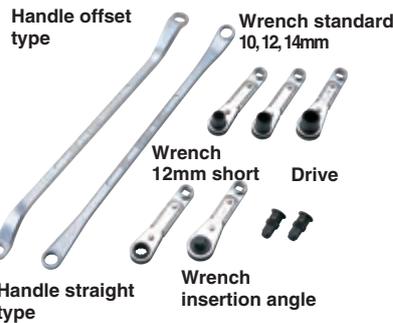
Free positioning wrench set

No. ATE104	▼kg1.2	☐1
Free positioning wrench	AE101-10, 12, 14	
Free positioning wrench handle	AE102 <Offset>	
*including drive		

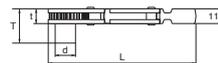
No. ATE107	▼kg1.7	☐1
Free positioning wrench	AE101-10, 12, 14	
12mm short	AE101-12S	
Insertion angle 3/8"sq.	AE101-3R	
Free positioning wrench handle	AE102 <Offset>	
*including drive		
	AE103 <Straight>	



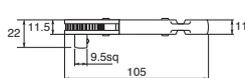
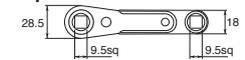
*ATE104, 107 includes blister tray
Tray size (L450xW150xH40)



Standard



3/8"sq.



Free positioning wrench/ standard

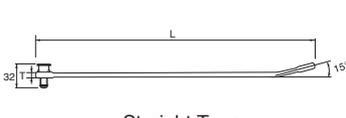
No.	S	D	T	t	d	L	▼g	☐
AE101-10	10	24	24.5	10.5	14.5	106	130	5
-12	12	24	27.5	10.5	17	106	130	5
-13	13	28.5	28	11.5	18.5	106	150	5
-14	14	28.5	28	11.5	20	106	150	5
-15	15	28.5	28	11.5	21	106	150	5
-17	17	34.5	28.5	11.5	24	113	180	5
-19	19	34.5	28.5	11.5	26	113	180	5

[Free positioning wrench series chart]

Product name	Product number	AE102	AE103	ATE104	ATE112	ATE107	
Wrench	Standard	AE101-10		●		●	
		-12		●		●	
		-13			●		
		-14			●		●
		-15					
		-17					
Handle	12mm short	AE101-12S				●	
	Insertion angle 3/8"sq.	AE101-3R			●	●	
	Offset type (45°×45°×10°)	AE102-HD	●		●	●	
	Straight Type (0°×15°)	AE103-HD		●		●	
Drive	AE102-DA	●	●	●	●	●×2	



Offset Type



Straight Type

Free positioning wrench

No.	S	D	T	t	d	L	▼g	☐
AE101-12S	12	24	14	10.5	17	106	115	5

- Suitable for cooler belt adjustment bolts on the Suzuki Alto Wagon R (F6A, K6A).

Free position wrench/3.8"sq.

No.	▼g	☐
AE101-3R	155	5



- As the tools are equipped with an insertion angle, it is possible to use the wrench on a 9.5sq standard semi-deep socket or a deep socket, etc.
- The wrench can be used on automobiles ranging from light to One-box type (including imported vehicles). <Recommended for 5.5~14mm hexagonal bolts and nuts with 2-faced widths.>
- Although limited, can also be used as short wrench.

Free positioning wrench handle (offset type) <AE102-HD+AE102-DA>

No.	D	T	L	▼g	☐
AE102	22	31	370	320	1

Free positioning wrench handle (straight type) <AE103-HD+AE102-DA>

No.	D	T	L	▼g	☐
AE103	22	7	370	210	1

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

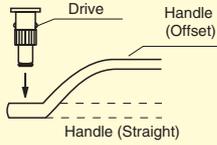
ENGINE

●Method of use

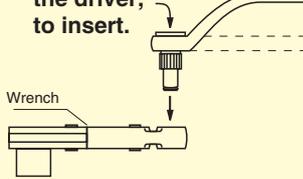
Connecting the wrench and the handle

- ① Insert the drive to the back of the handle.
- ② Push down on the top of the driver, to insert the driver into the square shaped hole of the wrench.

① Insert the driver

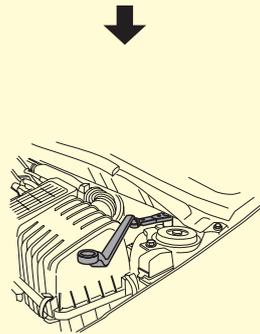
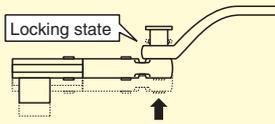


② Push down on the top of the driver, to insert.



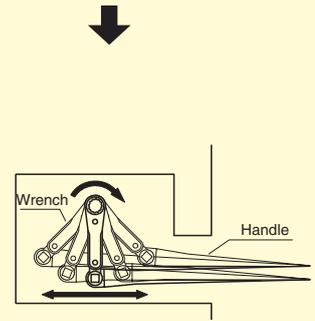
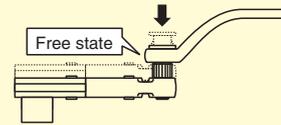
Loosening/tightening bolts & nuts

Lock the connecting area of the handle and the wrench together and then set in the desired angle.
(The wrench can be set in 24 positions at 15° increments)



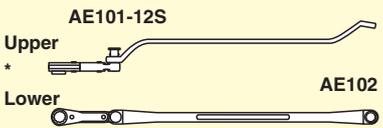
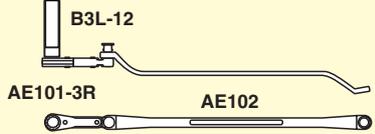
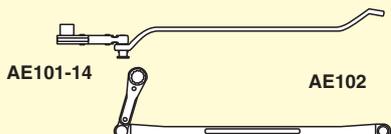
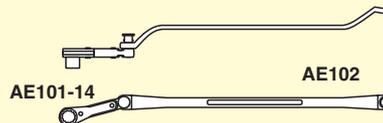
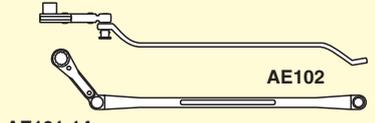
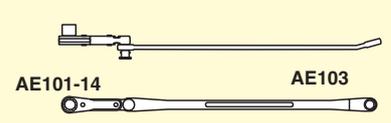
Place in a free state for high speed rotation

High speed crank operation is possible by pulling and pushing the handle.



The illustrations below show 2 pictures. The upper picture shows what the tool looks like when pieced together. The lower picture shows the fixed angle that the tool is used at.

●Examples

<p>① Suzuki Alto Cooler belt adjustment</p> <ul style="list-style-type: none"> ● A thin shaped socket is extremely effective when used in engine compartment 	<p>② Daihatsu Move Alternator belt adjustment</p> <ul style="list-style-type: none"> ● This type is easy to use inside engine compartment. 	<p>③ Nissan Cube Starter installation bolt</p> <ul style="list-style-type: none"> ● This type can be used in a lifted up position.
 	 	 
<p>④ Toyota Bitz Drive shaft mount stay</p> <ul style="list-style-type: none"> ● This type can reach deep areas if in a lift up position. 	<p>⑤ Toyota Voxy Strut tower installation bolt</p> <ul style="list-style-type: none"> ● Excellent for replacing the struts in engine compartment. 	<p>⑥ Mitsubishi Chariot Grandes Power steering belt adjustment</p> <ul style="list-style-type: none"> ● Can be used in pipe crossing in engine compartment.
 	 	 

Serpentine belt replacement

ENGINE

5 AUTOMOTIVE SPECIAL TOOLS

ENGINE

BELT TENSIONER WRENCH SET

No. ATE175	▼kg 1	📦 1
Belt tensioner wrench	AE107-500	
Exclusive socket 14,17,19mm	AE107-14W,17W,19W	
3/8" sq. Driver	AE107-3A	

Usage

- This is an exclusive tool for loosening the tensioner when replacing belts used in vehicles that are fitted with auto-tension type drive belts (with 1 belt only).

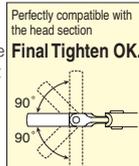
Application

- Is effective for working on domestic vehicles from light-weight to normal passenger vehicles, and especially on One-box type vehicles (FF vehicles).

Characteristics

Wrench

- This is a thin, exclusive long rotating head ratchet off-set wrench used for working on vehicles fitted with auto-tensioning. A large swing angle can be taken while working inside small engine compartments without interfering with pulleys and other obstacles.
- Provides easy operations on damper type auto-tensioners fitted in many heavy FF vehicles because of a non-slip, easy hold, and resin type grip.

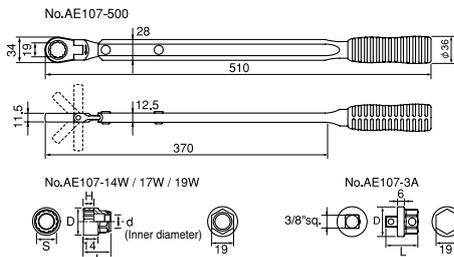
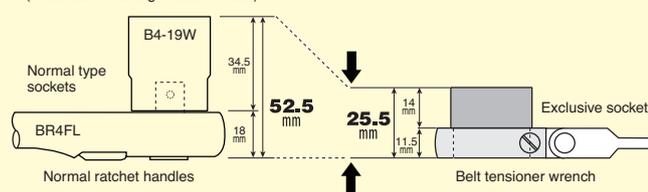


Exclusive socket 3/8" sq. Driver

- The exclusive socket can be set at 14/17/19mm, and is convenient where socket length must be changed frequently.
- A pierced type of thin design that helps eliminate slipping off the bolt.
- Normal sockets can also be used as the 3/8"sq driver is installed onto the offset area of auto-tensioner wrench.

Comparison of the head section

(in the case of using 19mm sockets)



Replacement parts: Belt tensioner wrench

No.	▼g
AE107-500	850

Exclusive Socket 3/8"sq. Driver

Product name	No.	S	D	d	H	L	▼g
Exclusive socket 14mm	AE107-14W	14	22	11	8.5	26	35
17mm	-17W	17	24	13	9	26	40
19mm	-19W	19	26	13	9	26	40
3/8" sq. Driver	-3A	-	26	-	-	28	60

BELT TENSIONER WRENCH SET

Belt replacement 1

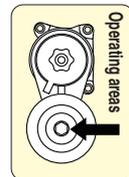
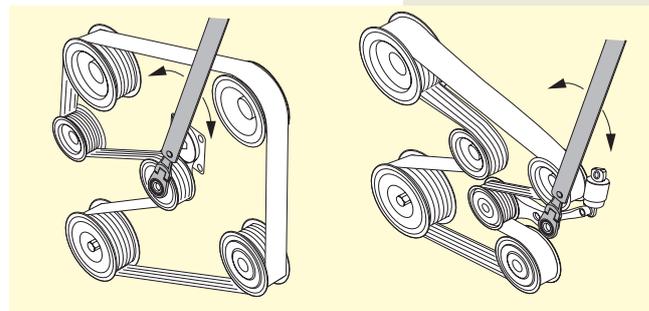


Exclusive socket

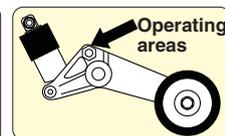
Covers a wide range of domestic vehicles.



Insert the exclusive hexagonal socket into the offset section.



Auto-tensioner



Damper fitted auto-tensioner

- CAUTION**
- Make sure that all operators read the Owner's Operator Manual carefully before usage.
 - Do not use for non-specified purposes.

BELT TENSIONER WRENCH (OFFSET TYPE)

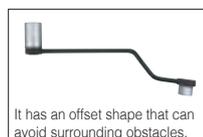
No. AE107-260	▼g 375	📦 1
Belt Tensioner Wrench	Caliber 19mm	

Usage ● Toyota's 2.4ℓ (2AZ) equipped vehicles: Vellfire, Alphard [May '08 or later], Mark X Geo, etc.

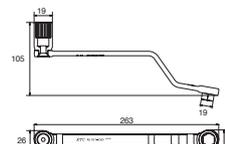
- Features ● Precise work with optimal posture is possible even in tight spaces by using in combination with AE107-500.
- The body has an offset shape to avoid surrounding obstacles.
 - Dedicated design that supports vehicles that can only be worked on from the lower part of engine room.

* Spare parts are configured. Please contact your dealer for details.

BELT TENSIONER WRENCH (OFFSET TYPE)



It has an offset shape that can avoid surrounding obstacles.



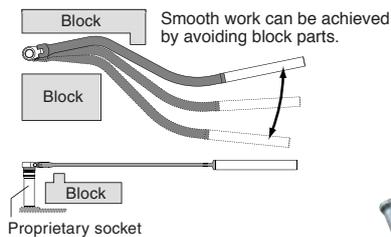
*Please check the merchandise inventory for a product that is marked by before placing an order.

ENGINE

Serpentine belt replacement

1 Belt replacement

●BELT WRENCH SET (for mini-cars only)



BELT WRENCH SET (for mini-cars)

No. ATE109		▼ g 410	📦 1
Belt wrench			
Proprietary socket			
No.	Name	▼ g	
AE109-450	Belt wrench	345	
AE109-12W	Proprietary socket	65	

Application

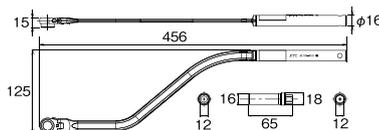
- Replacement and adjustment of Suzuki air conditioner belts (Wagon R [After September, 2008], MR Wagon [After January, 2006]) (Only the main unit)
- Replacement and adjustment of Daihatsu air conditioner and power steering belts (Move [after December, 2008], Tanto [After December, 2007]) (Main unit + proprietary socket)

Features

- Smooth work can be achieved by avoiding block with its unique shape.
- Optimum shape can be obtained for the engines of Daihatsu vehicles using the proprietary socket.
- Since a ratchet head is used at the end, work can be comfortably performed.
- Working time can be reduced only by removing the license plate.
- Removal of the bumper for replacement of the belt is not required.

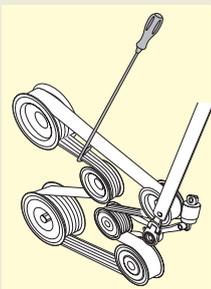


Since work can be performed only by removing the license plate, it is effective for reduction of time.



●BELT HOOK TOOL

Expected release date: July 2005



BELT HOOK TOOL

No.	d	D	L	ℓ	▼ g	📦
AE108	6	34	660	540	200	1

Removal of auto-tension type drive belts is easier when a belt tensioner wrench (No. ATE175) is used as a set.

Usage

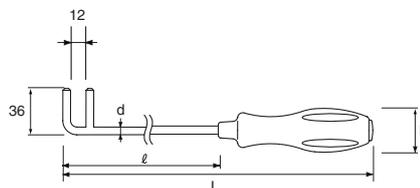
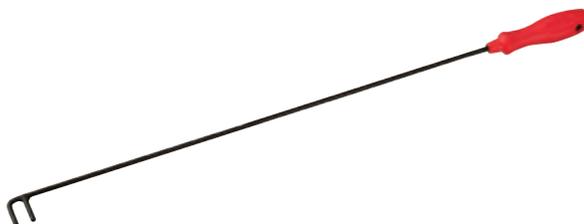
- Acts as a guide when replacing engine belts, and dealing with wiring or piping.

Application

- Mainly used in domestic and imported passenger vehicles where V belts and ribbed belts are common. (Belts with 7 ridges or more)

Characteristics

- Hooks that use rounded shafts make belt replacement easier and do not damage new belts.
- Belts that are normally difficult to replace, such as the wide and long serpentine belt, are quickly replaced.
- Due to its length (660mm), the tool is very effective in vehicles with tight engine compartments such as in the One-box vehicle type.



Replacing timing belt

ENGINE

●FREE POSITIONING WRENCH



P.223

●HANDY BAR



P.302

●FLAT TYPE EXTRA-LONG OPEN END WRENCH



P.121

Removing belts 1

CRANK PULLEY HOLDER

No. AE701	▼kg 3.9	📦 1
Crank pulley holder (body)	1	
Pin	2	
Set bolt for the pin (hex hole attached)	M8 Length: 25: 2	
Set bolt (hex hole attached)	M6 Length: 35-40-50-60-70-80-90: 2 of each M8 Length: 40-45-60-75-85-100: 2 of each	
Washers	M6 :2 M8:4	

A new crank pulley holding tool that can deal with various shapes

Usage

- Mainly for crank pulley removal operations (timing belt replacement, oil seal replacement, engine O/H operations) in automobiles (FR vehicles) with vertically placed engines. Can be used together with a crank pulley double-strength wrench to loosen the crank pulley lock bolt.

* The crank pulley pulper manual type (AE702), or the hydraulic type (CPU13) is essential when removing the crank pulley. P.228

Application

- Mainly used in vehicles with vertically placed engines. Especially in Toyota JZ type/1G type, Nissan RB type/VG type/VQ type. (Excluding diesel types)
- Exclusive to the V-ribbed belt • Pulley outer diameter: φ 90~180
- Where a service tap is included: fits with M6, M8

Characteristics

Easy to attach

- Simply attach the rotation claw onto the groove of the crank pulley and use the grip to tighten. (The center sliding position can be lined up when fitting the crank pulley.)

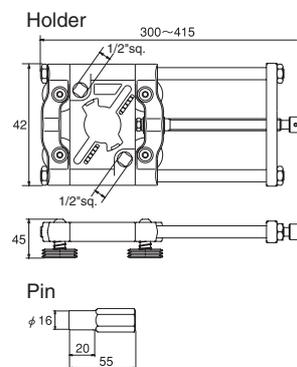
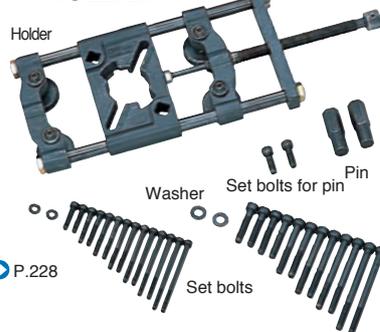
Thin Design! (Thickness 45mm)

- It is not necessary to remove the radiator condenser when carrying out work. (Excluding some vehicles)

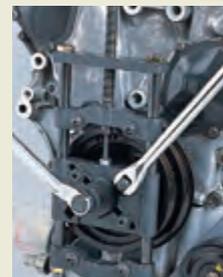
Replacement parts

Product name	No.	Contents	📦
Pin set	AE701 -1	Pins: 2 M8 set bolts for pins (hex hole included): length 25: 2 bolts Washer M8: 2	1
Set bolt set	-2	Set bolt (hex hole included) M6: Length: 35-40-50-60-70-80-90: 2 M8: Length: 40-45-60-75-85-100: 2 Washer M6: 2 M8: 2	1

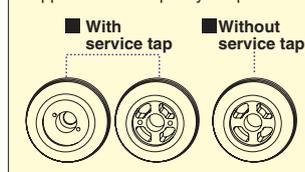
●CRANK PULLEY HOLDER PAT.



Removing crank pulley 2



●Applicable crank pulley shape



CRANK PULLEY HOLD PLATE

No. CPH1	▼kg 2	📦 1
Crank Pulley Hold Plate	1	
Set Bolt	M6: Length: 30-40-50-60-70-80-90: 2 M8: Length: 40-45-60-75-85-100: 2	
Washer	M6: 2, M8: 2	
ADAPTER	M10: 2	

Purpose

- Use to hold and take out pulley: plate as fixed with service tap of crank pulley; spinner handle (1/2"sq.) is set in.
- Applicable to crank pulley with service tap.
- Prevents pulley from rotating together and enables fastening/loosening of center lock bolt.
- Usable with AE-10.

* For removing a crank pulley, AE702 OR CPU 13 is required. P.228

Spare parts (set bolts and washers) are No. CPH128 (Crank Pulley Hold Plate Spare Set). For the details, refer to page 213 (Crank Pulley Tool No. CPHU2).

●CRANK PULLEY HOLD PLATE



CRANK PULLEY LOCK BOLT WRENCH

No.	Handle Opening	Square Drive	L	W	H	▼kg	📦
AE-10	125~1,160	12.7	862	70	60	4.3	1

• Accessories

Square Drive	S37mm L80mm	Each 1 pcs.
Set Bolt	M8x1.25(Length30mm)	2 pcs.

Supply Square Drive Short Long

No.	L
AE-10-1	37(Short)
AE-10-2	80(Long)

Purpose

- Removing Crank Pulley Lock Bolt for changing Timing Belt, Crank Short, Oil Seal, etc.)

Application

- Crank Pulley installed car with service tap except diesel engine over 3,000cc, Toyota3F, 1FZ Type Engine, Nissan VH Type. Engine, RB26DETT Type Engine.
- Can be used on vehicles with crank pulleys that do not have service taps when used with the AE701.

Special Feature

- Newly developed multiplying mechanism (Double Reverse) enables to loosen lock bolts without using impact wrenches.
- Can be used without removing radiators and condensers for shorter work time.

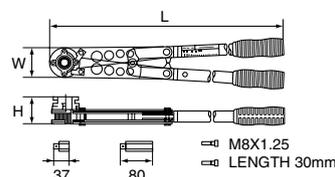
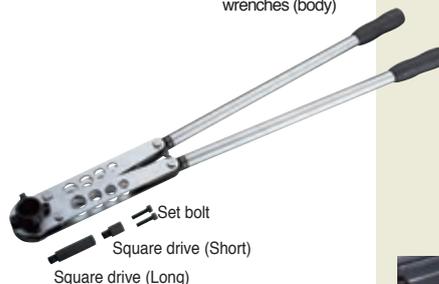
* CPH1 or AE701 is necessary for this operation.

* Cannot be used with AE11.

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

●CRANK PULLEY LOCK BOLT WRENCH

Double-powered wrenches (body)



CAUTION • THIS TOOL IS EXCLUSIVELY FOR LOOSENING BOLTS.

2 Removing the crank pulley lock bolt



Use situation (AE703)



Use situation (AE703A)

● CRANK PULLEY HOLD WRENCH FOR HONDA



1/2" sq.

(AE703)

* 24mm wrench or 1/2"sq spinner handle is necessary for this operation.



(AE703A)

* 1/2"sq spinner handle is necessary for this operation.

CRANK PULLEY HOLD WRENCH

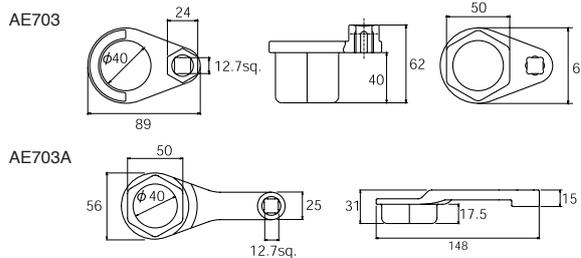
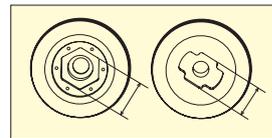
No.	▼g	📦
AE703	450	1
AE703A	400	1

Usage

- Crank pulley turn prevention tool for Hondas
- * Crank pulley removal is not possible.
- Use the AE701(or the CPH1) and the AE702 (or the CPU13) or carry out crank pulley removal.
- ➡ P.227 and P.228.

Application

- AE703
- The crank pulley shown in the right hand diagram is a 50mm 2-faced flat type used in Honda cars.
 - * Cannot be used on some NSX models.
- AE703A
- For Honda Life since 2003 (model JB5-JB8)
 - * Cannot be used on some of the old model of Honda Lifes (working space: less than 30mm)



3 Crank pulley removal

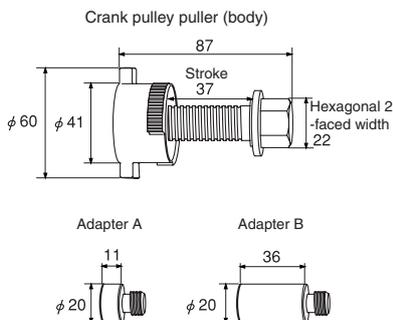


Example of AE701 + AE702 Use



Example of CPH1 + AE702 Use

● CRANK PULLEY PULLER (MANUAL TYPE)



CRANK PULLEY PULLER

No. AE702	▼g 500	📦 1
Crank pulley puller (body)		1
Adapter A		1
Adapter B		1

Manual type crank pulley removal tool

Usage

- Crank pulley removal.
- * The crank pulley holder (AE701) or the crank pulley hold plate (CPH1) is essential when removing the crank pulley. ➡ P.227
- * The clawed crank pulley puller (AE11) cannot be used in a combination.

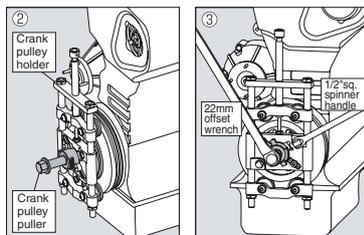
Characteristics

- Ideal for work in tight places due to its light weight and compactness.
- Stroke adjustment is possible due to 2 types of adapters.

Operating example

When a crank pulley holder (AE701) is utilized

- ① Set the crank pulley holder (AE701 or CPH1) to the crank pulley and remove the lock bolt.



- ② Select the adapter A/B combination and then fit it to the crank pulley holder.

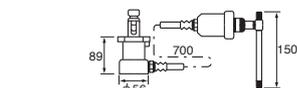
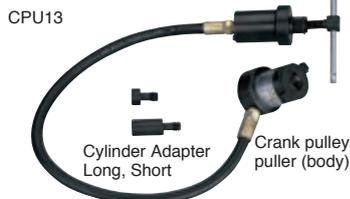
Select the adapter A/B combination according to the required crank pulley removal stroke.

- ③ Use the spinner handle to lock. Using a 22mm offset wrench or a drive tool turn the screw of the crank pulley puller and remove the crank pulley.

Replacement parts

Product name	No.	Contents	📦
Adapter A	AE702-1	Adapter A 1	1
Adapter B	-2	Adapter B 1	1

● CRANK PULLEY PULLER (HYDRAULIC TYPE)



CRANK PULLEY PULLER

No. CPU13	▼kg 1.7	📦 1
Crank Pulley Puller	1 pcs.	
Cylinder Adapter	2 pcs.	

Purpose

- Pulling out crank pulley.

Features

- Strong power by hydraulic pressure.
- The remote control facilitates use of the tools in the limited space of engine room.
- * For removing the crank pulley AE701 AE11 and CPH1 are required. ➡ P.227
- * Replacement parts are available. Check with your dealer for details.

Service Parts CRANK PULLEY PULLER SPARE SET

No. CPU12	
Cylinder Adapter Long, Short	Each 1 pcs.



Example of CPH1 + CPU13 Use



An example of AE702 + CPU13

CRANK PULLEY TOOL SET A

No. ATE7A	▼kg 6.8	📦 1
AE701 Crank pulley holder (body)		1
Pin		2
Set bolt for the pin (hex hole included)	M8: Length 25: 2	
Set bolt (hex hole included)	M6: Length: 35-40-50-60-70-80-90: 2 each M8: Length: 40-45-60-75-85-100: 2 each	
Washers	M6: 2 M8: 4	
AE702 Crank pulley puller (body)		1
Adapter A		1
Adapter B		1

Metal case (390x245x75)

The application is of a broad variety with a low price on the standard type.

Usage

- Tightening/loosening of the crank pulley lock bolt
- Crank pulley removal, manual type

Application

- Sets which are available with the either service taps included/excluded.

● CRANK PULLEY TOOL SET A



CRANK PULLEY TOOL SET B

No. ATE7B	▼kg 8	📦 1
AE701 Crank pulley holder (body)		1
Pin		2
Set bolt for the pin (hex hole included)	M8: Length 25: 2	
Set bolt (hex hole included)	M6: Length: 35-40-50-60-70-80-90: 2 each M8: Length: 40-45-60-75-85-100: 2 each	
Washers	M6: 2 M8: 4	
CPU13 Crank pulley puller (body)		1
Adapter A		1
Adapter B		1

Metal case (390x245x75)

A wide variety of easy, correct removal techniques is possible due to hydraulics.

Usage

- Tightening/loosening of the crank pulley lock bolt
- Crank pulley removal, hydraulic type

Application

- Sets which are available with the either service taps included/excluded.

● CRANK PULLEY TOOL SET B



CRANK PULLEY TOOL SET C

No. ATE7C	▼kg 1.9	📦 1
CPH1 Crank pulley hold plate (body)		1
Set bolt (hex hole included)	M6: Length: 30-40-50-60-70-80-90: 2 each M8: Length: 40-45-60-75-85-100: 2 each	
Washers	M6: 2 M8: 2	
Adapter	M10: 2	
AE702 Crank pulley puller (body)		1
Adapter A		1
Adapter B		1

* Metal case is not included.

Reasonable type at a low price.

Usage

- Tightening/loosening of the crank pulley lock bolt
- Crank pulley removal, manual type

Application

- Sets applicable for pulleys with fitted service taps.

● CRANK PULLEY TOOL SET C



CRANK PULLEY TOOL

No. CPHU2	▼kg 6	📦 1
CPU13 Crank pulley puller (body)		1
Output cylinder adapter		2
CPH1 Crank pulley hold plate (body)		1
Set bolt (hex hole included)	M6: 14 M8: 12	
Washers	M6: 2 M8: 2	
Adapter	M10: 2	

Metal case

Usage

- Crank pulley removal with the service tap fitted
- Work time is reduced, as the radiator, condenser does not need to be removed. (Some vehicles may not be included.)
- When outside of the garage, it is not necessary to turn drive tools in the narrow confines of an engine compartment making the job easier.
- Other companies do not stock the outer parts of crank pulleys. However, as the CPHU2 uses service taps, and as the torsion damper rubber does not break down, it can be used freely.
- Torque can be controlled when tightening.

Application

- Service taps are fitted to crank pulleys of vehicles ranging from light weight to normal passenger type and small trucks. (Excluding diesel vehicles that exceed 3000cc)

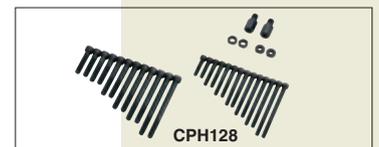
Replacement parts: Crank pulley holder spare set

No. CPH128	
Set bolt (hex hole included)	M6: Length: 30-40-50-60-70-80-90: 2 each M8: Length: 40-45-60-75-85-100: 2 each
Washers	M6: 2 M8: 2
Adapter	M10: 2

● CRANK PULLEY TOOL

- Removing and fitting crank pulley lock nut

- Crank pulley removal



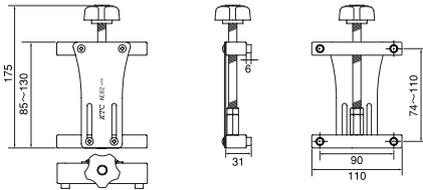
4 Cam pulley lock

5 Timing belt replacement

6 Fitting the crank pulley, tightening the lock bolt

7 Checking Torque

●CAM PULLEY LOCK TOOL



CAM PULLEY LOCK TOOL

No.	▼g	
AE82	860	

The cam pulley ensures excellent locking. It supports smooth timing belt removal.

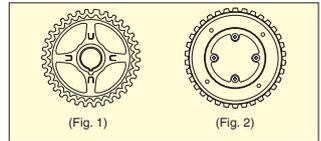
Usage

- This is a tool that helps hold the 2-cam pulley's position, and helps prevent slippage when removing the timing belt in DOHC gasoline engines.

Application

- Ranges from domestic light weight to normal passenger type vehicles with DOHC gasoline engines (FF, FR vehicles).

- As the insides of cam pulleys in some Honda and Mitsubishi vehicles are uneven, the pulley can move when tools that are in a fixed position are forced from the outside. (Fig. 1)
- It may not be possible to use this tool on some vehicles with adjustable valve timing as the shape can differ. (Fig. 2)



Characteristics

- It is possible to fix the cam pulley in a set position during timing belt replacement before removing the timing belt and up to the end of the operation.
- Install by the use of the knob only.
- Operating space is saved when installing/removing the timing belt as the center bolt is in an offset position.
- Is possible to be used in vehicles where there are obstacles between the 2 cam pulleys.



Usage

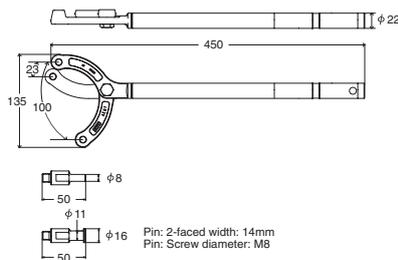
CAUTION • Make sure that all operators read the Owner's Operator Manual carefully before usage.

ENGINE

Disassembling, Inspecting and Installing Engine

1 Checking Torque

●CAM PULLEY HOLD WRENCH



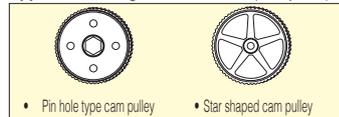
CAM PULLEY HOLD WRENCH

No. AE81	▼kg 1.1	☞1
Cam pulley hold wrench (body)	1	
Straight pin	2	
Flange fitted pin	2	

Usage

- Exclusive cam pulley stopper tool

Application Diagram below: Cam pulley shape

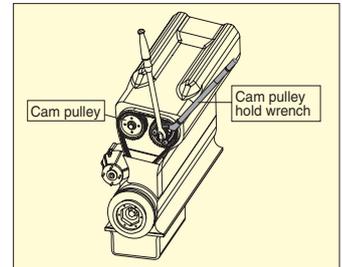


Characteristics

- The arm is opened/closed by a spring mechanism; this keeps constant tension on the opening action of the tool increasing safety.
- There are 2 types of stopping pins, both of them fit the 2 types of cam pulleys mentioned above.
- The grip part is knurled, is easy to grasp and power is easy to apply.

Method of use

- Select the correct pin (straight/flange fitted) depending on the shape of the cam pulley and then attach it to the arm.
- Adjust the cam pulley so that it touches the pin and does not turn, then using a wrench, loosen (or tighten) the holding bolt.



Replacement parts

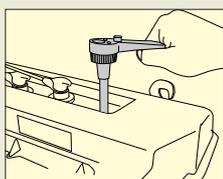
Product name	No.	Contents	☞
Straight pin	AE81-5	Straight pin: 2	1
Flanged pin	-6	Flanged pin: 2	1

CAUTION • Make sure that all operators read the Owner's Operator Manual carefully before usage.

2 Removing Head Cover

●HEXAGONAL WRENCHES

3 Removing Head Bolt



●1/2"sq. CYLINDER HEAD BOLT WRENCH · SET



CYLINDER HEAD BOLT WRENCH-SET

No. HBD353	▼g 355			
HBD35-8, 10				
B360-10				
No.	S	L	▼g	☞
HBD35- 8	8	100	110	5
-10	10	115	115	5
B360 -10	10	130	130	5

Purpose

- For fastening/loosening head bolts when removing/installing cylinder heads of engines

CAUTION • DO NOT USE A TOOL WITH A POWER TOOL SUCH AS AN IMPACT WRENCH, ETC.

CYLINDER HEAD BOLT SOCKET WRENCH · SET

No. HB352	▼g300	📦 5
HB35-8, 10		

1/2" sq.

mm

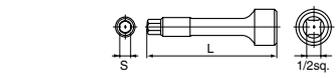
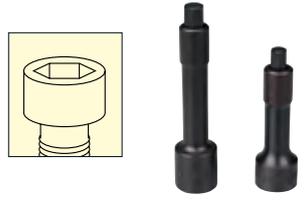
No.	S	L	▼g	📦
HB35 - 8	8	80	140	5
- 8T	8	90	150	5
-10	10	105	160	5

Purpose

- For use on head bolt with hexagon end.

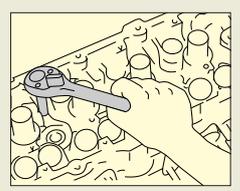
CAUTION • DO NOT USE A TOOL WITH A POWER TOOL SUCH AS AN IMPACT WRENCH, ETC.

● 1/2"sq. CYLINDER HEAD BOLT SOCKET WRENCH-SET



- Hexagon bolt is made of special spring steel for superb durability.
- Also can be used on cap screw bolts (with hexagon hole) 8mm. & 10mm.

3 Removing Head Bolt



CYLINDER HEAD BOLT SOCKET WRENCH-SET

No. B3502	▼kg 1.3	📦 1
B350-10, 12		

1/2" sq.

mm(12pt.)

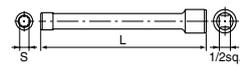
No.	S	L	▼g	📦
B350 -10	10	190	600	5
-12	12	200	700	5

FPurpose

- Special wrench for removing/installing engine cylinder head bolts.

CAUTION • DO NOT USE A TOOL WITH A POWER TOOL SUCH AS AN IMPACT WRENCH, ETC.

● 1/2"sq. CYLINDER HEAD BOLT SOCKET WRENCH-SET



- Socket part with suitable wall thickness properly treated for superb durability.

CYLINDER HEAD BOLT & FLY-WHEEL BOLT WRENCH-SET

No. ATBP603	▼kg 1.6	📦 1
For head bolts	ABP6-14WP	
For head bolts & fly-wheels	ABP6-19WP, 22WP	

3/4" sq.

mm(Triple Square)

No.	S	D ₁	D ₂	H	L	▼g	📦
ABP6-14WP	14	22.5	38	15	140	400	5
-17WP	17	26	38	16	90	540	5
-19WP	19	29	38	16	90	550	5
-22WP	22	33	38	16	120	650	5

Usage

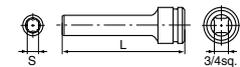
- This is a wrench that is exclusively designed for the removal and installation of engine cylinder head bolts and fly-wheel bolts.

Characteristics

- For bolts of Isuzu and Mitsubishi-fuso and fly-wheel bolts.

CAUTION • DO NOT USE A TOOL WITH A POWER TOOL SUCH AS AN IMPACT WRENCH, ETC.

● 3/4"sq. CYLINDER HEAD BOLT & FLY-WHEEL BOLT WRENCH-SET



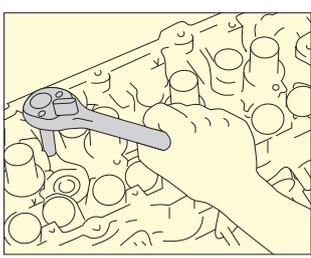
- This 4 pcs. set can be used on both head bolts and fly-wheel bolts of Isuzu and Mitsubishi-Fuso cars.

TRIPLE SQUARE (12P) BIT SOCKET SET

No. TBT304TS	▼g 320	📦 1
3/8"sq. Triple Square Bit Socket	BT3-M5, M6, M8, M10	
Socket Holder	EHB305	

3/8" sq.

● 3/8"sq. TRIPLE SQUARE BIT SOCKET SET

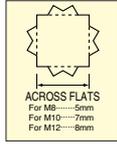


CAUTION • Do not use power tools such as impact wrench.



3 Removing Head Bolt

● 3/8" & 1/2" sq. TRIPLE SQUARE (12P) WRENCH



TRIPLE SQUARE (12P) WRENCH

No.	S	sq.	D	L	ℓ	▼g	📦
BT3-M 5	M5	9.5	17	72	43	50	10
-M 6	M6	9.5	17	72	43	51	10
-M 8	M8	3/8"	18.5	72	43	65	10
-M10	M10	3/8"	18.5	72	43	65	10
BT4-M12	M12	1/2"	22	76	40	110	10

Purpose

- Special wrench for special bolts with triple square holes such as head bolts, flange bolts of torsion joints, etc. of German cars.



• DO NOT USE A TOOL WITH A POWER TOOL SUCH AS AN IMPACT WRENCH, ETC.

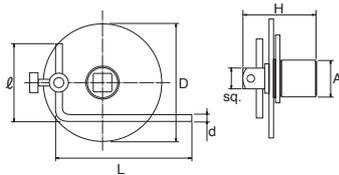
■ Triple Square Replacement Bit

No.	Applicable Part No.	Size	S	S ₁	L
T-M5	BT3-M5	M5	6.3	3.45	52
T-M6	BT3-M6	M6	6.3	4.34	52
T-M8	BT3-M8	M8	8	5.19	52
T-M10	BT3-M10	M10	10	6.96	52

4 Installing and Fastening Head Bolt



● ANGULAR TORQUE GAUGE



ANGULAR TORQUE GAUGE

No.	sq.	A	H	D	L	ℓ	d	▼g	📦
ATG30-1	1/2"	24.2	55	78.5	97	52	4.8	365	10

Usage

- For the fastening angle measurement of fastening bolt in plastic region (angle fastening bolt).

Features

- Small scale can measure in 5° increments, allowing the wide range of use for various engines of every manufacturer. (It can be used for imported cars as well as domestic.)



• Please don't tighten with a torque wrench when using this product. Torque wrench may be damaged by exceeding the set torque.

How to Use

1. Have the head bolt tightened by specific torque using a torque wrench.



2. Set the angular torque gauge and stop the rotation with L-shape stopper.

3. Set the gauge needle at 0.

4. Tighten up to the specified angle with a spinner handle, etc.

5 Torque checks

● TORQUE WRENCH

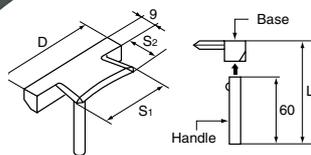
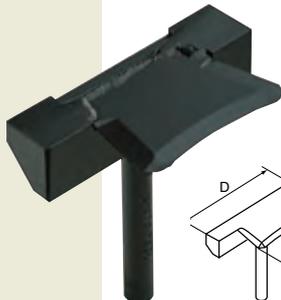


ENGINE

Removing oil pan

1 Cutting seal

● OIL PAN SEAL CUTTER



OIL PAN SEAL CUTTER

No.	D	L	S ₁	S ₂	▼g	📦
TAG-48	70	78	48	24	180	10

Purpose

- Applied for removing oil pans with seal packings.

Special feature

- Arc shaped cutter for hitting into seal part.
- The side cutter is sharp and when it digs into the base from the side it can slide easily.
- Sharp angled(α°) side cutter for deep contact and secure operation.
- Can be used in narrow spaces without handle.



• USE ANTI-DUST GLASSES WHEN USING THIS TOOL.

2 Scraping Seal

● CERAMIC SCRAPER

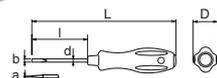
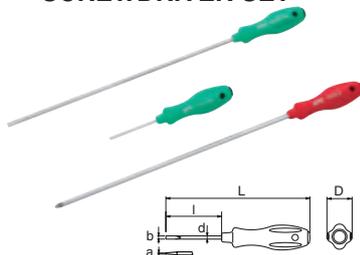


ENGINES

Adjustment of idling

1 Fastening/Loosening Adjustment Screw

● CARBURETOR SCREWDRIVER SET



CARBURETOR SCREWDRIVER SET

No.	CD3	▼g	380	📦	5
Carbjet Screwdriver		CDZ-165			
Long Screwdriver, Flat		MDDZ-400			
Long Screwdriver, Cross		PDDZ-2			

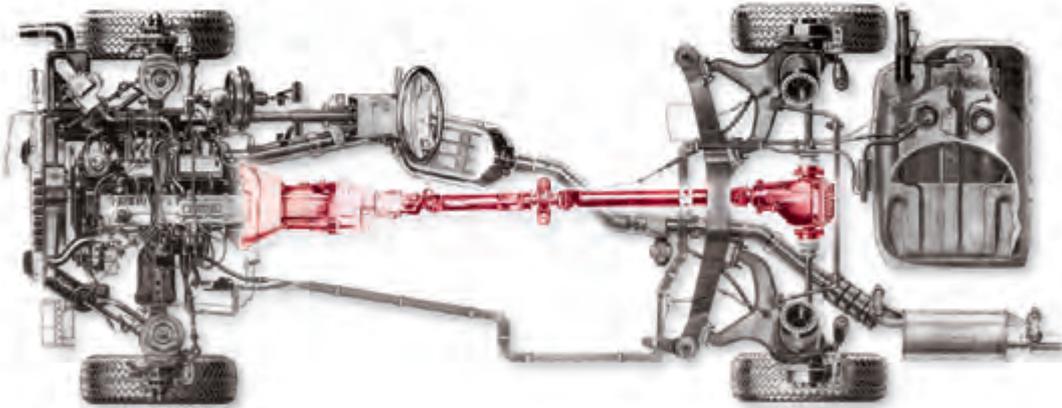
No.	Type	a	b	d	D	L	ℓ	▼g	📦
CDZ-165	Flat	0.7	3.5	3.5	27	155	60	40	5
PDDZ-2	Cross No.2	-	-	6	27	385	290	100	5
MDDZ-400	Flat	0.7	5.5	5.5	27	385	290	90	5

- For adjusting carburetors.



• DO NOT USE THESE TOOLS WITH ELECTRIFIED OBJECTS.
• DO NOT USE A TOOL FOR PURPOSES OTHER THAN ADJUSTING CARBURETORS.

Driveline System Mechanism

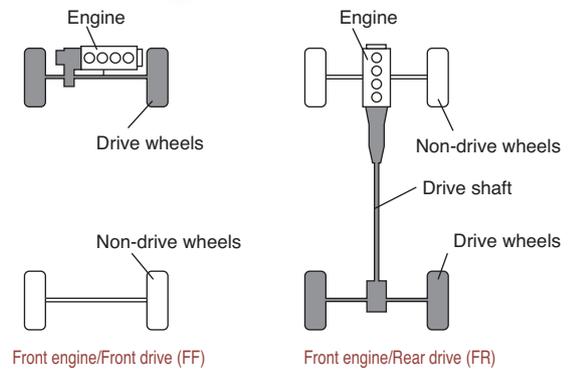


MECHANISM 1

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.



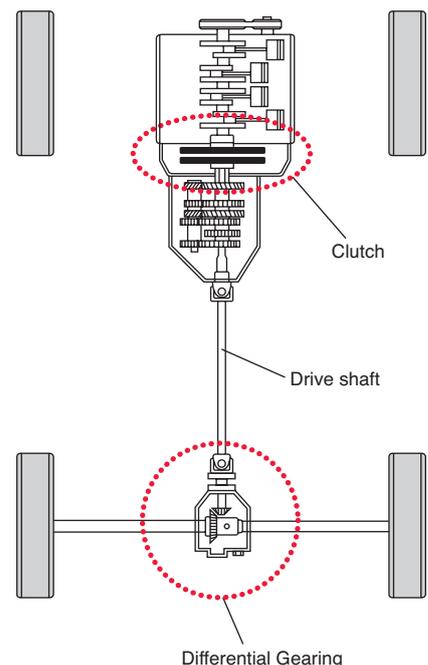
MECHANISM 2

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

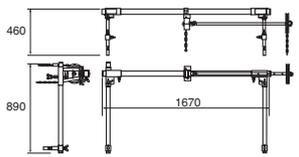
Transmission removal and attachment

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

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.

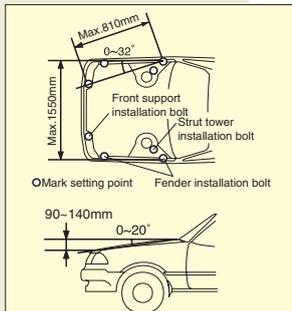
Applicable details

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

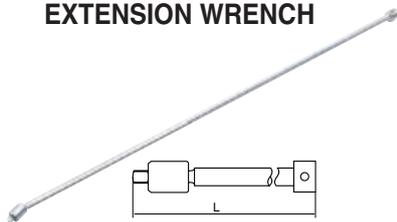
- An optional kit designed for use on previous engine machine hangers (ATH10) bridge (bar), and one that work with impact absorbent bodies.



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.

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

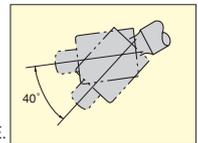
Purpose

- Removing/installing of clutch housing bolts.

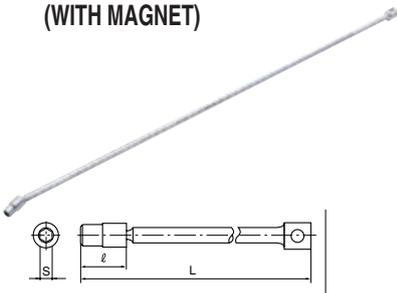
Features

- 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

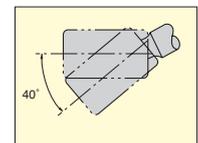
Purpose

- 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.

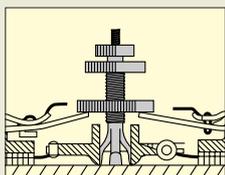


DRIVELINE

Disassembling Clutch

1 Installing Clutch Disc

CLUTCH ALIGNING TOOL

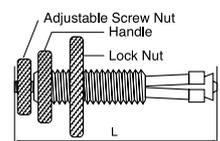


CLUTCH ALIGNING TOOL

No.	L	Applicable diameter	▼g	☐
CGP-1625	132	φ 16~25	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.

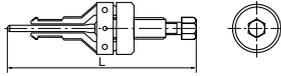
* Not for use on cars.



PILOT BEARING & BUSH PULLER

No.	Applicable Size	L	▼g	📦
PBU-1219	Inner Dia. φ 12~19	145	215	10

- Purpose**
- Light and compact body for easy handling.
- Features**
- Special claws offer firm gripping.
 - Can be operated on the car.
 - Wide application.
 - * Replacement parts are available. Check with your dealer for details.

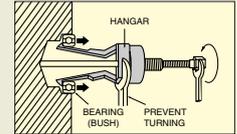


●PILOT BEARING & BUSH PULLER



Removing Pilot Bearing

2



Transmission/differential oil replacement

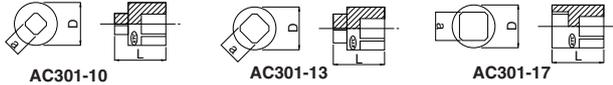
DRIVELINE

DRAIN PLUG SOCKET • SET (3pcs.)

No.	ATC3013	▼g	245	📦	1
1/2"sq. Drain plug socket		AC301-10,13,17			

No.	a	D	L	▼g	📦
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.



1/2" sq.

●DRAIN PLUG SOCKET • SET (3pcs.)

1



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

No.	S	D	L	ℓ	▼g	📦
AE503-10	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.

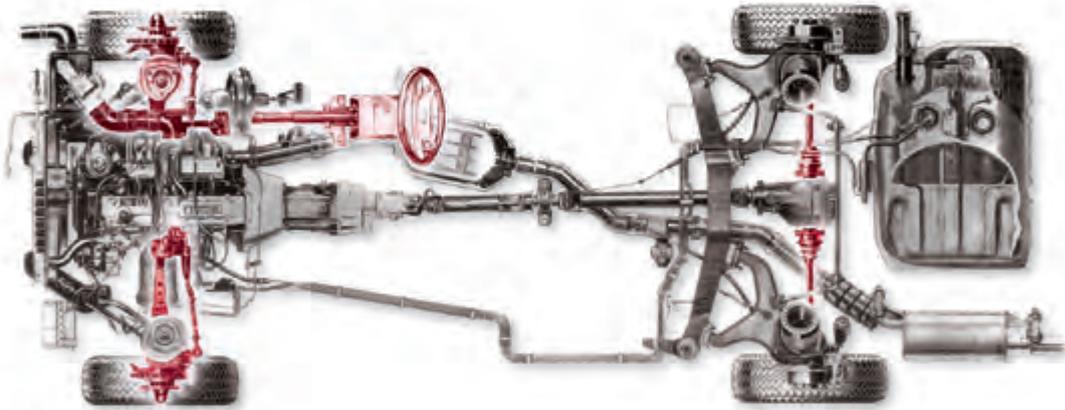


3/8" sq.

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



Steering System Mechanism

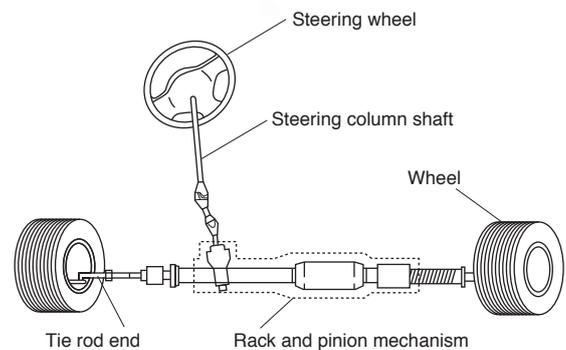


MECHANISM 1

Steering system makeup

By operating the steering wheel, the wheel direction is changed making the vehicle change direction. In other words, the steering system is a steering device. The fundamental mechanism allows the vehicle's direction to be changed when movement is transferred through the steering wheel gear box from the handle to the wheels.

There are many types of steering gear mechanisms available for steering systems. However, presently the main type is a combination of a rack and pinion gear. The rack gear connected at both ends by a tie rod is also known as the rack and pin method. However, because a large amount of power is required to change wheel direction, most vehicles now employ power steering mechanisms, which assist through hydraulics, and motorized mechanisms.



MECHANISM 2

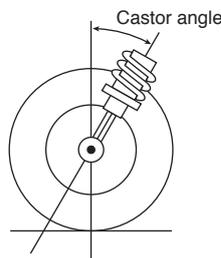
Wheel alignment

The wheels are fitted on a slight angle (not horizontal or square) to assist steering and drivability, and to keep the vehicle traveling in a straight line. This adjustment is called "wheel alignment" and is made up of 4 elements - caster, camber, toe, king-pin angle.

Castor

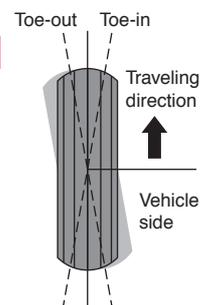
The front wheels are fitted off the axle on an angle, just as castors are fitted on the legs of chairs.

These are known as castors, by being set on an angle, help keep the vehicle in a constant aligned state.



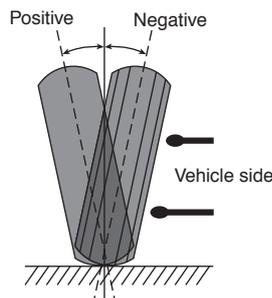
Toe

Looking at the wheel angle from above, toe-in is known as when the vehicle's tracking moves inwards, and toe-out is known as when the tracking moves outwards. When the camber is set to positive, the tendency for the wheels to head outwards will be eliminated and the vehicle's forward tracking will improve.



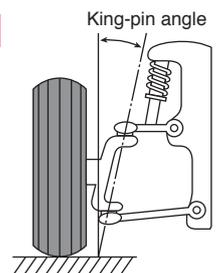
Camber

The angle seen from the front that is made from the perpendicular line opposed to the ground, and the wheel incline, is known as the camber angle. A negative camber is where the bottom is open, and a positive camber is where the top is open. This affects the vehicle's operation, stability and cornering when turning.



King-pin angle

When looking at the vehicle from the front, the king-pin axle faces towards the inside of the chassis leaning upwards. The angle that is perpendicular makes a line from the slant and the surface is known as the "king-pin angle". The angle that it is set to keeps the steering wheel in a straight position and also makes the steering return to the straight position after it has been turned.



TIE ROD LOCK NUT WRENCH

No.	D	T1	T2	T3	L	ℓ	▽g	☞
AS701	66	15	10	17	220	95	500	5

Usage

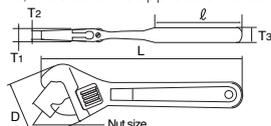
- Tightening and loosening Tie-rod end lock nuts in automobiles (light to normal automobiles)
- Side slip work at times of inspection and tire replacement.
- Rack boots replacement work

Application

- Hexagonal, 2-faced 17~24mm width lock nuts for tie-rod ends (covers most domestically made light~normal sized automobiles).

Characteristics

- The wrench is designed to grip the angles of the nut firmly and can loosen or tighten nuts without slipping.
- Even when a large amount of force is applied, the user's hand will not slip and injuries will not occur thanks to the width of the grip.
- The length of the tools means it does not become obstructed when the vehicle's steering wheels are at full rotate. This means that the operation can be carried out without removing the tires. (Photo 1)
- As their measurements are provided, the size of the applicable nut can be selected in advance.



●TIE ROD LOCK NUT WRENCH



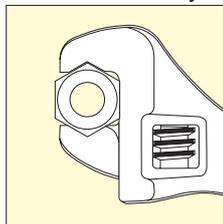
Tightening and loosening Tie-rod end lock nuts

1



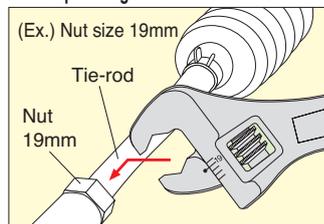
(Photo 1)

Holds the nut firmly



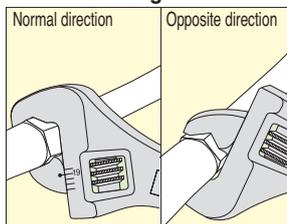
This wrench provides effective nut tightening / loosening without slippage. The shape of the wrench holds the angle of the nut.

The simple design of the set is ideal for nut



As the nut size has been set, it can be easily removed without obstructing the tie-rod.

The head is angled



As the head is angled it allows for both operating directions as required.

SIDE SLIP BOARD SET

No. ATG92	▽kg 31.5	☞ 1(2 Cartons)
Side slip board	AG901	
Step Board	AG902	

●Side slip board

No. AG901	▽kg 21.5	☞ 1
Main body	×1	
Slope for side slip board	×2	

●Step Board

No. AG902	▽kg 10	☞ 1
Main body	×1	
Slope for side slip board	×2 Bolts with hexagonal holes (M5 ×10mm)×2	

Characteristics

- Easy use without the need for heavy setting.
- The small and light design allows easy maneuverability.
- A separate type is available for vehicles with wider chassis.
- As the length is short the tool can be set up in tight spaces.
- As the height is low (28mm), vehicles can move on and off easily with slope.
- The displayed value remains at the maximum value.
- The needle can reset back to 0 easily by hand.
- The display range is a wide scale 0~20mm/m for both IN/OUT and is capable of handling imported vehicles as well.



Example of use No. ATG92

Usage

- This is a tester that easily reads the amount the vehicle is pulling to the side (side slip), the vehicle's front wheel toe-in and the balance of the camber by simply passing the front wheels of the vehicle over the side-slip board.

Application

- Light vehicles to 2 ton class freight trucks
- Vehicles with tires that have a width of 280mm or less

Specs.

- * Weight measure on one side. The weight is shown within the brackets.

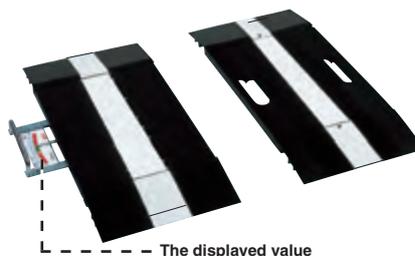
Wheel load tolerance*	750kg (Weight 1500kg)
Display range	Both IN · OUT measurements are 0~20 (mm/m) (Minimum increments of 1mm/m)
Display method	Analog, by needle (1)
Type	Left/Right separate

* This product is not a vehicle tester for fitness certificate checks.

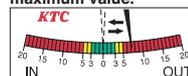
- * Replacement parts are available
- * Check with your dealer for details.

●SIDE SLIP BOARD SET

Easy checks before vehicle fitness certificate inspections. Fast check, Side slip



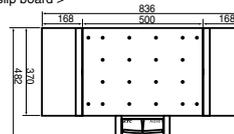
The displayed value remains at the maximum value.



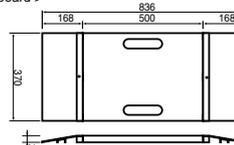
The needle can reset back to 0 easily by hand.

The display range is a wide scale 0~20mm/m for both IN/OUT and is capable of handling imported vehicles as well.

< Side slip board >



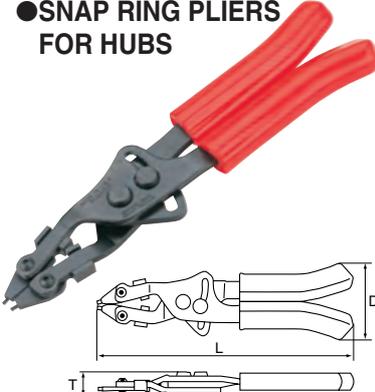
< Step board >

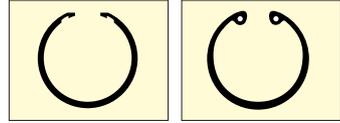


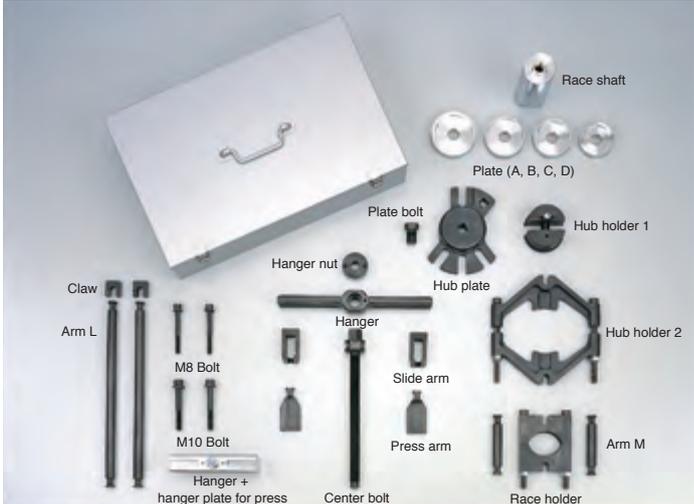
- ⚠ CAUTION • Make sure that all operators read the Owner's Operator Manual carefully before usage.
- Make sure that all operators are qualified to use this device. (A qualified vehicle maintenance technician or a holder of a special certificate applicable for work in this area.)
- Do not use for non-specified purposes.
- Do not disassemble or modify this product.
- * The AG902 (Step board) version does not have a side-slip display function attached. Use the ATG92 (Side slip board set) or the AG901 (Side slip board) x2 in combination with this product.

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

STEERING Axle disassembling/assembling

1	Wheel removal	●WHEEL CAP WRENCH  P.255															
	① Wheel cap removal ② Wheel nut removal	●IMPACT WRENCH	●WHEEL NUT SOCKET FOR IMPACT WRENCH	●CROSS RIM WRENCH	●OTHER TOOLS												
2	Hub nut removal	●LOCK NUT CHISEL  P.241	●SOCKET	●OTHER TOOLS													
3	Disc caliper removal	●SOCKET ●OTHER TOOLS															
4	Tie-rod separation	●TIE-ROD END SEPARATOR  P.240	●BALL JOINT SEPARATOR  P.240	●BOX END WRENCH	●SPINNER HANDLE												
		●PLASTIC HAMMER															
5	Removing the axle assy	●PLASTIC HAMMER															
6	Snap ring removal	●SNAP RING PLIERS FOR HUBS 	<table border="1"> <thead> <tr> <th>No.</th> <th>D</th> <th>T</th> <th>L</th> <th>▼g</th> <th></th> </tr> </thead> <tbody> <tr> <td>AS307</td> <td>58.5</td> <td>18.2</td> <td>228</td> <td>310</td> <td>5</td> </tr> </tbody> </table>			No.	D	T	L	▼g		AS307	58.5	18.2	228	310	5
			No.	D	T	L	▼g										
AS307	58.5	18.2	228	310	5												
	Usage • Installing and removing the snap ring used in the hubs of vehicles. Application • The open range of the mouth of the snap ring pliers is min. 10mm~max. 36mm Characteristics • Employs a non-stepped, automatic locking device. Can be locked to the desired position. • The lock can be released easily from the handle. • Only the claw can be easily replaced. • All models, except the hole fitted snap ring type, can deal with notched type rings designed for certain models (Toyota).																
Replacement parts: Pointed claws			<table border="1"> <thead> <tr> <th>No.</th> <th>Contents</th> </tr> </thead> <tbody> <tr> <td>AS3072</td> <td>Claw R/L 1, Installation screws 2</td> </tr> </tbody> </table>			No.	Contents	AS3072	Claw R/L 1, Installation screws 2								
No.	Contents																
AS3072	Claw R/L 1, Installation screws 2																



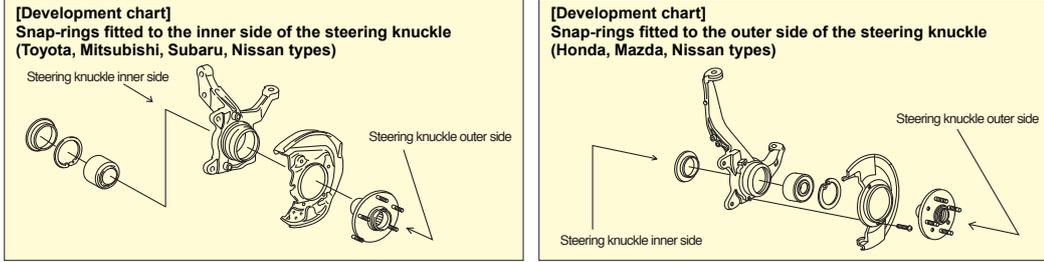
7	Removal/installation of the axle assy.	●MULTI PULLER All axles can be disassembled and assembled with this set.	MULTI PULLER 																																																									
		Usage • An exclusive tool designed for vehicle axle assembling/ disassembling, steering wheel diff-companion flange mission bearing & gear removal, and also a range of bearing & gear removal.																																																										
<table border="1"> <thead> <tr> <th>Axle</th> <th>Dismantling and fitting hubs and knuckles</th> </tr> </thead> <tbody> <tr> <td></td> <td>Dismantling and fitting the bearing race</td> </tr> <tr> <td></td> <td>Dismantling and fitting of wheel bearings</td> </tr> <tr> <th>Steering</th> <td>Removing the steering wheel</td> </tr> <tr> <th>Differential</th> <td>Removing the companion flange</td> </tr> <tr> <th>Transmission</th> <td>Removing bearings and gears</td> </tr> <tr> <th>Others</th> <td>Removing various types of bearings and gears</td> </tr> </tbody> </table>		Axle	Dismantling and fitting hubs and knuckles		Dismantling and fitting the bearing race		Dismantling and fitting of wheel bearings	Steering	Removing the steering wheel	Differential	Removing the companion flange	Transmission	Removing bearings and gears	Others	Removing various types of bearings and gears	Application • Mainly used for the axles of light to normal FF vehicles • Applicable for steering wheels, diff-companion flanges, transmission bearings and gears in light to normal vehicles.																																												
Axle	Dismantling and fitting hubs and knuckles																																																											
	Dismantling and fitting the bearing race																																																											
	Dismantling and fitting of wheel bearings																																																											
Steering	Removing the steering wheel																																																											
Differential	Removing the companion flange																																																											
Transmission	Removing bearings and gears																																																											
Others	Removing various types of bearings and gears																																																											
<table border="1"> <tbody> <tr> <td>Maximum weight when in use</td> <td>19,600 N (2 t)</td> </tr> <tr> <td>Hub bolts</td> <td>4~5 Holes</td> </tr> <tr> <td>Wheel bearing diameter</td> <td>φ 64~ φ 84</td> </tr> <tr> <td>Bearing race diameter</td> <td>φ 47~ φ 63</td> </tr> <tr> <td>Hub holder 1</td> <td>φ 68~84 mm</td> </tr> <tr> <td>Hub holder 2</td> <td>φ 76~106 mm</td> </tr> </tbody> </table>		Maximum weight when in use	19,600 N (2 t)	Hub bolts	4~5 Holes	Wheel bearing diameter	φ 64~ φ 84	Bearing race diameter	φ 47~ φ 63	Hub holder 1	φ 68~84 mm	Hub holder 2	φ 76~106 mm	●Multi puller																																														
Maximum weight when in use	19,600 N (2 t)																																																											
Hub bolts	4~5 Holes																																																											
Wheel bearing diameter	φ 64~ φ 84																																																											
Bearing race diameter	φ 47~ φ 63																																																											
Hub holder 1	φ 68~84 mm																																																											
Hub holder 2	φ 76~106 mm																																																											
Characteristics • The axle can be dismantled and refitted using 1 set. • Is applicable for hub bearings that are attached to either the inner or outer sides. • A hydraulic press can be used making operations both easy and fast. • The removal/installation of the arms is carried out by a one-touch set ball type system. • The center bolt is fitted with a bearing, which makes for a light drive torque. • Is applicable to FR and 4WD rear vehicles, as well as FF axles. • Has a varied use on the steering wheel, differential companion flange, transmission bearing and gearing, as well as the axle. • Is possible for use on the removal of other bearings and gearing from other devices because of interchangeable parts.		<table border="1"> <thead> <tr> <th>No. AS301</th> <th>▼kg 17</th> <th></th> </tr> </thead> <tbody> <tr> <td>Center bolt assy</td> <td>Hexagonal 2 faced 22mm width × length 280mm (M18 × 2.0)</td> <td>1</td> </tr> <tr> <td>Hanger</td> <td>270 × 38 × 37 mm</td> <td>1</td> </tr> <tr> <td>Slide arm</td> <td>60.5 × 30 × 20 mm</td> <td>1</td> </tr> <tr> <td>Arm M</td> <td>φ 16 × 105 mm</td> <td>2</td> </tr> <tr> <td>Hub plate</td> <td>φ 154 × 24 mm (Screw: M18 × 2.0, 1/2"sq. inc.)</td> <td>1</td> </tr> <tr> <td>Hub holder 1 assy.</td> <td>φ 70 × 34 mm(Wing bolt (M6) inc.)</td> <td>1</td> </tr> <tr> <td>Hub holder 2 assy.</td> <td>190/190 mm(Hexagonal adjustment bolt (M10) with hole inc.)</td> <td>1</td> </tr> <tr> <td>Race shaft</td> <td>φ 55 × 114 mm(Screw: M18 × 2.0)</td> <td>1</td> </tr> <tr> <td>Plate (4 types)</td> <td>A(φ 79 × 15) B(φ 71 × 15) C(φ 67 × 15) D(φ 60 × 15)</td> <td>1 each</td> </tr> <tr> <td>Hanger assy. for press</td> <td>150 × 50 × 25 mm(Hexagonal bolt (M10) + washer inc.)</td> <td>1</td> </tr> <tr> <td>Press arm</td> <td>φ 16 × 75 × 35 mm</td> <td>2</td> </tr> <tr> <td>Hanger nut</td> <td>φ 45 × 18mm(Screw: M18 × 2.0)</td> <td>1</td> </tr> <tr> <td>Race holder assy.</td> <td>90 × 140 mm(Hexagonal adjustment bolt (M10) with hole inc.)</td> <td>1</td> </tr> <tr> <td>Plate bolt</td> <td>Hexagonal 2 faced 22mm width × length 34mm (M18 × 2.0)</td> <td>1</td> </tr> <tr> <td>Arm L</td> <td>φ 16 × 330 mm</td> <td>2</td> </tr> <tr> <td>Claw</td> <td>27 × 25 × 12 mm</td> <td>2</td> </tr> <tr> <td>M8 Bolt</td> <td>Bolts with hexagonal holes (with washer) × 100 mm</td> <td>2</td> </tr> <tr> <td>M10 Bolt</td> <td>M10 hexagonal bolt with hole for M10 (with washer) × 100 mm</td> <td>2</td> </tr> </tbody> </table>		No. AS301	▼kg 17		Center bolt assy	Hexagonal 2 faced 22mm width × length 280mm (M18 × 2.0)	1	Hanger	270 × 38 × 37 mm	1	Slide arm	60.5 × 30 × 20 mm	1	Arm M	φ 16 × 105 mm	2	Hub plate	φ 154 × 24 mm (Screw: M18 × 2.0, 1/2"sq. inc.)	1	Hub holder 1 assy.	φ 70 × 34 mm(Wing bolt (M6) inc.)	1	Hub holder 2 assy.	190/190 mm(Hexagonal adjustment bolt (M10) with hole inc.)	1	Race shaft	φ 55 × 114 mm(Screw: M18 × 2.0)	1	Plate (4 types)	A(φ 79 × 15) B(φ 71 × 15) C(φ 67 × 15) D(φ 60 × 15)	1 each	Hanger assy. for press	150 × 50 × 25 mm(Hexagonal bolt (M10) + washer inc.)	1	Press arm	φ 16 × 75 × 35 mm	2	Hanger nut	φ 45 × 18mm(Screw: M18 × 2.0)	1	Race holder assy.	90 × 140 mm(Hexagonal adjustment bolt (M10) with hole inc.)	1	Plate bolt	Hexagonal 2 faced 22mm width × length 34mm (M18 × 2.0)	1	Arm L	φ 16 × 330 mm	2	Claw	27 × 25 × 12 mm	2	M8 Bolt	Bolts with hexagonal holes (with washer) × 100 mm	2	M10 Bolt	M10 hexagonal bolt with hole for M10 (with washer) × 100 mm	2
No. AS301	▼kg 17																																																											
Center bolt assy	Hexagonal 2 faced 22mm width × length 280mm (M18 × 2.0)	1																																																										
Hanger	270 × 38 × 37 mm	1																																																										
Slide arm	60.5 × 30 × 20 mm	1																																																										
Arm M	φ 16 × 105 mm	2																																																										
Hub plate	φ 154 × 24 mm (Screw: M18 × 2.0, 1/2"sq. inc.)	1																																																										
Hub holder 1 assy.	φ 70 × 34 mm(Wing bolt (M6) inc.)	1																																																										
Hub holder 2 assy.	190/190 mm(Hexagonal adjustment bolt (M10) with hole inc.)	1																																																										
Race shaft	φ 55 × 114 mm(Screw: M18 × 2.0)	1																																																										
Plate (4 types)	A(φ 79 × 15) B(φ 71 × 15) C(φ 67 × 15) D(φ 60 × 15)	1 each																																																										
Hanger assy. for press	150 × 50 × 25 mm(Hexagonal bolt (M10) + washer inc.)	1																																																										
Press arm	φ 16 × 75 × 35 mm	2																																																										
Hanger nut	φ 45 × 18mm(Screw: M18 × 2.0)	1																																																										
Race holder assy.	90 × 140 mm(Hexagonal adjustment bolt (M10) with hole inc.)	1																																																										
Plate bolt	Hexagonal 2 faced 22mm width × length 34mm (M18 × 2.0)	1																																																										
Arm L	φ 16 × 330 mm	2																																																										
Claw	27 × 25 × 12 mm	2																																																										
M8 Bolt	Bolts with hexagonal holes (with washer) × 100 mm	2																																																										
M10 Bolt	M10 hexagonal bolt with hole for M10 (with washer) × 100 mm	2																																																										

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

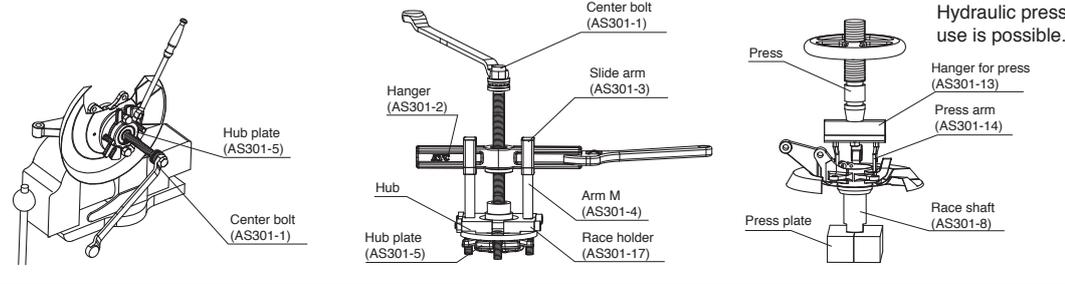
●Ex. Multi puller operation: The following operations are possible by the multi puller.

Removal/installation of the axle assy. **7**

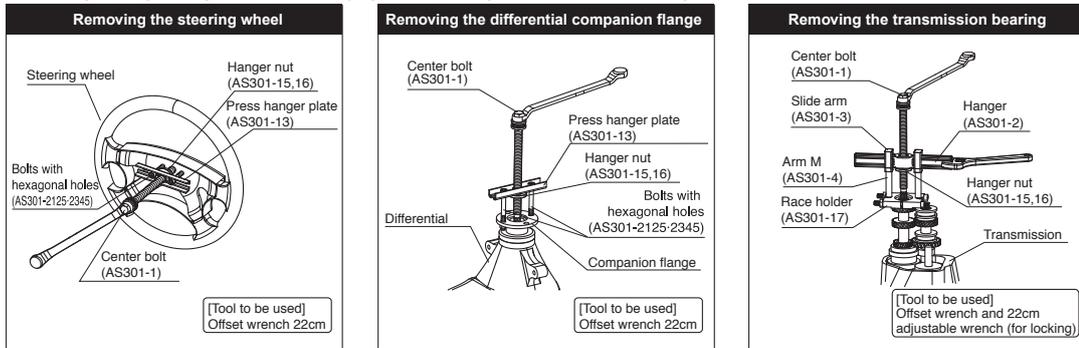
1. Hub removal/installation, Inner race removal/installation, Bearing removal/installation **1 set compatible for multiple makers.**



① Hub removal/installation example ② Inner race removal/installation example ③ Bearing removal/installation example



2. Other operating example: The following operations are possible with the multi puller.



Replacement parts

Center bolt Assy. No. AS301-1 Quantity 1 M18 × 2 screws, Full length : 280mm, Hexagonal 2-faced width: 22mm	Race shaft No. AS301-8 Quantity 1 M18 × 2 Screw, φ55 × 114mm	Press arm No. AS301-14 Quantity 2 16 × 75 × 35mm	Bolt set for M8 No. AS301-2125 Quantity 2 M8 hex hole bolt full length 100mm
Hanger No. AS301-2 Quantity 1 270 × 38 × 37mm	Plate A No. AS301-9 Quantity 1 φ79 × 15	Hanger nut No. AS301-15 Quantity 1 M18 × 2 Screw, φ45 × 18mm	Bolt set for M10 No. AS301-2345 Quantity 2 M10 hex hole bolt full length 100mm
Slide arm No. AS301-3 Quantity 2 61 × 30 × 20mm	Plate B No. AS301-10 Quantity 1 φ71 × 15	Hex hole bolt for the hanger nut No. AS301-16 Quantity 2 M5 × 10mm	
Arm M No. AS301-4 Quantity 2 φ16 × 105mm	Plate C No. AS301-11 Quantity 1 φ67 × 15	Race holder Assy. No. AS301-17 Quantity 1 90 × 140mm, M10 hex hole bolt (hex nut) included	
Hub plate No. AS301-5 Quantity 1 Insertion angle 1/2"sq. M18 × 2Screw, φ154 × 24mm	Plate D No. AS301-12 Quantity 1 φ60 × 15mm	Plate bolt No. AS301-18 Quantity 1 M18 × 2 screws, Full length: 34mm, Hexagonal 2-faced width: 22mm	
Hub holder 1 Assy. No. AS301-6 Quantity 1 φ70 × 34mm, Wing bolt M6 included	Hanger Assy. for pressing No. AS301-13 Quantity 1 150 × 64 × 31mm, M10 hex bolt (washer) included	Arm L No. AS301-19 Quantity 2 φ16 × 330mm	
Hub holder 2 Assy. No. AS301-7 Quantity 1 190 × 190mm, M10 hex hole bolt (hex nut) included		Claw Assy. No. AS301-20 Quantity 2 27 × 25 × 12mm	

The equipping of the axle assy. to the chassis **8**

●IMPACT WRENCH ●WHEEL NUT SOCKET FOR IMPACT WRENCH ●OTHER TOOLS ●TORQUE WRENCH SET FOR THE WHEEL NUT

Attaching the wheel **9**

- ①Attaching the wheel nut
- ②Checking torque

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

1.Removing wheel→2.Removing tie rod→3.Removing pitman arm→4.Removing lock nut→5.Separating & removing drive shaft & hub→6.Disassembling/Installing drive shaft band→7.The attaching of the drive shaft to the chassis→8.Attaching the wheel

STEERING Drive shaft disassembling/assembling

1 Removing wheel

① Removing Wheel Cap

● **WHEEL CAP WRENCH**



P.254

● **ALUMINUM WHEEL CENTER CAP WRENCH**



P.254

● **OTHER TOOLS**

① Removing Wheel Nuts

● **IMPACT WRENCH**



P.200

● **WHEEL NUT SOCKET FOR IMPACT WRENCH**



P.256

● **CROSS RIM WRENCH**



P.134

● **OTHER TOOLS**

2 Removing tie rod



● TIE ROD END SEPARATOR (OFFSET TYPE)



TIE ROD END SEPARATOR

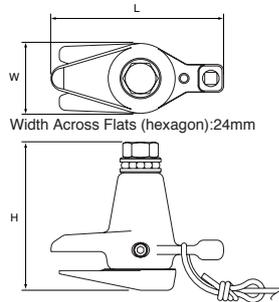
No.	L	W	H	▼kg	☒
AS201	135	55	116	1.6	1

Purpose

- Separating tie rod end.

Features

- Tough! Power increased!
 - Rated output power.15kN(1.5t), maximum power, 30kN(3t)
 - Applicable to larger output power compared with former model (BJU-1945).
- High Durability Design
 - Durability enhanced by offset shape.
- Fits various vehicle models
 - Range of opening: 16mm-50mm
 - Applicable tie rod end: from mini cars to large passenger cars (3L)
- Easy operation raises work efficiency.
 - Use of thrust bolt alone enables easy installation and removal of tie rod end.
 - Smooth job using with a drive tool.
 - Square drive (3/8"sq.) adopted. Can hold counterforce of driving tool.



Application Table

Object		Models	Mini Cars	Compact Cars
Tie Rod End			●	●
Suspension	Upper		●	△
	Lower		×	×



● BALL JOINT SEPARATOR (OFFSET TYPE)

PAT. P



BALL JOINT SEPARATOR (OFFSET TYPE)

No.	L	W	H	▼kg	☒
AS202A	165	70	160~200	3.0	1

Application Table

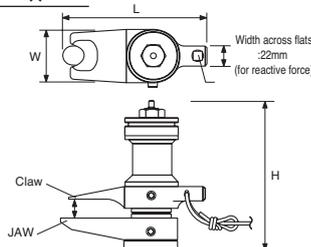
Object		Models	Mini Cars	Compact Cars
Tie Rod End			●	●
Suspension	Upper		●	●
	Lower		●	×

Purpose

- Separating ball joint.

Features

- Study design of the rated output, 2.5t
- Use of thrust bolt alone permits removal and pulling out of rod end.
- Smooth job using with a drive tool.
- Square drive (3/8"sq.) used. Can hold counterforce of driving tool.



Spare parts

No.	Name	▼kg	☒
AS202-A24	Claw	0.7	1
AS202-J	Jaw	0.7	1

3 Removing pitman arm



● PITMAN ARM PULLER



PITMAN ARM PULLER

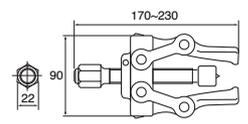
No.	Application	▼kg	☒
PAU-3747	Mini & Compact cars, trucks & tractors	1.5	1

Usage

- Pulls of pitman arm from center shaft quite easily.
- Forged claws with proper heat-treatment.
- A cord supplied for tying to prevent fall off.
- Fastening and claws will contact deeply to inside.

Application

- Pitman outer diameter $\phi 37 \sim \phi 47$



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

LOCK NUT CHISEL

No.	a	b	D	L	ℓ	▽g	📦
AS404	0.4	4.5	50	173	51	350	10

Purpose

- Removal (Attachment) of sealed type lock nuts on drive shafts.

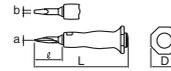
Application

- Most of sealed type lock nuts used on drive shafts.

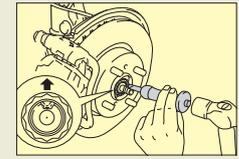
Features

- Sealing and pulling up of sealed part lock nuts is possible with one single chisel.
- Ship-shaped tip facilitates pulling up of the caulked part by hitting the chisel head.
- Grip, made of rubber, is easy to handle and is provided with the flange for protection of your hand.
- Forged and strong!

● **LOCK NUT CHISEL**



Removing lock nut **4**



IMPACT SOCKET FOR HUB NUT

1/2"sq. Impact Socket For Hub Nut Set

No.	ATS3082	▽g	730	📦	1
Hub Nut Socket		AS308-30W, 32W			

1/2"sq. Impact Hub Nut Socket

No.	S	D1	D2	H	L	ℓ	▽g	📦
AS308-30W	30	42	29	15	75	55	360	1
AS308-32W	32	44	29	15	75	55	370	1



● **1/2"sq. IMPACT SOCKET FOR HUB NUT PAT.**



Attached pins and rings

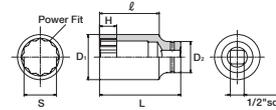


Usage

- Impact wrench loosening of double hexagonal shape front (rear) axle hub nuts used in Toyota.

Features

- Socket for impact wrench that has adopted the double hex. that matches the shape of hub nut.
- Aperture depth that matches the hub nut shape and thin-walled outside diameter shape are used.
- Semi-deep type with 75mm total length that does not interfere with the drive shaft threaded portion.



SLIDE HAMMER PULLER

No.	D1	D2	D3	D4	L	Shocker Weight	Screw Size	▽kg	📦
AUD3	60	68	30	14	580	1.2kg	W9/16-12	2.7	1
AUD4	85	68	30	18	675	3.5kg	M18x2.0	5.5	1

Purpose

- Body shop working.

Application

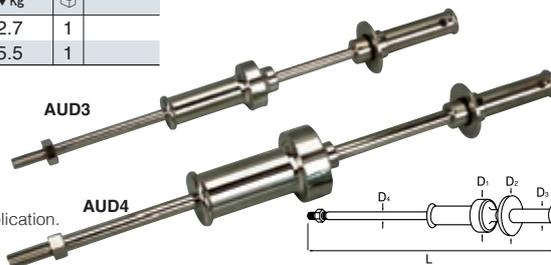
- For mini cars, passenger card and pick up trucks.

Special features

- Safety conscious design.
- Big and small hammers with weight 3.5kgs and 1.2kgs for wide application.

CAUTION • WHEN USING SLIDE HAMMER, MIND WORKING POSTURE AND THE POSITION OF HANDS. IMPROPER POSITION CAN RESULT IN INJURY.

● **SLIDE HAMMER PULLER**



Separating & removing drive shaft & hub **5**

SLIDE HAMMER PULLER ATTACHMENT

Screw size conversion adapter set for slide hammer

No.	ATUD302	▽g	600	📦	1
AUD3-1820	Screw Size Puller Side	W9/16-12	Object Side	M18x2.0	
AUD3-G1/2	Screw Size Puller Side	W9/16-12	Object Side	G1/2	

No.	ATUD402	▽g	600	📦	1
AUD4-9/16	Screw Size Puller Side	M18x2.0	Object Side	W9/16-12	
AUD4-G1/2	Screw Size Puller Side	M18x2.0	Object Side	G1/2	

● **SLIDE HAMMER PULLER ATTACHMENT**



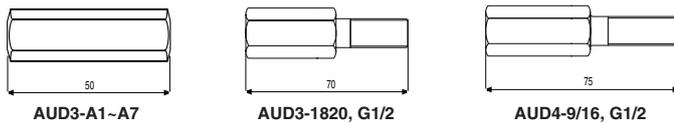
ATUD 302
ATUD 402

Screw size convertible adapter set for slide hammer puller

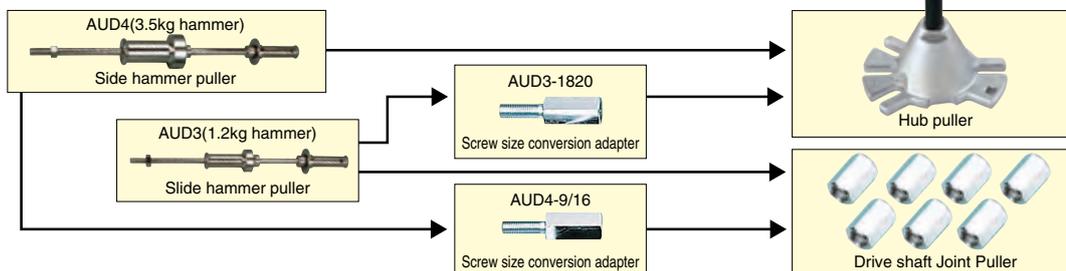
No.	ATUD307	Screw Size Puller Side	Object Side
AUD3-A1		W9/16-12	M18x1.5 Suzuki
AUD3-A2		W9/16-12	M19x1.5 Toyota
AUD3-A3		W9/16-12	M20x1.0 Nissan, Daihatsu
AUD3-A4		W9/16-12	M20x1.5 Mazda
AUD3-A5		W9/16-12	M22x1.0 Nissan
AUD3-A6		W9/16-12	M22x1.5 Nissan, Mazda, Mitsubishi, Daihatsu
AUD3-A7		W9/16-12	M24x1.5 Nissan, Honda



ATUD 307

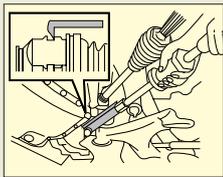


Combination



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

5 Separating & removing drive shaft & hub



●DRIVE SHAFT REMOVER FOR SLIDE HAMMER FOR SLIDE HAMMER

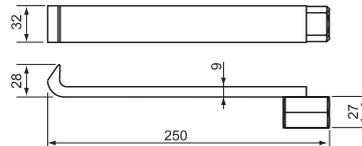


DRIVE SHAFT REMOVER FOR SLIDE HAMMER

No.	Size	Screw Size (puller-side)	▼g	☐
AUD3-AD1	250 × 32 × 28	W9/16-12	660	1

Purpose

- Removing drive shaft from trans-axle (FF vehicle).
- Used exclusively with slide hammer puller (AUD3).



●SLIDE HAMMER PULLER ATTACHMENT



HUB PULLER FOR SLIDE HAMMER

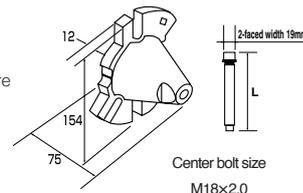
No.	Applicable Hub	▼kg	☐
AS30	PCD100mm~140mm Bolt M14smaller	1.4	1

Purpose

- Drawing axle shaft and brake drum.

Special feature

- Can be used for both 4 holes and 5 holes types.
- Can hold reactive force from driving tool as square drive (3/8"sq.) used.
- Open-end wrench usable as width across flats provided. Can hold counterforce.



Replacement parts

No.	Product name	L	2-faced width	▼g	☐
AS30-1	Center bolt (M18 × 2.0)	138	19	240	1

●HUB PULLER (FOR 6 HOLES) FOR THE SLIDE HAMMER PULLER



HUB PULLER FOR SLIDE HAMMER

No.	Applicable Hub	▼kg	☐
AS309	PCD140mm M14	2.5	1

Usage

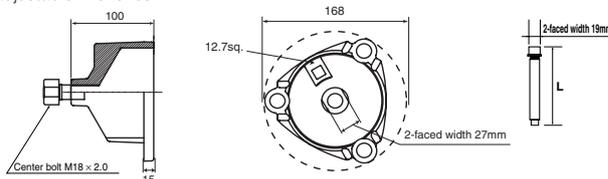
- Pulling out the axle shaft/brake drum and pushing out the drive shaft

Application

- 6 hole type hub for vehicles.

Characteristics

- Deep hole design is compatible with the front free wheel hubs on 4 wheel drive vehicles.
- With a 12.7 sq drive, force application can be maintained by the drive tool.
- The 27mm 2-faced width allows the application force to be maintained while using adjustable wrenches.



Replacement parts

No.	Product name	L	2-faced width	▼g	☐
AS30-1	Center bolt (M18 × 2.0)	138	19	240	1

BOOT BAND CUTTER

No.	B ₁	B ₂	T	L	▽g	
AS402	24	41	11	193	260	10

Usage

- Cutting the boot or boot band of the drive shaft

Application

- The stainless boot band of the drive shaft on light weight vehicles to standard vehicles.



Standard, modified boot bands



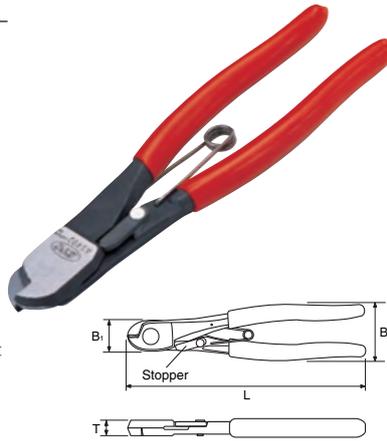
Sealed type boot band (up to 0.6mm plate thickness)

- Rubber drive shaft boot

Characteristics

- Cutting can be conducted while the boot band is attached.
 - The boot band can also be cut, increasing overall operation speed. (Fig. 1)
 - The same tool can be used to cut the boot after cutting the band. (Fig. 2)
 - The attached spring allows easy opening while the stopper allows storage in a compact form. Pushing the stopper while holding the handle will fix the tool in a position where the handle is closed, reducing the total storage space occupied by the tool. (Fig. 3)
- * Springs are available as replacement parts. Check with your dealer for details.

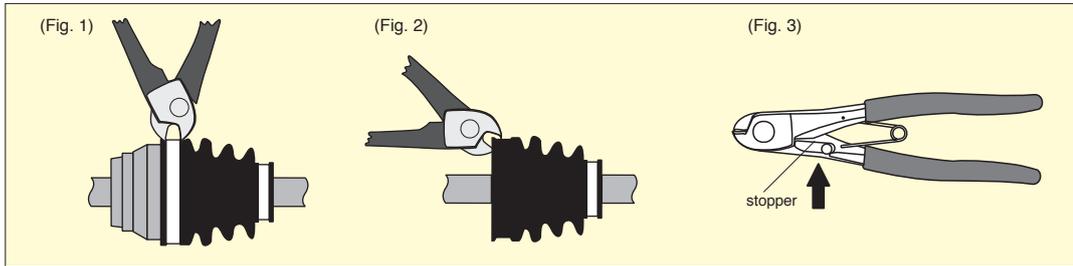
●BOOT BAND CUTTER



Disassembling/
Installing drive
shaft band

6

①Removing
Boot Band



EXTERNAL SNAP RING PLIERS

No.	D	L	ℓ	▽g	
AS403A	90	168	21	170	10
AS403B	90	168	21	170	10

Usage

- Useful in the removal and installation of snap-rings without grips that aid removal.

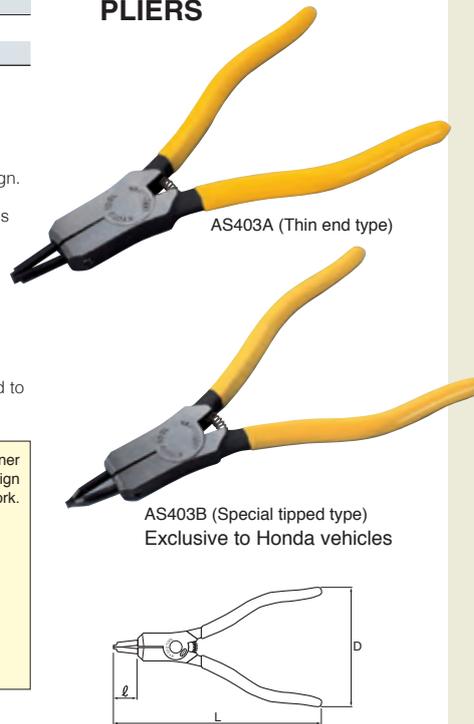
Application

- <AS403A>
 - Standard snap-ring without removal aid.
 - Working with narrow rings in openings is easier as the tip of the claw is of a thin design.
- <AS403B>
 - This is a special tool designed for Honda snap-rings that are fitted in narrow openings with their gripping areas placed on an angle.
 - Wear and tear is limited to the claw, and therefore only the claw needs replacing.

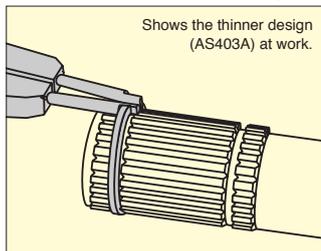
Characteristics

- <AS403A>
 - As the tip is of a step fitted shape, previous hard to work with snap-ring removal/installation is now easier.
 - Vertical and horizontal settings are possible depending on the position of the axle.
 - <AS403B>
 - Suitable for snap-ring removal/installation in Honda vehicles that are traditionally hard to work with.
- * Spare parts are available for springs and claw type screws.

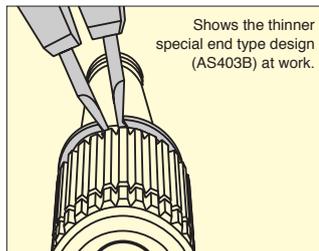
●EXTERNAL SNAP RING PLIERS



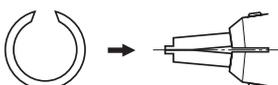
②Disassembling/
Installing Import Joint



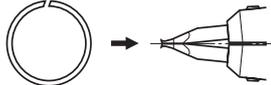
Shows the thinner design (AS403A) at work.



Shows the thinner special end type design (AS403B) at work.



Ring type A



Ring type B

PARTS FOR REPLACEMENT END CLAW

No.	Content of set
AS403A4	AS403A Claws: 4 sets
AS403B4	AS403B Claws: 4 sets

6 Disassembling/
Installing drive shaft
band

③ Fastening/Cutting
of Boot Band

● **BOOTS BAND TOOL
WITH CUTTER** PAT. P



BOOTS BAND TOOL WITH CUTTER

No.	B	T	t	L	▽g	☐
AS401	26	43	8	160	180	1

Usage

- Fastening/cutting of the band fixing the joint boot of drive shaft.

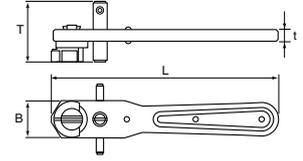
Application

- Applicable to quality boot bands (all sizes) for mini cars to compact cars.

Features

- Ratchet mechanism ensures effective winding of the band.
- Only one action required for bending and cutting of the band.

* Not required for the standard boot band designated by manufacturers.



Method of use

<p>1 Set the boot band tool.</p> <p>Insert the boot band attached to the boot of the drive shaft into the slit in the boot band tool.</p>	<p>2 Twist away the boot band.</p> <p>Twist the boot band by turning the handle clockwise.</p>	<p>3 Turn back the boot band and cut.</p> <p>Lower the boot band tool (in the direction of the arrow) until the boot band is cut.</p>	<p>4 Sealing the boot band</p> <p>Adjust and reshape the boot band after cutting using hammers and punches.</p>
--	---	--	--

④ Sealing

● **CENTER PUNCH**



➔ P.161

● **HAMMER**

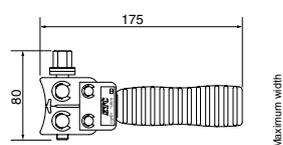
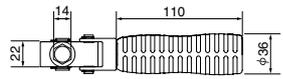


➔ P.158

③ Sealing of the boot
band



● **BOOT BAND TOOL**



Maximum width

BOOTS BAND TOOL

No.	▽g	☐
AS405	750	1

Usage

- An exclusive tool used for sealing the boot band on the drive shaft of vehicles

Application

- The tool is compatible with light weight to passenger type vehicles using the sealing type boot band.(Can be used for imported vehicles)

Characteristics

- Sealing is made easy by a simple bolt screw-in operation.
- The operation is faster and easier when using wrenches, such as the ratchet type, etc. (Hexagonal 2-faced width 14mm)
- As the center bolt is fitted with a flange, an offset wrench can be used and the wrench will not slip off.
- A resin grip is employed for the handle to prevent slippage.
- A claw form has been employed to stop the sealing section from rising.

⚠ CAUTION • Make sure that all operators read the Owner's Operator Manual carefully before usage.

Method of use

<p>1 Widen the claw by turning the center bolt and allow the sealing section of the boot band to enter.</p> <p>⚠ CAUTION Apply molybdene grease over the specified area before operating.</p>	<p>2 Touch the sealing section of the boot band with the claw.</p> <p>⚠ CAUTION Do not grasp the boot with the tip of the claw.</p>	<p>3 Tighten the bolt using a 14mm drive tool (offset wrench can be used).</p>	<p>4 Confirm end of operation. Loosen the center bolt and remove the boot band tool.</p> <p>⚠ CAUTION Refer to the maintenance manual of the car manufacturer for each individual sealing dimension before carrying out operation.</p>
--	--	---	---

7 Housing Nut & Hub
bolt removal

8 Attaching the wheel

- ① Attaching the wheel nut
② Checking torque

● **IMPACT WRENCH**

● **WHEEL NUT SOCKET
FOR IMPACT WRENCH**

● **CROSS RIM
WRENCH**

● **OTHER TOOLS**

● **TORQUE WRENCH SET FOR
THE WHEEL NUT**

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

Housing Nut & Hub Bolt removal

HOUSING NUT WRENCH (FOR HEXAGONAL AND OCTAGONAL NUTS)

No. AS351	▼kg 4	📦 1
Housing nut wrench for large vehicles (for hexagonal and octagonal nuts) 1		
Metal Case (245x140x110)		

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

Usage

- Loosening / tightening of the rear housing nuts

Application

- Width across flat rear housing nuts used in heavy vehicles (class 4t)

Characteristics

- Compatible with both hexagonal and octagonal types
Specially designed claw to fit both hexagonal and octagonal types
- Special design helps avoid slipping.
Claws are specially designed to firmly hold the surface of the nut.
- Size is easily adjustable.
Adjust size simply by tightening hexagonal knob with a 17mm drive tool.

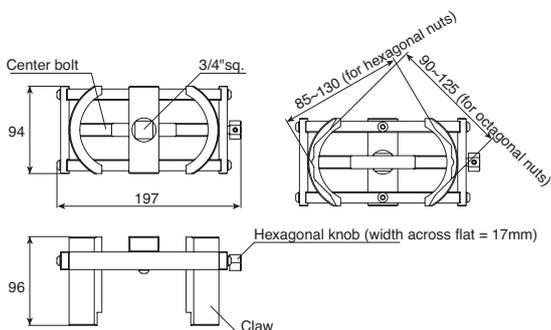
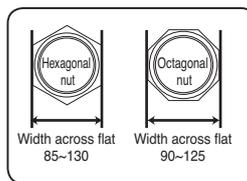
HOUSING NUT WRENCH FOR LARGE VEHICLES (FOR HEXAGONAL AND OCTAGONAL NUTS) D.PAT.P



Metal case is included



*3/4"sq drive tool (sold separately) is required for operation.



HOUSING NUT WRENCH (FOR CIRCULAR NUTS)

No. AS352	▼g 450	📦 1
Housing nut wrench for small vehicles (for circular nuts) (Main body) 1		
Pin A (for pin-hole diameter ϕ 6.8~9) 2		
Pin B (for pin-hole diameter ϕ 9.1~10) 2		
Wing nut 2		

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

Spare parts

Product name	No.	Tip diameter
Pin A (2)	AS352-2	ϕ 6.5
Pin B (2)	-3	ϕ 9

Usage

- Loosening / tightening of the rear housing nuts

Application

- Width across flat rear housing nuts used in small vehicle (class 2t)

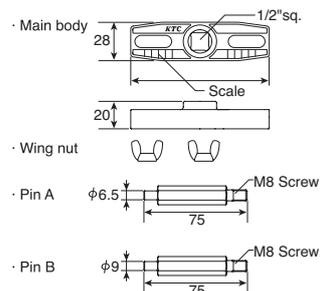
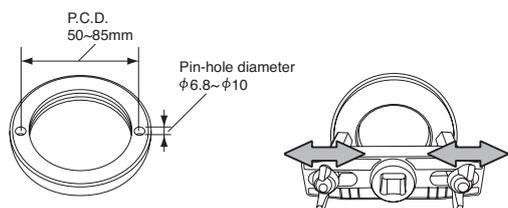
Characteristics

- Compatible with both hexagonal and octagonal types.
Pitch is adjustable by sliding the pin.
- Easy to position
Easy to center as a scale is marked on the wrench.

HOUSING NUT WRENCH FOR SMALL VEHICLES (FOR CIRCULAR NUTS)



*1/2"sq drive tool (sold separately) is required for operation.



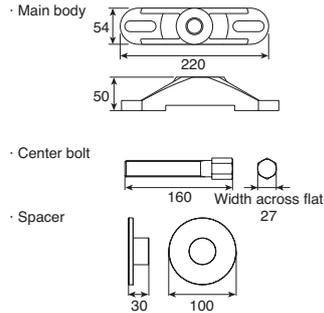


*An off-set wrench (with 27mm width across flat) or a socket with a drive tool (sold separately) is required for operation.

● REAR HUB PULLER FOR LARGE VEHICLES



Metal case is included



REAR HUB PULLER FOR LARGE VEHICLES

No. AS353	▼kg 3.5	📦 1
Rear hub puller for large vehicles (Main body)	1	
Center bolt	1	
Spacer	1	
Metal Case (245×140×60)		

Spare parts

Product name	No.
Center bolt	AS353-2
Spacer	-3

Usage

- For removal of rear wheel hub

Application

- Rear wheel hubs that are used in large vehicles (class 4t), which fulfills conditions below.
 - 8 or 10 holed (number of axle shaft attachment bolts)
 - P.C.D. 140~188mm
 - The size of axle shaft attachment bolt = M12~16

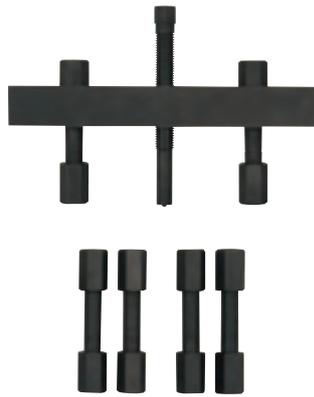
Characteristics

- Aluminum wheel will not be scratched or damaged. Aluminum wheels will not be scratched as the tool is attached to the axle shaft attachment holes using the axle shaft attachment bolt.
- Light and compact. Simple to set up.
- Removal operation made easy. Hub is easily removed by tightening the bolt with an off-set wrench, or a socket with a drive tool (with 27mm width across flat).

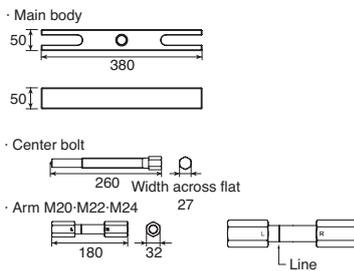


*An off-set wrench (with 27mm width across flat) or a socket with a drive tool (sold separately) is required for operation.

● FRONT HUB PULLER FOR LARGE VEHICLES



Metal case is included



FRONT HUB PULLER FOR LARGE VEHICLES

No. AS354	▼kg 12.1	📦 1
Front hub puller for large vehicles (Main body)	1	
Center bolt	1	
Arm M20	2	
Arm M22	2	
Arm M24	2	
Metal Case (380×240×75)		

Spare parts

Product name	No.
Center bolt (1)	AS354-2
Arm M20 (2)	-3
Arm M22 (2)	-4
Arm M24 (2)	-5

Usage

- For removal of front wheel hub.

Application

- Front wheel hubs that are used in large vehicles (class 4t), which fulfills conditions below
 - 6, 8, or 10 holed (6/8-hole: JIS system, 10-hole: ISO system) wheels
 - P.C.D. 222.25~335
 - Hub bolt size = M20×1.5, M22×1.5, M24×1.5

Characteristics

- Aluminum wheel will not be scratched or damaged. Aluminum wheels will not be damaged as hub is removed by attaching this tool to hub bolts.
- Hub can be removed on both left and right wheels with just 1 arm. The arm is engraved with "L" and "R" to distinguish between left and right wheel.
- The tool comes with 3 arm types. There are three types of hub bolt size - M20, 22, and 24. The different sizes can be distinguished with number of lines on the arm. (M20: 1 line, M22: 2 lines, M24: 3 lines)



*A 1/2"sq spinner handle or an off-set wrench (with 24mm width across flat) (sold separately) is required for operation.



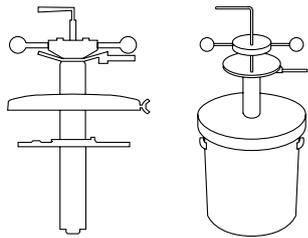
Metal case (W380×D240×H75)

GREASE EXCHANGER HIGHLOAD

No.	Applicable Container	Applicable Bearings	▼kg	📦
GZR18	16kg round cans	φ 15~100	19	1

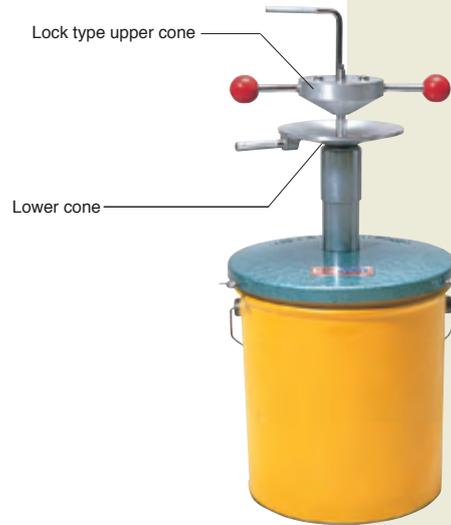
Usage

- Suitable for exchanging grease used in heavy-load bearings of large-sized vehicles.
- For exchanging grease in the hub bearings during inspection and servicing of vehicles for general use.
- **Wide range of applications.**
For bearings of various sizes used in automobiles (from mini-cars to large-sized trucks) and construction machinery.
- **Easy handing, improved work efficiency, keeps hands clean.**
Grease can be exchanged easily, requiring no skill. Operator's hands stay clean and free of grease, so he can proceed working immediately.
- **Reduced grease consumption by eliminating waste.**
Only a minimal amount of grease is required, Grease can be used completely to the bottom of a can, so you can save more grease than is possible with manual exchange operation.
- **Simple, highly reliable mechanism.**



Main body appearance View when the main body is attached

● GREASE EXCHANGER "HIGHLOAD"

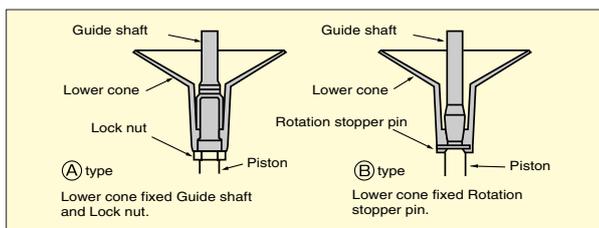


• CZR18 is the heavy-duty model of GZ18.

GREASE EXCHANGER HIGHLOAD ASSY.

No. GZR182	▼kg 2.2	📦 1
Upper cone	Applicable Bearings φ 15~100	
Lower cone		
Handle		
Rotation stopper handle		
Guide shaft		

- This kit of replacement parts for upgrading a GZ18 grease exchanger into a "HIGHLOAD" type heavy-duty grease exchanger can be used only with the (A) type model. Adaptability can be confirmed by pressing the bellows below the lower cone and checking if the lock nut is present.
- GZ18 can be used as GZ18 heavy duty model by assembling with these parts.



● ASSEMBLY PARTS FOR GREASE EXCHANGER "HIGHLOAD"



GREASE EXCHANGER

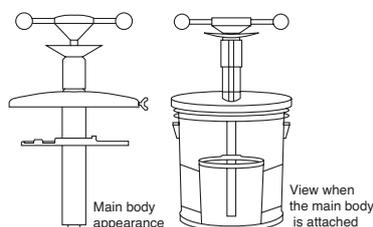
No.	Applicable Container	Applicable Bearings	▼kg	📦
GZ18	16kg round cans	φ 15~100	8.2	1

Usage

- Grease charging heavy load bearings of large automobiles.
- Grease charging to hub bearing of various automobiles in inspection or service.

Features

- Work time can be reduced to about 1/7 compared to the previous method.
- Useful in wide range of application.
- Keeps your hands clean and raises work efficiency.
- Grease in the can can be used up completely so waste can be eliminated and grease can be saved.
- KTC®-original pumping unit exchanges grease easily by using fresh grease to push out old grease.



Main body appearance View when the main body is attached

● GREASE EXCHANGER



Condition of Use



● AIR GREASE FEEDER



AIR GREASE FEEDER	
No. AVG35	▼kg 30
Pump type	Air-driven plunger pump
Size	460×360×1,190
Discharge	500g/min. on nozzle side (No.3 grease, 29°C, no load)
Discharge pressure	75~80kg / cm ²
Air pressure	6~9.8kg / cm ²
Grease type	No.0~No.3
Can	16kg pail can
Temperature Condition	0~40°C

Applicable bearings	
Cone side	Bore 15 to 100 mm
Hose side	Nozzle Adapter
	Nozzle adapter Bore 45 to 90 mm
	(bearing pitch 15 to 21 mm, equalant. to front-rear) (tapered roller bearing for 4 to 10 t vehicles)

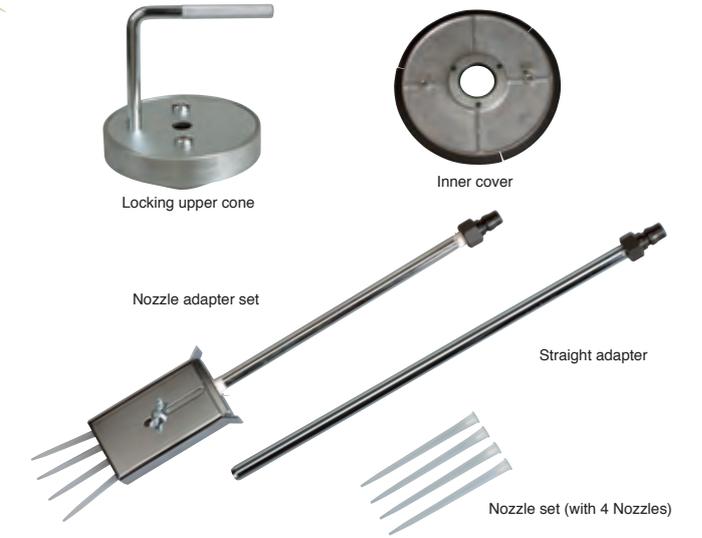
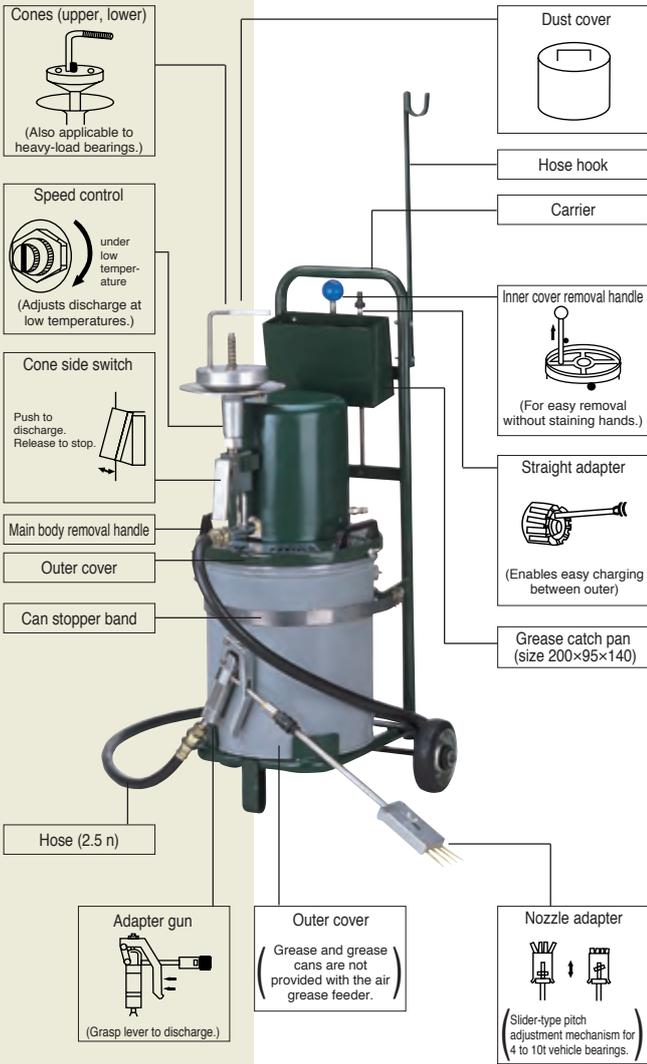
Usage
Dedicated equipment for feeding grease into tapered roller bearings during grease exchange or supply for medium-to large-sized trucks.

Application
Bearings with cone side bores of 15 to 100 mm, hose side bores of 45 to 90 mm and bearing pitches of 15 to 21 mm.

- Features**
- With the nozzle adapter, fresh grease pushes out old grease, without no need to remove each bearing.
 - Grease can also be fed into a removed bearing by installing it on the cone.
 - Grease can be fed even at around-10°C by proper piston speed control operation.
 - Foreign objects (such as moisture and dirt) in compressed air are filtered out by an air filter, preventing air regulator operation failure.
 - The built-in air regulator ensures air supply at optimal pressure.
 - Easy operation and setup reduces work time.
 - The carrier is equipped with a can stopper band and plate that prevents the grease can from falling or being displaced.

- CAUTION**
- DO NOT PULL THE LEVER EVEN AFTER REMOVAL OF THE AIR HOSE. OTHERWISE, GREASE MAY SCATTER INTERNALLY DUE TO RESIDUAL PRESSURE.
 - STORE IN PLACES WHERE YOU CAN AVOID FREEZING.
 - USE CLEAN AIR FOR INPUT.

● Name of parts and their applications



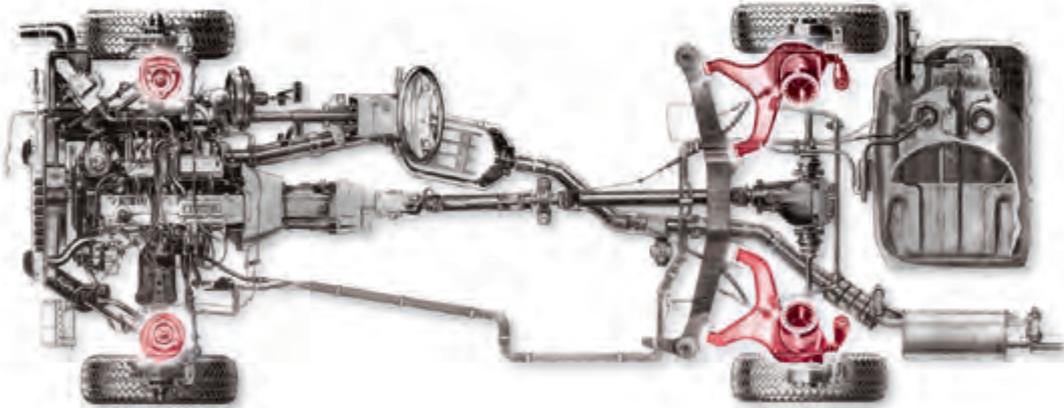
Supply parts

No.	Part Name	Q'ty
AVG35-2	Locking upper cone	1
-4	Inner cover	1
-6	Straight adapter	1
-7	Nozzle adapter set	1 (with 4 nozzles)
-7-7	Nozzle set	1

* These parts are also optionally available.



Suspension System Mechanism



MECHANISM 1

The suspension

Suspension is designed to dissipate the load forced onto a vehicle by absorbing vibration and impact from the road, stabilizing the position of the car while driving, and sustaining the optimum balance of the car for comfortable driving. The suspension is constructed using a combination of spring or shock absorber that absorbs vibration/impact and a stabilizer that reduces horizontal movement (roll).

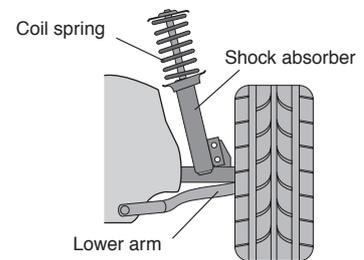
MECHANISM 2

Types of suspension

Strut type suspension

The lower part of the suspension system uses the lower arm attached to the chassis to receive the drive shaft where as the upper part is placed on the extension of the king pin, connected to the body with the coil spring attached to the shock absorber.

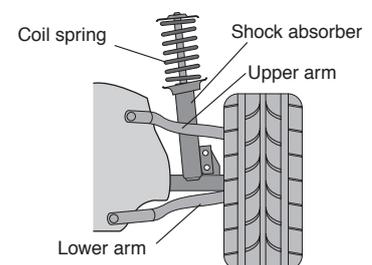
The system allows for a lower number of component parts, providing increased space as a merit, however, is less effective during larger rolls while cornering.



Strut type suspension

Double wishbone type suspension

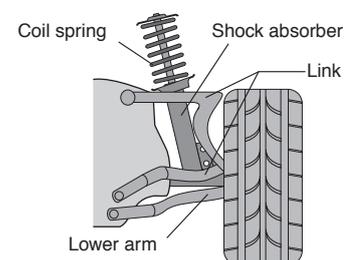
The double wishbone type suspension system has independent moving right hand and left hand parts. The independent hanging type is most common. The two upper and lower suspension arms support the combined shock absorber and coil spring. The wishbone name likens the shape of the arm to the chest bone of birds. The system provides high rigidity, better stability and handling but due to the complex structure, the system occupies space.



Double wishbone type

Multi-link suspension

The term multi-link is coined as the system is structured by dividing the lower arm into multiple links. The high control ability born of the multiple link system allows the vehicle to sustain the vehicle in an optimum balanced condition during roll, braking, and acceleration. Recently, the system has been used in many luxury vehicles.



Multi-link type

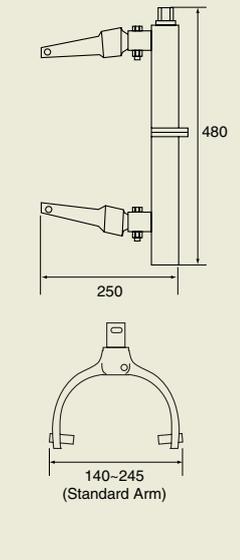
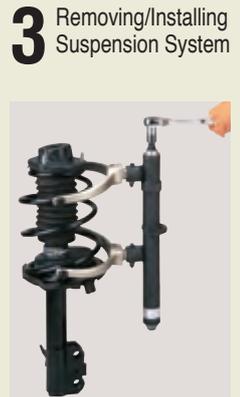
SUSPENSION Disassembling/Assembling Suspension System

1 Removing/Installing Wheel
 ① Remove Wheel Cap
 ② Remove/Installing Wheel Nuts

- WHEEL CAP WRENCH
- CENTER CAP WRENCH FOR ALUMINUM WHEEL
- OTHER TOOLS
- IMPACT WRENCH
- WHEEL NUT SOCKET FOR IMPACT WRENCH
- CROSS RIM WRENCH
- OTHER TOOLS

2 Pinching off Brake Hose
 ① Block off of Hoses
 ② Disassembling Pipe

- PINCH OFF PLIERS
- FLARE NUT WRENCH
- OTHER TOOLS



STRUT SPRING COMPRESSOR

No. AS10	kg 6.0	📦 1
Body	AS10-1	
Standard Arm (Dia.90~170)	AS10-2	

Applicable Coil Spring

Article	Applicable Capacity
Wire Dia.	18mm or smaller
Outer Dia.	Standard Am... 90~170mm Large Am 135~220mm
Coiling Cycle	2 times or more
Coil Span	20mm or over

Purpose

- For removing/installing coil springs used in automotive suspensions.
- Wide application for use on front- & rear-suspension of FWD (FF Cars) and RWD (FR Cars), strut type coil springs, etc.

Special feature

- If excessive load is applied on spring compressor, breaking mechanism will work inside the drive of center screw bolts. (Breaking load: 1,300kgs.) (Fig.2)
- Built in center screw bolts for protecting screw part.
- Compact pipe style body for easy operation.

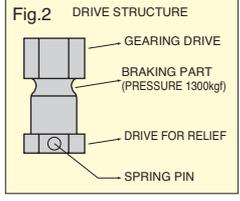
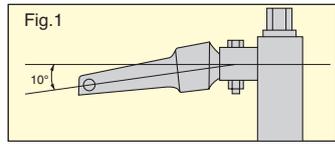
Body

No.	Dimension	kg
AS10-1	Length 480× φ 42	3.8

Arm

No.	Applicable Diameter	kg	📦
AS10-2	Standard Am Dia. 90~170	2.2	1
AS10-3	Large Am Dia. 135~220	2.5	1

- WARNING**
- BEFORE USING THIS TOOL, CAREFULLY READ THE PROVIDED INSTRUCTIONS.
 - NEVER APPLY OVER TORQUE ALTHOUGH BRAKE MECHANISM WORKS AT THAT TIME.
 - NEVER USE THIS TOOL WITH IMPACT WRENCH.
 - THIS TOOL IS SUITABLE FOR USING ON JAPANESE CARS.



Cautionary points on handling the spring compressor

As a result of the investigations carried out based on consumer comments and questions concerning the usage of the previous spring compressor SPU-70315 (1987~1995) provided by our company, the following daily uses were occurring. It is requested that the User's manual and cautionary points along with the maintenance procedures of this product are read thoroughly before use.

If any faults are recognized under the inspection items within the inspection guidelines, stop using this product and replace with the spring compressor (product number: AS10) currently provided by our company.

Explaining the situation

- Recent strut type springs have high spring numbers or illegally modified springs projecting a high stress load. Attachment and removal of springs that exceed the previous safety standards is being conducted.
- The tool is used when the span of the upper and lower arm (that hooks the spring during spring attachment and removal) is short. The spring characteristic allows for the compression that presses the spring to be different even when compressing the same amount.
- The spring is sometimes compressed using prohibited power tools (impact wrench) instead of the hand tool. Using a power tool to compress the spring is dangerous due to the immediate change in tightening strength, which can lead to compression exceeding the permissible range of the product.

The content explained above relates to an extremely dangerous operation on using the tools. Check the following inspection guidelines when using this tool.

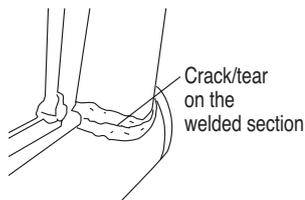
Ex.) Standard number of springs (Load necessary in order to compress the spring by 1mm)
 2 springs wound 363N/mm
 3 springs wound 180N/mm
 The compression load can double depending on the condition in which the spring is hooked (wound).

Inspection guidelines

● Inspection spots and inspection methods (do not use if the following inspection items are faulty)

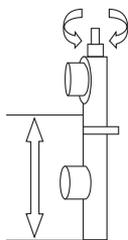
① Welded spot on the attachment section of the fixed arm

- Thoroughly clean the welded section using brake cleaners, etc. and visually check for any torn, cracked weld sections. (Cracked or torn sections are faulty)



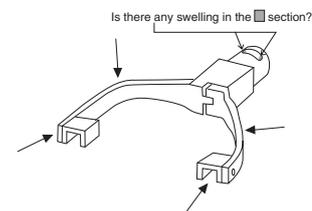
② Inspecting the center screw bolt

- From the slide groove on the main unit moving arm, visually inspect for unusual wear or bends on the center screw bolt.



③ Moving arm friction inspection

- Turn the head-drive with your hands and check that the moving arm moves smoothly. (When rotation is uneven, the center screw bolt is worn or damaged.)

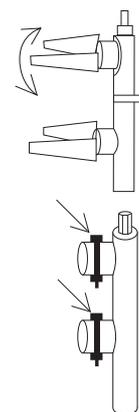


④ Individual inspection for the fixed and moving arm

- Remove both arms from the body and inspect for bends and wear.
- Inspect for any deformities on the hole for passing through the attachment bolt.
- Check that the arm can be removed easily.

⑤ Moving and fixed arm sway inspection

- After properly attaching the fixed and moving arm to the main unit, check that the neck sways smoothly without unevenness. (If uneven, item (4) is swelled or the attachment section is deformed.)



⑥ Fixed and moving arm attachment bolt

- Remove the fixed and moving arm attachment bolt from the main unit and visually check for bends, wear, and damage on the screw section.

If any faults are found in the above inspection, the parts have exceeded their useful life. Continuing to use these parts can cause damage and is dangerous. Avoid use. The listed contents can be used for the inspection for AS10. Please perform these inspections.

Cautionary points on use

• Never use an impact wrench as this can cause the spring compressor to break.

[Pre-use inspection]

- Perform the following inspections before operation and check for any faults. (Do not use if there are any faults)

- ① Check that the attachment bolts and nuts on Arm 1 and Arm 2 are not loose.
- ② Arm 1 and Arm 2 necks should sway freely.
- ③ Turn the center screw bolt with your hands and check that Arm 2 moves smoothly along its full stroke.
- ④ The hook moves swiftly left and right.
- ⑤ There are no signs of cracking, deformity, or damage.

[Attaching the spring]

- ① Attach to the diameter section of the spring when attaching the hook to the spring. (Fig. 2)
- ② Set to the widest position when considering the span of the hook for the upper and lower arms. (Distance between diagram 3A and B)
- ③ The spring pitch number (wind number) for the wind between the left and right hooks for the upper and lower arm must be equal. (Fig. 3)

[In use]

- When the tightening force suddenly increases during compression, immediately stop operation and loosen the spring.
- Do not compress until the line spaces between the springs are filled.
- Take care as to avoid having the upper and lower arm attachment bolts touch when using springs with low pitch numbers (fewer winds).
- Many springs with low pitch numbers have a high load. Use a torque wrench to control the torque of the tightening drive when using. (Tightening drive torque should be below 44N-m)

[Maintenance]

- Amply support the screw section of the center screw bolt and apply lubricant before use.
- When storing, make sure foreign particles/dust, etc. do not enter the slide groove section of the main unit.
- Do not disassemble or modify this product.

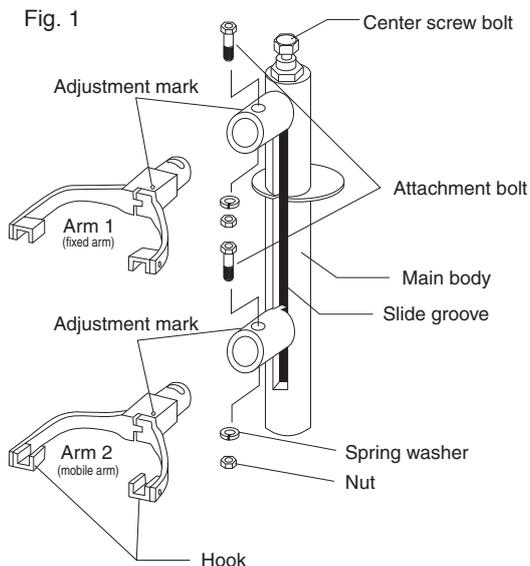


Fig.2 Coil spring

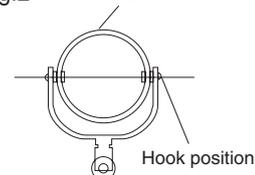
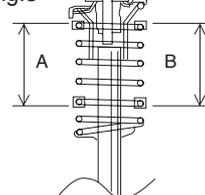


Fig.3



Same right/left pitch (A=B)

4 Inspecting Torque

● **TORQUE WRENCHES**



➔ P.189

5 Installing Wheel and Inspecting Torque

● **IMPACT WRENCH**



➔ P.200

● **WHEEL NUT SOCKET FOR IMPACT WRENCH**



➔ P.256

● **CROSS RIM WRENCH**



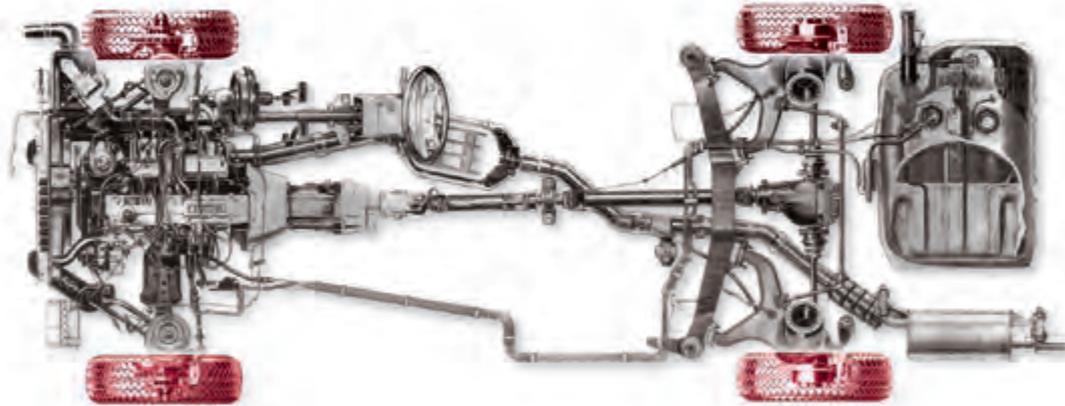
➔ P.134

● **WHEELNUT TORQUE WRENCH**



➔ P.190

Tire & Wheel Mechanism



MECHANISM 1

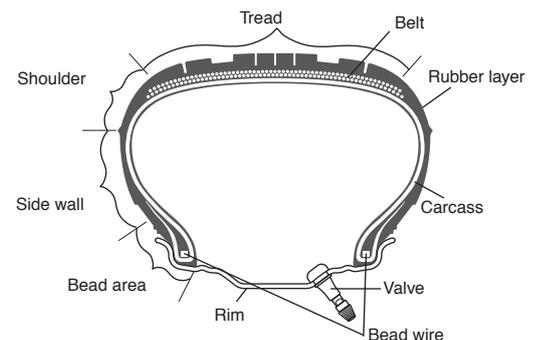
Function and mechanism of tire

The tires support the weight of the vehicle, they not only transfer the drive and braking power, they also protect the vehicle from road shock and play a role in transferring the vehicle's functionality to the road.

The following details the parts of the tire structure: **Tread:** This is the area that comes into contact with the road. **Shoulder:** The area that protects the carcass of the tire. **Sidewall:** The area where the tire size and the manufactures name is displayed. **Bead area:** This is made up of the rubber layers, belts, carcass, and bead wire materials and is where the tire is fixed to the rim.



Cross section of a bias tire

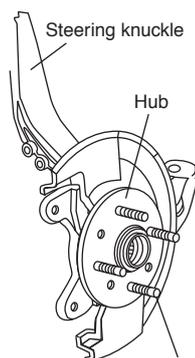


Cross section of a radial tire

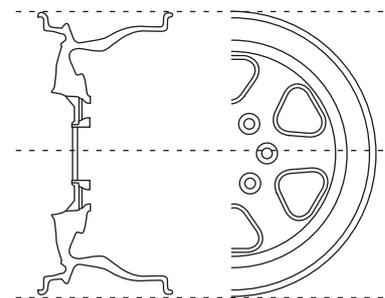
MECHANISM 2

Wheel & hub

A wheel consists of a rim and tire which is attached to the "hub" assembly. In modern cars the hub is a disc which normally contains 4-6 bolts (or studs) and is attached to the axle by way of the axle nut. The average amount of bolts is between 4-6. The heavier the vehicle, the more wheel nuts/bolts will be required.



Hub bolt (Wheel bolt)

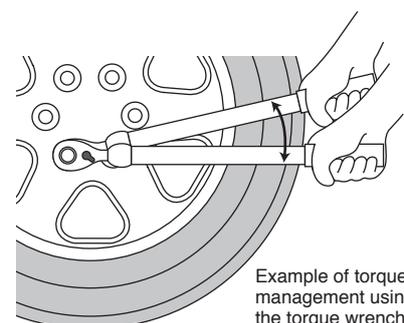


Cross section of wheel

MECHANISM 3

Torque management suggestion

Not only the tires, but faulty attachment or tightening of the hub bolts (wheel nuts) will largely influence safe driving. For example, if tightening of the hub nut (wheel nut) is weak, the tire can fall off because of vibration. If tightening is too strong, the hub bolt can break. In order to prevent these accidents, the tightening torque should be managed with a torque wrench. The common tightening torque for passenger vehicles is 103N-m and this torque is relatively easy to achieve. If the hub-nut (wheel nut) of your vehicle cannot be loosened with the provided tire wrench (providing there is no rusting), the hub nuts have been tightened excessively.



Example of torque management using the torque wrench

TIRE & WHEEL Wheel attachment and removal

1 Installing Fender Cover

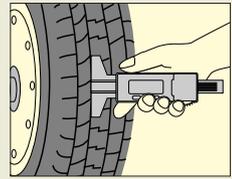
● **FENDER COVER**



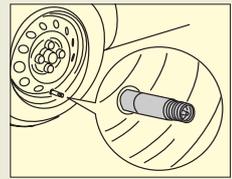
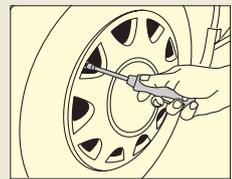
➔ P.303

2 Inspecting Tire Grooves

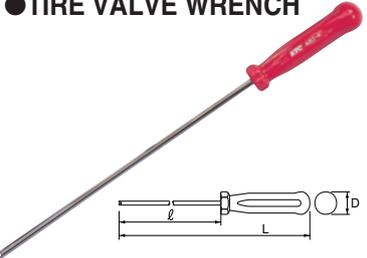
① Checking the tire groove



② Inspection and Adjustment of Air Pressure



● **TIRE VALVE WRENCH**



TIRE VALVE WRENCH

No.	D	ℓ	L	▼g	📦
AH2-4	17	165	235	40	1

Purpose

- Used to remove/install valve core of tires of mini cars, compact cars, trucks and buses (except for motor cycles, construction vehicles and tire of double tires)

Features

- Long shaft enables operation without hitting tire with the tool and improves work efficiency. (The length is 165mm.)
- Thinner handle to turn.

● **TIRE AIR GAUGE**



TIRE AIR GAUGE

No.	Range	Minimal indication	Thickness	ℓ	L	▼g	📦
AGT231	0~500kPa (0~5kgf/cm ²)	10kPa	95	100	270	800	1
AGT232	0~1200kPa (0~12kgf/cm ²)	10kPa	95	100	270	800	1

Purpose

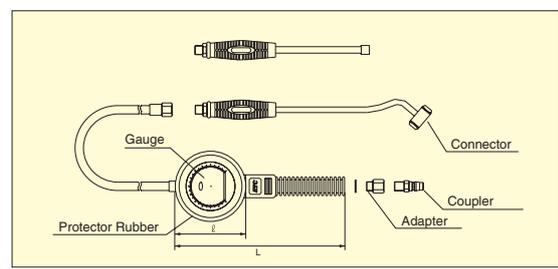
- Measuring, increasing and decreasing air pressure in car tires.

Application

- Tire Air Gauge 500: for passenger cars and commercial cars (vans)
- Tire Air Gauge 1200: for motorcycles, passenger cars, trucks and buses.

Features

- Light touch lever enables smooth fine adjustment.
- Large gauge (φ 70mm) easy to read measurements. Possible to measure and decrease pressure without connection with the air hose.
- Swivel joint prevents hose twisting.
- Ultra-thin straight connector on the tip (tip: 11mm dia.) facilitates use for most of aluminum wheels (AGT231).
- Double connector usable for outer tire of double tires (AGT232).
- Usable for some of the inner tire depending on the notch shape of the wheel.

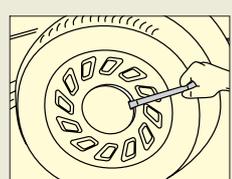
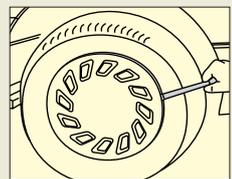


Connectors for replacement:

Connectors	No.
Straight connector	AGT23-A1
Double connector	AGT23-A2
Clip Connector	AGT23-A3

3 Removing/Installing Wheel

① Removing Wheel Cap



● **WHEEL CAP WRENCH**



WHEEL CAP WRENCH

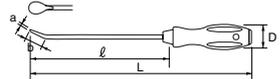
No.	a	b	D	ℓ	L	▼g	📦
AH101	1.3	20	40	215	350	200	5

Purpose

- Removing wheel cap from cars.

Features

- Thin tip; easy to put in between wheel rim and wheel cap, with lower possibility of damaging wheel cap and wheel.
- Tip is bent for easy operation.
- Hand fitting plastic handle.



● **CENTER CAP WRENCH FOR ALUMINUM WHEEL**



CENTER CAP WRENCH FOR ALUMINUM WHEEL

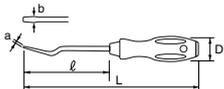
No.	a	b	D	ℓ	L	▼g	📦
AH102	0.7	7	34	115	235	90	5

Purpose

- Removing the center cap of aluminum wheel.

Features

- Thin tip, easy to put into the notch, with lower possibility of damaging the cap and wheel.
- Tip is bent at two points for easy operation.
- Hand fitting plastic handle.



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

Removing/Installing Wheel
 ② Removing/Installing Wheel Nuts



● IMPACT WRENCH



P.200

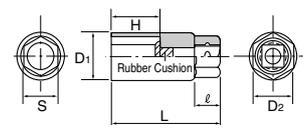
SOCKET FOR ALUMINUM WHEEL

No.	S (Hexagonal)	D ₁	D ₂	H	ℓ	L	▽g	⊞
B35A-17H	17	24	21	22	15	60	140	10
-19H	19	26	21	24	15	60	140	10
-21H	21	27.5	21	27	15	60	140	10

Purpose

- Specially for fasten/loosening aluminum wheel nuts of cars.
- With rubber cushion for plated and painted wheel nut.

CAUTION • DESIGNED SPECIALLY FOR THE ALUMINUM WHEEL AND ENDURES LOWER TORQUE BECAUSE OF ITS STRUCTURE.



1/2" sq.

● 1/2"sq. SOCKET SET FOR ALUMINUM WHEEL



WHEEL NUT SOCKET

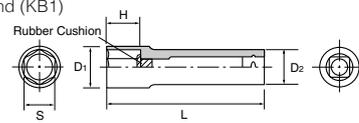
No.	S (Hexagonal)	D ₁	D ₂	H	L	▽g	⊞
B38Z-17H	17	24	22	22	100	200	5
-19H	19	26	22	24	100	200	5
-21H	21	27.5	22	26	100	200	5
-22H	22	29.5	22	27	100	200	5

Purpose

- Specially for fasten/loosening aluminum wheel nuts of cars.

Features

- The whole length is 100mm, designed exclusively to fit the wheel. Use with a torque wrench improves work efficiency.
- With rubber cushion for plated and painted wheel nut.
- 22H is for Land Cruiser 100 and Honda Legend (KB1)



1/2" sq.

● 1/2"sq. WHEEL NUT SOCKET



WHEEL NUT SEMI-LONG SOCKET WRENCH

No.	S (Hex.)	D ₁	D ₂	H	L	▽g	⊞
B38ZM-21H	21	27.5	22	26	130	300	5

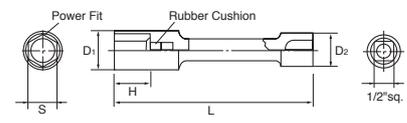
Usage

- It is a socket dedicated for the tightening and loosening of wheel nuts in automobile.

Features

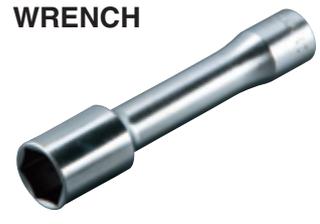
- It is a dedicated design with 130mm total length that matches the body shape.
- Usability is improved by using in combination with a torque wrench.
- It has a rubber cushion that's friendly for plated and coated nuts.

CAUTION • Withstand load is structurally low since it is dedicated for wheel nuts.



1/2" sq.

● 1/2"sq. WHEEL NUT SEMI-LONG SOCKET WRENCH



WHEEL NUT LONG SOCKET

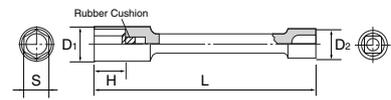
No.	S (Hexagonal)	D ₁	D ₂	H	L	▽g	⊞
B38ZL-17H	17	24	24	22	180	330	5
-19H	19	26	24	24	180	340	5
-21H	21	27.5	24	26	180	350	5

Purpose

- Specially for fasten/loosening aluminum wheel nuts of cars.

Features

- Long size most appropriate for RVs.
- Long size necessitates no extension bar and improves work efficiency.
- With rubber cushion for plated and painted wheel nut.



1/2" sq.

● 1/2"sq. WHEEL NUT LONG SOCKET



3 Removing/Installing Wheel
 ② Removing/Installing Wheel Nuts



● 1/2"sq. IMPACT SOCKET SET FOR ALUMINUM POLISHED NUT (3pcs.)

1/2" sq.

IMPACT SOCKET • SET (3pcs.) FOR ALUMINUM POLISHED NUT

No. ATBP403AL	415	1
Impact Socket Set For Aluminum Polished Nut		
Metal Case L165xW70xH40		
ABP4-17ALP, 19ALP, 21ALP		

• Set of 3 popular sizes (17, 19, & 21).

IMPACT SOCKET FOR ALUMINUM POLISHED NUT

No.	S (Hexagonal)	D1	D2	H	L	▽g	1
ABP4-17ALP	17	26	29	21	49	50	1
-19ALP	19	28.5	29	24	52	60	1
-21ALP	21	31	29	27	55	70	1

Attached pins and rings PR-2026

- For use on aluminum wheel and surface-treated nuts.
- Thin wall type with minimum outer diameter.
- Made of newly developed special aluminum alloy with special heat-treatment for superb durability.

(Caution) Aluminum wheel nut tightening should be conducted according to the set torque defined by each manufacturer.

CAUTION • USE ONLY ON WHEEL NUTS.
 • FASTEN ALUMINUM WHEEL NUTS AT THE SPECIFIED TORQUE.

● 1/2"sq. Wheel nut socket set for impact wrench (long, thin type) PAT.P.

1/2" sq.

WHEEL NUT SOCKET SET FOR IMPACT WRENCH

No. TBP4903	560	1
Wheel nut socket for impact wrench		
BP49-17, 19, 21		

No.	S (Hexagonal)	D1	D2	H	ℓ	L	▽g	1
BP49-17	17	24.0	25	22	18	100	180	5
BP49-19	19	26.0	25	24	18	100	190	5
BP49-21	21	27.5	25	26	18	100	190	5
BP49-22	22	29.5	25	27	18	100	210	5

Usage

- Compatible with exclusive socket wrenches and impact wrenches used to tighten and loosen vehicle wheel nuts.

Characteristics

- Exclusive socket for the aluminum wheel
- A protective rubber cushion has been fitted for chrome or painted nuts.

CAUTION • DO NOT USE EXCEPT FOR CAR WHEEL NUTS.
 • SPECIALLY DESIGNED TO BE THINNER THAN ORDINARY PRODUCTS. DUE TO THE THINNER CONSTRUCTION, THIS SOCKET SET MAY BREAK DEPENDING ON THE WAY OF USE.

● 3/4"sq. IMPACT LONG COMBINATION SOCKET FOR WHEEL NUT PAT.

3/4" sq.

IMPACT LONG COMBINATION SOCKET FOR WHEEL NUT

No.	S1 Hex.	S2 Square	D1	D2	H	ℓ	L	▽kg	1
ABP6ZL-4121TP	41	21	58	38	14	55	450	2.6	1

- It is a labor-saving tool for the loosening/tightening work of both outer and inner nuts with just 1 wrench.
- It is a thin wall type that's also effective for vehicle models that have less clearance for wheel hubs and wheel nuts.
- Looseness is eliminated by integrating the combination socket and extension bar, allowing the torque management with higher accuracy even when torque wrench is used.
- With the long design of 450mm total length, it can be used without interference even with the wide body.

Attached pins and rings PR-2833

CAUTION • Combine the black pin with black ring and silver pin with gray ring.

● 3/4"sq. IMPACT COMBINATION SOCKET FOR WHEEL NUT

3/4" sq.

IMPACT COMBINATION SOCKET FOR WHEEL NUT mm

No.	S1 Hexagonal	S2 Square	D1	D2	H	L	ℓ	▽g	1
ABP6-3217TP	32	17	46.5	50	12	76	51	780	2
-3517TP	35	17	50	50	13	78	53	840	2
-3820TP	38	20	55	50	14	75	50	850	2
-4119TP	41	19	58	50	14	80	55	900	2
-4120TP	41	20	58	50	14	80	55	900	2
-4121TP	41	21	58	50	14	80	55	900	2

- A single, labor-saving wrench can be used to tighten or loosen both the outer and inner nuts.
- Is very effective for vehicles that have limited wheel and nut clearance due to the thin wall design.
- All the tools necessary for working on medium size (2t class) to large size (4t class) vehicles are provided.

CAUTION • Match the black pin with the black ring, and the silver pin with the grey ring.

Attached pins and rings PR-4045

Pin: Silver
 Ring: Grey

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

3 Removing/Installing Wheel

IMPACT INNER SOCKET

No.	S	D ₁	D ₂	H	L	ℓ	▼g	📦	mm
ABP6-17SQP	17	40	38	18.5	56.5	31.5	370	5	
-19SQP	19	40	38	18.5	56.5	31.5	322	5	
-20SQP	20	40	38	20.5	58.5	33.5	346	5	
-21SQP	21	40	38	22.5	60.5	35.5	350	5	



Attached pins and rings

PR-2833



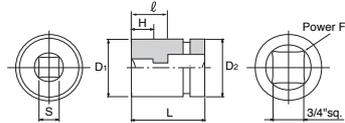
Pin: Black
Ring: Black



• Match the black pin with the black ring, and the silver pin with the grey ring.

● 3/4"sq. IMPACT INNER SOCKET

3/4" sq.



IMPACT SOCKET (DEEP)

No.	S	D ₁	D ₂	H	L	ℓ	▼g	📦
BP6L-33TP	33	48	38	28	100	75	693	5

• Deep thin wall type that supports the new ISO wheel.

Attached pins and rings

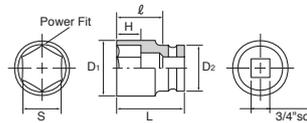
PR-2833



• Combine the black pin with black ring and silver pin with gray ring.

● 3/4"sq. IMPACT SOCKET (DEEP) PAT.

3/4" sq.



IMPACT SOCKET FOR WHEEL NUT

No.	S	D ₁	D ₂	H	L	ℓ	▼g	📦	mm
ABP8-32TP	32	46.5	50	25	80	50	680	2	
-35TP	35	50	50	25	80	50	710	2	
-38TP	38	55	50	30	80	50	800	2	
-41TP	41	58	50	35	80	50	840	2	



- A tool with the thin wall design that can be used for car types with lesser clearance between the wheel hub and wheel nut.
- The outer diameter has been reduced by 94% in comparison with the previous products.

Usage

- Tightening and loosening wheel nuts (outer nut) for middle size vehicles (2 t~4 t) and large vehicles (4 t and above, such as buses).



• Match the black pin with the black ring, and the silver pin with the grey ring.

Attached pins and rings

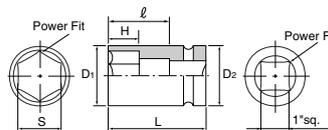
PR-4045



Pin: Silver
Ring: Grey

● 1"sq. IMPACT SOCKET FOR WHEEL NUT (THIN)

1" sq.



WHEEL NUT COMBINATION SOCKET FOR IMPACT USE

No.	S ₁ Hexagonal	S ₂ Square	D ₁	D ₂	H	L	ℓ	▼g	📦	mm
ABP8-3517TP	35	17	50	50	13	83	53	830	2	
-3820TP	38	20	55	50	14	80	50	840	2	
-4119TP	41	19	58	50	14	85	55	890	2	
-4120TP	41	20	58	50	14	87	57	900	2	
-4121TP	41	21	58	50	14	87	57	900	2	



- It is a labor-saving tool for the loosening/tightening work of both outer and inner nuts with just 1 wrench.
- It is a thin wall type that's also effective for vehicle models that have less clearance for wheel hubs and wheel nuts.



• Match the black pin with the black ring, and the silver pin with the grey ring.

Attached pins and rings

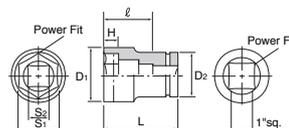
PR-4045



Pin: Silver
Ring: Grey

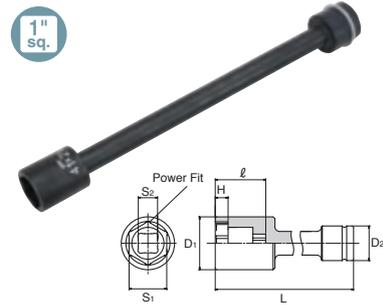
● 1"sq. WHEEL NUT COMBINATION SOCKET FOR IMPACT USE (THIN)

1" sq.



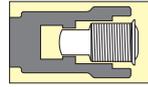
3 Removing/Installing Wheel

● 1"sq. IMPACT LONG COMBINATION SOCKET FOR WHEEL NUT PAT.

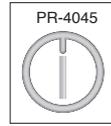


IMPACT LONG COMBINATION SOCKET FOR WHEEL NUT

No.	S ₁ Hex.	S ₂ Square	D ₁	D ₂	H	ℓ	L	▼kg	📦
ABP8ZL-4121TP	41	21	58	50	14	55	450	2.8	1



Attached pins and rings



- It is a labor-saving tool for the loosening/tightening work of both outer and inner nuts with just 1 wrench.
- It is a thin wall type that's also effective for vehicle models that have less clearance for wheel hubs and wheel nuts.
- Looseness is eliminated by integrating the combination socket and extension bar, allowing the torque management with higher accuracy even when torque wrench is used.
- With the long design of 450mm total length, it can be used without interference even with the wide body.

CAUTION • Combine the black pin with black ring and silver pin with gray ring.

● 1"sq. IMPACT SOCKET (DEEP) PAT.

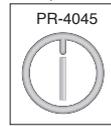


IMPACT SOCKET (DEEP)

No.	S	D ₁	D ₂	H	L	ℓ	▼g	📦
BP8L-33TP	33	48	49.5	25	100	70	832	2

- Deep thin wall type that supports the new ISO wheel.

Attached pins and rings



- CAUTION**
- It may not be usable for some models.
 - Combine the black pin with black ring and silver pin with gray ring.

● CROSS RIM WRENCH



➡ P.134

● 1/2"sq. WHEEL NUT TORQUE WRENCH · SET D.PAT.



WHEEL NUT TORQUE WRENCH · SET

1/2"sq. Wheel Nut Torque Wrench · Set			
No. TWCMPA119	▼kg 1.3	📦 1	
1/2"sq. Wheel Nut Torque Wrench	85N-m		WCMPA085
1/2"sq. Wheel Nut Socket	19mm		B38Z-19H
1/2"sq. Wheel Nut Torque Wrench · Set			
No. TWCMPA221	▼kg 1.3	📦 1	
1/2"sq. Wheel Nut Torque Wrench	103N-m		WCMPA103
1/2"sq. Wheel Nut Socket	21mm		B38Z-21H
1/2"sq. Wheel Nut Torque Wrench · Set			
No. TWCMPA319	▼kg 1.3	📦 1	
1/2"sq. Wheel Nut Torque Wrench	108N-m		WCMPA108
1/2"sq. Wheel Nut Socket	19mm		B38Z-19H
1/2"sq. Wheel Nut Torque Wrench			
No.	Set Torque	▼kg	📦
WCMPA085	85N-m	1.1	1
WCMPA103	103N-m	1.1	1
WCMPA108	108N-m	1.1	1

Usage

- Unipotent torque wrench dedicated for automotive wheel nut.
- Applicable only in clockwise tightening direction. (It does not apply to the reverse screw.)

Application

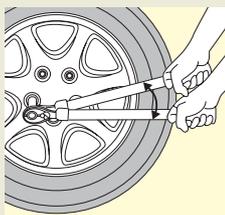
- WCMPA085: 85N-m specified torque (Suzuki, Nissan light vehicles)
- WCMPA103: 103N-m standard torque (Toyota, Daihatsu)
- WCMPA108: 108N-m standard torque (Nissan, Honda)

Features

- High-precision torque management is made possible with the design dedicated for each manufacturer specified torque.
- Total length is optimally set at 420mm to keep hands away from tires.
- Set torque can be determined by the neck cover color.
- Work time is reduced by the adoption of the ratchet head (36-gear).
- * Repair kit (BR4E-K) is configured.
- * Recommend to calibrate and adjust when using a repair kit.

CAUTION • Please use it upon confirming the manufacturer specified torque.

Details of Wheel Nut Socket
➡ P.255



Please check the tightening torque within the range of the arrow.

WHEEL NUT TORQUE WRENCH SET

No. TWCMPA221	kg 1.3	1
1/2"sq. Torque wrench for wheel nut		WCMPA103
1/2"sq. Exclusive socket for wheel nut 21mm		B38Z-21H

Usage

- This tool is a pre-set type torque wrench that is used to tighten vehicle wheel nuts 17, 19, and 21mm at a specified torque of 103N·m (10.5kgf·m). (The 17, 19mm sockets are sold separately.)
- Applicable for clockwise rotation tightening. (Is not applicable for anti-clockwise rotation tightening)

Characteristics

- Reliable operation is possible through torque management. (For confirmation during inspection on completion)
- Work hours have been reduced with the employment of the ratchet head. (36 plate gears) The union structure allows for the firm sustenance of the socket. Socket replacement can be carried out easily.
- The full optimum length is designed so that the tire and the mechanic's hands do not interfere. (Full length has been set at 420mm, 55mm longer than in previous models.) The load on the handle has also been reduced during operation.
- The head angle changes with a light shock to the hands when the tightening torque is reached, enabling recognition of completion.
- The rubber cap attached to the base prevents entry of dirt and dust.
- Provided with a soft case that makes storage easy.

*Replaceable parts are available for the ratchet section. Check with your dealer for details.

Compatibility Table (Domestic Vehicles)

Nut size (mm)	Manufacturer	Examples of Compatible Cars
19 <small>*19mm socket is required (sold separately)</small>	Honda, Subaru	All passenger vehicles (except recreational and light vehicles)
	Isuzu	All passenger vehicles
21	Toyota, Nissan	All passenger vehicles (except recreational and light vehicles)
	Mitsubishi, Daihatsu	All passenger vehicles (except recreational and light vehicles)
	Mazda	All passenger vehicles (except recreational and light vehicles)

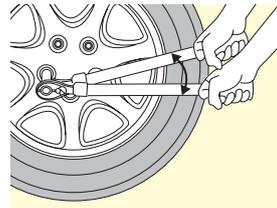
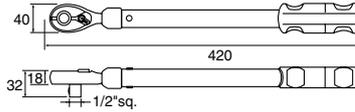
- * The torque value for light vehicles with 17mm nuts differs from the one for regular vehicles. For this reason, the torque wrench above cannot be used. However, the torque wrench can be used on some foreign cars made outside of Japan.
- * Compatible with wheel tightening torque value of 103N·m. (Not applicable to certain vehicles and wheels.)
- * The wrench cannot be used for trucks and recreational vehicles, as the torque value required is too high.
- * Check the torque value before using wrench on non-standard wheels.

1/2"sq. WHEEL NUT TORQUE WRENCH SET

D.PAT.



1/2" sq.



Confirm the tightening torque with the wrench positioned between the arrows, as shown in the diagram.

Inspecting Tightening Torque **4**



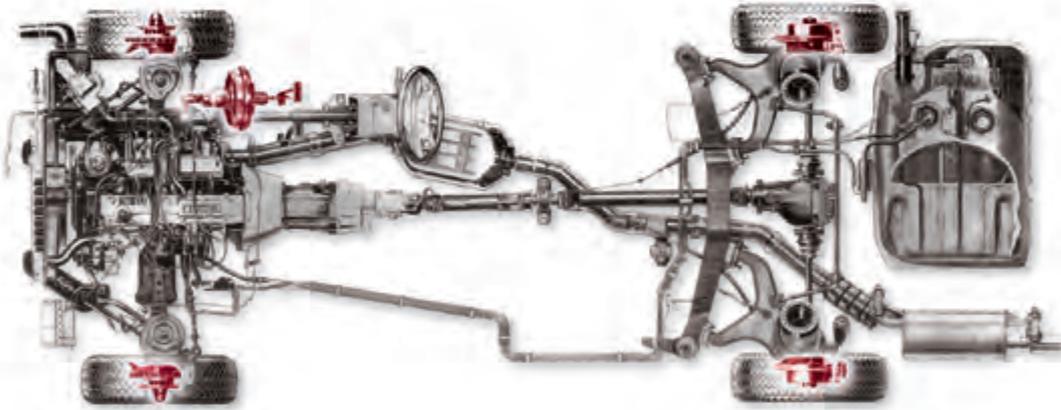
CAUTION

1. This torque wrench is exclusively designed for wheel nuts. Do not use this tool to tighten or loosen other bolts/nuts.
2. The wheel tightening torque is set for domestically manufactured vehicle standard wheels. Check the torque settings for special wheels before use.
3. This product is a measurement tool. Take extreme care when handling. Be sure to avoid dropping, throwing, or hitting this product.
4. Hold the grip at the line as the center and apply even firm pressure.
5. Applying pressure at other places (pipe part etc.) than the grip will give inaccurate torque readings.
6. Use this product multiple times to avoid misleading when the tool has been stored for a long time.
7. Do not use during rain, high humidity levels, and in conditions where the tool is exposed to water.
8. Do not disassemble this product. The torque settings can become faulty.
9. Immediately stop use and request for an inspection/disassembly and adjustment when this product is dropped, submerged in water, emits abnormal sound, or operates faultily.
10. Do not apply force after operation.

5. AUTOMOTIVE SPECIAL TOOLS

Dismantling the Mechanism (6)

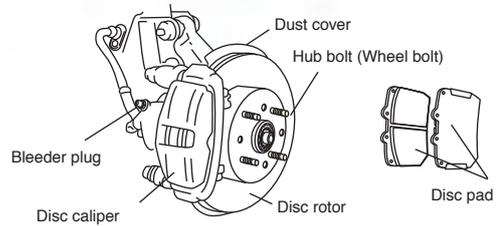
Brake System Mechanism



MECHANISM 1

How the disc brake works

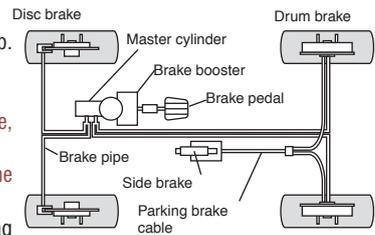
The disc brake is a device that works by pressing a brake pad against the disc rotor that rotates with the wheel. Compared to the drum brake, the disc brake is far more effective and stable, allowing for a larger braking force and is used on the front wheels of passenger vehicles and light trucks.



MECHANISM 2

Brake system

Braking is one of the basic functions being necessary for vehicles in order to drive, turn and stop. Brakes are an important device necessary for safe driving. The system consists of 2 main operations used by the driver - being the "Brake Pedal" and the "Parking Brake Lever". The master cylinder that converts the pressure directed towards the brake pedal to fluid pressure, further directing the brake fluid to the braking device. The "Brake Pipe" and "Brake Hose" that direct the brake fluid pressure to the braking device from the master cylinder. The "disc Brake" and "Drum Brake" that transfer the braking pressure on the brake pedal to the rotating wheel. Respective categories are raised above.



Disc brake tools

<p>Offset wrench for bleeder plugs No.ABX7-08-10</p>	<p>disc cylinder polisher No.ACPD-54-64</p>	<p>Seal pick tool No.ABO-100</p>	<p>Disc parking tool (parking attached for discs) No.ABX101~104</p>
		<p>Brake piston re-setter No.ABX105</p>	<p>Offset wrench for brake pipes No.MZ1-10-10x14-10x12-11x12 MZ10-10x12-14x17 MZ11-10-12</p>
		<p>Socket for brake pipes No.BZ25-10H</p>	
<p>Disc brake piston tool No.ABX10</p>	<p>Disc brake piston tool No.AB-10</p>	<p>Disc brake piston tool (wide plate) No.ACB-12</p>	<p>Disc brake piston tool (for single pistons) No.AB-11</p>

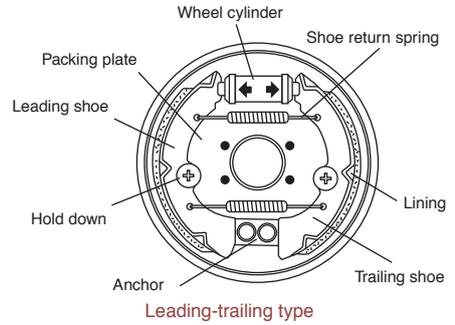
Claw-foot offset wrench for brake pipes
No.MZ25-10H

Rotating offset wrench for brake pipes
No.MZF-10

MECHANISM 3

How the drum brake works

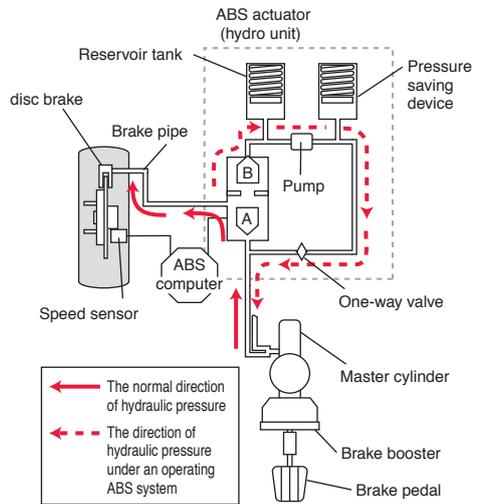
The brake drum is a device that works by pressing a brake shoe against the inner side of a cylindrical drum that rotates with the wheel axle. There are the leading-trailing type, 2 trailing type, and 2 leading type and other different types of drum brakes depending on the operating form of the brake shoe. The leading-trailing type is effective and stable for driving and reversing. However, due to the inferior cooling qualities, drying qualities when wet, and brake fade phenomenon through continuous use, the drum brake is often used for the rear wheel brake only.



MECHANISM 4

How the ABS (Anti-lock Brake System) system works

ABS is an electronic brake control system that increases braking hydraulic pressure in order to prevent the locking of the tires, providing better driving stability and handling. ABS works by having speed sensors on each wheel detect a slipping condition. The normally open valve A within the ABS actuator (as in the diagram on the right) is closed and valve B open, releasing brake fluid into the reservoir tank. Furthermore, the pump feeds back the brake fluid to the master cylinder for depressurization, mechanically creating a brake-pumping motion. As oil normally does not flow to the ABS actuator, air is not caught within the system when replacing brake fluid.



Drum brake tools

<p>Cylinder polisher for small type vehicles No.ACP-16A~32A No.ACP-16F~32F</p>	<p>C washer tool No.ABX-31</p>	<p>Shoe hold spring tool No.ABX-33-34</p>	<p>Brake drum screw driver No.AB-5</p>
<p>Parking shoe lever tool No.ABX-32</p>	<p>Tension spring tool No.AB-7, ABX-35</p>	<p>Brake shoe adjustment tool No.ABX301~305</p>	

Large vehicle brake tool

<p>Duo servo type spring tool No.AB-9-LAB-9</p>
<p>Brake spring pliers/claw No.ASP-550</p>
<p>Cylinder polisher for large type vehicles No.ACP-41~59F</p> <p>Drill (air or electric) Low speed revolution</p>

BRAKE

Disassembling/Assembling Brake

Overall disassembly and attachment of the brake tool

● DRUM BRAKE SERVICE TOOL SET (12 ITEM)



ATBX12

DRUM BRAKE SERVICE TOOL SET (12 item)

No. ATBX12	kg1.1	☞ 1
Tension spring tool		AB-7
C washer tool		ABX-31
Parking shoe lever tool		ABX-32
Shoe hold spring tool		ABX-33, 34
Tension spring tool		ABX-35
Brake shoe adjustment tool		ABX301, 302, 303
High grade L type standard hex shaft wrench		HLD100-6
Brake drum removal tool (hex hole bolt M8 x 2 pieces)		ATBX14-1
Tray (335 x 230 x 45)		



Usage

- A tool set that is exclusively designed for disassembling, attaching, and adjusting the brake drum on vehicles.

Application

- The drum brake device that is used on vehicles ranging from light weight class vehicles to small trucks (up to 2 tons)

- The tool set fits within the tool station (P.354-355) alongside the ATBX6.

● DISC BRAKE SERVICE TOOL SET (6 ITEM)



ATBX6

DISC BRAKE SERVICE TOOL SET (6 item)

No. ATBX6	kg1.6	☞ 1
Disk brake piston tool		ABX10
Disk parking tool		ABX102, 103, 104
Disk parking tool handle		ABX101
Seal pick tool		ABO-100
Tray (335 x 230 x 45)		



Usage

- A tool set that is exclusively designed for disassembling, attaching, and adjusting the disk brake on vehicles.

Application

- The disk brake device that is used on vehicles ranging from light weight class vehicles to small trucks (up to 2 tons)

- The tool set fits within the tool station (P.354-355) alongside the ATBX12.

1 Removing Wheel
① Removing Wheel cap and Wheel Nuts

● WHEEL CAP WRENCH



➡ P.254

● CENTER CAP WRENCH FOR ALUMINUM WHEEL



➡ P.254

● IMPACT WRENCH



➡ P.200

● WHEEL NUT SOCKET FOR IMPACT WRENCH



➡ P.256

● CROSS RIM WRENCH



➡ P.134

② Removing hub cap.



● HUB CAP PLIERS

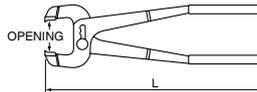


HUB CAP PLIERS

No.	Max. Opening	L	▼g	☞
HP-350S	95	350	750	10

Purpose

- Removing Hub Cap.
- Can operate by one touch without damaging hub caps.
- Easily taking off caps.
- Free size for wide application.



● HUB CAP PLIERS

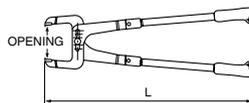


HUB CAP PLIERS

No.	Max. Opening	L	▼g	☞
HP-45130	130	490	1350	1

Purpose

- Removing Hub Cap.
- For taking off hub grease cap easily without damaging it.
- Adjustable jaw opening, for small cars to middle size trucks.

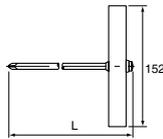


SCREWDRIVER FOR BRAKE DRUM SCREW

No.	Tip	L	▼g	☒
AB-5	Cross No.3	270	260	1

- For removing/installing brake drum bis.
- T shape handle with non-slip handle.
- Also used for removing/installing door hinge bolts.

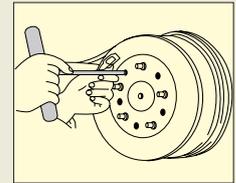
- WARNING**
- DO NOT USE THIS TOOL WITH ELECTRIFIED OBJECTS.
 - USE SCREWDRIVER APPROPRIATE TO SIZE OF THE SCREW.
 - DO NOT USE SCREWDRIVER FOR ANY OTHER PURPOSE.



SCREWDRIVER FOR BRAKE DRUM SCREW



Disassembling/Installing drum brake **2**
① Disassembling/Installing shoe



TENSION SPRING TOOL

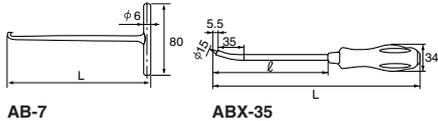
No.	L	ℓ	▼g	☒
AB-7	153	—	90	1
ABX-35	265	145	130	10

Purpose

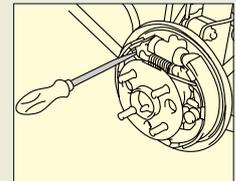
- Disassembling/installing tension spring for drum brake.

- AB-7**
- Tip is designed to prevent spring coming off, and T-shape handle ensures safe operation.

- ABX-35**
- Round shaft makes smooth spring movement. The easy-to-hold grip makes installation of spring easier.



TENSION SPRING TOOL



SHOE-HOLD SPRING CUP TOOL

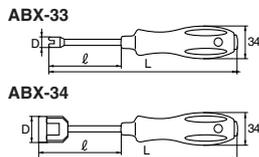
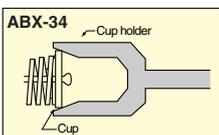
No.	D	L	ℓ	▼g	☒
ABX-33	10	195	75	100	10
-34	24	205	85	130	10

Purpose

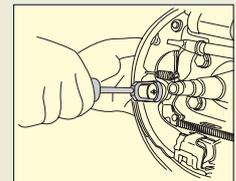
- Disassembling/installing shoe hold spring for drum brake.

- ABX-33**
- Easy-to-hold grip suitable for pressing and turning of screw/pin.

- ABX-34**
- Tapered cap holder suitable for good holding enables speed operation.



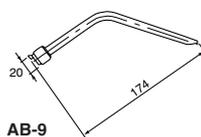
SHOE-HOLD SPRING CUP TOOL



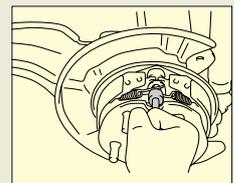
DUO-SERVO TYPE BRAKE SPRING TOOL

No.	Application	▼g	☒
AB-9	Medium sized cars (24tons) (2~4t) Hi Ace class	160	5

- Cover almost all models for dismounting/mounting brake shoe return springs using with Brake Spring Plier (ASP-550).



DUO-SERVO TYPE BRAKE SPRING TOOL



PARKING SHOE LEVER TOOL

No.	L	▼g	☒
ABX-32	177	170	10

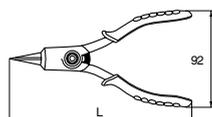
With one motion, parking cable can be installed/removed.

Purpose

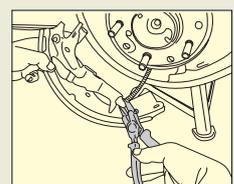
- Removing/installing parking cable.

Features

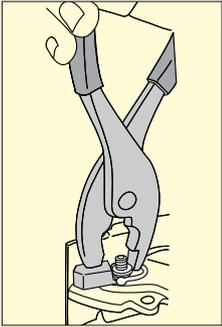
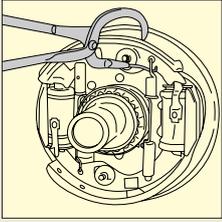
- The claw, designed exclusively for this tool, ensures good holding of the parking cable.



PARKING SHOE LEVER TOOL



2 Disassembling/Installing drum brake



② Cleaning Brake Shoe Bracket of Large Vehicles

● BRAKE SPRING PLIERS & CLAW



BRAKE SPRING PLIERS [Claw (with a pin)]

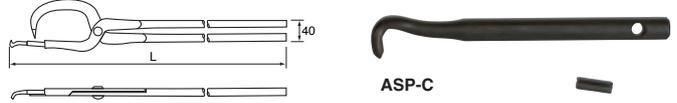
No.	L	▼g	☞
ASP-550	550	1,200	1

Claw (with a pin)

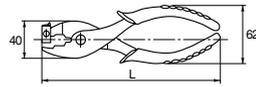
No.	L	▼g	☞
ASP-C	101	35	1

Purpose

- Special tool for removing / setting of large sized vehicle (4-10 tons).
- *Do not use this claw with BSP-520 (conventional type).



● C-WASHER TOOL



C-WASHER TOOL

No.	L	▼g	☞
ABX-31	203	230	10

Good work efficiency with special claws.

Purpose

- Removing/installing C-washer.

Features

- For quick work, use wedge side of claw to open C-washer flat side to push it out.

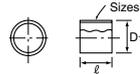
[Removing C-washer]

- Set wedge side of claw to inside.
- Open C-washer with blade part.
- Turn claw and set flat side to inside for removal.

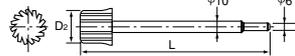
● BRACKET SANDER SET



Supplement paper



Rubber wheel



BRACKET SANDER SET

No.	Contents							Car Models	▼g	☞
	Paper			Rubber Wheel						
	D ₁	ℓ	No.	Pcs.	D ₂	L	Qty.			
APS306	30	25	#60	5	29	177	1	Hino over 8t	160	5
APS326	32	30	#60	5	31	177	1	UD over 8t	160	5
APS356	35	35	#60	5	34	177	1	Fuso, Isuzu over 8t	160	5

SPARE PAPER SET FOR BRACKET SANDER

No.	Contents	Quantity	▼g	☞
APS3010	#60 Paper for φ 30	10pcs.	100	5
APS3210	#60 Paper for φ 32	10pcs.	100	5
APS3510	#60 Paper for φ 35	10pcs.	100	5

Purpose

- Cleaning brake shoe bracket of large vehicles.

Rubber wheel for bracket sander

No.	D ₂	L	▼g	☞
APS-30G	29	177	110	10
APS-32G	31	177	110	10
APS-35G	34	177	110	10

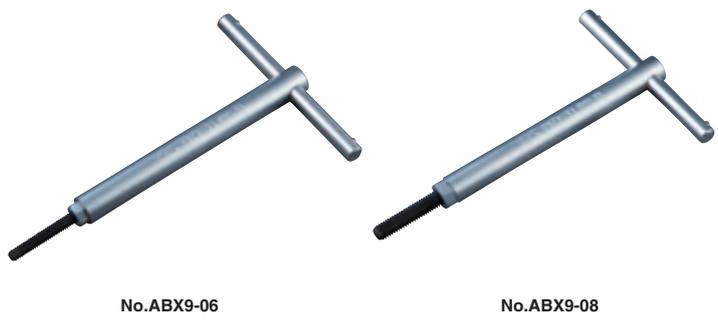
T-SHAPED DRUM REMOVER

No.	a	L	ℓ	D ₁	D ₂	▽g	☒
ABX9-06	M6	160	100	14	9	200	
ABX9-08	M8	160	100	14	9	200	

- Application**
- Removal of brake drum mainly on mini-vehicles
- Features**
- Since the handle is operated with a sliding mechanism, the brake drum can be smoothly removed without interference of handles each other if two handles are used.
 - Since the end screw is designed to be replaceable, only the end screw can be replaced if the screw is worn off.

Part for replenishment

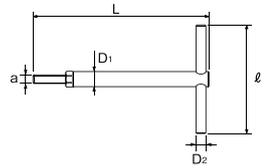
No.	Name	☒
ABX9-06A	M6 bit	
ABX9-08A	Ma bit	



Since the handle is operated with a sliding mechanism, no interference of handles occurs if two handles are used.



When two handles are used, the brake drum can be removed in a stable manner.



●HEX. WRENCH

●PLIERS

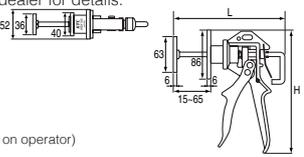
DISK-BRAKE SPREADER

No.	L	H	▽g	☒
ABX105	145~195	214	750	1

- Usage**
- An exclusive tool designed for disk brake pad replacement, and also pushing out brake caliper pistons (single piston type) during overhauls.
- Characteristics**
- The brake piston is returned easily by just operating the lever.
 - Various positions are possible by turning the handle.
 - One hand operation in removing from the caliper.
 - Parallel movement with no piston damage, direct, straight pushing is possible.
- Application**
- Is applicable for single piston types from light weight vehicles to small trucks (2 ton class)
 - Brake (Cannot be used on parking brake body type brake calipers)
- *Replacement parts are available. Check with your dealer for details.

Comparisons with previous KTC products.

Compared to the previous handle type, piston retrieval is completed in 12 sec* with just holding the grip.
A 60% reduction is operation timing compared to previous products.



●DISK-BRAKE SPREADER

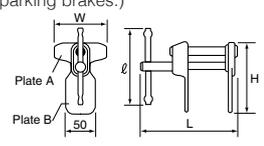


DISC-BRAKE SPREADER

No.	Plate Opening	ℓ	L	W	H	kg	☒
ABX10	10~75	125	155	86	117	1	5

Use of either plate A or B enables application to various car models.

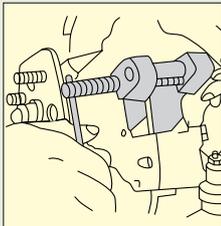
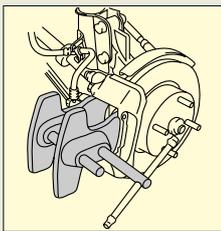
- Purpose**
- Pushing in disc brake piston (single piston/2-piston types).
- Features**
- Applicable to single piston caliper, parallel piston calipers, and opposed piston calipers of mini cars to small trucks (2t).
(Cannot be used on brake calipers combined with parking brakes.)



●DISK-BRAKE SPREADER D.PAT.



3 Disassembling/
Installing disc pad
③ Replacing Piston



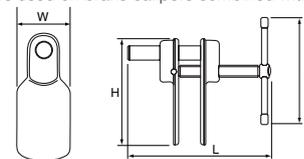
●DISK-BRAKE SPREADER



DISC-BRAKE SPREADER

No.	Plate Opening	ℓ	L	W	H	▽g	📦
AB-10	10~65	115	155	50	115	780	1

- Purpose** • Pushing in disc brake piston (2-piston type).
- Features** • The claw for pushing in the piston makes parallel movement along guide. Operation possible by turn of the handle.
• Designed to prevent claw from widening the caliper or mounting when putting it in.
- Application** • Applicable for parallel piston caliper and opposed piston caliper of light cars to small trucks (2t). (Cannot be used on brake calipers combined with parking brakes.)



●DISK-BRAKE SPREADER
(WIDE PLATE) D.PAT.



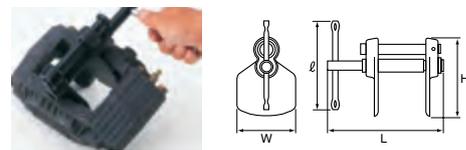
DISC-BRAKE SPREADER

No.	Plate Opening	Handle	Thickness	L	W	H	▽g	📦
ACB-12	10~87	150	5	184	90	120	1400	5

- Application**
- From mini cars to small trucks.
 - Cannot be used on brake calipers combined with parking brakes.
 - Cannot be used on opposite 2 pistons brake caliper on the car.
 - Can be used if it is dismantled from the car.

Special Features

- For use on opposite 4 pistons, parallel pistons & single pistons.
- Superb durability.
- Smooth work by handle.



●DISC-BRAKE SPREADER
SET WIDE TYPE



DISC-BRAKE SPREADER SET WIDE TYPE

No. ATCB5	▽kg 3.0	📦 1
Disc-Brake Spreader (Wide Plate)	ACB-12	
Plate A Set	ATCB2A	
Plate B Set	ATCB2B	

Usage

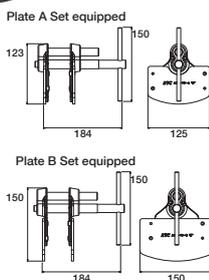
- Disc caliper piston return that's used in disc pad replacement work.

Application

- Supports Opposing 4, 6-Piston and Parallel 2-Piston Disc Calipers.
- Plate A Set: Opposing 4-Piston and Parallel 2-Piston Disc Calipers, caliper upper opening size of 125mm or more
- Plate B Set: Opposing 6-Piston Disc Caliper, caliper upper opening size of 150mm or more

Features

- Plate can be replaced to fit the used size based on Disc Brake Piston Tool (No.AC-12).



	Caliper Type	Car Type	Manufacturer	
Plate A 125mm	Parallel 2-Piston Disc Caliper	Small truck	Isuzu	Elf
			Passenger car	Toyota
		Passenger car	Nissan	Cedric, Gloria, Elgrand, Liberty, Serena
			Mazda	MPV, Bongo
Plate B 150mm	Opposing 4-Piston Disc Caliper	Passenger car	Lexus	LS, GS
			Porsche	928
	Opposing 6-Piston Disc Caliper	Lexus	IS F	

●WIDE PLATE for DISC-BRAKE SPREADER
(ACB-12)



WIDE PLATE for DISC-BRAKE SPREADER (ACB-12)

No. ATCB2A	▽g 670	📦 1
Dedicated Plate	125 x 77 x 11.3	
		x2

- It can be equipped to your disc-brake spreader (wide plate: No.AC-12).

⚠ CAUTION • Plate set is dedicated for the disc-brake spreader (wide plate: No.AC-12).

●WIDE PLATE for DISC-BRAKE SPREADER
(ACB-12)



WIDE PLATE for DISC-BRAKE SPREADER (ACB-12)

No. ATCB2B	▽g 920	📦 1
Dedicated Plate	150 x 87 x 11.3	
		x2

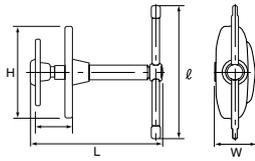
- It can be equipped to your disc-brake spreader (wide plate: No.AC-12).

⚠ CAUTION • Plate set is dedicated for the disc-brake spreader (wide plate: No.AC-12).

DISC-BRAKE SPREADER

No.	Plate Opening	ℓ	L	W	H	▽g	📦
AB-11	12~77	125	122	36	86	345	1

- Purpose** • Pushing in disc brake piston (single piston type).
- Features** • With this tool, the plate can make full contact for either high arm or low arm.
• Ball-bearing center screw makes smooth movement.
- Application** • Applicable to single piston caliper of light cars to small vehicle (Max.:2t) (Cannot be used on brake calipers combined with parking brakes.)

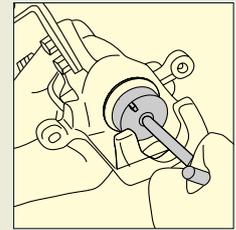


DISC-BRAKE SPREADER (SINGLE PISTON TYPE) D.PAT.



Disassembling/Installing disc pad

3



DISC PARKING TOOL SET (3pcs.)

Disc Parking Tool Set

No.	▽g	📦
ATB13	200	10

Rotor (A-B) (C-D) (E-F) ABX102,103,104



Note: AB101(Handle) is not included in ATB13.

- Features:**
- With three types of rotor, applicable to six types of brake piston.
 - Small outer diameter allows installation through notch portion of the caliper.
 - Precision-cast tool fits piston shape. Easy selection of applicable rotor and reduced coming off of rotor nail.

DISC PARKING TOOL SET (3pcs. Set)



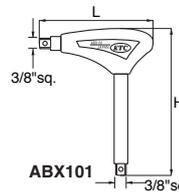
ABX101



ABX102

ABX103

ABX104



ABX101

Rotor (A&B)

No.	L	W ₁	W ₂	▽g	📦
ABX102	34	11	16	70	10

Rotor (C&D)

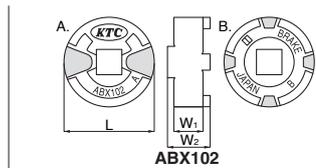
No.	L	W ₁	W ₂	▽g	📦
ABX103	30	11	16	60	10

Rotor (E&F)

No.	L	W ₁	W ₂	▽g	📦
ABX104	34	11	16	70	10

3/8" sq. handle

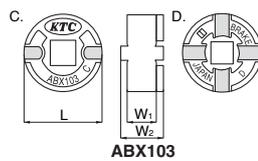
No.	L	W ₁	W ₂	▽g	📦
ABX101	105	135	28	250	10



ABX102

Applicable Makers

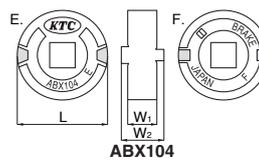
A	B
Toyota, Mitsubishi, Mazda, Daihatsu, Nissan (Akebono Brake)	Nissan



ABX103

Applicable Makers

C	D
Toyota (Aishin), Suzuki	Honda (Nissan), Suzuki



ABX104

Applicable Makers

E	F
Volkswagen, Audi	Subaru

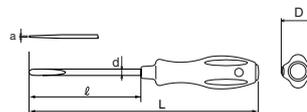
SEAL PICK TOOL

No.	a	D	d	L	ℓ	▽g	📦
ABO-100	1	27	5	187	100	55	1

The round tip prevents scratching.

- Purpose**
- Peeling off seal from disc brake.
 - For removing O ring without damaging seals and boots.
 - Ergonomic grip and long shank for removing seals and boots easily.

SEAL PICK TOOL



Replacing inner parts

4

① Seal Picking

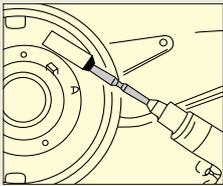


4 Replacing inner parts

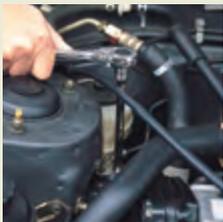
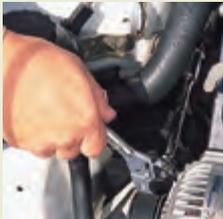
② Cleaning of Cylinder



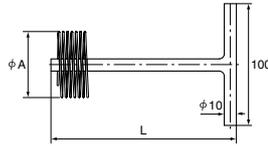
② Cleaning of Cylinder



③ Disassembling of the Pipe



● DISC CYLINDER POLISHER



DISC CYLINDER POLISHER

No.	L	Cylinder Size (φ A)	▼g	☒
ACPD-54	150	48~53	180	1
-64	150	54~60	180	1

- For easy cleaning in disc brake cylinders.
- For cleaning inside the cylinders, rust in the seal groove, dust, etc.
- 2 sizes according to inner diameters of cylinders.
- With hand brush with wear resistance and elasticity.

● BRAKE CYLINDER POLISHER SET (6pcs.)



BRAKE CYLINDER POLISHER SET (6pcs.)

No.	ACP6	▼g	400	☒	5
For Aluminum Alloy Cylinder		φ 16 · φ 24 · φ 32			
Molded Cylinder		φ 16 · φ 24 · φ 32			

- For easy cleaning in disc brake cylinders.
- For cleaning inside the cylinders, rust in the groove, dust, etc.
- 2 sizes according to inner diameters of cylinders.
- With hard brush with wear resistance and elasticity.

CAUTION • BE CAREFUL OF DUST OR NYLON FIBER AS IT MAY CUT AND SCATTER.
• WEAR EYE GLASSES WHEN USING THE TOOL.

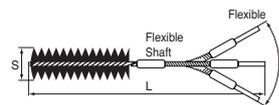
● BRAKE CYLINDER POLISHER



ACP-24A



ACP-24F



BRAKE CYLINDER POLISHER

No.	S	L	Type	▼g	☒
ACP-16A	φ 16	172	Aluminum For cylinder	30	10
-24A	φ 24	175		35	10
-32A	φ 32	175		40	10
ACP-16F	φ 16	172	Mould For cylinder	30	10
-24F	φ 24	175		35	10
-32F	φ 32	175		40	10

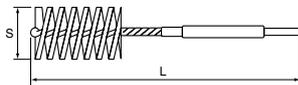
- For cleaning brake wheel & master cylinders.
- Flexible shaft for easy operation.

CAUTION • BE CAREFUL OF DUST OR NYLON FIBER AS IT MAY CUT AND SCATTER.
• WEAR EYE GLASSES WHEN USING THE TOOL.

● BRAKE CYLINDER POLISHER FOR LARGE SIZED VEHICLES



ACP-41F



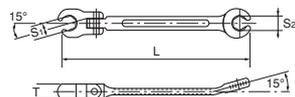
BRAKE CYLINDER POLISHER

No.	S	L	Type	▼g	☒
ACP-41F	φ 41	220	Mould For cylinder	110	5
-51F	φ 51	230		160	5
-59F	φ 59	250		200	5

- The decisive factor is in the nylon threads which contain polishing agent.
- One polisher can be used for over 3000 cylinders.
- Easy to use. Finish in around 15~30 seconds.

CAUTION • SCATTERING OF THE NYLON THREADS AND PARTICLES CAN OCCUR, IF BREAKAGE OCCURS.
• ALWAYS WEAR SAFETY GOGGLES WHEN USING.

● FLEX FLARE NUT WRENCH



FLEX FLARE NUT WRENCH

No.	S1xS2	T	L	▼g	☒
MZF-10	10 x 10	10	143	80	5

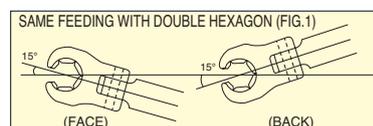
POWERFIT

Purpose

- Fastening/loosening union nuts (flare nuts) on brake and clutch systems of many types of cars from mini-cars to small trucks.

Special Feature

- Flexible head for wider application, particularly narrow space near master cylinders.
- 15° angled Hexagon head for getting same feeding with double hexagon by continuous reversing operation.(Fig.-1)



BRAKE PIPE TOOL SET (2pcs.)

No. AB252	▼g 105	📦 10
Socket for Brake Pipe	BZ25-10H	
Claw foot for Brake Pipe	MZ25-10H	

Purpose

- Fastening/loosening flare nuts (union nuts) of brake and clutch systems of light cars to small trucks (2t).

Features

- Designed to be compact and effective for the flare nut of master cylinder installed in narrow space.

Application

- Applicable to flare nuts (10mm) of brake and clutch systems of all models of Japanese cars (mini cars, compact cars, passenger cars, light trucks and small trucks.)

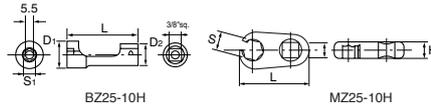
Socket wrench for brake pipe

No.	S ₁	D ₁	D ₂	L	▼g	📦
BZ25-10H	10	20	17	54	60	1

Claw foot offset wrench for brake pipe

No.	S	H	L	▼g	📦
MZ25-10H	10	10	40	45	1

- Claw foot offset wrench for brake pipe has an angle of 15 degrees from the center line. The hexagonal end can be used as 12 point end (30 degrees) by repeated operation with the two sides.



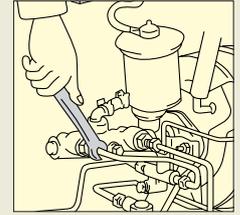
●BRAKE PIPE TOOL SET (2pcs.)



Replacing inner parts

4

③Disassembling of the Pipe

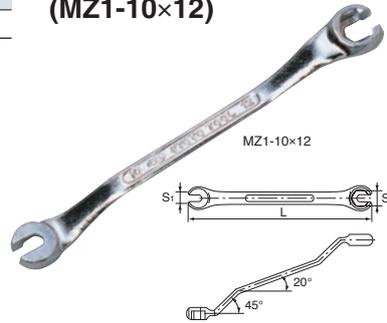


FLARE NUT WRENCH

No.	S ₁ (Hexagonal shaped) × S ₂ (Hexagonal shaped)	L	▼g	📦
MZ1-10 × 12	10 × 12	160	80	5

- Fastening/loosening brake pipe flare nuts of mini, compact & medium sized cars of all car makers.
- 45° angled & straight ends for wider application.

●FLARE NUT WRENCH (MZ1-10×12)

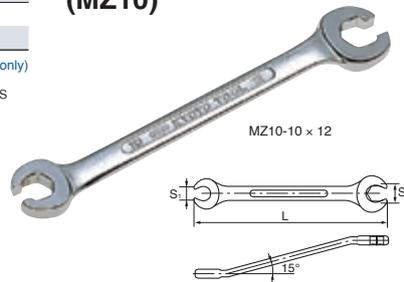


FLARE NUT WRENCH

No.	S ₁ × S ₂	L	▼g	📦
MZ10-10 × 12	10 × 12	145	80	5
-14 × 17	14 × 17	164	100	5

- Special wrench for removing/attaching brake pipe flare nuts and clutch pipe flare nuts (hydraulic type only).
- Contacting by 5 points for turning nuts securely.

●FLARE NUT WRENCH (MZ10)



FLARE NUT WRENCH•SET (2pcs.)

No. MZ112	▼g 135	📦 10
Flare Nut Wrench	MZ11-10, 12	

No.	S ₁ × S ₂ (Hexagonal shaped)	L	▼g	📦
MZ11-10	10 × 10	150	60	10
-12	12 × 12	154	75	10

- Combination of Flare Nut Wrench and Open End Wrench.
- Open end for quick turning and sprit-ring end for final tightening.

●FLARE NUT WRENCH & SET (MZ11 2pcs.)



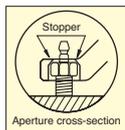
No.	S ₁ × S ₂	D ₁	D ₂	T ₁	T ₂	L	▼g	📦
ABX7-0811	8×11	15.8	18.3	6.3	7.3	127	50	1

Usage · Application

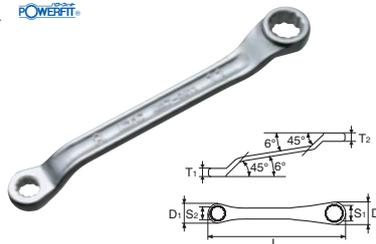
- Loosening/tightening work of 8×11mm bleeder plugs in Toyota Vellfire · Alphard (model year May '08 or later), Estima (model year January '06 or later), etc.

Features

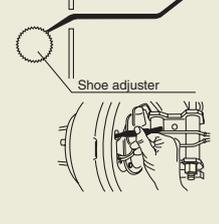
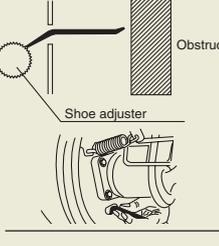
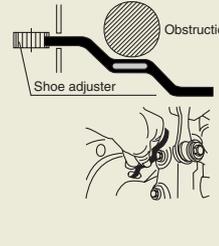
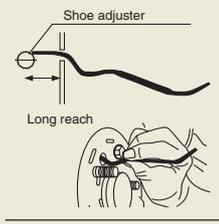
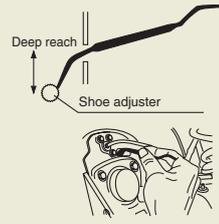
- By combining with the 8×11mm size, 1 unit can support both the front and rear.
- With a stopper provided on the bore top, it can be used while fixed on the hex. part of the bleeder plug.
- Short type that does not interfere with the tire or underbody.



●BLEEDER PLUG WRENCH



5 Adjusting shoe clearance



● BRAKE SHOE ADJUSTER TOOL SET

Standard Type

ABX301

- Designed for vehicles that have shoe adjusters in hard to reach areas.

Round Type

ABX302

- Designed for vehicles with substantial distance to the shoe adjuster.

Offset Type

ABX303

- Designed for vehicles with shock absorbers etc. that obstructs maintenance procedures.

Short Type

ABX304

- Designed for vehicles that have many obstructions.

Long Type

ABX305

- Designed for vehicles that have high tension springs.

BRAKE SHOE ADJUSTER TOOL SET

● For Passenger Cars (3pcs. Set)

No. ATBX33	▼ g 110	📦 10
Brake Shoe Adjuster Tools	ABX301, 302, 303	

● For Medium-Sized Cars (2-3t class) (2pcs. set)

No. ATBX32	▼ g 75	📦 10
Brake Shoe Adjuster Tools	ABX304, 305	

Purpose
 • Specialized tools for adjusting clearance between drum and brake shoe on drum brakes.

Application
 • Mainly for minicars and compact cars (ATBX33)
 • Mainly for trucks 2-4t (ATBX32)

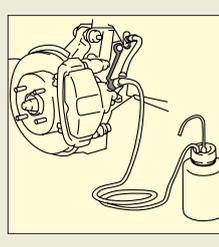
Features
 • Diverse shapes enable shoe adjustment in places previously inaccessible.
 • Each tool has two types of curve and therefore broader application.

No.	Type	Application	L	W ₁	W ₂	▼g	📦
ABX301	Standard Type	For Passenger Cars	140	12	8	40	10
ABX302	Round Type	For Passenger Cars	140	12	8	33	10
ABX303	Offset Type	For Passenger Cars	140	8	12	39	10
ABX304	Short Type	For Medium-Sized Cars	80	12	8	24	10
ABX305	Long Type	For Medium-Sized Cars	150	12	8	51	10

● Applicable Models

Type	Maker	Model
ABX301	Toyota	Ardeo / Starlet / Tercel / Corsa Crown / Hiace / Townace / Lightace
	Nissan	Largo / Serena
	Mitsubishi	Toppo / Minica
	Subaru	Pleo / Vivio
	Daihatsu	301, 302, 304, 305 can be used as the drum is removed for adjusting.
ABX302	Suzuki	301, 302, 304, 305 can be used as the drum is removed for adjusting.
	Toyota	RAV4 / Ipsum / Gaia / Nadia
	Honda	Effective for adjustment form the drum side
ABX303	Daihatsu	301, 302, 304, 305 can be used as the drum is removed for adjusting.
	Suzuki	301, 302, 304, 305 can be used as the drum is removed for adjusting.
	Toyota	Corolla / Marino / Ceres / Sprinter / Vista / Spacio
ABX304	Mazda	Bongo
	Fuso	Fighter / Canter
	Isuzu	Elf (new) / Fargo
	UD	Condor
	Nissan	Bluebird / Primera / Presea / Be-1
ABX305	Mitsubishi	Bravo
	Daihatsu	301, 302, 304, 305 can be used as the drum is removed for adjusting.
	Suzuki	301, 302, 304, 305 can be used as the drum is removed for adjusting.
	Toyota	Dyna / Toyoace
	Hino	Dutro / Ranger

6 Replacing brake oil



● BLEEDER WRENCH SET

BLEEDER WRENCH SET

No. ATBX04	▼ g 320	📦 1
Bleeder Plug Wrench	ABX7-08, 10	
Fluid catch tank (capacity: 1L)	ABX7-T1	
Fluid inhalator (50cc)	ABX7-S1	

● BLEEDER PLUG WRENCH

BLEEDER PLUG WRENCH

No.	S	D	T	L	▼g	📦
ABX7-08	8	16	7.5	141	60	1
-10	10	19	7.5	143	60	1

Replacement parts

No.	Product name	Materials	L	ℓ	D	Hose spec.	Capacity	▼g	📦
ABX7-T1	Fluid catch tank	PE	282	182	100	Soft PVC φ5 × φ8 × 1.1m	1 ℓ	170	1
ABX7-S1	Fluid intake container	PP	240	138	49	Silicone tube φ3 × φ6 × 0.1m	50cc	30	1

Essential Tool for removing air of Brake Oil

Purpose
 • Replacing brake oil and bleeding air in the pipe.

Application
 • Applicable to bleeder for light cars to small trucks (2t class)

Features
 • Convenient combination of a large tank for waste oil and necessary tools for good work efficiency.

Stopper on the top of the opening enables easy operation.

Purpose
 • Fastening/loosening of bleeder plugs.

Features
 • Optimal rising angle enhances operability.

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

Replacing brake oil **6**

SOCKET WRENCH FOR ELBOW CONNECTOR

No.	Sq.	S	D1	D2	H	L	A	B	▼g	☐
ABX6-12	9.5	12	18.5	18	14	50	14	12	60	5
ABX6-14	9.5	14	22	20	17	50	17	14	80	5
ABX6-17	9.5	17	24	22	17	50	17	17	98	5
ABX6-19	9.5	19	26	24	21	50	21	19	110	5
ABX6-22	9.5	22	30	27.5	21	50	21	22	153	5
ABX6-34	12.7	34	45	41	20	44	19.5	27	300	5

Usage

- Tightening tool for one-touch elbow connector that's used for trucks of 4t or more.
- Width across flats 34mm is for the tightening and loosening of connector for check valve that's used for Isuzu trucks.
- It can also be used to tighten and loosen elbow connectors (L-shape piping joint) used for general maintenance machinery.

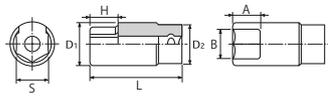


Usage State

SOCKET WRENCH FOR EIBOW CONNECTOR



3/8" sq. 1/2" sq. POWERFIT



BRAKE BLEEDER

BRAKE BLEEDER PAT.P.

Continuous smooth feeding without pausing! Applicable to ABC Models. Quick One-man Operation!

Purpose

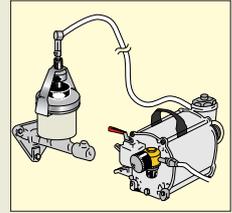
- Replacing brake oil and supplying of brake oil during air-removing.

Application

- Applicable to reserve tanks (inner diameter of inlet: φ 18-76) for mini cars and compact cars to small trucks (2t).

Features

- Continuous feeling (pressured) shortens work time
- Compact design: simple, low cost, but high performance.
- Easy to operate for air-driven method.
- One touch on the button enables air-removing of the tank.
- Plate rubber adopted for attachment by one action (see attachment A1).
- Expansion rubber with inner pressure ensures excellent contact (see attachments A2, B1 and B2).
- Special attachment enables quick installation (see attachments G1, G2, F1, F2 and H1).



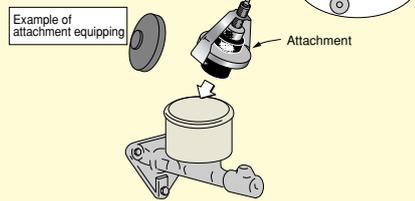
BRAKE BLEEDER

No. ABX70	kg 8.5	
Brake bleeder main body (with dust-proof cover), L320×W205×H210 Tank Capacity 2 ℓ Feeding Hose 3.5m		
Attachment Set	Attachment A1	ABX70-A1
	Attachment A2	ABX70-A2
	Attachment B1	ABX70-B1
	Attachment B2	ABX70-B2
	Clamp D1 (Claw)	ABX70-D1
	Clamp E1 (Chain)	ABX70-E1
	Attachment Case	Plastic case



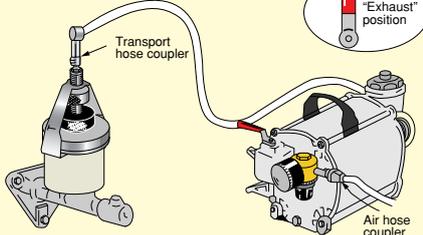
How to Use Brake Bleeder

1 Equip the attachment on the reservoir tank.



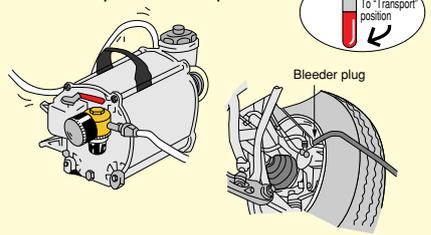
Remove the reservoir tank cap and equip the appropriate attachment on the tank.

2 Connect hoses.



Connect the transport hose coupler with attachment and air coupler with brake bleeder.

3 Transport brake liquid.



Switch the operation lever to "Transport" and transport brake liquid, replace brake liquid, or relieve air.

No. ATBX701	Brake Bleeder Main Body (with Dust-Proof Cover) L320×W205×H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Attachment A2	ABX70-A2	φ 32-45	Toyota, Nissan, Mitsubishi, Mazda, Daihatsu, Suzuki, Subaru, Isuzu, Daimler-Benz, OPEL, GM	1
Attachment Case				1



Trial set comes at a reasonable price.

- A set including an attachment with most applicable cars.

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

7 Installing wheel & Inspecting torque

● **IMPACT WRENCH**



➔ P.200

● **WHEEL NUT SOCKET FOR IMPACT WRENCH**



➔ P.256

● **CROSS RIM WRENCH**



➔ P.134

● **WHEEL NUT TORQUE WRENCH SET**



➔ P.190

SPECIAL BRAKE BLEEDER SET

●Attachment (separately sold)

Product Name	Product No.	Applicable Size	Applicable Makers (Models)
Attachment A1	ABX70-A1	φ 18~31	Toyota, Nissan, Mitsubishi, Daihatsu, Audi, VW
Attachment A2	ABX70-A2	φ 32~45	Toyota, Nissan, Mitsubishi, Mazda, Daihatsu, Suzuki, Fuji H. I., Isuzu, Daimler-Benz, BMW, Opel, GM
Attachment B1	ABX70-B1	φ 46~60	Toyota, Honda, Mitsubishi, Daihatsu, Suzuki, Fuji H. I., Isuzu
Attachment B2	ABX70-B2	φ 61~76	Toyota, Nissan, Honda, Mitsubishi, Mazda, Suzuki, Fuji H. I.
Attachment F1	ABX70-F1	φ 36	Mazda (mainly Bongo)
Attachment F2	ABX70-F2	φ 60	Daihatsu (mainly one-box wagon)
Attachment G1	ABX70-G1	φ 42.5	Toyota (passenger cars in general)
Attachment G2	ABX70-G2	φ 56	Honda (mainly Acty and Odyssey)
Attachment H1	ABX70-H1	φ 75	Honda (mainly Odyssey)
Clamp D1	ABX70-D1	For ABX70-B1, B2	
Clamp E1	ABX70-E1	For ABX70-B1, B2, H1	

Features

- Simple attachment with a fit-and-press type plate rubber (attachment A1)
- Internal pressure-expanded rubber gives excellent contact (attachments A2, B1, B2)
- Special attachment enables easy equipping (attachments G1, G2, F1, F2, H1).

●For Toyota

No. ATBX70T			
Brake Bleeder Main Body (with Dust-Proof Cover) L320 × W205 × H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Attachment A1	ABX70-A1		1
Attachment B2	ABX70-B2		1
Attachment G1	ABX70-G1		1
Clamp E1	ABX70-E1		1
Attachment Case	Resin Case		1

●For Nissan

No. ATBX70N			
Brake Bleeder Main Body (with Dust-Proof Cover) L320 × W205 × H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Attachment A1	ABX70-A1		1
Attachment A2	ABX70-A2		1
Attachment B2	ABX70-B2		1
Clamp E1	ABX70-E1		1
Attachment Case	Resin Case		1

●For Honda

No. ATBX70H			
Brake Bleeder Main Body (with Dust-Proof Cover) L320 × W205 × H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Clamp E1	ABX70-E1		1
Attachment H1	ABX70-H1		1
Attachment G2	ABX70-G2		1
Attachment Case	Resin Case		1

●For Mitsubishi

No. ATBX70M			
Brake Bleeder Main Body (with Dust-Proof Cover) L320 × W205 × H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Attachment A1	ABX70-A1		1
Attachment A2	ABX70-A2		1
Attachment B1	ABX70-B1		1
Attachment B2	ABX70-B2		1
Clamp D1	ABX70-D1		1
Attachment Case	Resin Case		1

●For Daihatsu

No. ATBX70D			
Brake Bleeder Main Body (with Dust-Proof Cover) L320 × W205 × H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Attachment A2	ABX70-A2		1
Attachment B1	ABX70-B1		1
Clamp E1	ABX70-E1		1
Attachment F2	ABX70-F2		1
Attachment Case	Resin Case		1

●For Mazda

No. ATBX70MZ			
Brake Bleeder Main Body (with Dust-Proof Cover) L320 × W205 × H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Attachment A2	ABX70-A2		1
Attachment B2	ABX70-B2		1
Clamp E1	ABX70-E1		1
Attachment F1	ABX70-F1		1
Attachment Case	Resin Case		1

●For Subaru/Suzuki

No. ATBX70SS			
Brake Bleeder Main Body (with Dust-Proof Cover) L320 × W205 × H210, Tank Capacity 2 ℓ, Compressed Transport Hose 3.5m			1 each
Attachment A2	ABX70-A2		1
Attachment B1	ABX70-B1		1
Attachment B2	ABX70-B2		1
Clamp E1	ABX70-E1		1
Attachment Case	Resin Case		1



Attachment A1



Attachment A2



Attachment B1



Attachment B2



Attachment F1



Attachment F2



Attachment G1



Attachment G2



Attachment H1



Clamp D1



Clamp E1



Attachment A1



Attachment A2



Attachment B2 + Clamp E1



Attachment B2 + Clamp D1



Attachment F1



Attachment G1



Attachment H1 + Clamp E1

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

Attachment Application Table for Break Bleeder

● Toyota

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
bB	NCP31	φ42.5	-	G1
	QNC20	φ54	-	G3
MR2	AW11	φ56	B1+D1	-
MR-S	ZZW30	φ42.5	A2	G1
RAV4 (including EV)	SXA10/10W/11 · ACA21W	φ42.5	A2	G1
Willi Vi	NCP19	φ42.5	-	G1
Willi VS	ZZE127	φ42.5	A2	G1
Isis	ANM10G	φ42.5	A2	G1
Arion	NZT240	φ42.5	A2	G1
Aristo	JZS147/161	φ42.5	A2	G1
Altezza	GXE-10	φ42.5	-	G1
Alphard	ANH10W	φ42.5	A2	G1
Alphard Hybrid	ATH10W Series (2003/7~)	φ42.5	A2	G1
Alex	NZE121	φ42.5	A2	G1
Ist	NCP65	φ42.5	A2	G1
Ipsum	SXM10G · ACM21W	φ42.5	A2	G1
Wish	ZNE10	φ42.5	A2	G1
Vitz	KSP90	φ42.5	A2	G1
	SCP10	φ42.5	-	G1
Wyndham	MCV20 · VCV11	φ42.5	A2	G1
Verossa	JZX110	φ42.5	A2	G1
Estima	MCR30W A2	φ42.5	A2	G1
	TCR11/20G	φ23	A1	-
Estima Hybrid	AHR10W Series (2003/7~2006/5)	φ42.5	A2	G1
	AHR20W Series (2006/6~)	φ42.5	A2	G1
Opa	ZCT15	φ42.5	A2	G1
Camry Gracia	SXV25W	φ42.5	A2	G1
Carina · Corona	ST202/190/210/AT212	φ42.5	A2	G1
	AT170 (E1)	φ56	B1+D1	-
Carina ED	ST202 · 183	φ42.5	A2	G1
Carib	AE111G/95G	φ42.5	A2	G1
Caldina	ST191/215W	φ42.5	A2	G1
Curren	ST206	φ42.5	A2	G1
Corolla	AE110/101	φ42.5	A2	G1
Corolla Fielder	ZZE123	φ42.5	A2	G1
Cami	J100E	φ54	B1+D1	-
Crown	GS130/131 · MS137JZS143/149/151/155/171	φ42.5	A2	G1
Crown Majesta	JZX149 · UZS186 Series	φ42.5	A2	G1
Grand Hiace	KCH16W	φ42.5	A2	G1
Granvia	RCH11 · VCH10/16 · KCH10/16	φ42.5	A2	G1
Kluger	ACV20	φ42.5	A2	G1
Kluger Hybrid	MHU28W Series (2005/3~)	φ42.5	A2	G1
Cresta	JZX101/90/81	φ42.5	A2	G1
Coaster	HDB10	φ42.5	A2	G1
Cynos	EL5	φ70	B2+D1	-
Supra	GA70 · JZA80	φ42.5	A2	G1
Starlet	EP81/91	φ70	B2+D1	-
Sparky	S221E	φ34	A2	-
Spacio	AE111N	φ42.5	A2	G1
Sprinter	AE101/81	φ42.5	A2	G1
Serra	EXY10	φ70	B2+D1	-
Celica	ST185/202	φ42.5	A2	G1
Celsior	UCF11/21/31	φ42.5	A2	G1
Soarer	JZZ31 · GZ20	φ42.5	A2	G1
Tercel · Corsa	EL51/45/41 (E1)	φ70	B2+D1	-
Dina	BU87	φ23	A1	-
Townace	CR30	φ23	A1	-
Townace Truck	YR28G · YM55	φ23	A1	-
Chaser	1JX100 · GX100/81	φ42.5	A2	G1
Toyocace	LH80	φ42.5	A2	G1
Trueno	AE111/92 A2	φ42.5	A2	G1
Noah	SR40/50 · CR40	φ42.5	A2	G1
Hiace	LH119 · KZH106	φ23	A1	-
	KDH200	φ42.5	A2	G1
Hiace Regius	RCH41W · KCH40W	φ42.5	A2	G1
Hilux	TRN215	φ42.5	A2	G1
Hilux Surf	KZN · RZN185 · LN131V	φ42.5	A2	G1
Harrier	MCU10W	φ42.5	A2	G1
Harrier Hybrid	MHU38W Series (2005/3~)	φ42.5	A2	G1
Vista	SV41/40/32/20	φ42.5	A2	G1
Vista Ardeo	SV50	φ42.5	A2	G1
FunCargo	NCP25/20	φ42.5	-	G1
Platz	SCP11	φ42.5	-	G1
Prius	NHW10/20/30	φ42.5	A2	G1
Pronard	MCX20A	φ42.5	A2	G1
Beita	KSP92	φ42.5	A2	G1
Voxy	AZR60G · ZRR70G	φ42.5	A2	G1
Porte	NNP10	φ42.5	A2	G1
Mark II	GX71 (Later Period)	φ42.5	A2	G1
	GX71 (Early Period)	φ56	B1+D1	-
Mark II Wagon	SXV25W	φ42.5	A2	G1
Mark X	GRX120	φ42.5	A2	G1
LightAce	YR21	φ23	A1	-
Raum	EXZ10	φ42.5	A2	G1
Rush	NCP100	φ42.5	A2	G1
Land Cruiser	HDJ81V/101K · UZJ100	φ42.5	A2	G1
Land Cruiser Prado	KZJ90W/VZJ121W	φ42.5	A2	G1
Levin	AE92	φ42.5	A2	G1

● Lexus

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
GS	UZS190 · URS190 Series (2005/7~)	φ42.5	A2	G1
GS Hybrid	GWS191 Series (2006/3~)	φ42.5	A2	G1
LS	USF40 Series (2006/9~)	φ42.5	A2	G1
LS Hybrid	UVF45/46 Series (2007/4~)	φ42.5	A2	G1

● Nissan

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
AD Wagon	WFY10	φ34	A2	-
Atlas	H41	φ24	A1	-
	AKR66EA	φ42.5	A2	-
Avenir	W10	φ34	A2	-
Wingroad	WFY11 · Y12	φ34	A2	-
X-TRAIL	PNT30	φ24	A1	-
S-Cargo	G20	φ63	B2+E1	-
Elgrand	AVWE50	φ24	A1	-
Caravan	KRME24	φ24	A1	-
Cube	BZ11	φ24	A1	-
	Z10	φ34	A2	-
Sunny	SB14 · B13	φ34	A2	-
	HB12	φ63	B2+E1	-
Sunny Truck	GB122	φ70	B2+E1	-
Safari	WYY61	φ34	A2	-
Cima	Y34/33/32	φ34	A2	-
Cedric · Gloria				
Silvia	S14/15	φ34	A2	-
	S13	φ70	B2+E1	-
Skyline	R34/33	φ34	A2	-
	R32	φ70	B2+E1	-
Stagea	WGNC34	φ34	A2	-
Cedric	Y31	φ70	B2+E1	-
Cefiro	A33/32 · WPA32	φ34	A2	-
Cefiro Wagon				
Serena	PC24/C25	φ24	A1	-
	KBC23	φ34	A2	-
Tida	C11	φ24	A1	-
Tino	HV10	φ34	A2	-
Terrano	YD21	φ70	B2+E1	-
Basara	JHU30	φ24	A1	-
Vanette	KHGNC22	φ24	A1	-
	SS28V	φ36	-	F1
Pulsar · S-RV	FN15	φ34	A2	-
Fairlady Z	Z33	φ34	A2	-
	GCZ32	φ70	B2+E1	-
Primera	P10 · P11	φ34	A2	-
Primera Wagon				
Primera EV				
Bluebird	EU13 · U14	φ34	A2	-
	U11/12	φ70	B2+E1	-
Bluebird Sylphy	QG10	φ34	A2	-
Prairie EV	HM11 · PM11	φ34	A2	-
Prairie Joy				
Presage	HU30	φ24	A1	-
President	H252	φ34	A2	-
Presea	PR10	φ34	A2	-
March	AK12	φ24	A1	-
	K11	φ34	A2	-
Racine	RFNB14	φ34	A2	-
Largo	W30	φ34	A2	-
Liberty	PM12	φ24	A1	-
R'nessa	NN30	φ34	A2	-
Legalis	JLR50 · JRR30	φ34	A2	-
Leopard	Y33	φ34	A2	-
Laurel	HC34 · GC35	φ34	A2	-
	FNB12	φ63	B2+E1	-
	HC33	φ70	B2+E1	-

● Daihatsu

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
MAX	L950S	φ54	-	G3
Atrai	S130V	φ34	A2	-
	S80V/81V	φ60	B1+D1	F2
Applause	A101S	φ54	B1+E1	G3
Charade	G200S	φ54	B1+E1	G3
Terios	J100E	φ54	B1+D1	G3
Delta	V57~	φ23	A1	-
Delta Wagon	GR50	φ42.5	A2	-
Pyzar	G313G	φ60	B1+E1	-
Hijet	S100V/110P	φ34	A2	-
	S80V/82P/83V	φ60	B1+D1	F2
Midget	K100P	φ34	A2	-
Mira	L500S/700S	φ54	B1+D1	G3
	200S · 70V	φ54	B1+E1	-
	L250S	φ54	-	G3
Move	L610S/602S	φ54	B1+E1	G3
	L150S	φ54	-	G3
Rugger	F76G	φ60	B1+E1	-

● ISUZU

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
Elf	NPR6~	φ34	A2	-
	NKR~	φ42.5	A2	-
Gemini	JT151F	φ67	B2+D1(E1)	-
Bighorn	UBS69GW	φ54	B1+D1(E1)	-
Fargo	WFS6~	φ33	Not applicable	Not applicable
Forward~	GIGA (4t~10t)	φ49	Not applicable	Not applicable
MU	UCS69DW	φ54	B1+D1(E1)	-

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

● Mitsubishi

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
ek Wagon	H81W	φ34	A2	-
Outlander	CW5W	φ34	A2	-
GTO	Z16A	φ66	B2+D1	-
RVR · Chariot	N23W/33W	φ66	B2+E1(D1)	-
Airtrek	CU4W	φ34	A2	-
Charisma	DA2A	φ66	B2+D1	-
Galant	EA1A · E33A/35A/52A	φ66	B2+D1	-
Galant	EC5A	φ66	B2+D1	-
Canter	FE437E	φ34	A2	-
Chariot Grandis	N84W	φ34	A2	-
Challenger	K97W	φ66	B2+D1	-
DIAMANTE	F31A/17A	φ66	B2+D1	-
DION	CR9W	φ34	A2	-
DINGO	CQ2A	φ34	A2	-
DEBONAIR	S12A	φ66	B2+D1	-
DELICA	P35W · P51V	φ18	A1	-
DELICA SPACE GEAR	PD8W	φ34	A2	-
TOPPO	H31A/32V	φ58	B1+D1(E1)	-
TOPPO BJ	H46A	φ34	A2	-
PAJERO	V75W	φ34	A2	-
	V26WG/24WG	φ66	B2+D1	-
PAJERO Jr.	H57A	φ58	B1+D1(E1)	-
PAJERO Mini	H56A	φ58	B1+D1(E1)	-
MINICA	H22A	φ58	B1+D1(E1)	-
MINICAB	U41V/41T/11V	φ34	A2	-
MIRAGE	CA1A · CJ2A	φ66	B2+D1	-
LANCER	CK4A	φ66	B2+D1	-
LANCER CEDIA WAGON	CS5W	φ34	A2	-
LIBERO	CB5W	φ66	B2+E1(D1)	-
LEGNUM	EA1W	φ66	B2+D1	-

● Honda

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
CR-V	RD1	φ56	B1+E1	G2
	EF6	φ56	B1+E1	G2
HR-V	GH3	φ56	-	G2
NSX	NA1	φ75	B2+E1	H1+E1
S-MX	RH1	φ56	B1+D1(E1)	G2
Z	PA1	φ56	B1+D1(E1)	G2
Accord	CF1	φ56	B1+D1(E1)	G2
	CA3 · CD4	φ75	B2+E1	H1+E1
Ascot	CB1	φ75	B2+E1	H1+E1
Inspire · Vigor	CB5	φ75	B2+E1	H1+E1
Integra	DA5	φ56	B1+E1	G2
	DC2	φ75	B2+E1	H1+E1
Elysion	RR3	φ56	B1+D1(E1)	G2
Odyssey	RA6/5	φ56	-	G2
	RA2	φ75	-	H1+E1
Orthia	EL3	φ56	B1+D1(E1)	G2
Capa	GA4	φ56	B1+D1(E1)	G2
Civic	EK3/9	φ56	B1+D1(E1)	G2
	EG8/4 · EF2 · AH	φ56	B1+E1	G2
STEPWGN	RF1	φ56	B1+D1(E1)	G2
STREET-ACTY	HH4/3	φ56	-	G2
STREAM	RN1~6	φ56	-	G2
SABER	UA5	φ56	B1+D1(E1)	G2
Cherokee	MX · R4	φ30	A1	-
TODAY	JW3 · JA4	φ56	B1+E1	G2
Torneo	CF4	φ56	B1+D1(E1)	G2
VAMOS	HM1/2	φ34	A2	-
BEAT	PP1	φ75	B2+E1	H1+E1
Prelude	BB6/5	φ56	B1+D1(E1)	G2's Sealing Cap ASSY+E1 of G2
Prelude	BA5	φ75	B2+E1	H1+E1
Life	JA4	φ56	B1+D1(E1)	G2's
Lagreat	RL1	φ56	-	Sealing Cap
Legend	KA8/7/3	φ56	B1+E1	G2's
Logo	GA3	φ56	B1+E1	ASSY+E1

● Subaru

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
Impreza	GC8 · GC1 · GF6	φ34	A2	-
	GC8	φ67	B2+D1(E1)	-
Vivio	KW3A · KK3	φ60	B1+D1(E1)	-
Sambar	KS3N · KR6 · KV4	φ34	A2	-
Sambar Dias		φ34	A2	-
Sambar	KV4 · KS4	φ60	B1+D1	-
Domingo	KJ8 · FA7	φ34	A2	-
FORESTER	SF5	φ34	A2	-
Pleo	RA1	φ34	A2	-
Legacy	BG5/6/9 · BH5/BP5	φ34	A2	-
	BG5 · BF5 · BD5	φ67	B2+D1(E1)	-

● Suzuki

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
kei	HN11S	φ34	A2	-
MR Wagon	MF21S	φ34	A2	-
Alto	CN21S · HA11S	φ34	A2	-
Escudo	TD52W	φ60	B1+D1	-
	TD94	φ34	A2	-
Every	DA52W · DF51	φ34	A2	-
Cultus	AB34S	φ60	A2	-
SX4	TA41S	φ34	A2	-
Carry	DB51 · DA41P	φ34	A2	-
Crescent	GC41W	φ34	A2	-
Jimny	JA12W	φ60	B1+D1	-
	JA51W	φ67	B2+D1(E1)	-
Swift	HT51S	φ34	A2	-
CERVO	CN22S	φ34	A2	-
Wagon R	CT21S/51S	φ34	A2	-
Wagon R Wide	MP61S	φ34	A2	-

● Mazda

Car Type	Model	Inside Diameter	Attachment	
			Conventional	Dedicated
AZ-Wagon	CY21S	φ34	A2	-
MPV	LY3P	φ36	A2	-
	LVLR	φ36	A2	F1
	LW5W	φ36	Not applicable	-
MS-8	MB5P · MBEP	φ36	A2	F1
RX-7	FC3S · FD3S	φ36	A2	F1
Capella	GF8P · GW8W	φ36	A2	F1
	CG2PP · GV8W · GD8S	φ67	B2+E1	-
Capella Wagon	GW8W	φ36	A2	F1
Carol	AA6PA	φ33	A2	-
Scrum	DL51V	φ34	A2	-
Sentia	HD55/5S · HEEA	φ36	A2	F1
TITAN	WGT4H	φ27.5	A1	-
	(Former)	φ36	-	F1
Demio	DY5W	φ36	A2	F1
	DW5W	φ67	B2+E1	-
Familia	BHALP · BJ3P	φ36	A2	F1
	BHA6R · BG6P · 5P	φ36	A2	-
FamiliaXG	MFY10	φ34	A2	-
FESTIVA	DA3PF	φ67	B2+E1	-
Premacy	CP8W	φ36	A2	-
FRIENDEE	SGLW	φ36	A2	F1
PROCEED	UF66M	φ36	A2	F1
Persona	MASP	φ67	B2+E1	-
Porter Cab	PC567	φ27.5	A1	-
BONGO	SS88H · SSF8W · SD2AT	φ36	-	F1
Eunos	500 CA8PE	φ36	A2	F1
EUNOS800	TA5P	φ36	A2	F1
Lantis	CBA8P · CBAEP	φ36	A2	F1
Luce H	BEY · HCFS · HCSS	φ36	A2	F1
Laser	BFSPP	φ67	B2+E1	-
Roadster	NA6CE	φ67	B2+E1	-

● Imported Cars

Manufacturer	Inside Diameter	Car Type	Model	Attachment	
				Conventional	Dedicated
Audi *2	φ30.5	80 2.0E 2.3E A6	8CABK~ 4AAAAR 4AAB~	A1	-
Opel	φ32	Astra	XD200~ BY9506	A2	-
Chrysler	φ32	Current Vita Dodge · Avenger Dodge · Caliber JEEP · Wrangler	ABA-JSD27 ABA-PM20 ABA-JK38S	A2	-
Saturn	φ36	Sedan · Coupe SL~		A2	-
Citroen	φ32	Citroen	VF72AZ	A2	-
FIAT	φ36	Punto	ZFA1880~	A2	-
Ford	φ32	KA Discovery LJ~	WFOBX~	A2	-
Peugeot	φ34	406	B-2343 DVF37CRFSW~	A2	-
Volvo	φ63	V70 Series		B2+D1	-
Mercedes	φ32	Benz E280 E210/202 V12	E-124022 E-12408~ E-1400~ WDB~	A2	-
Renault	φ36	Megane *1 Lutecia	ABA-RK4M	A2	-
Rover	φ33	MINI Cooper 200	XW~	A2	-
BMW	φ32	BMW	E-325 · 318ti	A2	-
GM	φ32	Cadillac	E-AE~	A2	-
VW*2		Golf Polo	1HADZ	A1	-
			Current cars		

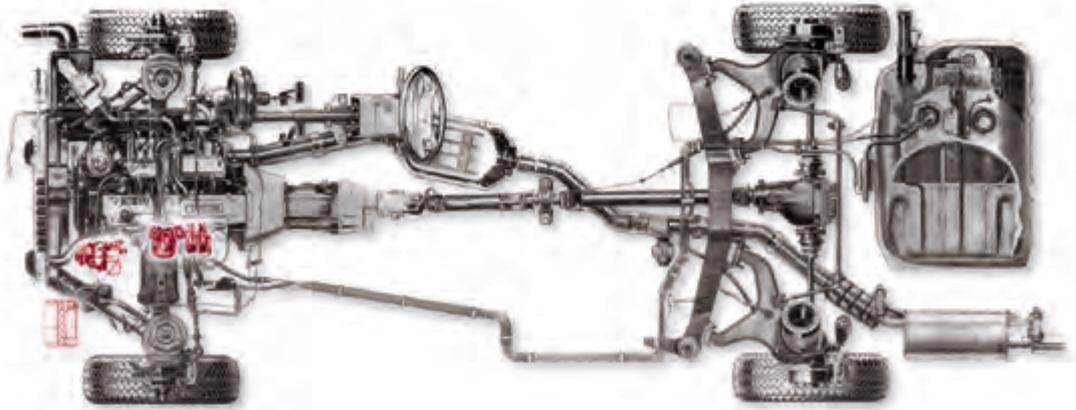
*1: Battery cover needs to be removed.

*2: Although Audi and VW apply to A1, since the outside diameter of their filler neck is larger than the rubber of A1, please be careful in center alignment during installation.

● Other Large Trucks

Manufacturer	Inside Diameter	Type Model	Attachment	
			Conventional	Dedicated
Hino	φ32	4t Series Ranger	A2	-
UD	φ92	10t Series Super Dolphin		
Fuso	φ80	4t~10t Condor ~ BigThumb		
	φ80	Old cars		
	φ95	4t~10t Fighter ~ Super Great		
			Not applicable	

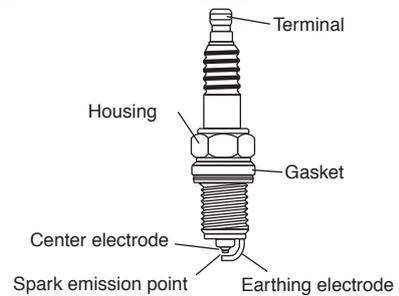
Electric System Mechanism



MECHANISM 1

Spark plug

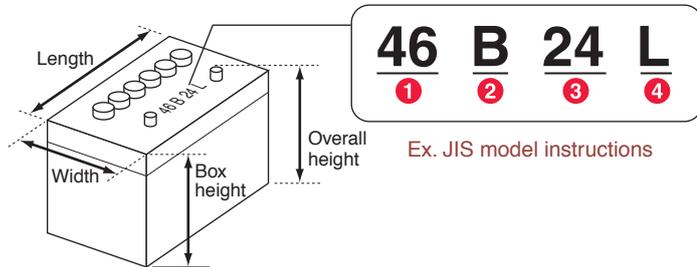
The spark plug is designed to emit a high voltage spark directly into the combustion chamber. It is installed by screwing into the cylinder head. The high voltage enters the spark plug via the top terminal and is transmitted through a ceramic insulator by the central electrode. As the current is grounded to an earthing electrode it creates a spark crossing the "gap". Sparks are discharged from the electrodes in a variety of shapes for different uses and functions.



MECHANISM 2

Battery

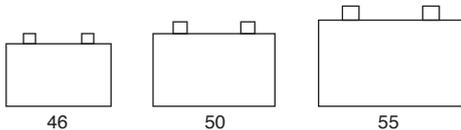
As the model of the battery is placed on the topside, it is easy to find out information like capacity, position and size of the terminal polarity, etc. Knowing and understanding these rules makes it easy when selecting a correct battery for each vehicle.



Ex. JIS model instructions

① Capacity rank

The performance of the battery is shown here. (Battery capacity and start performance) The higher the numerical value, the higher the capacity, however, there is no "recommended specific" number. For a simple setting to follow (Up to 50: Will produce 2; Over 50: Will produce 5).



② Battery size (JIS standards: Classification is worked out by Width x Box height)

Sizes follow symbols from A → H and get larger in that order.

Symbol	Width	Box height
A	127	162
B	129 (127)	203
D	173	204
E	176	213
F	182	213
G	222	213
H	278	220

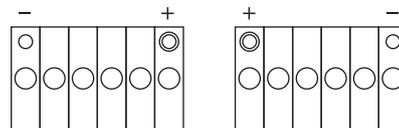
(Unit: mm)

③ Battery length measurements (approx. cm)

The overall battery measurement is shown (approx. cm)
Ex.: 46B24L (approx. 24cm)

④ Battery terminal position

Positive terminal position is shown. On the "R" Type, the positive terminal is on the far right side, while on the "L" type, the positive terminal is on the far left side.



MECHANISM 3

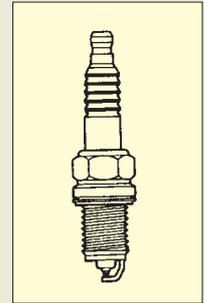
Alternator

This is a generator that produces electricity while the engine is running. The first type of generators produced electricity in the DC form, however, nowadays they are more stable, producing electricity in the AC form.

Inspection, Cleaning and Replacing Spark Plug

Removing Spark Plug Leads 1

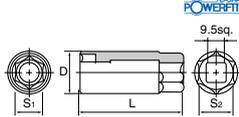
Removing Spark Plug 2



SPARK PLUG SOCKET

No.	S ₁ (ppt.)	S ₂	D	L	Spark Plug (Type)		▽g	sq.	□
					NGK	ND			
B3A-14SP	14	—	18.5	62			60	3/8"	5
-16SP	16	—	20	65			65		5
B3A-13P	13	17	18	56	ER	r	72	3/8"	5
-16P	16	17	21.5	62	BC,C	PQ,U	100		5
-18P	18	19	23.5	62	D	X	130		5
-20.8P	20.8	24	26.5	62	B	W	170		5

- With Magnet for using in narrow spaces.
- * B3A-16SP is thin wall type for use on 4-valve engine of Mitsubishi mini cars.
- The B3A-14SP is a socket designed to be compatible with the new Nissan engines HR15DE, MR18DE, MR20DE types.



3/8"sq. SPARK PLUG SOCKET

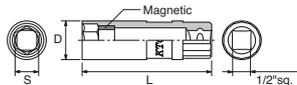


- CAUTION**
- Do not place a wrench around the outside of the B3A-14SP and rotate it.

SPARK PLUG SOCKET

No.	S ₁ (ppt.)	S ₂	D	L	Spark Plug (Type)		▽g	sq.	□
					NGK	ND			
B4A-16P	16	—	22	63.5	BC,C	PQ,U	110	12.7	5
-19P	19	—	26.5	65	BM	WM	170		5
-20.8P	20.8	24	26.5	65	B	W	160		5

- With Magnet for using in narrow spaces.
- * B35P-19H for changing spark plugs on chain saws, mowing machines, small generators, etc.



1/2"sq. SPARK PLUG SOCKET

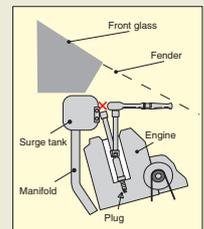
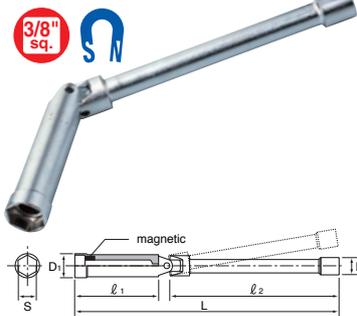


UNIVERSAL SPARK PLUG WRENCH

No.	S (ppt.)	D ₁	D ₂	l ₁	l ₂	L	▽g	□
B3F-14SP	14	18.5	17	73	111	192	270	1
-16SP	16	20	18	73	148	230	300	1

- Purpose**
- Removing/installing spark plug.
- Application**
- Mini-van and wagon: effective for use on cars having small clearance between engine and cowl panel. Toyota's Ipsum, Hiace Reijas, Prius, Noa; Honda's Odyssey, and other models.
 - Usable for replacing spark plugs on other models.
- Features**
- No falling of the socket from the extension bar during operation as the 16mm plug socket and the bar are integrated into one piece of tool.
 - Easy insertion into plug hole with universal joint used in the middle of the wrench. (the maximum flexible angle : 90 degrees).
 - For specially thin socket, usable on 4-valve engine of Mitsubishi.

3/8"sq. UNIVERSAL SPARK PLUG WRENCH D.PAT.

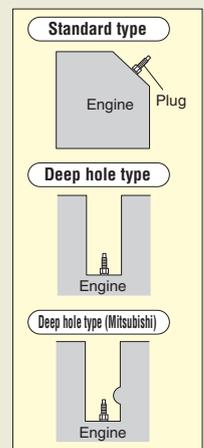
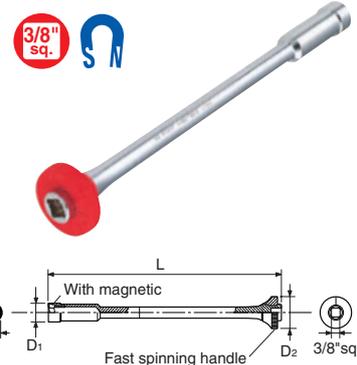


SUPER LONG PLUG WRENCH

No.	S (ppt.)	D ₁	D ₂	L	▽g	□
B3P-16LL	16	20	35	250	250	5

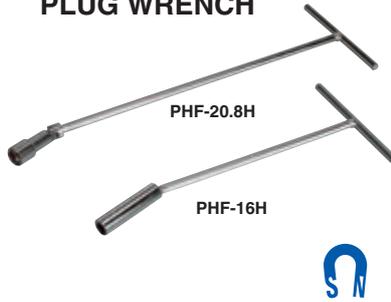
- Purpose**
- Use for spark plug removal/installation.
- Characteristics**
- This is a plug socket, extension bar, and quick spinner all in one new type of plug wrench.
 - The operation is improved by eliminating time wastage and troublesome tool retrieval. The fast handle movement when using the ratchet (quick spin) also brings a positive effect.
 - As the socket section is of a quite thick design, its uses are wide. (It can also be used on Mitsubishi light weight 4-valve engines).
 - Dropping spark plugs is prevented as the tool is magnetic.
 - The tightening angle is determined by a line mark on the side of the quick spinner.

3/8"sq. SUPER LONG PLUG WRENCH



2 Removing Spark Plug

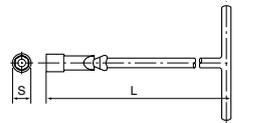
● FLEX SHAPE SPARK PLUG WRENCH



FLEX T SHAPE SPARK PLUG WRENCH

No.	S	L	Spark Plug(Type)		Applicable Car	▼g	📦
			NGK	ND			
PHF-16H	16	385	BC, C	PQ, U	Toyota 4A-G, IG-G Nissan VG20, VG30 Others Twin CAM For Multi Valves	500	10
-20.8H	20.8	530	B	W		600	10

- T shape handle and magnetized socket with flex joint.
- For changing spark plugs in deep narrow quarters.



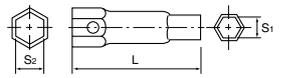
● SPARK PLUG WRENCH



SPARK PLUG WRENCH

No.	S (6pt.)		L	Applicable Car		▼g	📦
	S ₁	S ₂		NGK	ND		
PH-16×21	16	20.8	115	BU, C	PQ, U	130	5
	B			W			

- Can be used for 2 types of spark plugs.



● COMPACT SPARK PLUG WRENCH SET



COMPACT SPARK PLUG WRENCH SET

No. B126P	▼kg 1	📦 1
Spark Plug Wrench	B12P-16H, 18H, 20.8H	
Special Extension Socket	BE12-30, 45	
Ratchet Box-End Wrench	RM-10×12	
Metal Case L185×W105×H35	B126P-M	

- New type Spark Plug Wrench Set specially designed for use on motorcycles.
- Most usable sizes for wider application.



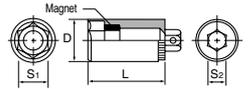
● COMPACT SPARK PLUG WRENCH SOCKET



COMPACT SPARK PLUG WRENCH SOCKET

No.	S ₁ (6pt.)	S ₂	D	L	Applicable Plug(Type)		▼g	📦
					NGK	ND		
B12P-16H	16	12	21.5	61	BC, C	PQ, U	100	5
	18	12	23.5	61	D	X	120	5
	20.8H	20.8	12	26.5	61	B	W	150

- New type Spark Plug Wrench
- Most suitable for the latest models of motorcycles and agri-machines with small hexagon head. (Can be used in the space where Ratchet Handles cannot be used due to the shape of the frame, cowring, or cylinder head.)
- Can be used on mini motorcycles.



● SPECIAL EXTENSION SOCKET

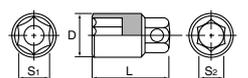


SPECIAL EXTENSION SOCKET

No.	S ₁ (6pt.)	S ₂	D	L	▼g	📦
BE12-30	12	12	17	30	40	5
-45	12	12	17	45	60	5

Purpose

- Extending plug wrench (B12P-) for motorcycles.



ELECTRIC SYSTEM

Disassembling Alternator

Removing Alternator Belt 1

● FREE POSITIONING WRENCH



➔ P.223

● FLAT TYPE EXTRA LONG BOXEND WRENCH



➔ P.121

● HANDY BAR



➔ P.302

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

Disassembling Alternator

ELECTRIC SYSTEM

ARMATURE BEARING PULLER

No.	BEARING APPLICABLE RANGE	▼g	📦
ABU-1935	Outer φ 19~35 Inner φ 7 Over	210	1

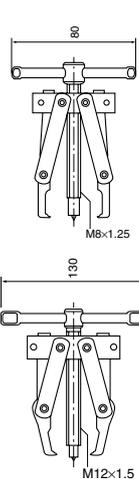
• For small bearings.

Purpose

- For generators and alternators with built-in cooling fans.
- For removing armature bearings of reduction type starter motor, power tools, cleaner, etc.

No.	BEARING APPLICABLE RANGE	▼g	📦
ABU-3262	Outer φ 32~62 Inner φ 10 Over (No.6201~6305)	890	1

- For mini cars to big sized vehicles.
- Thin tip of claw for using in narrow space.
- Can be used by fixing the back by vise for narrow niche. (Fig.1)
- In case of bigger niche, preventing the tool from turning itself by using adjustable wrench, etc. (Fig.2)



Bearing Application Chart

Inner	No.	Outer	Inner	No.	Outer
7	607 *	19	12	6001 *	28
	627	22		6201 *	32
	637	26		6801	21
8	608 *	22	6901	24	
	628	24	16001	28	
	638	28	6002	32	
	698	19	6202 *	35	
	B8-74D *	22	6802	24	
9	609	24	6902	28	
	629 *	26	16002	32	
	639	30	6003 *	35	
10	699	20	6803	26	
	6000 *	6	6903	30	
	6200	30	16003	35	
	6300	35			
	6800	19			
	6900	22			
	B10-46D *	23			

*Frequently used types
Note: For other bigger types than the above mentioned, please use ABU-3262.

● ARMATURE BEARING PULLER D.PAT.



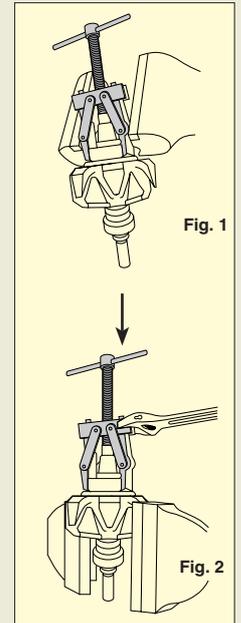
No.ABU-1935



No.ABU-3262

Disassembling Alternator

2



Headlight Axis Adjustment

ELECTRIC SYSTEM

HEADLIGHT ADJUST WRENCH

No.	▼g	📦
AMLB0810	290	1

Main Body Extension socket (Overall length 20mm)

Purpose

- Adjustment of headlight axis adjustment screws used on asymmetrical left-night odd-shaped headlights of automobiles.

Application

- Headlight axis adjustment screws with a width across flats of 8mm for automobiles from mini to standard sizes. Cannot be applied for models which do not use asymmetrical left-right odd-shaped headlights (sealed-beam headlights, etc.) and for one-box vehicles.

Features

- The 320mm-long body and timing belt enables headlight axis adjustment by remote operation from outside the engine room, without need to insert a tool or hand into the narrow area around headlights.
- The aluminum body has reduced main body weight to about 200 grams, making the wrench easy and less fatiguing to work with.
- The grip handle assures smooth, precise rotation in both directions, just like a stubby screwdriver.
- Usable with a wide range of vehicle models, because a total of four socket lengths, 0mm, 10mm, 20mm and 30mm, can be selected for use in combination with the extension socket. (Extension socket: No.AMLB8-0820)

REPLACEMENT PARTS

No.	Description	▼g	📦
AMLB0810-320	Body	160	
-08	Extension Socket 8mm	20	
-10	Extension Socket 10mm	25	
-12	Extension Socket 12mm	30	
-H	Grip Handle	55	

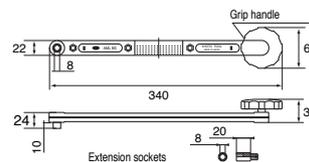
BELT EXCHANGE SET

No.	Content
AMLB0810-1	Belt • Screw • Nut

● HEADLIGHT ADJUSTMENT WRENCH

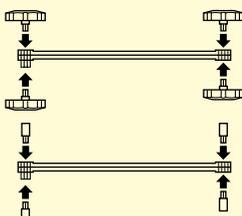
Headlight Axis Adjustment

1

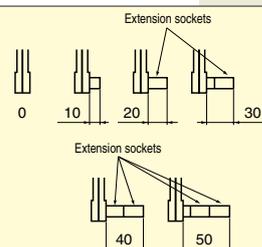


VARIETY OF USE

- The grip handle and extension socket can be attached to any of the four positions on the wrench bore.



- Any of four socket lengths of 0, 10, 20 and 30mm can be selected for combination with the extension socket. It is also possible to increase the socket length to 40 or 50mm by connecting extension sockets. (The headlight adjustment wrench is provided with an extension socket in the set. Connection of two extension sockets requires purchase of another optionally available extension socket.)



- Select the socket length and grip handle position according to the vehicle model and turn the headlight axis adjustment screw.

ELECTRIC SYSTEM **Headlight Axis Adjustment**

1 Headlight Axis Adjustment

●HEADLIGHT ADJUST SCREWDRIVER



HEADLIGHT ADJUST SCREWDRIVER

No.	Count	D	d	s	L		ℓ		▽g	📦
					Normal	Extended	Normal	Extended		
AD701	No.2	39	5	6.3	340	400	230	290	180	1

Usage

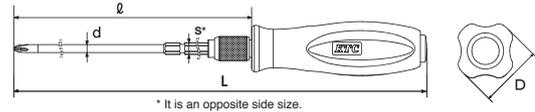
- Headlight optical axis adjustment dedicated screwdriver (cross No.2) for automobile, etc.

Application

- Screw for headlight optical axis adjustment is cross No.2.

Features

- Telescopic type with the axial length of 230mm · 290mm.
- Normally, it is set at the size (340mm total length) that easily fits in a tool box.
- Supports vehicle models with narrow service hole with the fine axis diameter of 5mm.



- Axis is non-through type.
- Magnet is not attached on the tip.

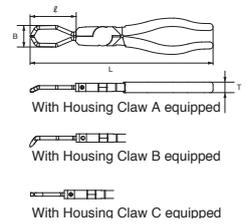
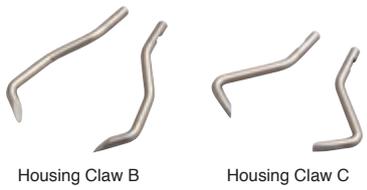
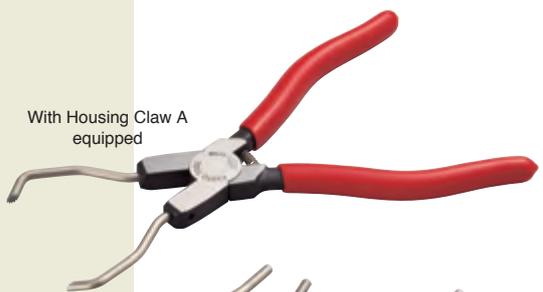


It cannot be used for some imported cars with special screw shapes.

ELECTRICAL DEVICE **Electric Works**

1 Removing Connectors

●CONNECTOR HOUSING PLIERS D.PAT.P.



* AD101 is a set of the body and 3 types of housing claw (A, B, C).

CONNECTOR HOUSING PLIERS

No.	Attached Claw	L	ℓ	B	T	▽g	📦
AD101	Claw A	208	53	25	12	177	5
	Claw B	209	54	25	12	177	
	Claw C	194	39	34	12	176	

Usage

- Unlocking and extraction of connector housing.

Features

- Smoothly unlocks small, thin or recessed lock that's difficult to work with.
- Supports various shapes with 3 types of claw with different bending angles and tip shapes.
- Long claw that can avoid bundled wirings and reach deep places is adopted.
- * Spare parts are configured. Please contact your dealer for details.



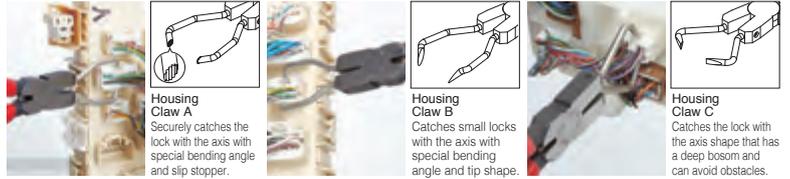
Please do not use it for usages other than the application.

Supply Parts

No.	Product Name	Set Contents	▽g	📦
AD101-123	Claw Set	Housing Claw A, B, C, 1 each	20	5

Hex. socket screws are not included.

- If you already own the KTC straight snap ring pliers for hole (No.SCP-171, 1715), it can be used by replacing the claw. (Either screw can be used for the set screw.) P.283



Housing Claw A
Securely catches the lock with the axis with special bending angle and slip stopper.

Housing Claw B
Catches small locks with the axis with special bending angle and tip shape.

Housing Claw C
Catches the lock with the axis shape that has a deep bosom and can avoid obstacles.

CONNECTOR TOOL SET

No. ECC6	▼g 300	📦 1
Connector coupling tool	ECC-1R, 2R, 3R	
Connector terminal tool	ECC-1T, 2T, 3T	

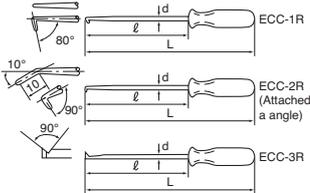
Connector coupling and connector terminal removal tool set

No.	d	L	ℓ	▼g	📦
ECC-1R	4	300	215	58	5
-2R	4	300	215	58	5
-3R	4	300	215	58	5
-1T	4	150	65	40	5
-2T	4	150	65	40	5
-3T	4	150	65	40	5

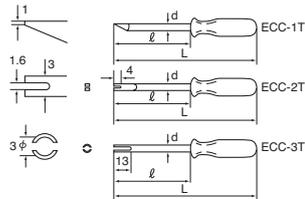
Features

- Dedicated tools are easy to handle and remove.
- Easy operation in tight, hard-to-reach spaces.
- Parts can be removed without damage.

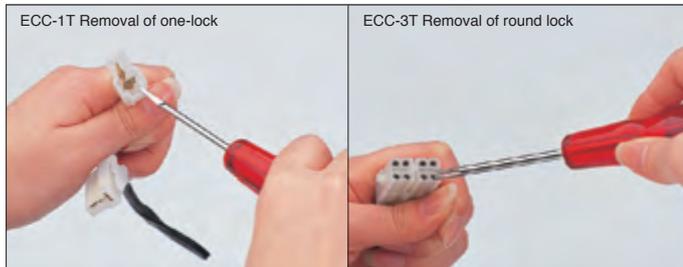
■ Connector coupling tool



■ Connector terminal tool



Connector terminal tools



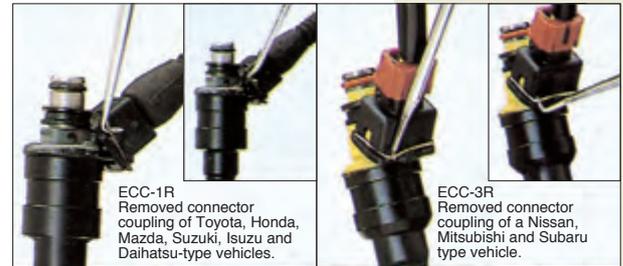
CONNECTOR TOOL SET

Removing Connectors

1



Connector Coupling tools



MULTI-PURPOSE CRIMPING PLIERS

No.	L	B	T	▼g	📦
AD102A	187	56	22	160	10

Usage

- For the wire harness repair of automobiles.

Application

- Applicable wires: JASO AVS AVSS 0.3, 0.5, 0.85, 1.25.

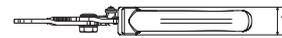
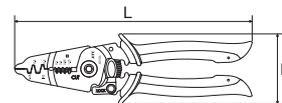
Features

- Supports automotive low-voltage wires 0.3 · 0.5 · 0.85 · 1.25.
- Supports 3 usages of wire cutting · wire stripping · terminal crimping.
- With the lock function that's convenient in storage.



- Do not use it where current is live.
- It is a simple crimping tool that does not have a molding confirmation mechanism. It cannot be used in work that needs to guarantee the reliability

MULTI-PURPOSE CRIMPING PLIERS (FOR AUTOMOTIVE THREAD) D.PAT.P.



MULTI-PURPOSE CRIMPING PLIERS

No.	L	B	T	▼g	📦
AD102B	220	62.5	22.5	200	10

Usage

- wire cutting · wire stripping · terminal crimping.

Features

- Supports 3 usages of wire cutting · wire stripping · terminal crimping.
- With the lock function that's convenient in storage.

Application

- Wire Stripping · Cutting

mm	0.25	0.3	0.4	0.5	0.65	0.8	1.0
AWG	30	28	26	24	22	20	18

• Crimping part (open barrel terminal)

0.3sq.	0.5sq.	1.25sq.
--------	--------	---------

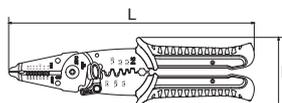
• Crimping part (sleeve terminal)

0.5sq.	1.25sq.	2.0sq.
--------	---------	--------



- Do not use it where current is live.
- It is a simple crimping tool that does not have a molding confirmation mechanism. It cannot be used in work that needs to guarantee the reliability

MULTI-PURPOSE CRIMPING PLIERS



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

ELECTRIC SYSTEM

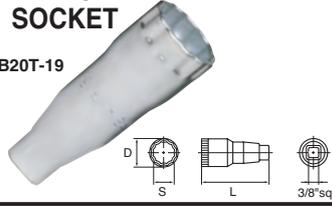
Removing/Installing Thermo-sensor and Oxygen Sensor

1 Removing/Installing Thermo-sensor and Oxygen Sensor



●3/8"sq. THERMO-SENSOR SOCKET

B20T-19



THERMO-SENSOR SOCKET

No.	S	D	L	▼g	☞
B20T-19	19	26	73	55	1

- Purpose** • Specially designed in accordance with the size shape of thermo-sensor.
Application • For Toyota, Nissan, Mazda, Honda and Daihatsu cars.
Special features • Thin wall type with small diameter for using in narrow engine rooms.

CAUTION • DO NOT USE THIS SOCKET FOR ANY PURPOSE, EXCEPT FOR REMOVING/INSTALLING THERMO-SENSORS.

●3/8"sq. O₂ SENSOR SOCKET · SET

AD501-22W



O₂ SENSOR SOCKET · SET

No.	▼g	☞
AD501-22W	290	1
O ₂ Sensor Socket · Set	AD501-22W	
O ₂ Sensor Socket Attachment	AD501-A	

- Features**
 • Designed with the shape that matches O₂ sensors and optimal length.
 • With 2 types of drive (3/8"sq. square, 19mm flats) configured, it supports the use of many driving tools.
 • Obstacles can be avoided by using the attachment.

O₂ SENSOR SOCKET · SET

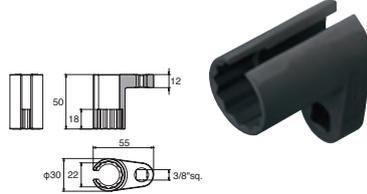
No.	▼g	☞
AD501-22W	200	1

O₂ SENSOR SOCKET ATTACHMENT

No.	▼g	☞
AD501-A	90	1

CAUTION • When tightening the O₂ sensor, use a torque wrench and tighten at the torque designated by the manufacturer.

●3/8"sq. O₂ SENSOR WRENCH



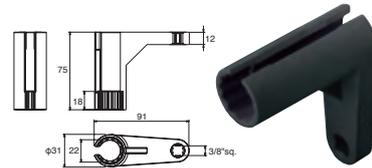
O₂ SENSOR WRENCH

No.	Aperture	Total length	▼g	☞
AD502-22W	22	55	210	1

- Features**
 • It has a short total length that can be used in tight spaces.
 • The drive offsets to avoid obstacles.
 • Driving tool of 3/8"sq. square can be used.

CAUTION • When tightening the O₂ sensor, use a torque wrench and tighten at the torque designated by the manufacturer.

●3/8"sq. O₂ SENSOR WRENCH LONG TYPE



O₂ SENSOR WRENCH

No.	▼g	☞
AD503-22W	350	1

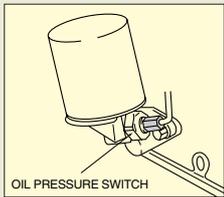
- Features**
 • It has a unique shape for avoiding obstacles and allows the removal of O₂ sensors without removing the front bumper, improving comfort in work.
 • It is an item that, by adopting the shape that supports not only new Daihatsu models but also existing Daihatsu models and Suzuki, covers most of the light vehicles.

CAUTION • When tightening the O₂ sensor, use a torque wrench and tighten at the torque designated by the manufacturer.

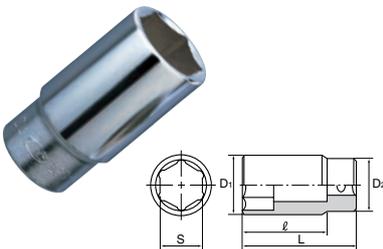
ELECTRIC SYSTEM

Removing/Installing Oil Pressure SW

1 Removing/Installing Oil Pressure SW



●3/8"sq. OIL PRESSURE SOCKET · SET (2pcs.)



OIL PRESSURE SOCKET · SET (2pcs.)

No.	▼g	☞
B202HD	470	1
Oil Pressure Socket	B20-24HD,27HD	

No.	S (6pt.)	D ₁	D ₂	ℓ	L	▼g	☞
B20-24HD	24	32.5	28.5	46	58	230	1
-26HD	26	35	30	46	58	230	1
-27HD	27	36.5	31	46	58	240	1

- Purpose**
 • For removing/installing oil pressure switch.
Special features
 • With 3/8"square female drive for easy operation.

ELECTRIC SYSTEM

Battery replacement

Removing vehicle batteries



This tool is great for removing batteries from hard to reach areas. There is a rubber pad on the gripping part of the tool to prevent scratching the battery.

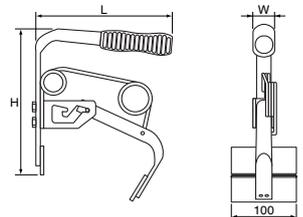
●BATTERY CATCHER



BATTERY CATCHER

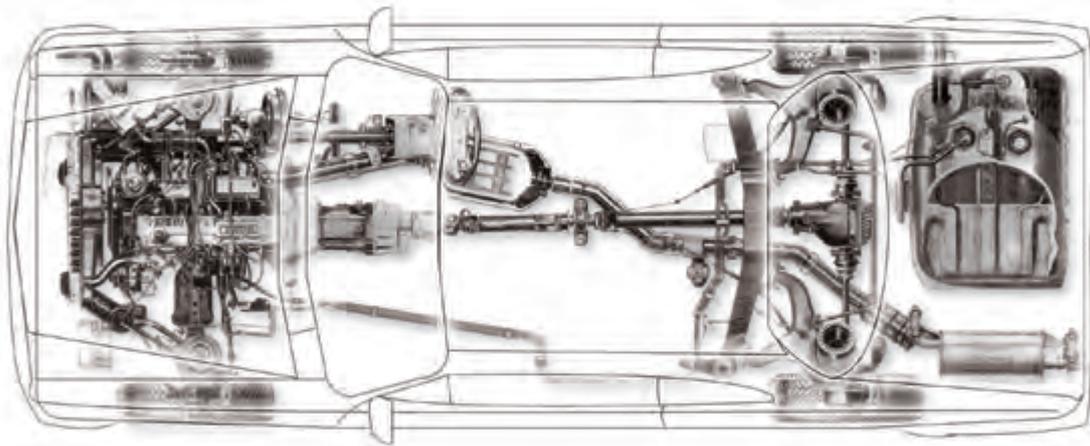
No.	L	W	H	▼kg	☞
ADV2	193	33	215	0.95	1

- Usage**
 • Useful in battery removal and carrying
Application
 • From light weight vehicles to passenger and one-box car batteries.
 • Battery width 120~180mm, Less than 22kg in mass.
 (Sample battery size: JIS26A17RL~95D31RL)
 * Replacement grips are available. Check with your dealer or service provider for details.



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

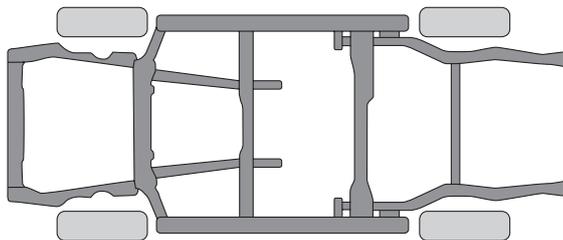
Body Mechanism



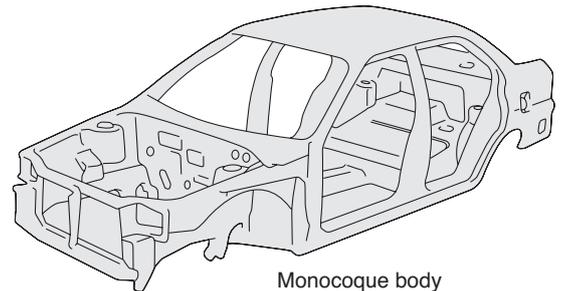
MECHANISM 1

Frame and monocoque body

The framework that is designed as a base for vehicles is called the Frame. The engine & suspension, steering mechanisms, body, are fitted to this. This structure is seen more frequently these days compared with previous models. In recent years, as the merit of a more rigid body that is even more lightweight is achieved, the monocoque body, where the frame is one with the body, is becoming more popular.



Frame



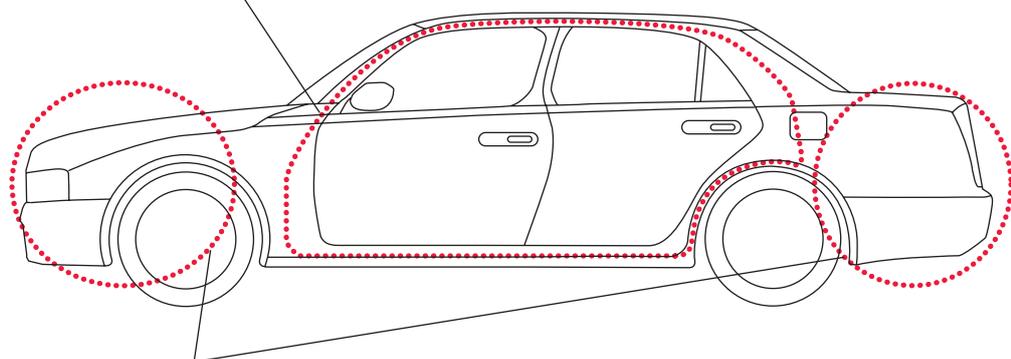
Monocoque body

MECHANISM 2

Impact absorbing body

Monocoque bodies are a countermeasure for impacts. There is a variety of names for these; impact absorbing body, crushable body, etc. However, these body structures all come from the "Front/Rear Impact Absorption" and "Strengthened cabin to protect vehicle occupants" designs. The names differ depending on the maker, however, GOA, ZONE, G-CON, RIZE, MAGMA, TAF, TECT. New cyclic structure bodies are in use at present.

Cabin: Strengthened cabin designed to protect vehicle occupants in an accident.



Front/Rear structure: Front/Rear structural design to absorb impact force at the time of an accident.

BODY

Maintenance of Body

Damage Diagnosis/Estimates

●BODY COMPASS PAT.P.

Estimates are more accurate.

No.	L	H	▼kg	☞
AP901	1,016	58	2	1

Usage

This is an exclusive tool (estimates etc.) designed to assess the damage to a vehicle's body after an accident.

Application

From light weight vehicles to normal passenger types (also compatible with foreign vehicles)

Damage assessment range	40~1700mm
Body measurement hole diameter	φ 5~10mm

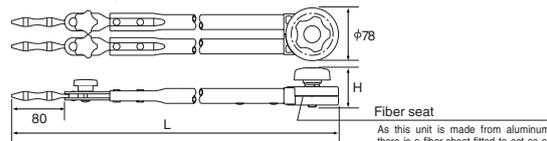
Characteristics

Sealing is made easy by a simple bolt screw-in operation. The operation is faster and easier when using wrenches, such as the ratchet type, etc. (Hexagonal 2-faced width 14mm)

As the center bolt is fitted with a flange, an offset wrench can be used and the wrench will not slip off.

A resin grip is employed for the handle to prevent slippage.

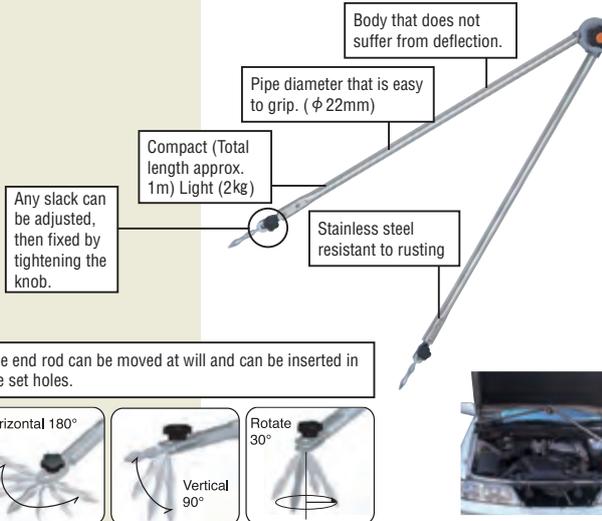
Fitted with a claw shape that does not allow the sealed areas to lift.



Replacement parts

Product name	No.
Fiber-sheet	AP901-1

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



CAUTION * Make sure that all operators read the Owner's Operator Manual carefully before usage.

Repair of Sheet Metal

●SLIDE HAMMER PULLER ATTACHMENT SET (5pcs.)

SLIDE HAMMER PULLER ATTACHMENT SET

No. AUD55T	▼kg 13.5	☞1
SLIDE HAMMER PULLER	AUD5	
SLIDE HAMMER PULLER ATTACHMENT	AUD5-B2,B21,B3,F1	

Usage

Body shop working

Application

For mini cars, passenger cars and pickup trucks.

Special features

Big and small hammer with weight 3.5kgs and 1.2kgs for wide application.



CAUTION * TAKE YOUR FOOTHOLD SECURELY, MAINTAIN GOOD POSTURE, AND MIND POSITION OF YOUR HANDS WHEN USING THE SLIDE HAMMER.

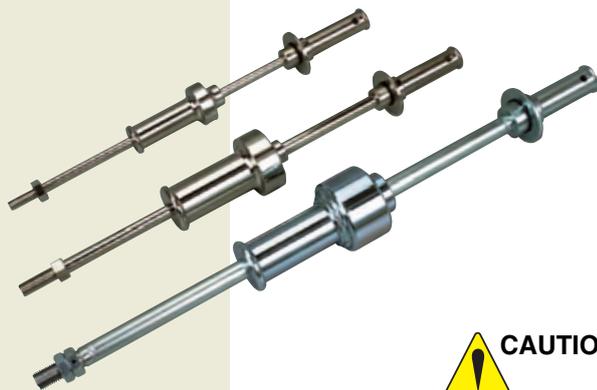
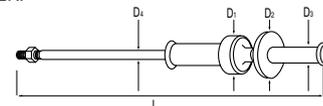
●SLIDE HAMMER PULLER

SLIDE HAMMER PULLER

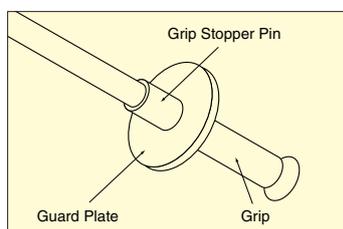
No.	D1	D2	D3	D4	L	Weight Shocker	Screw Size	▼kg	☞
AUD3	60	68	30	14	580	1.2kg	W9/16-12	2.7	1
AUD4	85	68	30	18	675	3.5kg	M18 × 2.0	5.5	1
AUD5	96	80	36	25	825	5.3kg	M22 × 2.5	8.4	1

Wide range of application with shockers of 3 different weight, i. e. 5.3kgs., 3.5kgs., and 1.2kg.
Applicable to mini/compact cars and small trucks.

CAUTION * TAKE YOUR FOOTHOLD SECURELY, MAINTAIN GOOD POSTURE, AND MIND POSITION OF YOUR HANDS WHEN USING THE SLIDE HAMMER.



CAUTION



BEFORE USING TOOLS.

- READ INSTRUCTION MANUALS BEFORE USE.
- TAKE YOUR FOOTHOLD SECURELY AND TAKE A GOOD BALANCE WHEN USING.

FOR YOUR SAFETY:

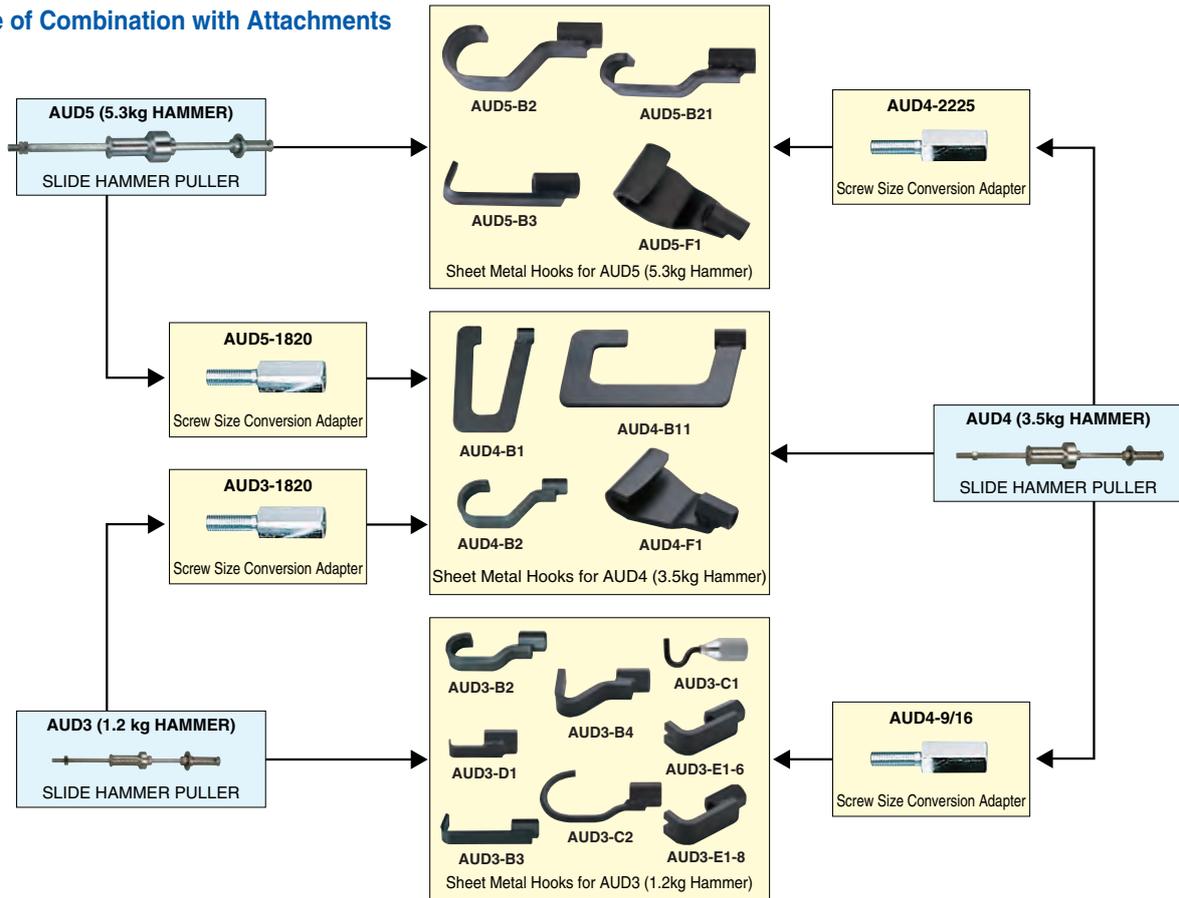
- ENSURE GRIP STOPPER PIN HAS BEEN INSERTED. (SEE FIGURE BELOW. AUD5 DOES NOT HAVE THE PIN.)
- HOLD THE TOOL WITH BOTH HANDS TO PREVENT UNEXPECTED MOVEMENT OF SHOCKER.
- USE IT ALONE.
- BE SURE TO INSTALL NUT TO TIP OF SHAFT. DO NOT ALLOW SHOCKER TO MOVE TOWARD TIP.
- BE SURE TO FIX ATTACHMENTS WITH CLOSED NUT.
- APPLY THIS TOOL TO THE PART FREE FROM DAMAGE BY HITTING.
- DO NOT ATTEMPT TO MODIFY A TOOL, OTHERWISE, YOU MAY DEGRADE QUALITY CONSIDERABLY.

FOR DAMAGE PREVENTION

- SELECT ATTACHMENTS APPROPRIATE TO THE WORK.
- BE CAREFUL NOT TO DROP THE TOOL. DO NOT PLACE ANYTHING ON THE TOOL.
- DO NOT ALLOW MOISTURE, CHEMICALS, IRON POWDER OR DUST TO COVER THE TOOL.

Use slide hammer puller together with the attachments (separately sold).

Example of Combination with Attachments



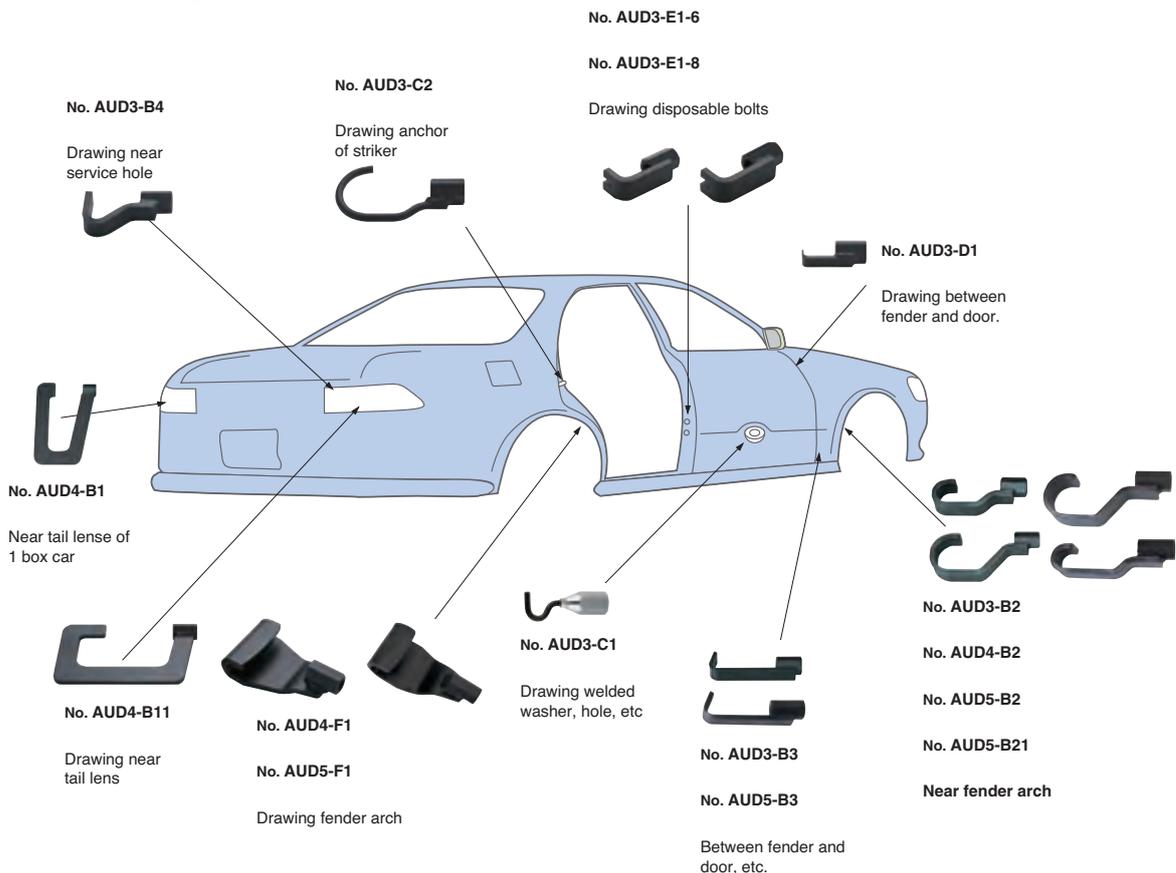
Application

Applicable to mini/compact cars and trucks.

How to Use

- To tip of the slide hammer puller, install attachment appropriate to work.
- Fix the attachment to puller with enclosed nut and offset wrench or similar tool.
- Slide the shocker and start to work.

●Example of Sheet Metal Drawing Operation



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

● **SLIDE HAMMER PULLER ATTACHMENT HOOK**

SLIDE HAMMER PULLER ATTACHMENT HOOK

SLIDE HAMMER PULLER ATTACHMENT SET (4pcs)

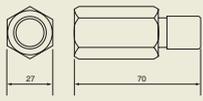
No. ATUD304	▼kg 1.35	📦 1
Attachments for Sheet Metal	AUD3-B4,C2,D1,E1-8	

SLIDE HAMMER PULLER ATTACHMENT SET (3pcs)

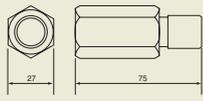
No. ATUD303	▼kg 1.17	📦 1
Attachments for Sheet Metal	AUD3-B2,B3,C1	

SLIDE HAMMER PULLER ATTACHMENT

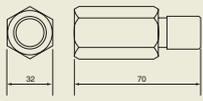
No.	AUD3-B2	AUD3-B3	AUD3-B4	AUD3-C1
	530g	500g	430g	140g
Screw Size at Puller side	W9/16-12	W9/16-12	W9/16-12	W9/16-12
Thickness x Width (mm)	9 x 32	9 x 32	9 x 25	Length 105
No.	AUD3-C2	AUD3-D1	AUD3-E1-6	AUD3-E1-8
	300g	220g	400g	400g
Screw Size at Puller side	W9/16-12	W9/16-12	W9/16-12	W9/16-12
Thickness x Width (mm)	Length 120	4.5 x 19	9 x 32	9 x 32
No.	AUD4-B1	AUD4-B11	AUD4-B2	AUD4-F1
	1.35kg	1.2kg	840g	1.1kg
Screw Size at Puller side	M18 x 2.0	M18 x 2.0	M18 x 2.0	M18 x 2.0
Thickness x Width (mm)	9 x 35	9 x 35	9 x 38	6 x 100
No.	AUD5-B2	AUD5-B21	AUD5-B3	AUD5-F1
	1.3kg	1.1kg	850g	1.9kg
Screw Size at Puller side	M18 x 2.0	M18 x 2.0	M18 x 2.0	M18 x 2.0
Thickness x Width (mm)	9 x 35	9 x 35	9 x 38	6 x 100



AUD3-1820, G1/2



AUD4-9/16, G1/2, 2225



AUD5-1820, G3/4

● **ADAPTER-SET FOR SLIDE HAMMER PULLER**



ADAPTER-SET FOR SLIDE HAMMER PULLER

ADAPTER-SET FOR SLIDE HAMMER PULLER (2pcs.)

No. ATUD302	▼g 600	📦 1
Adapter	AUD3-1820, G1/2	

No. ATUD402	▼g 600	📦 1
Adapter	AUD4-9/16, G1/2	

No.	Length	▼g	Screw Size (Puller)	(mm)	Screw Size (Object)	(mm)	Outer Hex A/F (mm)
AUD3-1820	70	300	W9/16-12	(14.2 x 2.1)	M18 x 2.0	—	27
AUD3-G1/2	70	300	W9/16-12	(14.2 x 2.1)	G1/2	(20.8)	27
AUD4-9/16	75	300	M18 x 2.0	—	W9/16-12	(14.2 x 2.1)	27
AUD4-G1/2	75	300	M18 x 2.0	—	G1/2	(20.8)	27
AUD4-2225	75	300	M18 x 2.0	—	M22 x 2.5	—	27
AUD5-1820	75	350	M22 x 2.5	—	M18 x 2.0	—	32
AUD5-G3/4	75	350	M22 x 2.5	—	G3/4	(26.4)	32

• Setting 12 kinds of attachments quite easily.
Adapter for changing screw sizes enables setting 12 kinds of attachments easily for big or small hammer.

Modification of Body

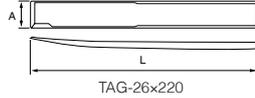
BODY

FLAT CHISEL

No.	A	L	▼g	☞
TAG-25×170	25	170	160	10
-26×220 (with rubber stopper)	26	220	270	10

- Flat & light body. Curved shape for easy use.
- Side blade for effective work. (Fig.1)
- Rubber stopper for safety job. (TAG-26×220)

CAUTION • WEAR SAFETY EYE GLASSES WHEN USING THIS TOOL.



●FLAT CHISEL D.PAT.



Cutting Body

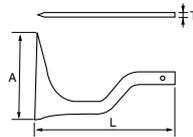


BODY PANEL EDGEWAYS CHISEL

No.	L	A	T	▼kg	☞
TAGZ-200×320	320	200	9	1	10

- Sharped edge on one side for effective lining on the corner of panel.
- Good impact transmission with center striking part for easy lining job.
- Various lining works are possible (Ex.1 : Removing inner cover of a door and inserting this tool through service hole, then hitting end of this tool for lining.
Ex.2 : At the corner of a panel or a narrow space, putting the edge of this tool into the damaged part and adjusting the direction of lining by hitting each part for lining.)

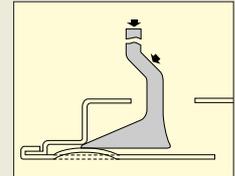
CAUTION • WEAR SAFETY EYE GLASSES WHEN USING THIS TOOL.



●BODY PANEL EDGEWAYS CHISEL



Line Alignment



AUTO PUNCH

No.	L	ℓ1	ℓ2	D1	D2	▼g
UDP-4	160	90	70	28	34	160

Punches for Replacement

No. UDP-4-1

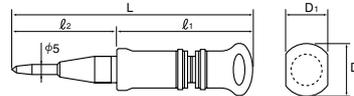
Application

- For making when attaching optional parts. To eliminating distortion during sheet metal processing.
- For marking the fitting point to engage the parts.

Features

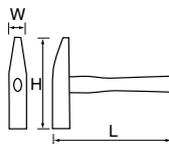
- Punch tip is made of highly durable hard steel.
- Continuous operations enhance operability.
- Quick marking with one hand without a hammer.
- Strength of punching adjustable by turning the handle.
 - * Harder punch: turn clockwise. Softer punch: turn counter-clockwise.
 - * The punch is made of abrasion-resistant SK steel.

●AUTO PUNCH



SHEET METAL PROCESSING HAMMER

No.	Usage	L	W	H	▼g	☞
UD5-1	Tapping at room temperature	250	38	190	1600	1
-2	Variagation	300	30	143	290	1
-3	Side repair from interior	300	30	100	300	1
-4	Vertical repairs from interior	300	50	100	390	1



●SHEET METAL PROCESSING HAMMER



ULTRA LONG T-TYPE TORX BIT SOCKET FOR DOOR HANDLE

No.	Nominal	D	L	ℓ	▼g
AP205-T20	T20	17	229	200	10
AP205-T25	T25	17	229	200	10

Application

- Attaching and detaching of the outer handle in imported cars; mainly Mercedes Benz C-Class · E-Class (AP205-T20) and BMW (AP205-T25).

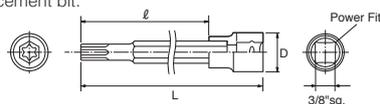
Features

- It is an ultra-long type that does not interfere with the thickness of the door or door molding, making it ideal for the attaching and detaching of outer handles.
- Tip bit can be replaced.

Replacement Bit

No.	Nominal
AP205-T20A	T20
AP205-T25A	T25

* Set screw is attached with the replacement bit.



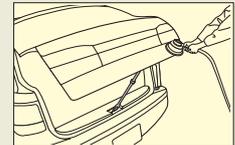
●3/8"sq. ULTRA LONG T-TYPE TORX BIT SOCKET FOR DOOR HANDLE



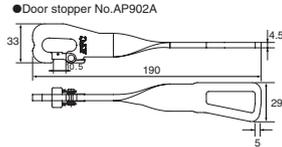
Working door sheet metal



Working rear gate sheet metal



● DOOR · GATE STOPPER D.PAT.



- CAUTION**
- Make sure that it is removed from the striker side when removing as there is a chance of scratching the body.
 - Make sure that all operators read the Owner's Operator Manual carefully before usage.

DOOR · GATE STOPPER

No. ATP9022	▼ g 700
Door stopper	AP902A
Gate stopper	AP902B

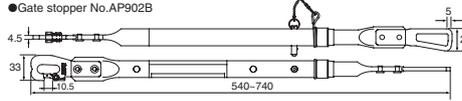
Product name	No.	Full length	▼ g
Door stopper	AP902A	190	200
Gate stopper	AP902B	540~740	500

Application

- An exclusive tool for working sheet metal or part replacement on doors and rear gates when slightly open.
- Door striker in the shape shown below. * Striker size: Less than φ 10mm (Does not fit chassis that are fitted with auto-lock door mechanisms)

Characteristics

- Sets the part using the door locking area.
- Can be used on most models.
- Removal/Installation is made easier.



Applicable striker



Replacement parts Extend/retractable pin-set for the gate stopper

No.	
AP902B-1	

* Exclusive for the gate stopper (No. AP902B). Contact your supplier or dealer for a replacement if this part is lost.

CAUTION

The model shapes below cannot use a striker. (Some Subaru models, etc.)

BODY

Welding

Protection of Front Shields and Seats



● PROTECLOTH



PROTECLOTH With Straps

No.	Size	Fixing Strap	☐
AYPC-1	1250×1730	930mm×2	1

No.	Size	☐
AYPC-2	820×1920	1
-4	1700×1920	1
-6	1700×2920	1

Purpose

• Protecting front shields, seats, etc. from sparks caused by welding operation.

Special Features

- With magic tape straps for fixing on front shields & seats. (AYPC-1)
- No magnets to damage car bodies by abrasion.
- Sheet approval No. JIS1323A. Temperature limit for continuous use : 1,000.C. Maximum : 1,650C.
- Containing no asbestos so harmless for human bodies.

● DISPOSABLE RESPIRATOR (3pcs.) YAMAMOTO

Expected release date: July 2005



DISPOSABLE RESPIRATOR (3pcs.)

No.	Type	Possible operating time	▼ g	☐
YEA-4000	Head-band type	12 hrs	11	10

Characteristics

- High capacity mask that has passed national standards (Classification DS2)
- As there are no metal parts in use, replacement is easy.
- Fitted with a tough, rigid rubber belt that is difficult to sever.
- Adjust the length of the belt.



Anti-sever belt & rubber type belt



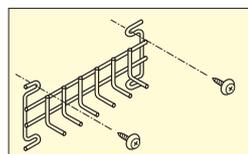
Belt length adjustment parts

* YAMAMOTO is the registered trademark of Yamamoto Kogyo Co., Ltd.

BODY

Removal of Interior · Exterior Parts

● CLIP CLAMP TOOL SET [11pcs.]



Convenient hanger is included

CLIP CLAMP TOOL SET

No. ATP11	▼ g 1990
Angle Small	AP20-6
Angle Medium	AP20-10
Angle Large	AP20-13
Long Middle	AP20L-10
Long Large	AP20L-13
Straight Small	AP20-6B
Straight Middle	AP20-10B
Straight Large	AP20-13B
Long Straight Middle	AP20L-10B
Long Straight Large	AP20L-13B
Long Movable Support	AP20L-P

Usage

• Removal of linings and clips in automobile.

Application

• Ideal for the lining of doors, backdoors, quarter panels, floors, etc. in domestic cars.

Features

- Convenient hanger is included.
- Please refer to P.290 for each single item.

CLIP CLAMP TOOL SET

No. ATP03A	▼g 340
Angle Small	AP20-6
Angle Medium	AP20-10
Angle Large	AP20-13

Usage

- Removal of linings and clips in automobile.

Application

- Ideal for the lining of doors, backdoors, quarter panels, floors, etc. in domestic cars. Please refer to  P.290 for each single item.

●CLIP CLAMP TOOL SET ANGLE [3pcs.]



CLIP CLAMP TOOL SET

No.ATP03B	▼g 370
Straight Small	AP20-6B
Straight Middle	AP20-10B
Straight Large	AP20-13B

Usage

- Removal of linings and clips in automobile.

Application

- Ideal for the lining of doors, backdoors, quarter panels, floors, etc. in domestic cars. Please refer to  P.290 for each single item.

●CLIP CLAMP TOOL SET STRAIGHT [3pcs.]



CLIP CLAMP TOOL SET

No. ATP03C	▼g 720
Long Medium Straight	AP20L-10B
Long Large Straight	AP20L-13B
Long Movable Support	AP20L-P

Usage

- Removal of linings and clips in automobile.

Application

- Ideal for the lining of doors, backdoors, quarter panels, floors, etc. in domestic cars. Please refer to  P.290 for each single item.

●CLIP CLAMP TOOL SET LONG-STRAIGHT [3pcs.]



CLIP CLAMP TOOL SET

No. ATP2032A	▼g 130
Angle Short Small	AP203-6A
Angle Short Medium	AP203-10A

Usage

- Removal of linings and clips in automobile.

Application

- Ideal for the lining of doors, backdoors, quarter panels, floors, etc. in domestic cars. Please refer to  P.290 for each single item.

●CLIP CLAMP TOOL SET ANGLE SHORT [2pcs.]



CLIP CLAMP TOOL SET

No. ATP02	▼g 560
Long Middle	AP20L-10
Long Large	AP20L-13

Usage

- Removal of linings and clips in automobile.

Application

- Ideal for the lining of doors, backdoors, quarter panels, floors, etc. in domestic cars. Please refer to  P.290 for each single item.

●CLIP CLAMP TOOL SET LONG ANGLE [2pcs.]



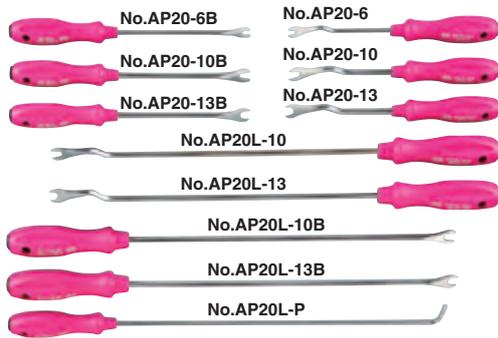
BODY

Removing Interior Fixtures and Exterior Parts

1 Removing Interior Fixtures and Exterior Parts
 Removing Interior Fixtures and Clips



CLIP CLAMP TOOL · SET D.PAT.



Full Set Covers Wide Applications.

Purpose

- Removing upholstery and clips of cars.

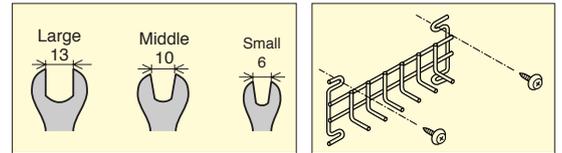
Application

- Optimal for upholstery such as panels of front/rear doors flooring, quarter panels.

Features

- Applicable to three sizes of clips. Comes in two types, curved and straight.
- Tip of large-size clip clamp tool is specially designed to fit clip shape.
- Full set (No. ATP11) includes a useful hanger. (Figure 1)

Tip Sizes



(Fig.1) Useful Hanger
 *(only for ATP11)

Product Name, Product Number	Size	▼g	☐	Angle Short Set	Angle Set	Straight Set	Long Angle Set	Long Straight Set	Full Set	
Angle short small No.AP203-6A		6	60	10	●					
Angle short middle No.AP203-10A		10	70	10	●					
Small No.AP20-6		6	100	10		●			●	
Middle No.AP20-10		10	120	10		●			●	
Large No.AP20-13		13	120	10		●			●	
Long-Middle No.AP20L-10		10	280	10			●		●	
Long-Large No.AP20L-13		13	280	10			●		●	
Straight-Small No.AP20-6B		6	110	10		●			●	
Straight-Middle No.AP20-10B		10	130	10		●			●	
Straight-Large No.AP20-13B		13	130	10		●			●	
Long-Middle-Straight No.AP20L-10B		10	280	10				●	●	
Long- Large -Straight No.AP20L-13B		13	280	10				●	●	
Long-Movable Fulcrum No.AP20L-P		-	160	10				●	●	
					ATP2032A	ATP03A	ATP03B	ATP02	ATP03C	ATP11

Angle Type

Short



Long



Straight Type

Short



Long+Movable Fulcrum



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

HANDY REMOVER · SET

No. ATP2014	▼g 140	📦 5
HANDY REMOVER	AP201-10A, 10P, N, W	

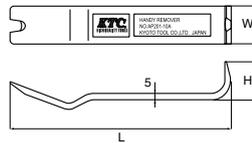
Purpose

Removing upholstery and clips on cars.

- Applicable to variety of work.
- Handy and colorful (4 types)

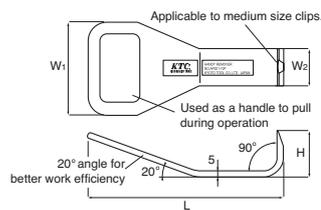
Medium Size

No.	L	W	H	▼g	📦
AP201-10A	180	30	31	30	5



Pull Type (Medium size)

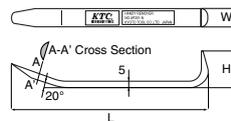
No.	L	W1	W2	H	▼g	📦
AP201-10P	160	75	30	40	40	5



Narrow Type

No.	L	W	H	▼g	📦
AP201-N	160	15	30	10	10

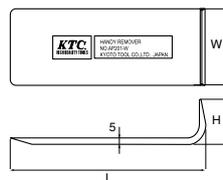
- The round bottom designed to avoid interference with instrument panel when removing the cluster of the panel.



Wide Type

No.	L	W	H	▼g	📦
AP201-W	160	60	35	60	5

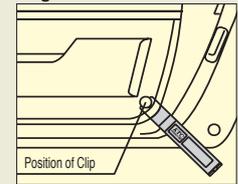
- Flat blade suitable for removing glued parts such as laces.



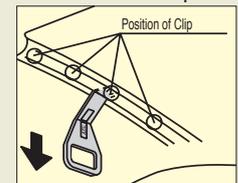
●HANDY REMOVER



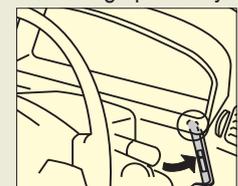
Removing upholstery in general



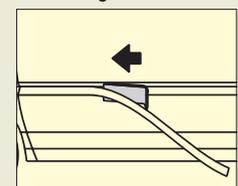
Removing upholstery in general including ones around the pillar



Removing upholstery



Removing laces



CLIP CLAMP TOOL · SET

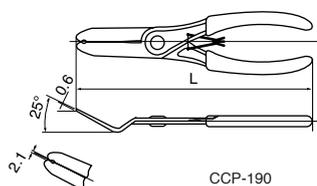
No. ATP2012	▼g 170	📦 1
Clip Clamp Plier	CCP-190	
Clip Clamp Remover	AP201-10A	

- Clip Clamp Pliers : For removing clips and clamps.
- Clip Clamp Remover : For removing plastic and rubber fixtures.

CLIP CLAMP PLIERS

No.	L	▼g	📦
CCP-190	190	140	1

- For removing clips by clamping the shafts without damaging them.
- Holding the clip shaft in 3.5mm combined hole on the edge of the blade.
- * Springs are available as replacement parts. Check with your dealer for details.



●CLIP CLAMP TOOL · SET



●HANDY REMOVER · SET

HANDY REMOVER · SET

HANDY REMOVER SET

No. ATP2015	▼g 125	📦 5
Narrow Type Remover	AP201-CN	
Flat Type Remover	AP201-CF	
Spoon Type Spatula	AP201-HS	
Narrow Type Spatula	AP201-HN	
Flat Type Spatula	AP201-HF	

Usage

- Remover has a new shape that allows the removal of clips in deep areas.
- Spatula type supports the removal of audio panels and service hole caps.

Features

- Strong, hard remover is achieved by the use of fibered resin.
- It has a thin tip shape that does not easily damage the olefin resin with soft surface that's been used in recent vehicles.

HANDY REMOVER SPATULA SET

No. ATP201H3	▼g 70	📦 5
Spoon Type Spatula	AP201-HS	
Narrow Type Spatula	AP201-HN	
Flat Type Spatula	AP201-HF	

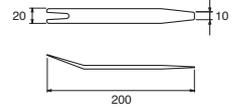
Usage

- Supports the removal of audio panels and service hole caps.
- It is removed by lifting up using the narrow or flat type, then prying open with the spoon type.

Narrow Type Remover

No.	▼g	📦
AP201-CN	21	5

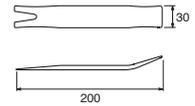
- With the thin tip shape, it can be inserted even in small gaps.



Flat Type Remover

No.	▼g	📦
AP201-CF	31	5

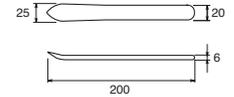
- Flat shape is maintained up to the grip, making it ideal for the removal of clips in deep places.



Spoon Type Spatula

No.	▼g	📦
AP201-HS	26	5

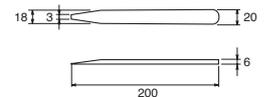
- By enlarging the tip shape, it is effective in prying open the panel that's been lifted by AP201-HN · AP201-HF.



Narrow Type Spatula

No.	▼g	📦
AP201-HN	22	5

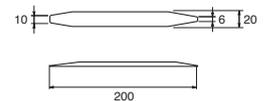
- By narrowing the tip, it can be used in places that used to need protection for the flat screwdriver tip.



Flat Type Spatula

No.	▼g	📦
AP201-HF	22	5

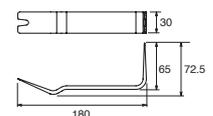
- By narrowing the tip, it supports the notch portion of switch base cover, etc.



Standard Type Remover

No.	▼g	📦
AP201-C	31	5

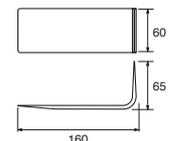
- With the thin tip shape, it can be inserted even in small gaps.



Wide Type Remover

No.	▼g	📦
AP201-WA	56	5

- With the thin tip shape, it can be inserted even in small gaps.



Removal of lining



Usage example: AP201-CN



AP201-CN



Usage example: AP201-CF



AP201-CF

Removal of lining
Removal of audio panels, etc.



Usage example: AP201-HS+
AP201-HN



AP201-HS

Lining · Hole Plug
Switch Base Cover



Usage example: AP201-HN

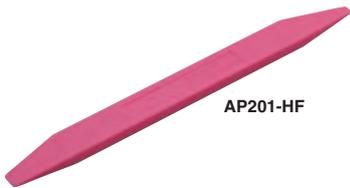


AP201-HN

Hole Plug
Switch Base Cover



Usage example: AP201-HF



AP201-HF

Removal of lining
(doors, etc.)



Usage example: AP201-C



AP201-C

Removal of lining



Usage example: AP201-WA



AP201-WA

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

CLIP CLAMP PLIERS

SET

No. ATP2022	▼g 290
CLIP CLAMP PLIERS	AP202A, AP202B

No.	Type	L	W1	W2	T	▼g	☒
AP202A	35°	196	25	53	9	145	5
AP202B	80°					145	5

Purpose

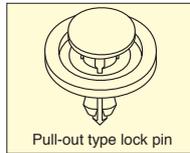
- Removal and installation of shaft of plastic clips used on front/rear bumpers, front fender faces, etc.. at time of removal and insertion.

Application

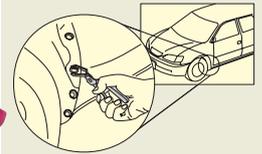
- Plastic clips with pull-out type lock pin (Shaft diameter : 5-10, in case of installing the clips.)

Features

- Lock pin (lock release) can be done with ease. (Fig.1)
- Clip can be pulled out after pulling out the lock pin. (Fig.2)
- Easy clamping and inserting of clip shaft at clip installation into car body (Fig.3)
- Pliers tip shaped to prevent damage to a clip.
- Pliers tip is angled to avoid damage to car body and interior covers.
- Pliers tip provided with arrow mark for easy alignment with the clip.



●CLIP CLAMP PLIERS 35° · 80° (for pulling out lock pins)



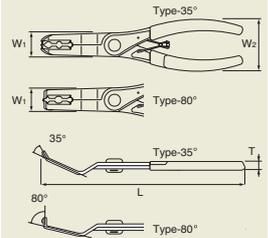
Type -35° (for flat planes)



Type -35° (for flat planes)

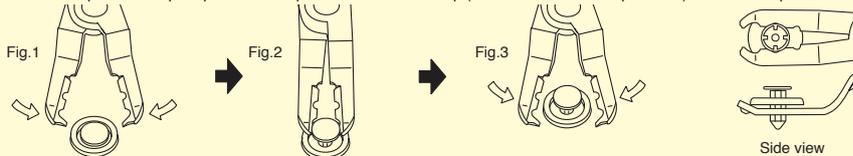


Type -80° (for deep holes)



●How to Use the Pliers

To pull out the lock pin of the clip To pull out the clip itself. To install the clip (contract the shaft and push it in)



CLIP CLAMP PLIER · SET

Clip Clamp Tool Set

No. ATP2022A	▼g 300
Clip Clamp Pliers	AP202C, AP202D

Clip Clamp Pliers D.PAT.P

No.	Type	L	B1	B2	T	▼g	☒
AP202C	20°	202	25	53	9	150	5
AP202D	80°	200	25	53	9	150	5

Usage

- Removal of 3-groove lock pin extraction type resin clip that's used inside the tire housing, undercover, bumper, etc. of automobile, as well as tightening and inserting of shaft when equipped.

Application

- 3-groove lock pin extraction type resin clip that's used in Suzuki, Mazda and Nissan of '08 or later (clip equipped: $\phi 5\sim\phi 10$ shaft diameter)

Features

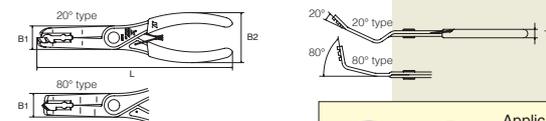
- It claws onto the lock pin from 3 directions to prevent the pin from breaking and allow the easy work.

* Spare parts are configured. Please contact your dealer for details.



20° type (for flat surface) 80° type (for tight space)

●CLIP CLAMP PLIERS 20° · 80° 3-CLAW TYPE · SET (for EXTRACTING 3-GROOVE TYPE TRIM CLIPS) D.PAT.



CLIP CLAMP PLIER

No.	Type	L	B1	B2	T	▼g	☒
AP208A	35°	167	18	53	9	120	5
AP208B	80°	162	18	53	9	120	5

Usage

- Removal of lock pin extraction type resin clip that's used in the front and rear bumpers, front fender liners, etc. of automobile as well as tightening and inserting of shaft when equipped.

Application

- 2-groove and 4-groove lock pin extraction type resin clips. (clip equipped: $\phi 5\sim\phi 10$ shaft diameter)

Features

- Since the short total length does not easily interfere, it can be used without removing the tire.

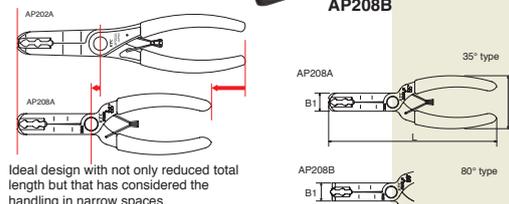
* Spare parts are configured. Please contact your dealer for details.



35° type 80° type



●CLIP CLAMP PLIERS 35° · 80° SHORT TYPE for WHELL HOUSING

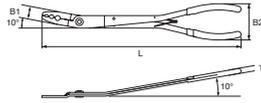


*Please check the merchandise inventory for a product that is marked with a lightning bolt icon before placing an order.

● TRIM CLIP PLIER FOR REAR GARNISH D.PAT.



AP207



TRIM CLIP PLIER

No.	L	B ₁	B ₂	T	▼g	☐
AP207	320	20	58	6	220	1

Usage

- Removal of the trim clip for rear garnish in automobile.

Application

- Trim clip for rear garnish that's used in Toyota, Nissan, Honda, Mazda, Suzuki, etc.

Features

- It does not damage the clip, allowing it to be reused.
- Long total length allows the use for clips in deep places.
- Angled tip can easily dodge obstacles (wiring, etc.).

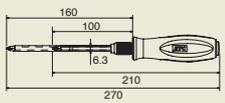
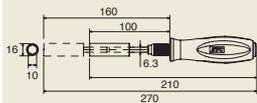
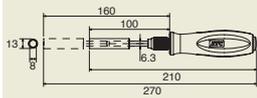
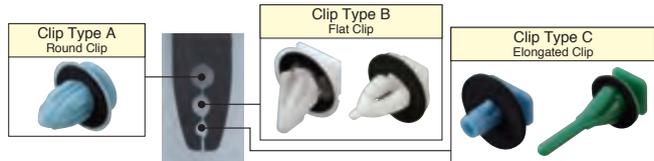
⚠ CAUTION • Do not use for other than the trip clip for rear garnish.



Firmly catches the lock

Usable in narrow, low places

Usable in deep, difficult places



● TELESCOPIC DRIVER · SET



AD601-08



AD601-10



AD601-P2

TELESCOPIC DRIVER · SET
TELESCOPIC DRIVER SET

No.	▼g	530
Telescopic Driver 8mm (bore: hex.)	AD601-08	
Telescopic Driver 10mm (bore: hex.)	AD601-10	
Telescopic Driver Cross No.2	AD601-P2	

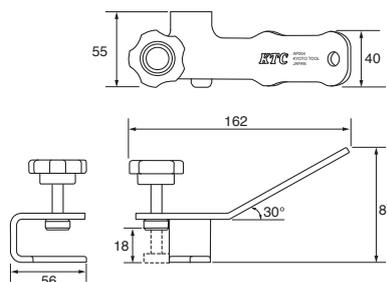
Features

- Axial length can stretch between 100mm and 160mm, allowing 1 unit to have 2 roles.
- Tip with magnet can hold the bolt.
- Magnet at the tip moves, changing the height of the magnet for both with and without tray, securely holding the bolt. (AD601-08, AD601-10)

Telescopic Driver

No.	Tip Shape · Bore Size	▼g	☐
AD601-08	Hex. · 8mm	180	10
AD601-10	Hex. · 10mm	200	10
AD601-P2	Cross · No.2	150	10

● WIPER ARM REMOVER



WIPER ARM REMOVER

No.	Full length	▼g
AP204	162	300

Usage

- Exclusive tools for removing car wiper arms.

Application

- Can be used on vehicles ranging from light to RVs that use full-con and semi-con type shield wipers.

* There are some vehicle types that cannot use this system.

Characteristics

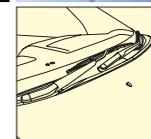
- Once the wiper arm is attached, removal can take place easily with only little effort.

Full-con shield, wipers

- Type of pivot part of the wiper arm is hidden by the bonnet.

Semi-con shield, wipers

- The pivot part of the wiper arm pivot visible.



Removal, Installation and Adjustment of Doors

BODY

15 AUTOMOTIVE SPECIAL TOOLS

COURTESY LAMP SWITCH STOPPER

No.	L	D	AAA	▽g	☒
ATP32	79	40	2	25x2	5

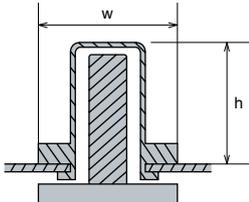
Usage

- When the door has been left in an open state, press the Courtesy switch to shut off the cabin's lamp and to stop the "open door alarm" from sounding.

Characteristics

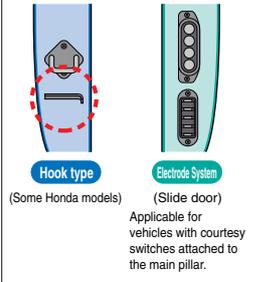
- Simply grasp the lever to apply or remove.
- As the switch has been made out of engineering plastic with glass fiber, it is both robust and light.
- The switch's rubber does not scratch.

Applicable courtesy lamp switch size

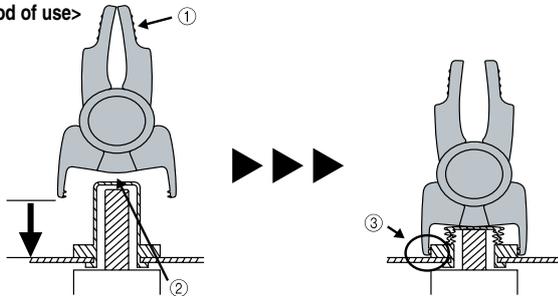


Width (w): 21.5-28.5mm
Height (h): Over 10mm when switch is OFF

Courtesy switch shapes that are not applicable.

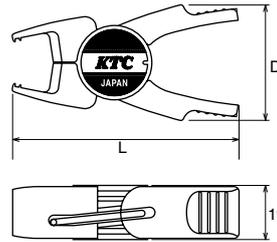


<Method of use>



- Grasp the lever part and open at the edge of the body.
- Push vertically towards the courtesy switch push.
- Fit so that the base of the courtesy switch's rubber cover catches the body's edge.
- Make sure of secure installation.

●COURTESY LAMP SWITCH STOPPER



Stopping the door caution alarm **1**

Example of use (Front)



Example of use (Rear)



CAUTION • Do not close the door when tool in use.

DOOR BELT MOLDING REMOVER

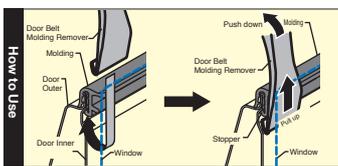
No.	B	D	L	I	▽g	☒
AP206	22	34	220	100	120	10

Usage

- It is a dedicated tool for the removal of door belt molding (drain molding) that's used in light and standard-sized vehicles (limited to domestic. Some models are not supported).

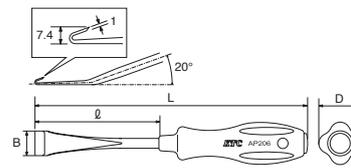
Features

- It uses the tip claw shape that can easily be inserted into small gaps and slide.
- It has the angle that's hard to bend and can easily lift the door belt molding, improving workability.
- Easy-to-grip resin grip that minimizes the hand sore is adopted.



- CAUTION
- Please be sure to work upon confirming the removal method on the maintenance manual.
 - There are types in some vehicle models that cannot be removed by this remover. Door belt molding (drain molding), clip or the like may be damaged if forced.

●DOOR BELT MOLDING REMOVER



DOOR HINGE BOLT WRENCH SET (2pcs.)

No.	▽g	☒
DMZ2	450	10

Door Hinge Bolt Wrench 12, 14

No.	S	D	L	▽g	☒
DMZ-12	12	19	300	200	10
-14	14	22	300	250	10

Purpose

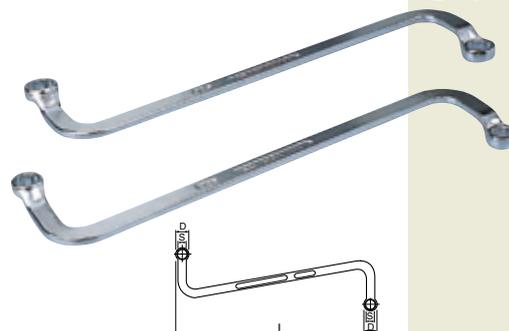
- Special wrench for adjusting, removing and installing doors.

Features

- Can be used in narrow quarters where conventional wrenches cannot be used.
- Combination of 12x12(14x14) enables using right side and left side effectively.

S	Applicable car Maker
12	Toyota, Nissan, Mitsubishi, Honda, Mazda, Subaru, Daihatsu
14	Toyota, Daihatsu, Mitsubishi

●DOOR HINGE BOLT WRENCH SET



Removal, Installation and Adjustment of Doors **2**

BODY

2 Removal, Installation and Adjustment of Doors

● DOOR HINGE BOLT RATCHET WRENCH



DOOR HINGE BOLT RATCHET WRENCH

No.	S	L	▼g	📦
DMR-12	12	250	250	10

Features

- Ratchet end for effective use in narrow spaces.
- Can be used from upper and lower sides of a hinge and left & right door.
- "S" shaped body for bypassing obstacles.
- Extruded shape of socket enables use on concave press-hinges, bypassing other bolts.
- 12 points ratchet end allows easy fitting into hinge bolts.

3 Adjustment of Door Striker

● TORX® WRENCH

● TORX® DRIVER

● OTHER TOOLS

BODY

Painting

Painting bumpers, fenders and doors

● SPRAY HANGER

SPRAY HANGER

No.	LxWxH standard (maximum value)	▼kg	📦
AP502	800x705x800(960)	7.3	1



- With 4 pads

Usage

- Painting and drying work carried out on body parts that have been laid flat such as doors, engine hoods, rear gates and the bumpers of light to regular sized vehicles.
- Replacement parts

Characteristics

- The height can be adjusted to two levels (800mm and 960mm) by the ring hook position of the chain, according to the size of the object, or to the worker's height.
- Also applicable for long wrap around bumpers. (Maximum value)
- The legs are of flat steel with grating for grip.
- Folding type for compact storage.
- Light construction for easy movement.

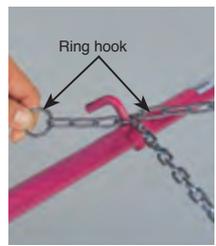
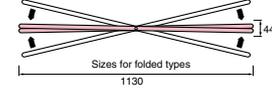
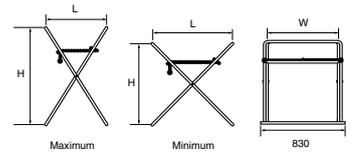
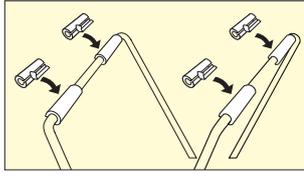


Can work on long wrap around bumpers.

SPRAY HANGER

No. AP502PA	▼g 40	📦 1
-------------	-------	-----

Pads x 4 (for replacement)



The height can be adjusted to two levels (800mm and 960mm) by the ring hook position of the chain.

TILTING SPRAY HANGER

No.	A	B	C	D	E	Accessories	▼kg	📦
TSR1380	1350	834	800	400	400	Panel stays 1 kit Bumper stays 1 kit	17	1

Purpose

- Spraying of bumpers, fenders, doors, etc. of up to the smallest-sized vehicles.

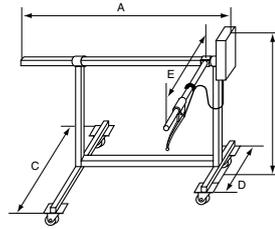
Features

- The object can be rotated, so even portions which are hard to spray can be sprayed efficiently.
- The rotation angle can be adjusted in increments as fine as 15°. An object can be fixed at a desired position according to the progress of work.
- The versatile stays can move freely, vertically and horizontally, and can also be fixed.
- Three kinds of stays can be used to spray paint on bumpers, fenders doors, engine hood, etc. (but not on tail gates).
- The stay for use with engine hoods is optional.
- The rotary mechanism has been designed not to turn more than 180° at any time, even if the lock wire is damaged.



●TILTING SPRAY HANGER

Spraying Bumper, Fender and Door



Option (Engine hood stay)

No. TSR1380-OP1



TSR1380-OP1

●Usage example

Fender



Panel stay

Engine hood



Engine hood stay (Option)

Bumper



Bumper stay

Door



Bumper stay

SPRAY HANGER

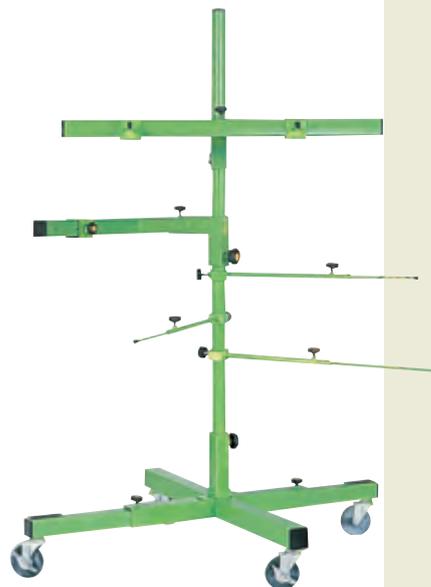
No.	H	▼kg	📦
TS1500	1685	28	1

A-single unit can be used to spray paint and dry parts including urethane bumpers, doors and tail gates.

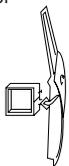
- The universal arms can rotate freely 360°, improving efficiency by allowing for fine work to proceed on two sides simultaneously.
- Parts are attached to newly designed hooks and can be transported easily.
- Rugged construction and contractable feet make it possible to spray heavy objects.
- The universal casters with 100mm diameter transport the stand freely even inside a booth or on a grating.
- Attached parts can be detached easily, so the storage space can be saved.
- Both the front and back sides of parts can be dried simultaneously to reduce expense.
- Rubber caps are provided to prevent parts damage, and rubber mats are attached on the base extensions to facilitate installation.



●SPRAY HANGER



Door



Hook A/B

Fender



Hook B

Bumper



Hook A/B

