

2012 ▶ 2013

HKS

GOODS MASTER



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P2~7



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EXHAUST Technology

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MUFFLER SERIES



For HKS who insist on "Total Balance", the exhaust system is one of the most important aspects of tuning. The key to a powerful engine is in a properly capable exhaust system and is a necessity in achieving good performance. This is why we strive for perfection in this field.

POINT

Exhaust is an engine part

Since its foundation in 1973, HKS has taken up many motorsport challenges as a pioneer in aftermarket tuning.

As a manufacturer of intake, exhaust and other engine parts including forced induction, HKS develops exhausts from the perspective of a complete engine tuner to bring performance that just exhaust development cannot achieve.

The experience gained through 40 years of development is packed into each and every muffler we create

Complete "in house" production

Planning - Design - Development - Production - Logistics - Sale
The complete processes is handled internally for the most stable supply of high quality products that customers can enjoy for many years to come, backed by ISO9001 certification

Our unique in house approach allows not just high quality production but for the key factors in exhaust systems "High Performance" "Sound" & "Style" to be balanced at a high level to create the most suitable product for the current times.



LINE-UP

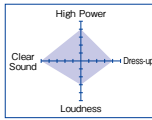
Super HIGH PERFORMANCE EXHAUST TECHNOLOGY Turbo Muffler



"High-dimensional Super Turbo Muffler" Exhaust Efficiency & Sound Pressure Reduction are implemented together.

The turbo engine master HKS challenged to implement the following 3 characteristics together to develop Super Turbo Muffler.

- Effective on stock to high performance vehicles w/ upgraded turbines.
- The performance exhaust sound meets the JASMA standard.
- Unique exhaust sound designed specifically for the engine.



HKS SSM Super Sound Master

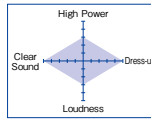


High frequency sport sound right after acceleration. Not too loud while cruising. Quiet at idling. Exhaust system that links with drivers' mind.

What HKS has found about "sound."

There should be a performance sound quality whether idling in the morning or at night, daily driving, or during spirited driving. HKS utilizes the latest sound control technology to develop exhaust systems that are tuned to the driver's desire.

An unprecedented exhilarating sporty sound from the SSM begins the moment the accelerator is pressed.



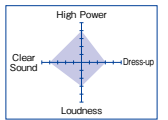
Hi-Power SPEC L HKS Hi-Power Muffler SPEC L - Light Weight



New Generation Sport Muffler Built Around "Light Weight" Concept. Carbon Wrapped Tip To Emphasize Light & Sporty Design.

Designed and developed with the concept theme of "light weight", pipes, silencers and other parts have all been individually lightened to produce a muffler which is half the weight of the stock muffler.

Bullet style silencers have been used for aggressive appearance with carbon wrapping around the tip to express the lightweight concept of this muffler.



SUPERIOR R SPEC

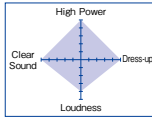


"High performance" is the concept of this full titanium muffler.

The durable full titanium exhaust system is lightweight and it weighs 10kg lighter than stock exhaust system.

As rpm goes up, the high sound will be like racing sound. The piping layout has large radius to optimize exhaust gas pressure and temperature. Reduced exhaust gas pressure can handle even hard tunings.

Dual layer tips prevent heat affection to bumper and silt inlets tips have noise reduction effect. After a lot of R&D, finally HKS flagship exhaust system has been available with ultimate performance, sound quality and appearance.

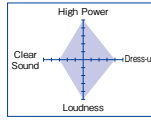


Hi-Power SPEC R



Sound, layout, exhaust performance, detailed finish of manufacturing. It is a real sport muffler.

Hi-Power Spec R mufflers are designed for no compromises whilst still maintaining a reasonable noise level for street use. In the pursuit of absolute efficiency, one piece design was utilized and titanium was chosen as the preferred material due to its incredible lightweight properties and durability against the weathering and long term use. Hi-Power Spec R mufflers are on average 65% lighter than the manufacturer's standard muffler system and the single piece design reduces the inefficiencies that can be found at joints whilst allowing for the straightest possible design.

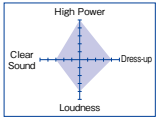


FULL DUAL MUFFLER



The flagship model with HKS exhaust technology.

Full independent layout of both right and left banks of V type engines. Full dual layout without 2:1 junction portion like stock exhaust system. Without performance drop due to the exhaust interference, it enables stress free revolution up to high rpm range.

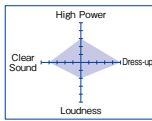


LEGAMAX Premium HKS STYLING PERFORMANCE



Advanced Legamax with vehicle specific stylish tip design.

Legamax Premium mufflers offer the performance benefits of a sports muffler with the class and elegance of a premium muffler. Every tail pipe design is customised per application to ensure that muffler has impact and becomes a focal point in the appearance of the vehicle, yet blends with the overall design of the car. Legamax Premium mufflers are constructed of SUS304 grade stainless steel to give a high lustre finish which is durable. Some applications also incorporate the latest automotive fashion trends by featuring titanium tail tips which adds to the premium appearance with its distinct look.



ES ELEGANT & SPORTS Premium



Small diameter cannon ball type sporty silencer with elegant style "ESpremium muffler".

End of the silencer has diffuser shape that will have shade around there when installed to a vehicle. It will have an elegant look. The thick designed tip has premium looking that differentiate from other cannon ball type exhausts. Although the sound level is slightly louder than stock exhaust system, it has high sound quality. This is a new cannon ball type exhaust system with "ELEGANT & SPORTS PREMIUM" looking.

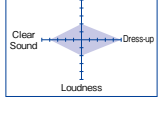


HKS Stylish Exhaust System Cool Style



"Stylish" & "Affordable"

Cool looking from rear side. Comfortable sound quality and level.

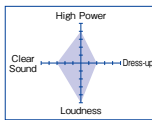


silent

High quality sound. Sport exhaust system with reduced noise level.



The real street sports muffler.

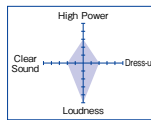


ES Wagon MUFFLER

HKS offers Wagon Sports with comfortable and sporty exhaust systems.



Affordable exhaust systems for wagon vehicles.

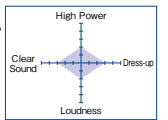


LEGAMAX HKS EXHAUST TECHNOLOGY

The quality is the new standard with high performance and dignity.



LEGAL The basic model of HKS exhaust systems.



TAIL STYLE



*Advantex is a registered trademark of Owens Corning.

METAL CATALYZER

High horsepower and high cleaning performance are balanced at high level with Metal Catalyzer.

Other aftermarket sport catalytic converters have image like "high horsepower but low cleaning performance". HKS Metal Catalyzer achieved both high horsepower & high cleaning performance. Vehicle specified type and universal type are available.

- The target horsepower is 500 - 600 PS.
- 150 Cell is well balanced for exhaust efficiency and cleaning performance. Thickness of fin is 0.1mm for durability.
- As Automobile Exhaust Gas Test Report is attached, it is Japanese Road Safety Standard approval and meets to Vehicle Inspection.
- High horsepower and high cleaning performance are well balanced at high level.
- Vehicle specified type, universal oval type and round type are available.

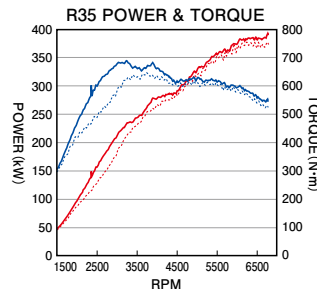


POINT

HKS METAL CATALYZER (Vehicle Specified)

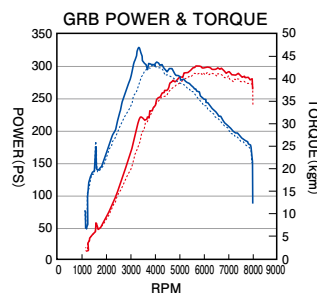
Extension + Center pipe integrated type (R35)

- Total tuning from outlet of turbo to center pipe. "Exhaust gas cleaning" and "Low resistance for exhaust gas flow" are balanced at high level. Environment friendly performance and reduction of exhaust gas resistance enables quick boost pressure spooling.
- Stock part has 4 catalytic converters (Primary catalytic converter x 2·Center pipe portion x 2). Because of high cleaning performance of HKS Metal Catalyzer, just 2 primary catalytic converters can clean exhaust gas enough to meet Japanese road regulation and reduced number of catalytic converters improves exhaust gas efficiency and enables better response.
- Extension portion of turbo outlet is manufactured with "Lost-wax casting". Normal machining or press manufacturing has welding bead that causes turbulence. Lost-wax casting eliminates inside gap and enables smooth gas flow.



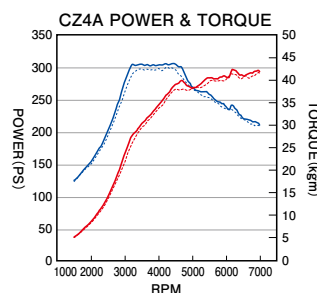
Extension + Front Pipe integrated type (GRB)

- Sports Catalytic Converter that has high horsepower and high cleaning performance.
- 150 Cell is well balanced for exhaust efficiency and cleaning performance. Thickness of fin is 0.1mm for durability.
- Horsepower and torque at middle rpm range are improved with stable performance enhancement at high rpm.



Round type (CZ4A)

- HKS Metal Catalyzer for CZ4A has combination of 300 cell and 150 cell (Stock: 600 cell and 400 cell). Cleaning performance is as high as 300 cell level with low resistance as 150 cell.
- Diameter of pipe is enlarged to $\phi 65$ (Stock: $\phi 60$) to improve exhaust gas efficiency.
- "High horsepower" and "High cleaning performance" are balanced at high level.
- With high cleaning performance, primary exhaust back pressure and secondary exhaust back pressure are reduced that enables quick boost pressure spooling.



POWER — HKS
..... STOCK

TORQUE — HKS
..... STOCK

●HKS METAL CATALYZER (Universal)

■Universal sport type catalytic converter that can be used for various level of tuning cars. It is well balanced for high horsepower and high cleaning performance.

■Target Horsepower 500 - 600PS.

Oval and Round types are released for various vehicles.

Oval Type can be used for $\phi 85$ - $\phi 90$ and Round Type can be used for $\phi 115$.
(Modification is required.)

As they are universal type, flanges need to be welded.



Oval Type



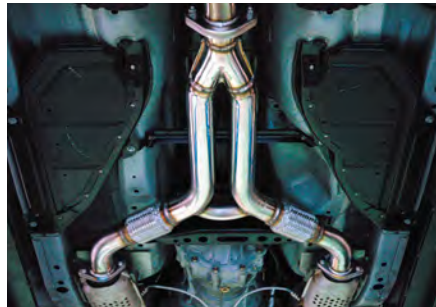
Round Type

STAINLESS STEEL CENTER PIPE

Aggressive sporty sound.

Larger diameter of pipes improves exhaust gas flow to muffler. Engine performance will be improved.

Durable and good looking with SUS304.



STAINLESS STEEL FRONT PIPE

STAINLESS STEEL HIGH PERFORMANCE FRONT PIPE.

Front Pipe decreases secondary exhaust gas back pressure of turbine to improve response.

Stainless steel is durable and good looking.

Flanges are also made of stainless steel and tig welded that reduces exhaust gas friction.



BNR32·BCNR33·BNR34

FRONT PIPE

HKS FRONT PIPE pulls out potential power from turbocharged vehicle.

Diameter of pipe is studied and selected for each vehicle, engine performance and characteristics.

Bending of pipe is designed as straight as possible to reduce secondary exhaust gas pressure.

Response of turbocharger is improved and potential power of turbocharged vehicle comes out.



HKS HEADER SERIES

Ultimate exhaust efficiency. RACING HEADER

HKS Exhaust technology, which is know-how of long time development, targets to pull out 100% engine performance with the exhaust manifold.

A lot of different approach were tried for each vehicle to keep performance for middle rpm range and to improve horsepower at high rpm.



POINT

■ Reduced pressure with Bypass Pipe

When strong vacuum is created, to the contrary, there will also be strong pressure. Cylinder pipes are connected with Bypass Pipe to reduce pressure as minimum as possible. Rhythm of "Pressure" and "Vacuum" inside manifold is controlled.

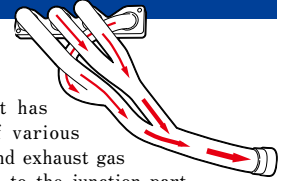
Besides, number of bypass pipe, positions are designed to optimize for each engine characteristics. It enables to reduce pressure without change of vacuum. Therefore, there is no drop of torque as shown in the graph below. The engine will have Inertia Exhaust Gas Efficiency (Efficiency to increase horsepower of NA engine) and flat torque characteristics, which enables easy drivability.



■ Advantage of 4-2-1 Straight Junction (SUPER HEADER)

HKS selected 4-2-1 junction design that has best result for street use from study of various data about a lot of engine characteristics and exhaust gas pulse. 4-1 Junction type has shorter length to the junction part and it is better for competition purpose that require performance only at high rpm range. But it has too less torque at low rpm range for street driving.

HKS' Straight Junction Design accelerates exhaust gas with exhaust gas pressure and it pulls out combustion gas. Exhaust gas efficiency is improved with the design.

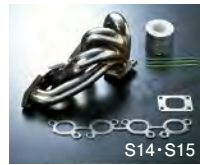


STAINLESS STEEL EXHAUST MANIFOLD

STAINLESS EXHAUST MANIFOLD pulls out potential power from turbocharged engine.

The best solution to reduce primary exhaust gas back pressure and supply smooth exhaust gas to turbine is replacement of exhaust manifold.

HKS supplies stock replacement type Stainless Exhaust Manifold.



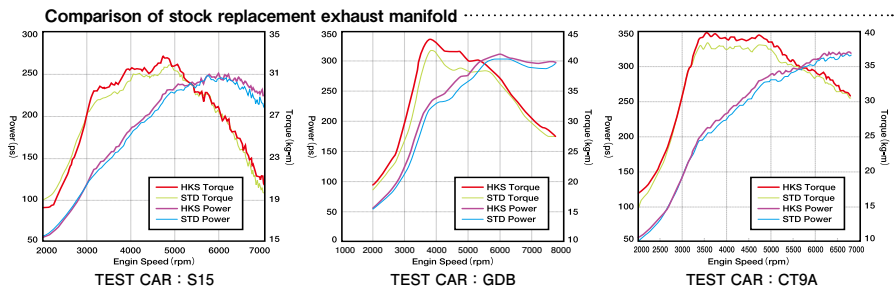
POINT

■ Turbine performance is affected by Exhaust Manifold.

Shape, diameter of pipes and production quality of Exhaust manifold between engine and turbine affects performance of turbine. HKS Exhaust Manifolds are developed with know-how and data from long time development experience of turbo technologies.

Diameter of pipes and design of bending are designed for each engine performance and displacement. Welding portion between flange and pipe is flattened to reduce friction of exhaust gas.

As a result, response of turbocharger at middle and high rpm range is improved. Both torque and horsepower will be increased.



SUSPENSION

Technology

● HIPERMAX SERIES 9~10

SUSPENSION SERIES



Single tube type damper is the standard for high performance suspension tuning. However, because of precision manufacturing requirement, production cost is increased. Besides, since it is not suitable for mass production, most manufacturers use twin tube design.

However, HKS' latest in-house R&D and manufacturing technologies enable controlled cost with high performance.

LINE-UP

HIPERMAX

Under development

MAX IV RS

for Circuit & Street

World leading performance for circuit driving and street use.



- Single Tube
- 3 way damping force adjustment
- Ride height adjustable lower bracket type
- Special Oil
- PNE Coating
- M Shaft (Normal type)
- Aluminum Bracket
- Pillow upper mount
- Inverted Type (Strut only)
- Remote reservoir
- Overhauling service available

MAX IV GT

for Street Standard

Awesome control and comfort ride on the street for a sporty drive. The new Max IV GT sporty suspension.



- Single Tube
- 30 step damping force adjustment
- Ride height adjustable lower bracket type
- Special Oil
- PNE Coating
- M Shaft (Normal type)
- M4P
- Changeable port system
- Aluminum Bracket (Normal type)
- Reinforced rubber upper mount (Normal type)
- Inverted Type (Strut only)
- Overhauling service available



for Extreme Low Form

Not just for lowering the vehicle height. "Super Low Stance Model" for reliable driving performance.



- Single Tube
- 30 step damping force adjustment
- Ride height adjustable lower bracket type
- Special Oil
- PNE Coating
- Short Coil Spring
- Pillow Upper Mount
- Inverted Type (Strut only)
- Spring Rate Change Available
- Overhauling service available



for Luxury & Almighty

The ultimate all-rounder for the low stance enthusiast.



- Single Tube
- 30 step damping force adjustment
- Ride height adjustable lower bracket type
- Special Oil
- PNE Coating
- M Shaft
- Strengthened Rubber Upper Mounts
- Inverted Type (Strut only)
- Spring Rate Change Available
- Overhauling service available



for Casual & Comfort

S-Style C is the basic model of new S-style suspension series. The simple structure provides beautiful style and great ride quality.



- Single Tube
- Fixed Damping Force
- Ride height adjustable lower bracket type
- Special Oil
- PNE Coating
- M Shaft
- Strengthened Rubber Upper Mounts
- Inverted Type (Strut only)
- Spring Rate Change Available
- Overhauling service available



for Drift & Circuit

Suspension for Easy Drifting.



- Single Tube
- 30 step damping force adjustment
- Ride height adjustable lower bracket type
- Special Oil
- PNE Coating
- Coil Spring
- Pillow upper mount
- 2Way Pillow Upper Mount
- Inverted Type (Strut only)
- Spring Rate Change Available
- Overhauling service available



HIPERMAX



for SPORTS **MAX IV**

for STYLISH *s-style*



Circuit & Street
Under development



Street Standard



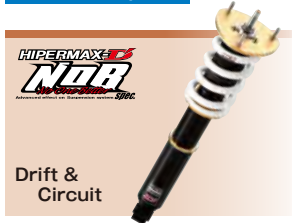
Extreme Low Form



Luxury & Almighty



Casual & Comfort



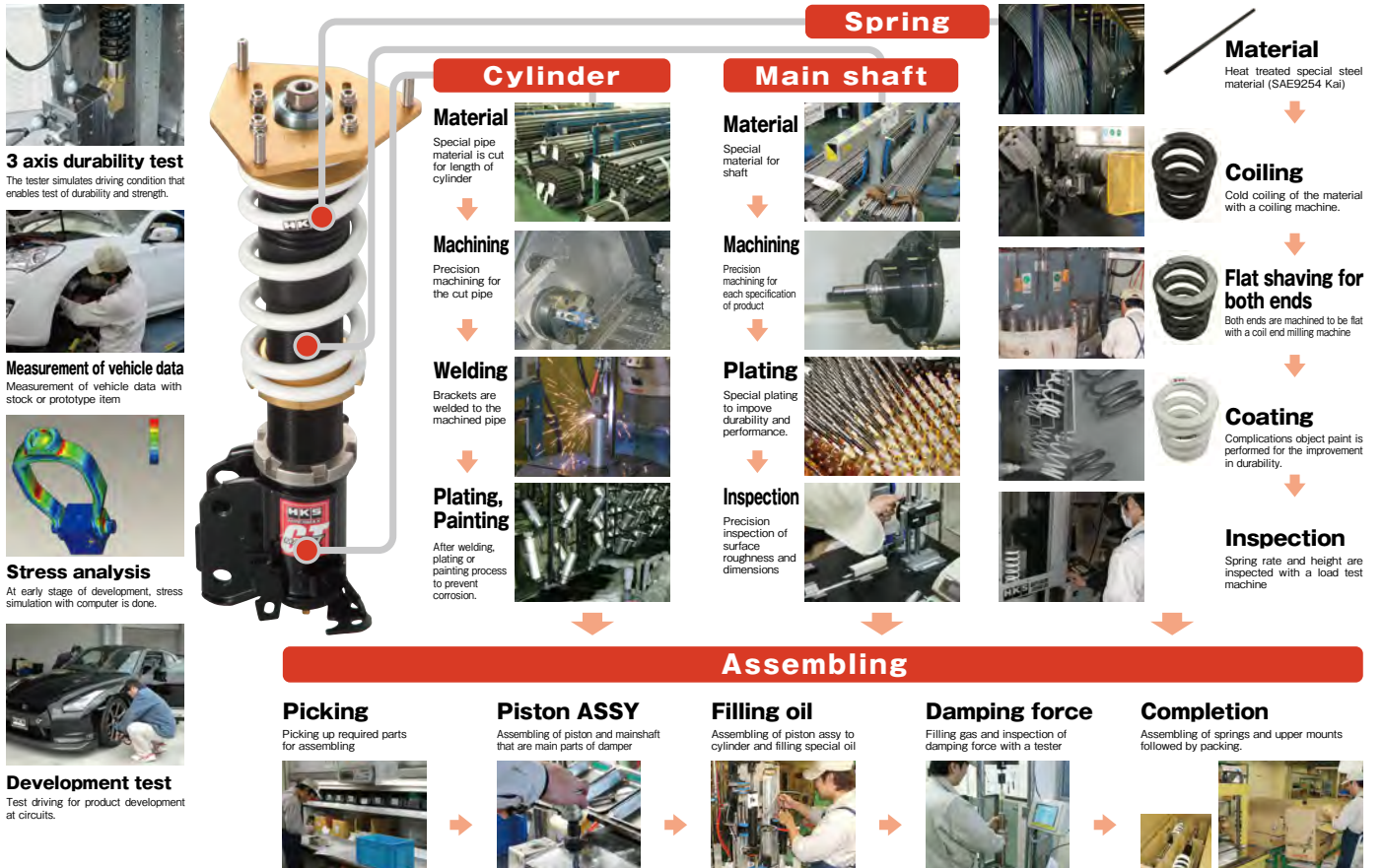
Drift & Circuit

HKS HIPERMAX series for various needs

- HIPERMAX series items have HKS' factory settings of spring rate and height.
- HIPERMAX series items are ride height adjustable with thread type height adjusting mechanism (Excluding some vehicles).
- All items are single tube structure. It is possible to overhaul and specification change (It is charged. Excluding some items).
- For quality control, R&D, manufacturing, shipment are all in house.

TECHNOLOGY

HIPERMAX Manufacturing process HKS manufactures dampers in house.



INTAKE

Technology

- **HKS INTAKE SERIES** 13~14
- **RACING CHAMBER KIT** 15
- **SUPER POWER FLOW PARTS** ... 15
- **SUPER HYBRID FILTER** 16

HKS INTAKE SERIES



Super Power Flow was developed to induct more clean air efficiently to engine with detailed analysis of air flow with a flow bench.

With great features of Super Power Flow remain such as lip funnel structure, which creates vacuum area that enables forced air induction and application for vehicles with precision air / fuel ratio management, refined evolution models Super Power Flow Reloaded / Racing Suction Reloaded are now available.

Some models have air guide that streamlines air flow and enables precision measurement of air volume. It is applicable for the latest engine management technology like closed-loop control.

LINE-UP

From the stock replacement type to ultimate intake system are available for a wide variety of customers' needs.

HIGH LEVEL TYPE RACING SUCTION Reloaded

The ultimate intake system for higher performance

**RACING
SUCTION**
Reloaded



Vehicle specific design to maximize induction performance.

SPORTS TYPE SUPER POWER FLOW Reloaded

The HKS standard intake tuning model.

**SUPER
POWER
FLOW**
Reloaded



Proved Racing type filter, "Super Power Flow" evolved to Reloaded with new structure stealth frame

HIGH RESPONSE TYPE Premium Suction Kit

Premium Suction
S S S



The vehicle specific suction pipe has casual existence in engine compartment with premium response. Super Hybrid Filter has calm comfortable engine feeling. "Mature premium sports" with high quality driving.

STANDARD TYPE SUPER HYBRID FILTER

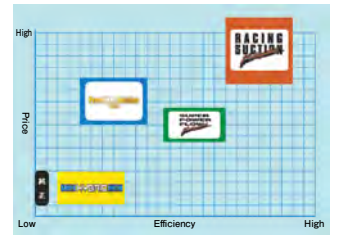
SUPER HYBRID FILTER
Reloaded



Easy installation stock replacement type "SUPER HYBRID FILTER". With HKS performance enhancement spirits, calm, high efficient and fun driving is achieved.

Reduction of intake resistance

Improvement of engine response and horsepower, reduction of intake resistance and increasing of induction air are factors of intake tuning. HKS intake products offer following options to improve performance.



Easy tuning

Stock air cleaner

Filter area is designed for the stock engine horsepower and intake resistance is big and it sometimes becomes bottle neck for performance improvement. Resonator is equipped to reduce induction noise.

Point

Stock element is folded non-woven fabric. When induction air flows through folded non-woven fabric, it interferences and it becomes big friction.

Response

Light sports

Real sports

STOCK REPLACEMENT TYPE

SUPER HYBRID FILTER

Special polyurethane form reduces induction resistance in the limited space of stock air cleaner box. Simple installation for easy improvement of induction efficiency.

Point

Special material and smooth straight air flow as the above figure reduces induction resistance.

Premium Suction

Super Hybrid Filter and aluminum suction pipe reduces induction resistance and improves throttle response. With stock like looking, response is improved.

Point

Even with quiet intake sound, by preventing deformation of stock suction hose, response will be improved.

SUPER POWER FLOW Reloaded

Ambient exposure type air cleaner has larger area of induction inlet that increases intake air volume. Engine horsepower and torque will be more than panel filters. Without air cleaner box, intake sound will be sporty.

Point

Free layout and larger inlet area will increase performance of engine.

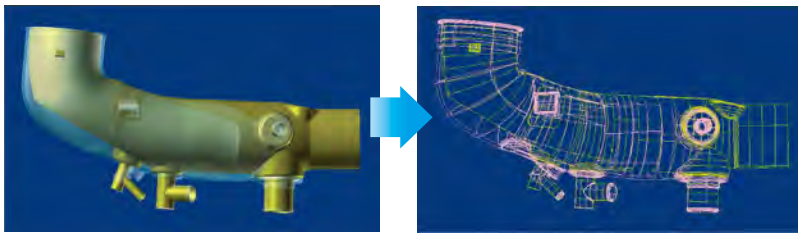
RACING SUCTION Reloaded

Vehicle specific suction pipe design. Angle and length of pipe are for enhanced induction efficiency. It is effective for quick response for NA engines and higher performance for turbocharged engines.

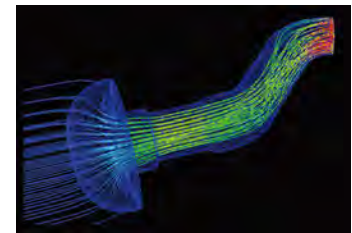
Point

With stock suction system, induction air hit to corrugated portion of hose and makes swirl and resistance. The specially designed pipe reduces corrugated portion and gap inside pipe to make air flow smoother.

Design The shape for reduction of intake resistance is designed with 3D CAD. The design maximizes intake air volume in the limited space of engine compartment.



Analysis Computer analysis of air flow in the pipe.

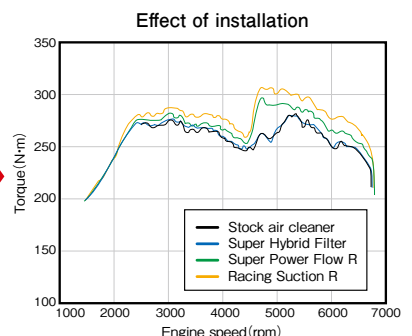
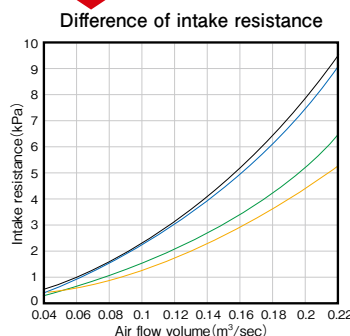


Effect of intake resistance reduction

Intake resistance will be reduced after replacement to HKS products from stock air cleaner.

- Super Hybrid Filter.....About3%
- Super Power Flow Reloaded...About30%
- Racing Suction Reloaded.....About40%

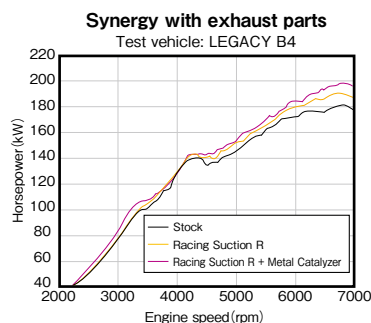
* General example values. Actual effect depends on vehicle models.



Balance with intake efficiency

In order to replace intake items, relation with exhaust system and management systems and engine data need to be concerned to achieve a good balance. HKS has built many racing engines and tuned engines as well as development & manufacturing of exhaust and electronics products totally. All parts are developed with data each other to best match with the engine.

* Due to not efficient exhaust system, just replacement of intake items is not so efficient for some vehicles. Improvement of exhaust efficiency like muffler and Metal Catalyzer will be effective for both intake and exhaust systems.



WARNING

It is not simple to improve performance just by decreasing intake resistance. Even efficiency and performance are increased, if ECU or sensor are not properly set, engine might be damaged. Latest vehicles have complicated control system for emission control or improving fuel consumption. Small improper setting may damage engine after several months. Too much efficiency improvement should not be done! Development of HKS products are well balanced for efficiency and control.

RACING CHAMBER KIT

Special chamber kit for BNR34 & BCNR33.

Aluminum Chamber Pipe from outlets of each turbine to junction portion.

Stock layout enables various kind of tuning.



SUPER POWER FLOW PARTS

■ Filter of Super Power Flow collects dust and intake efficiency will decrease after long time usage. In order to keep dust collection and engine performance, filter should be periodically replaced.

For proper product performance, replace the air filter element at regular intervals: (Recommended) Replace every 3,000-5,000km or every 3-6 months.

* There are certain conditions where, depending on dirt buildup, the filter may need to be replaced earlier than the above recommended intervals.

■ Super Power Flow replacement filter is high cost performance product and easy to install.

* For engine setting, please always use a new filter.



Replacement filter : Green



Replacement filter : Yellow



Replacement filter : Dry 3layers



Flame bolt

AIR FLOW LESS ADAPTER (STOCK AIR FLOW METER TYPE)

Air flow meter is one of big suction resistance. It can be removed with D-Jetro and controlled with "F-CON V Pro".

Performance is greatly improved when Racing Suction Reloaded is also installed. With "Air Flow Less Adapter", air flow meter can be easily removed.

Buffing finished aluminum cast pipe can be replaced with air flow meter. There is a boss on the pipe to install intake air temperature sensor (Modification is required).

■ For GT-R...With $\phi 70$ Flange. For HKS Racing Suction R (Code No. : 70020-AN005, 007).

■ For RB, VG...With $\phi 80$ Flange. For HKS Racing Suction R (Code No. : 70020-AN003, 004, 009, 010).

■ For SR...With $\phi 80$ Flange. For HKS Racing Suction R (Code No. : 70020-AN001, 002).

■ Universal... $\phi 80$ - $\phi 100$ Conical shaped aluminum cast pipe. It can be installed to HKS Racing Suction R (Altezza, Lancer Evolution IV-VI) with small modification of stay.



● AIR INTAKE FUNNEL (Option parts of Premium Suction)

● Stock air resonator is replaced and restriction of intake will be less.

● Even with stock air cleaner box, intake sound will be sporty.

● It is effective to be used with Premium Suction Kit.



Filter element for SUPER HYBRID FILTER

Sport filter that is replaceable.

70017-AK001

S-SIZE (143×256) Dry 3 layers

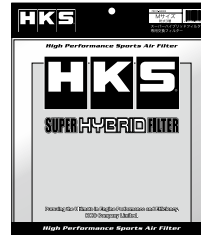


Application Lists

70017-AD002	70017-AN001	70017-AT020
70017-AD003	70017-AN003	70017-AZ001
70017-AH007	70017-AS001	
70017-AH008	70017-AS002	
70017-AH009	70017-AS003	
70017-AH010	70017-AS004	
70017-AH013	70017-AT012	
70017-AH014	70017-AT017	
70017-AM006	70017-AT018	

70017-AK002

M-SIZE (232×249) Dry 3 layers



Application Lists

70017-AF001	70017-AN002	70017-AT021
70017-AH002	70017-AN006	70017-AT022
70017-AH004	70017-AT002	70017-AZ002
70017-AH005	70017-AT003	
70017-AH006	70017-AT004	
70017-AH012	70017-AT007	
70017-AM001	70017-AT011	
70017-AM004	70017-AT015	
70017-AM005	70017-AT016	

70017-AK003

L-SIZE (198×346) Dry 3 layers



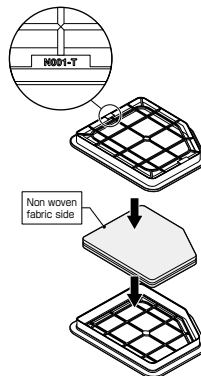
Application Lists

70017-AH003	70017-AZ004
70017-AH011	70017-AZ006
70017-AM007	70017-AZ007
70017-AN004	
70017-AN005	
70017-AT001	
70017-AT005	
70017-AT014	
70017-AT019	
70017-AZ003	

How to use

1. Remove Super Hybrid Filter from the vehicle.
2. Disassemble frame of Super Hybrid Filter and remove the old filter.
3. Cut the Filter Element (This item). (See the instruction on the right.)
4. Attach the cut new filter to the frame.

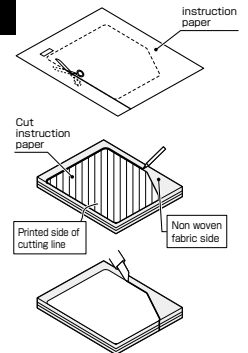
Face non woven fabric side towards the side of frame that has the carved seal [0000-T]. Ensure that there is no space between them
5. Assemble frames.
6. Install the filter to the vehicle.



How to cut the filter

- a. The instruction paper has the cutting line. Check the cutting shape by checking part number of the printed instruction or comparison with the removed old filter.
- b. After confirmation of the shape, cut the instruction paper for the line.
- c. Using the instruction paper, trace the cutting line to the filter with a marker.

The cutting line printed side of the instruction paper should be the side of non woven fabric side.
- d. Cut the filter.



ELECTRONICS

Technology

●DMR	19~20	●VAC	28
●HKS TURBO TIMER	21	●SLD/FSC/FCD/EIDS	28
●HKS TURBO TIMER HARNESS ...	21	●ATSC	29
●CIRCUIT ATTACK COUNTER.....	22	●F-CON id	30
●OB-LINK	23	●F-CON D	31
●DIRECT BRIGHT METER	24	●FLASH EDITOR	32~33
●TWIN POWER	24	●F-CON iS.....	34~35
●EVC 6	25	●F-CON V Pro Ver.4	36
●EVC-S	26	●F-CON V Pro	36
●EasyWriter set for EVC 6 ...	27		

DMR

Direct Multi Recorder



Some drive recorders generate radio wave, which causes the electromagnetic interference of digital terrestrial broadcasting, which results in poor or no signal reception.

HKS DMR minimizes radio emission with radio shielding on the main unit and other components!

HKS DMR can record driving and allow digital terrestrial broadcast viewing at the same time.

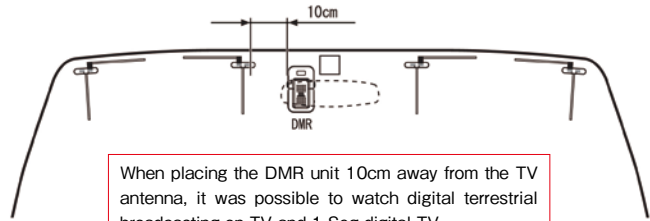
"Record," "View," and "Analyze" driving with HKS' drive recorder DMR. DMR is now one seg and DTT compatible.

* Depending on signal reception/ radio wave conditions, digital terrestrial broadcasting may not be received properly.

Comparison of DTT Antenna Reception

	Company P's:2-channel,2-tuner DTT tuner		Company P's:4-channel,4-tuner DTT tuner	
	General drive recorder	DMR	General drive recorder	DMR
Drive Recorder NOT in use	Antenna level 61	Antenna level 57	 12-Seg	 12-Seg
Drive Recorder in use	Antenna level 28	Antenna level 54	 1-Seg	 12-Seg

Result of in-house Test (It may be different from actual usage.)



☆FM · AM · FM-VICS · GPS can be received properly.

POINT

Drive recorder function of DMR

Main unit contains a camera, of course, GPS and G sensors to enable recording of video, audio, position time and impact with improved recording performance. "DMR" is the recorder to enjoy recording

■SIMPLE INSTALLATION

·Position the DMR unit at the top of the windscreen, and just plug into the 12 volt accessory Socket.

■GPS UNIT & G-SENSOR EQUIPPED

·Location and interval speed can be viewed on Google maps using the GPS location information.

·G sensor can detect and record the speed (G) so the DMR can show the XYZ amplitude. Also, there is a permanent power supply unit include which prevents the battery from discharging too much.

■SECOND CAMERA as STANDARD EQUIPMENT

·HKS' DMR is equipped with the 2nd camera as a standard. The camera can point towards the driver's foot or meters to record the driver during circuit. Using the special viewer software, it is possible to analyze your driving more precisely.

Shoot the Performance!

- A 1.3 mega pixel CMOS digital sensor unit
- 142.5° wide-angle camera + super sensitive 2nd camera

Record the Performance!

- Image and sound are recorded simultaneously.
- Location & speed recorded using GPS, viewed on Google Map.
- Vehicle's XYZ direction can be recorded using G sensor.
- Permanent power supply allows continuous recording.

View the Performance!

- Data can be analyzed on PC using the DMR viewer software.
- 16 frame multi capture for continuous recording.

■DMR's "HIPER ENGINE" ON CPU

·Most recent high speed CPU (Hiper DMR Engine) allows seamless recording straight to SD memory card without delay even though most drive recorders will have short gaps every few minutes in recording when it saves the recording to SD memory card.

·DMR uses the latest systems to directly record to the SD memory card meaning that those precious moments aren't lost. It also does not retain any data on the main unit. This is a unique feature for the HKS' DMR.



VIEWER SOFTWARE - FUNCTIONS



- 1 **Menu** Menu of "File", "View", "Tool", and "Help."
- 2 **Shortcut Icons** Shortcut of printing, event report, DMR settings, and viewer software setup.
- 3 **Main Screen** Screen to show the Image recorded.
- 4 **G Sensor Graph** Graph shows the variation of G sensor.
(Red: Front - back, Yellow: Lateral, Blue: Up & Vertical direction)
- 5 **VCR Control** Adjust image conditions, volume, and replay speed.
- 6 **Screen Switch Button** Switch the screen between the main screen and sub screen.
- 7 **Sub-Screen** Image from the camera, Google Maps, or Google Earth are shown.
- 8 **File List** List of images recorded.
- 9 **Shortcut Icons** Icons for capture, 16 frame multi capture, Google Earth, and Google Maps.
- 10 **GPS Data - Speed Information** GPS data, speed, and distance are shown.

SPECIFICATIONS

Size	H: 107mm / W: 60mm / T: 19mm	
Weight	93g	
Voltage	12V~24V	
Operation Temperature	-10°C~+60°C	
Main Camera	1.3M Pixel CMOS Digital Sensor	
2nd Camera	0.27M Pixel / Color CCD (Monochrome in dark)	
G Sensor	XYZ 3D Sensor (for possible impact, heavy braking, rapid acceleration)	
GPS	GPS data for longitude, latitude and time	
Storage Media	SDHC2GB-16GB (8GB allows for 16hours 1ch recording)	
Recording Resolution	MEGA Mode IN:1280×960 OUT:640×480	
	VGA Mode IN:640×480 OUT:640×480	
Recording Speed	Main Camera	MEGA 15frame(1280×960)
		VGA 30frame(640×480)
	2nd Camera (2ch)	MEGA 8frame(1280×960)
		VGA 15frame(640×480)
Recorded Data Format	H.264 (MPEG-4 AVC)	
Recording Time	Continuous Save Mode. Constantly records in 3 minute segments	
	Event Mode. Records 15 seconds before and after an event (total 30 seconds)	
Other	Internal Microphone, Internal Buzzer, LED	

Example of captures



Point the main camera forwards and the 2nd camera at the driver to see the driving action and effect on each corner.
Lateral G and pitching can also be viewed at the same time allowing very fine analysis of all aspects of driving.

If your computer is connected to the internet, you can trace your route using Google maps or Google Earth. Vehicle location is reflected on the map and journeys can be recreated using Google Earth satellite images. Great to retrace your memories of your enjoyable journey or to use as a locator in the case of an accident.



Record to the DMR



In car recording to improve driving technique

DMR is great for circuit use. Point the main camera forwards to record the lines traced, then use the 2nd camera to record driver actions or monitor meters for further analysis.

Record your daily drive "just in case"

The primary purpose for a drive recorder is for information in road traffic accidents. Having a recording of the moment can be very useful in clarifying the situation.



Record whilst parked for security

When connected to the permanent power supply, it is possible to record even when the engine is not running. Main camera can see approaching suspicious people and the 2nd camera can be pointed inside the cabin to act as a security camera.

[PACKAGE CONTENTS]

- DMR Main Unit ●12 Volt accessory Socket Power Cable (4m)
- Hard Wire Power Unit (3m) ●SD Memory Card (8GB)
- Video output cable (90cm) ●Guide Sticker ●Fitting Bracket
- 2nd Camera ●2nd Camera Power & AV cable
- 2nd Camera Holder ●Fitting accessories (screws clips tape)
- Viewing software (Windows XP/Vista/7 Compatible)

TURBO TIMER



HKS Turbo Timer is separate design type with thin display unit and control unit. The slim design enables smart installation.

FUNCTION

Easy installation by separate units design

Even for vehicles that have no space for installation of Turbo Timer, separate type can be easily installed because of the thin design.

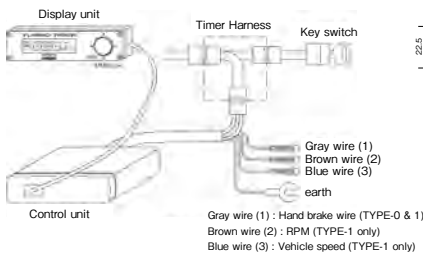
The same design concept as the latest HKS electric devices

The same design concept as EVC and A/F Knock Amp. and the system layout (separate type).

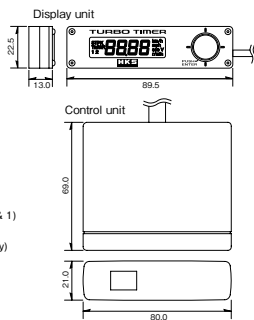
Hand brake detection safety circuit

The hand brake detection function prevents accident while Turbo Timer is working.

System layout



Dimension type-0・1共通



type-0

[type-0]

- Timer function : Manual 1, 2 mode
- Battery voltage indication function : Battery voltage, Peak value indication, ON/OFF of warning function
- LCD : Red back light

[type-1]

- Timer function : Manual 1, 2 mode, Auto mode
- Vehicle speed indication function : Vehicle speed, Peak value indication, Warning function
- RPM indication function : RPM, Peak value indication, Warning function
- Timing function : Sector time function
- Stop watch & Lap time function : Stop watch & Lap time
- Battery voltage indication function : Battery voltage, Peak value indication, ON/OFF of warning function
- LCD : White back light

*Easy installation with HKS Timer Harnesses.

HKS TURBO TIMER HARNESS

HKS Turbo Timer Harness is vehicle specific harness to install HKS Turbo Timer. It enables easy installation by unplugging of key switch coupler and installing the HKS harness in between. HKS Turbo Timer works completely with HKS Turbo Timer Harness. With other manufacturers' harness, there are some cases that ACC does not work during operation of turbo timer.

Features of HKS Turbo Timer Harness

- The connector for Turbo Timer has lock mechanism that eliminates connection problem completely. (Some items does not have this mechanism.)
- All wires are large current type not to prevent current flow.
- It supplies current for IG1, IG2 and ACC. During operation of Turbo Timer, all functions of vehicle work normally. (There are some functions that do not work during operation of Turbo Timer such as auto seat position, steering wheel tilt function, remote door lock.)



*Stock or stock option Push-Start Engine vehicles are not applicable.

CIRCUIT ATTACK COUNTER

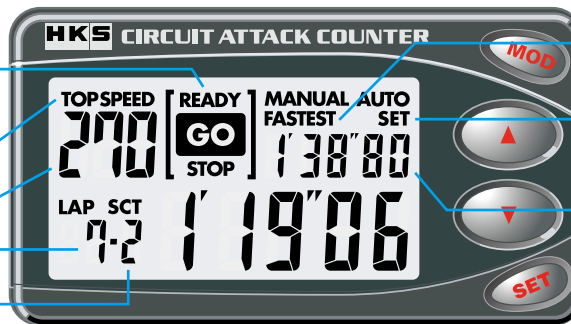
"Circuit Attack Counter" can display necessary information in real time. It is equipped with functions necessary for circuit driving and displays necessary information on time.



FUNCTION

Display

- "READY", "GO", or "STOP" comes on depending on the measuring condition.
- "TOP SPEED" or "SPEED" comes on
- Speed up 350km/h can be displayed.
- Lap Number
- Section



- "FASTEST" comes on when the fastest lap time is selected to display.
- Selected mode is displayed.
- Lap time or split lap time

Automatic Lap Timing (Auto Mode)

- Lap time is measured by sensing the magnet built into the track.
- Split lap time can be measured and displayed by plural magnet sensors on a track.
- Lap time is shown by unit of 1/100 second.

Manual Lap Timing (Manual Mode)

- On a track without built-in magnet(s), lap time is measured manually by pressing "SET" button.

[Parts Included]

- Magnet Sensor (Waterproof)
- Display Unit
- Speed Signal Connection Harness
- In-vehicle Power Port Plug

*Power can be supplied from 12Volt accessory socket or wiring of ECU.

Display Function

- Real-time Lap time and car speed (real-time speed or top speed) and fastest lap time are displayed.
- At tracks equipped with plural magnets, real-time lap time and speed (real-time speed or top speed) and split lap time are displayed.
- The display time of the previous lap time can be selected from for 3, 5, 10, or 15 seconds.

Memory Function

- Memory for total 99 laps of lap time and top speed.
- Both split lap time and lap time can be memorized.

Data Edit Function

- Measured data can be sorted from fastest lap time.
- Data can be deleted by individual data or all data. Only unnecessary data can be deleted.



Speed Limiter Cancellation Function (SLD Function)

- Speed limiter cancellation function for manual transmission cars (2 or 4 pulses, Equivalent to SLD TYPE1).

Stop Watch Function

- Stop watch function up to 9 hours 59 minutes 59 seconds
Driving range measurement up to 1,000km.
Speed display

Wide Input Pulse Range (2 - 25 Pulse)

- Input pulse range is between 2 and 25 pulse; so it is compatible with a wider range of vehicles.(Serial No .03500 or later.)

OB-LINK



OB-LINK extracts vehicle data from the on board diagnostics port (OBD) and sends it via Bluetooth to an Android device (Tablet/Smartphone etc.)

FUNCTION



Data is sent to the Android device via Bluetooth link.



On Board Diagnostics Connector

Extract vehicle data by connecting OB-LINK to the vehicle on board diagnostics port.

App

OB-LINK Data sent from the OB-LINK can be viewed using an app called "Carscope" (*) for Android devices. This allows viewing of vehicle maintenance data and other parameters. *"Carscope" can be downloaded from Google Play

Check Android Devices

Check 1: Make sure the version of Android OS is 2.1 or newer.
 Check 2: Make sure Bluetooth is equipped. (*SSP protocol compliant)
 When all of check points are OK, download app and install it to the Android device.
 To use the OB-LINK, 2 apps on the right are required.



Car chart

Enter vehicle maintenance schedule and message will be displayed to remind you of the next service



Diagnosis code

If a diagnosis code is found then the icon is displayed in real time at the bottom left of the screen. By tapping the icon shows details of the error code



Real Time Meter

Displays vehicle data in real time View modes can be switched with left or right flicks or tapping the indicators on the left or right of the screen.

Multi information meter



Quattro meter



Graph



Data list



Eco meter



Real Time Meter -Display Items-

1. Speed
2. Engine RPM
3. Water Temperature
4. Ignition Timing
5. AF Correction Value1
6. AF Correction Value1
7. AF Correction Value2
8. AF Learning Value2
9. Intake Air Volume
10. Airflow 1
11. Airflow 2
12. Intake Manifold Pressure
13. Intake Air Temperature
14. Throttle Angle1 or Throttle Voltage1
15. Throttle Angle2 or Throttle Voltage2
16. O2 Sensor 1
17. O2 Sensor 2
18. Injection Time
19. Accelerator Angle1 or Accelerator voltage1
20. Accelerator Angle2 or Accelerator voltage2
21. Engine Oil Temperature
22. A/T Oil Temperature(ECT→EFI)
23. Shift Position
24. Error Code

History List

Past data is listed and tapping shows detail of each trip. Long tap can delete the record.

History list



Driving information



Data graph



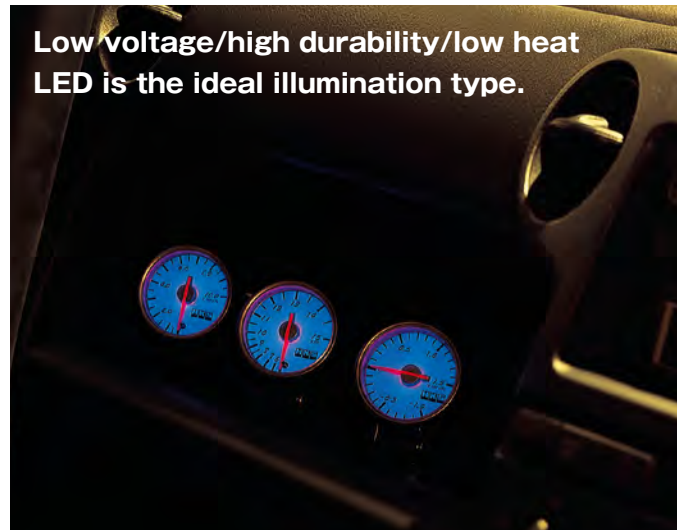
Fuel consumption map



All items shown on the real time meter are logged.

DIRECT BRIGHT METER

Surface illumination type with LED eliminates lamp failure and enables longer life.



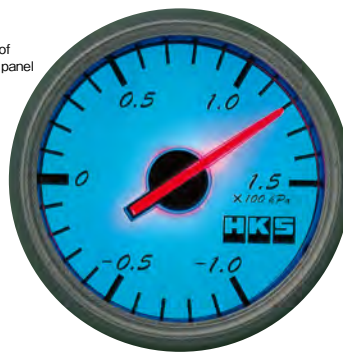
Low voltage/high durability/low heat LED is the ideal illumination type.

FUNCTION

Advantage of LED

- Low electricity consumption
- Long life of illumination
- Excellent visibility

Illumination image of Boost meter White panel



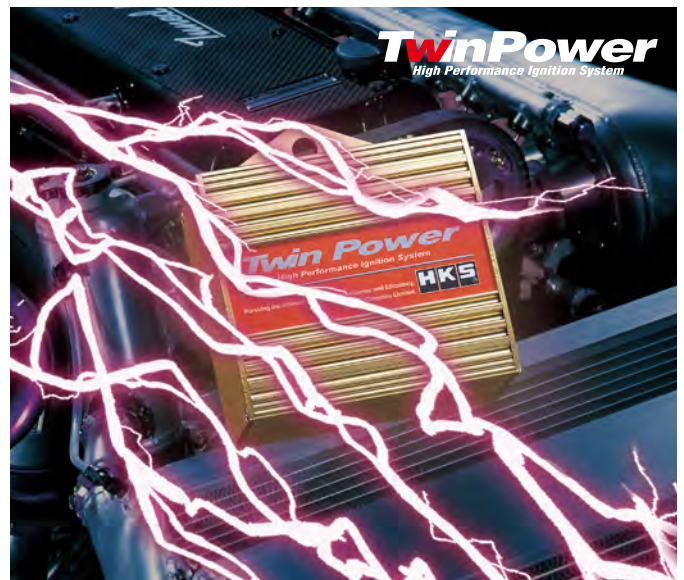
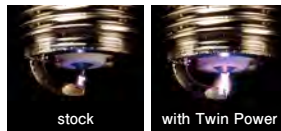
Illumination image of Boost meter Black panel



TWIN POWER

Ignition power is not changed even spark plug or plug cord are changed. Twin discharge system of Twin Power, is full transistor + C.D.I. system. A compounding ignition system of full transistor type + CDI (Capacitive Discharge Ignition) type has an ideal performance in a wide range of engine speeds from low RPM to high RPM.

It improves starting and enables stable idling even with high boost pressure, high compression ratio or high heat range of spark plug. The compact and light weight device has a circuit board up to 6 cylinders.



LINE-UP

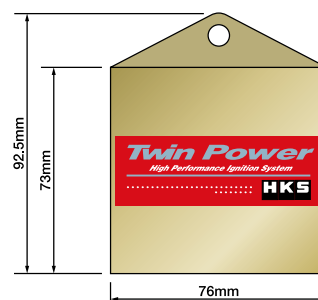
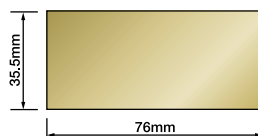
■ Twin Power TYPE-DLI

For direct ignition system. Compact design for 4 or 6 cylinder engines.

This is a compact and lightweight, so it can be mounted anywhere.

Dimension : 91L x 76W x 34.5H (mm)
Weight : 400~500 (g)

*Less electricity consumption with larger energy discharge than other manufacturers' devices or stock systems.



EVC 6

ELECTRONIC VALVE CONTROLLER



Features

- TFT Full Color Monitor : Clear and high level of visibility.
- Monitor Navigate System : Simple setting of setting/logging monitor.
- Stepping Motor : Matured technology utilized to the valve unit.
Valve size is reduced to 2/3 of the conventional valve.
- "EVC Hiper Engine" : New generation CPU. Control speed is improved spectacularly
- Setting range is from the stock to 300kPa.

FUNCTION

Display

[Indicator]

Displays the following modes:
P_H:Standard mode w/ peak value
MAP:Standard mode w/ map use
SBC:Scramble function
WRN:Warning function

[Bar Graph]

Bar graph of each value. Under the standard mode, graph base can be selected from surge tank press, speed, RPM, or throttle angle.

[Digital Display (L)]

Surge tank pressure.
Unit - kPa or PSI.

[Navigation System]

Indicates the current page.

[Digital Display (S)]

Warning value(kPa or PSI),
Boost value(kPa or PSI),
Peak hold value,scramble time(sec)

[Speed/Engine RPM]

[Throttle Angle]

[Operation Button]

These 4 buttons & Navigation system make operation simple and accurate.

[Unit]

Select the unit from kPa or PSI.

[Selected Mode]

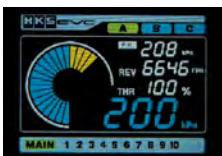
Function

TFT LCD Full Color Monitor	English Display	Switchable Button Position
3-mode Boost Setting	Return-to-stock	Speed Signal Input
Scramble	Map Correction	Triple Digital Meter
3-mode Offset Setting	Bar Graph Selection	Warning
Bar Graph Peak Hold	Throttle Signal Input	After Image
Engine RPM Signal Input	Data Memory	Display Brightness Selection
Exhaust Bypass Selection	Data Lock	Pressure Unit Selection



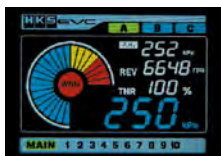
Screen modes

In addition to the main screen, various modes such as initial setting, vehicle setting, boost setting, boost correction are clearly shown on the TFT LCD display.



Main screen ①

Normal screen. Boost, RPM, Throttle, Peak value of boost are shown.



Main screen ②

Screen when warning value is exceeded. "WRN" in the center of bar graph blinks until boost level goes down to normal or set boost level.



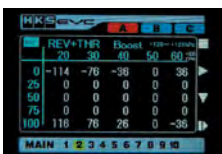
Main screen ③

"SBC" on bar graph blinks while scramble boost operation.



Basic setting screen

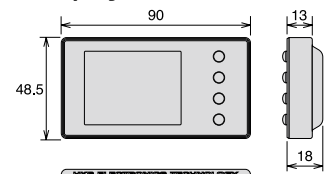
Boost levels of each mode, off set values and warning values are set.



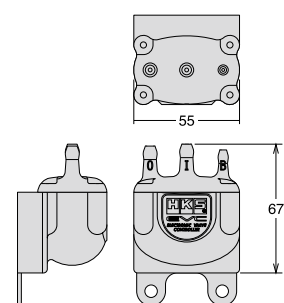
Map Correction screen

Boost correction map with rpm, throttle and speed.

EVC Display Unit Size



EVC Valve Unit Size



EVC-S

ELECTRONIC VALVE CONTROLLER typeS

Simple functions & affordable price
Basic model of HKS' EVC series



FUNCTION

Display

A Mode and B Mode allow for 2 different boost settings.

[OFS=Offset Value]

Boost setting item of initial standard.

[RSP=Response Value]

Response Value under the Boost Setting Mode.

[OPT=Over Boost Value]

Boost value the EVC starts controlling.

[DRO=Drop Boost Value]

Value decrease from the offset value when boost exceeds the warning value.

Boost pressure or various setting value is digitally-displayed.

[PH=Peak Hold Display]

This comes on when the peak hold boost value is displayed.

[WRN=Warning Display]

This comes on when the warning function is activated.



Display

Switch

%=This comes on during setting the offset,etc.

[kPa-PSI-Unit]

Selectable unit from kPa (kilo pascal) or PSI (pound square inch).

[Lock=Data Lock]

Setting data can be locked.

Features

- Easier installation by separate setup
 - Separated units are connected to the center control unit.
 - Thin display unit enables free layout.
- Unified design
 - The same design as A/F Knock Amp. and other items.
 - Unified design for whole HKS electronics products.

● Basic functions & High cost performance

- 2 control modes (A/B mode)
- Basic parameters of Offset, Response Control range of solenoid duty output = 0-100%
- Warning, Drop boost functions
- Peak hold, after-image indication functions

- Applicable for both internal and external wastegate types
- Stock boost recovery function when power is off
- Data lock function
- Diagnosis function for malfunction of boost sensor and valve or wiring connection

Advanced Features

Compact Size / 4 Separate Units

EVC-S includes 4 separate units: Display Unit, Control Unit, Boost Sensor, and Solenoid Valve. Each unit is compact and easy to install in the engine bay and the interior. Since the Boost Sensor is independent, hose routing does not need to run into the vehicles interior.

Return Function

The boost setting returns to the factory setting when the power is turned off. On some vehicles, the boost value may be lower than the boost before installing the EVC-S.

After Image Display Function

When the boost changes from positive pressure to negative pressure, the maximum boost under positive pressure can be displayed for 3 seconds. This function can be turned off.

Data Lock Function

The setting data can be protected by a password to prevent unwanted or accidental changes.

Capable of Controlling High Boost

EVC-S can control up to 250kPa (36PSI)

Warning Function

If the boost level exceeds the warning value, the unit will warn the user by an audible buzzer and visually on the display. The boost value will be lowered to the set value. This function protects the engine and turbocharger from excessive boost.

2 Mode Boost Setting Function

A Mode and B Mode allow for 2 different boost settings.

Data Memory Function

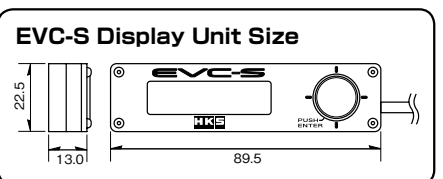
Each setting value is saved in the internal memory; the saved values are retrievable even after the ignition is shut-off or the battery is disconnected.

Simple Boost Setting

Directly input simple values to modes A and B, and let the HKS EVC control the boost.

Boost Pressure Unit Select Function

The boost pressure unit of measure is selectable between kPa and PSI.



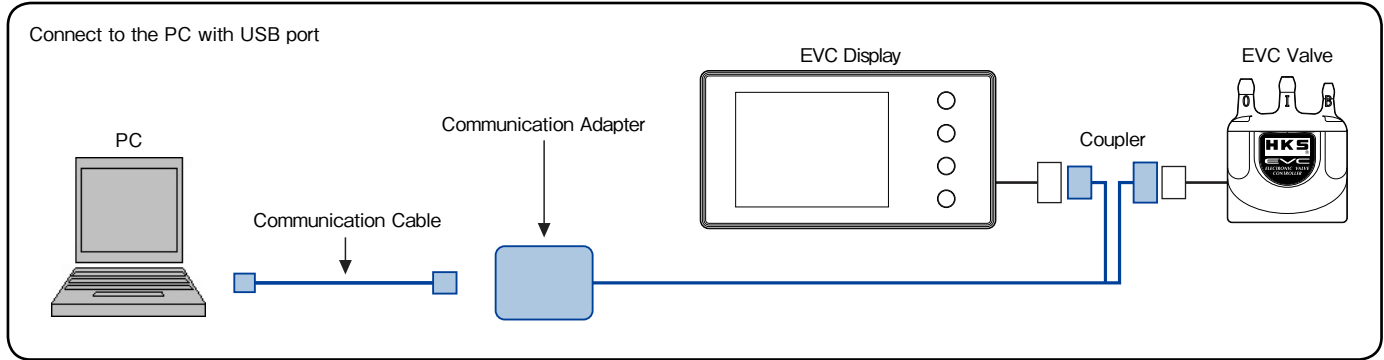
EasyWriter set for EVC 6

EasyWriter is the boost pressure setting tool which improves the operability of the EVC. New EVC6 is equipped with the TFT LCD; map setting can be easily done on the screen on the unit because of the high level of visibility. Using this EasyWriter enable the EVC to connect with the PC, and setting can be much easier.



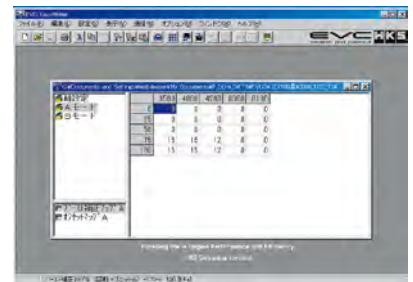
FEATURE

- Settings can be edited, checked, and confirmed on the PC monitor.



Editable Items by EasyWriter

- Bar graph (Boost, Speed, RPM, or Throttle)
- Bar graph peak function setting
- Max Value of bar graph
- Boost set valve
- Map function setting (ON/OFF of Boost correction map, Signal Selection)
- Map axis setting (Rpm, Car speed, Throttle)
- Boost correction value
- Offset value
- Offset map setting value
- After-image function setting
- Backlight brightness
- Sampling Time
- Scramble boost value and time
- Drop boost function setting



Correction map (RPM + Throttle)

Save setting to the PC

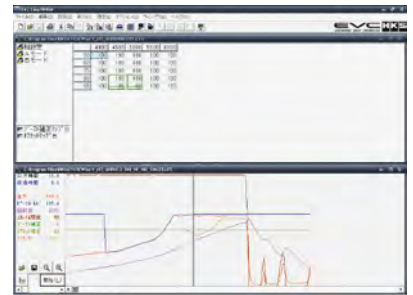
Saving and resetting data to the original even after editing.

Monitor input signals using the PC

Monitoring the boost pressure, engine RPM (or speed), throttle angle, and correction values.

Log EVC data on the PC

Logging the boost pressure and/or correction conditions to check them on graphs.



Log link
*EVC start-up screen can be changed by using another software.

[Product Contents]

- Communication Adapter
- Communication Cable

EasyWriter Operating Condition

- CPU: Pentium3 or higher spec
- OS: Windows98SE, ME, 2000, XP, Vista, 7
- RAM: 256MB or greater
- Internet connection
*To download the EasyWriter software.
- USB Port

VAC

Velocity Advanced Computer

HKS VAC (Velocity Advanced Computer) is an electronic device designed to eliminate the vehicle's factory speed limiter to bring out full performance of the vehicle. With the HKS VAC, the high speed driving is possible without affecting the high performance. HKS VAC analyzes the control method for each vehicle; so it can eliminate the speed limiter by the most appropriate way for the vehicle.



LINE-UP

Toyota and/or Lexus equipped with the 6 speed automatic transmission are controlled electrically; so the factory computer controls the vehicle precisely in response to various driving conditions. The conventional speed limiter elimination method may affect this precise control system; it cannot fully utilize the performance of the 6 speed automatic transmission. However, with HKS' unique technology to control this computerized 6 speed automatic transmission, the VAC can fully utilize the performance of the 6 speed automatic transmission. After the factory speed limiter was eliminated when the vehicle's speed reached over 180km/h; then HKS VAC works as the full computer to control the automatic transmission.

HKS VAC also can be used on the vehicle with the CAN communication system. VAC can control the advanced and complicated in-vehicle network system, which even controls the vehicle's motion, by its original technique.



VAC type S



VAC type CZ



VAC type IS F

SLD

Most of JDM vehicles are equipped with speed limiter function. With this function, the vehicle's speed cannot exceed 180km/h. On the other hand, the performance of JDM vehicles is improved; even non-sports models are capable of driving over 180km/h. HKS SLD can eliminate the factory speed limiter to drive over 180km/h and bring out full performance of the vehicle.



Features of SLD TYPE-III

HKS found the way to pick up the speed signal from other signals transmitted by CAN communication system to eliminate the speed limiter.

The original control method of CAN communication system enables the vehicle's digital speed meter to indicate the speed over 180km/h.

The speed limiter can be eliminated even after rewriting the ECU program as the units connected to the ECU harness.

*1 CAN (Controller Area Network) communication is a high speed, highly reliable, and internationally - standardized network system within a vehicle. It controls the engine, drive-train and meters, etc. Also in addition to the speed data, it controls electric devices. CAN requires only 2 lines to control data. CAN is very popular in Europe and is becoming more popular globally.

FSC

FSC (Fan&Speed Controller) controls the CAN communication signal. Through this, the radiator fan can be controlled, preventing water temperature increases beforehand and safeguarding the engine. The FSC is also equipped with a speed-limiter cut function, allowing the user to enjoy stress-free track racing even at high speeds.

<Function>

- Eliminate Speed Limiter
- Control the Electric Radiator Fan



FCD

FCD cancels fuel cut function at high boost level. With wider range of boost, it enables high horsepower and quick response.

It maximizes power of turbocharged vehicle and enables high speed cruising.

The compact design enables easy installation even in the limited space around stock ECU.



EIDS

To prevent engine stall, output voltage of air flow meter is adjusted. When intake parts are changed like installation of blow off valve, air flow meter output voltage is sometimes affected when throttle is closed. EIDS will solve the problem.

* It is only for throttle sensors, which output characteristic is linear. It cannot be used for throttle switch. It does not solve idling problem that is not related with air flow meter output after throttle is closed.



ATSC



ATSC is the system to control front torque distribution of R35 GT-R.

Vehicles with boost up or upgraded turbos can fully use the increased power.

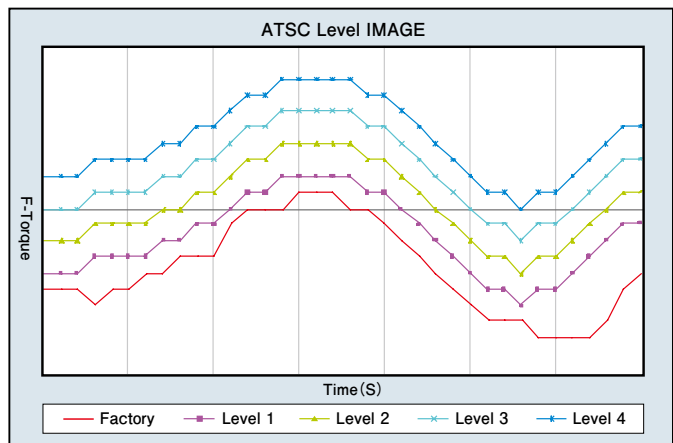
POINT

PRODUCT OUTLINE

- The 4WD system of the R35 GT-R is electronically controlled. The front torque distribution is controlled by the drive condition. ATSC is the device to control the front torque distribution to be an appropriate level. Front torque distribution is available in 4 levels. Just press a switch to change the setting level. The number of the LED blinking represents the setting level.

ADVANTAGE

- Oversteering during a high load driving can be overcome. Therefore, stable driving under high load is possible. Recommended for a highly tuned vehicle (GT800SPEC / GT600PACKAGE / GT570PACKAGE) Proper torque distribution can optimize the engine performance. Simple installation. ATSC controls the torque when the speed goes beyond 50km/h without applying a brake. It won't lead instability at start or during a low speed driving.

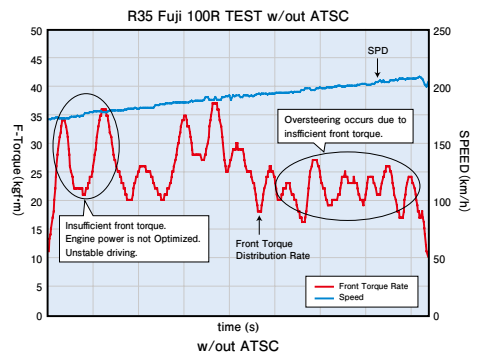
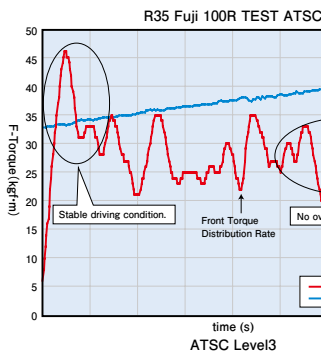


- [KIT PARTS]**
- Coupler-ON Harness
 - Main Unit-ON/OFF Switch

INSTALLATION

Install the main unit to the E-TS Unit underneath the driver's seat using the Coupler-ON Harness. Required installation time is approximately 2 hours.

PERFORMANCE Fuji Speedway 100R Drive Test



F-CON iD

Advance model of "F-CON D" that is a fuel management system for diesel engines.

Adjustment of common rail pressure, correction of air flow sensor signal, data correction and map edit functions are available for wide range of tuning.



POINT

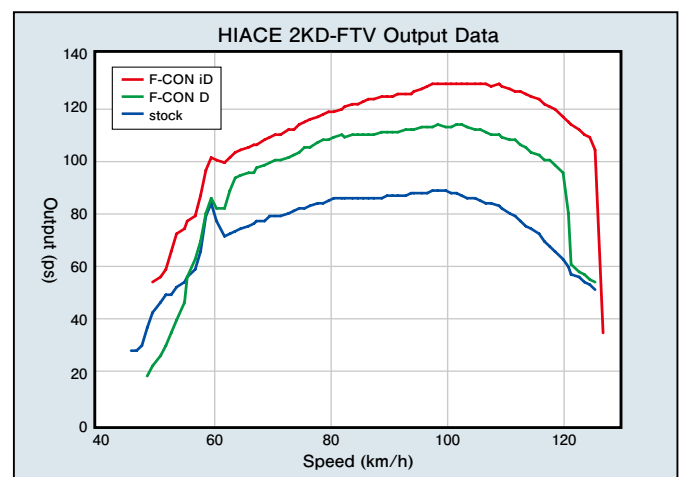
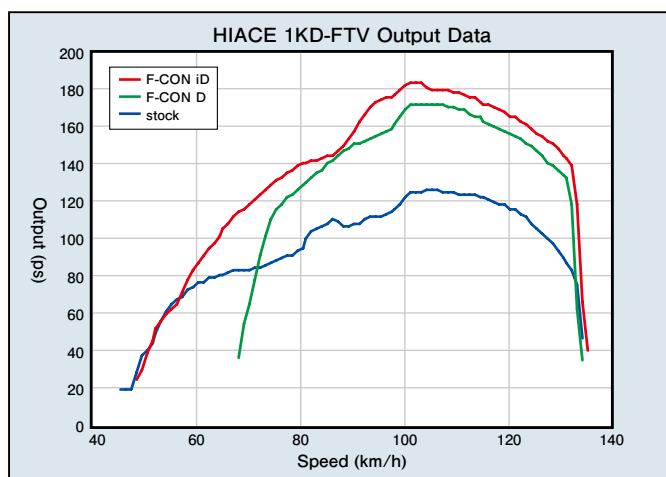
Product Outline

- Fuel Control piggy-back ECU for 4cyl Common Rail Type Diesel Engine.
- Direct injector signal processing enables the use of this product in various vehicle.
- No vehicle specific data are available. Settings must be done using the data programming software F-CON iD EasyWriter. (Data for JDM vehicles are preprogrammed to the F-CON iD for HIACE (P/N 42011-AT031 & 42011-AT032).)

Function

- Fuel volume increase system controlled by a piggy-back ECU.
- FCD function to deactivate the factory ECU's boost-cut.
- Common rail pressure adjustment function.
- Airflow sensor signal correction function.
- Pressure sensor signal correction function (Boost pressure of electric VN turbo vehicles is able to be increased.)

Data programming software "F-CON iD EasyWriter" is available for data correction and map editing via USB connection.



Installation

- Connect the provided Universal Harness to the factory ECU wires.
- Mount the F-CON iD main unit on the vehicle's interior.
- To return to the factory setting, simply use the provided Return Connector
- Data programming software (F-CON iD EasyWriter) and communication USB Cable are not included.
- *Data programming software "F-CON iD EasyWriter" will be distributed to the overseas authorized dealers

F-CON D

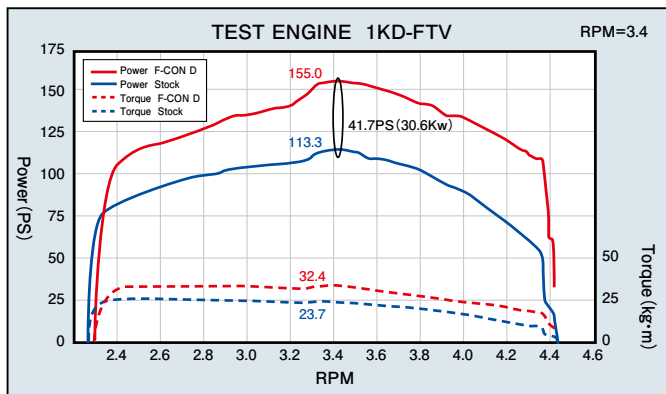


Diesel fuel increasing device for TOYOTA HIACE KDH200 series that is popular base vehicle for customization. About 40PS will be increased for 1KD-FTV engine (late model) and about 20PS for 2KD-FTV engine. 20 - 30% enhancement from stock engine.

POINT

Features

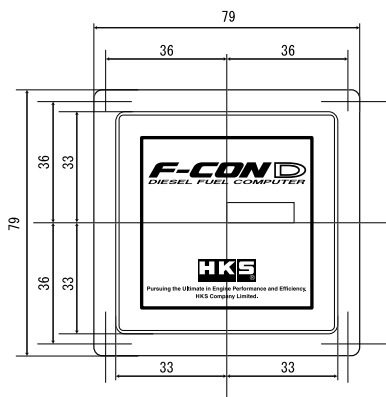
- By installation to stock ECU(Engine control unit) wires, engine horsepower will be increased by about 20 - 30%.
- ON<=>OFF switch is available for easy recovery to stock control.



F-CON D ECO Test

1KD 3000cc Diesel	Fuel consumption
With F-CON D Permanently ON 599.3km@7 hours Used fuel volume 55.0 Liters	10.90km/ℓ
Stock vehicle 592.7km@7 hours Used fuel volume 55.5 Liters	10.68km/ℓ

*HKS in house test result.



FLASH EDITOR

Application for the latest vehicles.
 For comfortable feeling with stock or light tuned vehicles.
 ECU Reflash tool for step up of tuning.
 As of May,2013,this product is for JDM vehicles only.
 Please contact the local HKS distributor about this product.




POINT

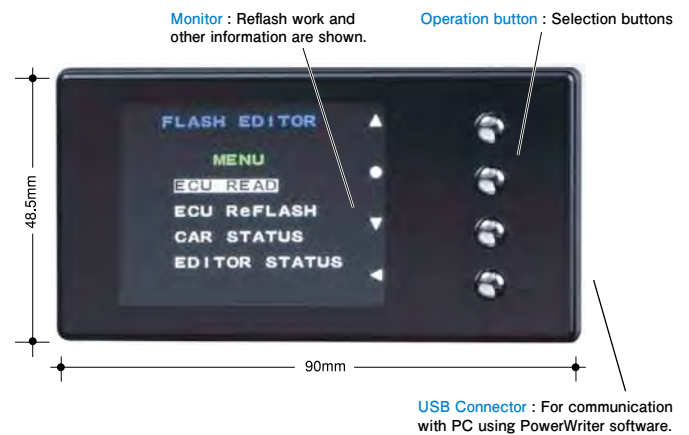
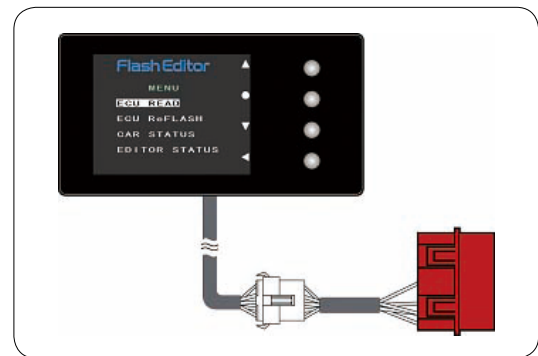
Summary

- ECU reflashing via the on board diagnostics port (OBD II) is made possible.
- 1 Flash Editor is used per vehicle tuned.
- Stock data can be read and written.
- Can save stock ECU data and 3 other custom data files.
- HKS factory data (Phase 1, Phase 2) is pre-installed.
- Data can be edited by licensed dealer with PowerWriter.

Data for Standard Unit and Power Writer Shops

Data Available	Standard Unit	PowerWriter Shops
NORMAL	●	●
PHASE1	●	●
PHASE2	●	●
PowerWriter	×	●

 Original FLASH EDITOR settings are available from HKS authorized PowerWriter shops.



FUNCTION

Main Functions

ECU Read

Read ECU data and store via OBDII connection.

Create and Save Custom Data

Create and save custom data based on saved stock ECU data.

Write to ECU

Write to ECU. write stock or custom data to ECU.

Vehicle Information Display

Display vehicle information via OBDII connection.

USB Connection

USB connection for connection with PowerWriter.(Only available for PowerWriter shops)

Data Protection

Each Flash Editor is restricted to 1 vehicle and data are protected.

IMPREZA WRX STI A-Line

DATA SUMMARY

PHASE1 Parts used : Muffler
Data Contents : Speed limiter cancellation + Drivability improvement

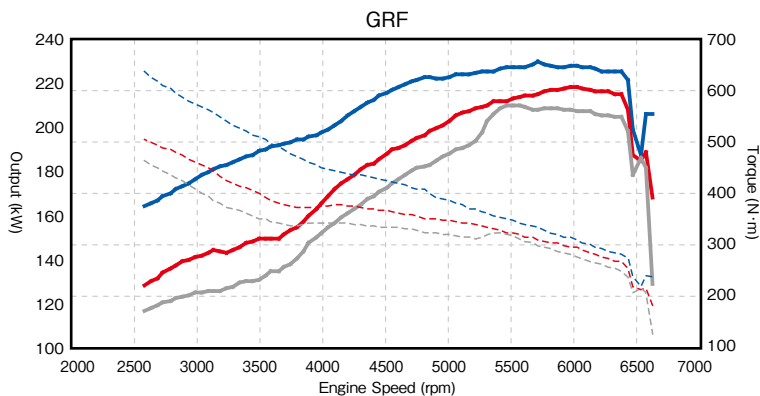
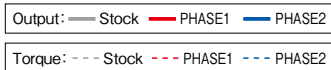
PHASE2 Parts used : Muffler, Metal Catalyzer, Exhaust Manifold, Premium Suction, Super SQV4
Data Contents : Speed limiter cancellation + Boost pressure increase

Performance

Stock 213kW (290ps)

PHASE1 221kW (300ps)

PHASE2 230kW (312ps)



IMPREZA WRX STI

DATA SUMMARY

PHASE1 Parts used : Muffler
Data Contents : Speed limiter cancellation + Drivability improvement

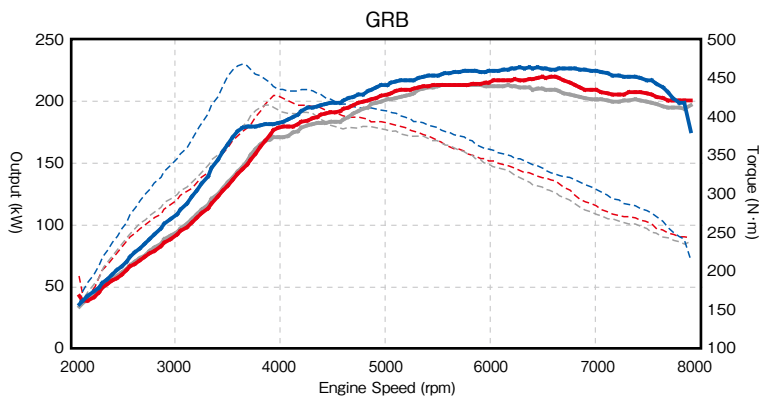
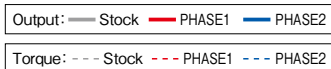
PHASE2 Parts used : Muffler, Metal Catalyzer, Super Hybrid Filter, Super SQV4
Data Contents : Speed limiter cancellation + Boost pressure increase

Performance

Stock 212kW (288ps)

PHASE1 219kW (298ps)

PHASE2 226kW (307ps)



LANCER EVOLUTION X 280ps Model

DATA SUMMARY

PHASE1 Parts used : Muffler
Data Contents : Speed limiter cancellation + Drivability improvement

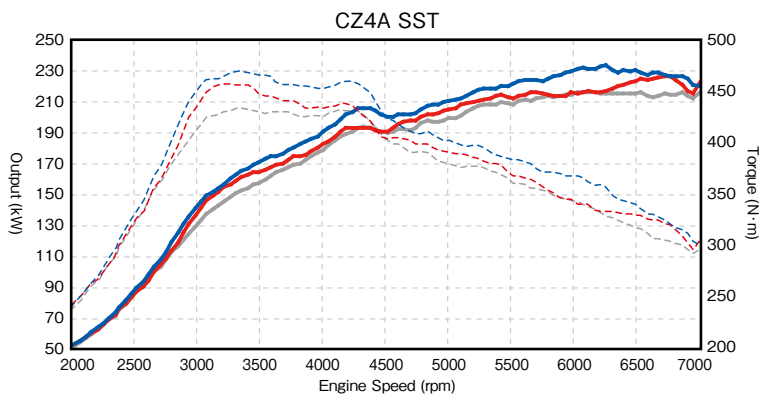
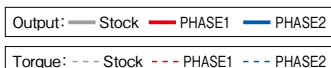
PHASE2 Parts used : Muffler, Metal Catalyzer, Super Hybrid Filter, Super SQV4, Intercooler Piping
Data Contents : Speed limiter cancellation + Boost pressure increase

Performance

Stock 216kW (294ps)

PHASE1 229kW (305ps)

PHASE2 233kW (317ps)

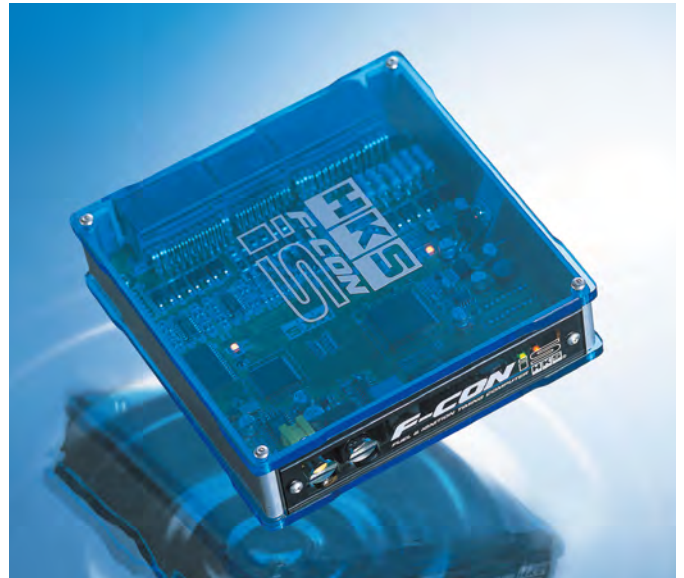


NOTE

- Only ECU IDs stoned on the FLASH EDITOR unit is writable. (To write other ECU IDs, FLASH EDITOR software or PowerWriter software must be upgraded.)
- VAC cannot be used with Flash Editor.
- During data transmission, do not disconnect the connector, turn off the ignition power, operate the A/C, hazard light, etc.
- Data are prepared based on the JDM vehicle.
- PHASE2 requires installation of Metal Catalyzer.

F-CON iS

Functions for fuel and ignition controls are inherited from the previous model F-CON SZ. In addition to it, function to collect OBD II diagnosis data was added for correction of setting due to stock close-loop trim values when intake/exhaust parts are upgraded or boost level setting is changed.



POINT

Main Spec (Compared with F-CON SZ)

- The latest CPU improves processing speed (25% increased from the previous model).
- The newly designed circuit ... Reduced elements improved mechanical reliability and optimized applicability for various specifications or vehicles.

* To change data or vehicles, change of data at F-CON dealer is required.

- Vehicle specific data of F-CON SZ can be converted for F-CON iS.
- Vehicle specific initial parameter setting can be set using PowerWriter software (by F-CON dealer).



FUNCTION

FUNCTIONS

Video Output Display Function (NTSC only)

Output signals from F-CON iS can be displayed on a monitor.

- Up to 18 items
- Each data can be shown by bar graph and numbers.

Basic items : Engine rpm, Vehicle speed, Air flow meter output voltage, Throttle position, Water temperature, Intake air temperature, Battery voltage, Injector duty



With HKS Interface Unit, A/F Knock Amp., OSC set, any data can be shown on monitor.

- I/F Unit + Sensors.
Items: Boost (Vacuum) pressure, Oil temperature, Water temperature, Oil pressure, Fuel pressure, Exhaust gas temperature
- A/F Knock Amp.
Items : A/F value, Knock sensor level
- OSC set
Items : OBD Ignition timing, A/F trim value, A/F close-loop value

OSC

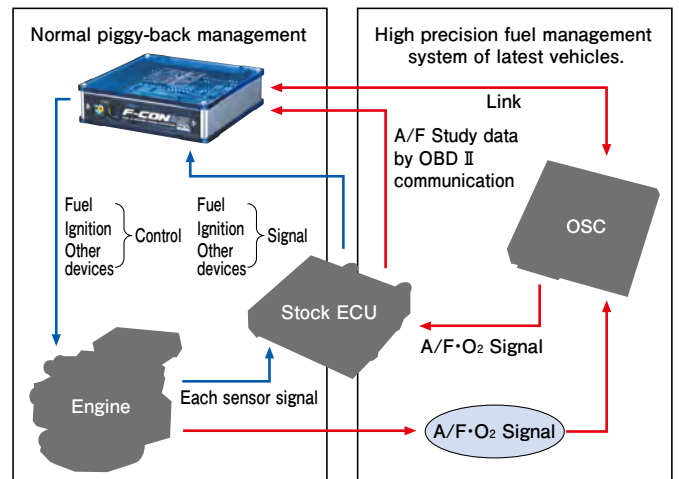
It is an option computer for F-CON iS to enable fuel setting for stock close-loop area.



Advanced functions with on option computer

By linking to the option computer (OSC), precise control is possible even for the latest vehicles with high precision management system.

F-CON iS system diagram



Functions of F-CON iS

Correction of Fuel amount, Ignition timing

Fuel signal and ignition timing are controlled with trim maps inside F-CON iS. Four sub maps for each fuel and ignition control can be easily switched with dip switches.

Scramble trim map can be used as Trim C map that enables up to 3 different load axis.

● It is possible to trim with 3 load axis such as air flow, pressure and throttle.

Injector Dead Time can be set independently for IN (Input signal from ECU to iS) and OUT (Output signal from iS).

● SZ was the same for IN, OUT. iS can have better setting by independent setting when large injector is installed (Better engine starting).

SLD Function

Vehicle speed signal can be controlled to cancel speed limiter by stock ECU.

*Not for Automatic Transmission and electro magnet pick up type sensor.

Error Display Function

When malfunction of sensor is detected, LED on the front panel will be on to indicate the malfunction.

FCD Function

Fuel Cut at high boost level can be cancelled with FCD function.

Engine Check Function

Even with F-CON iS, engine check function of stock ECU works.

(Except some vehicles)

Advanced functions of F-CON iS

A/T Shift Up, Shift Down Ignition Compensation

To prevent knocking of vehicles with automatic transmission during shift up at high load or shift down for acceleration, engine rpm difference and throttle position is kept and ignition timing is retarded for a certain period.

*Except some vehicle.

NVCS Control Function

Solenoid of Nissan NVCS (Nissan Valve Control System) can be controlled with F-CON iS with RPM + Water Temperature condition.

*Harness modification is required. For vehicles with NVCS only.

Air Flow (Intake Air Volume sensor) Conversion Function

Air flow meter signal input can be converted with a 16x24 map with Air Flow Input value and RPM axis. When characteristics of air flow meter output are changed from stock condition, air flow meter signal can be corrected.

*Only a vehicle type is in part.

Functions using A/F Knock Amp.

A/F, Knock Level Monitor Function

A/F, O₂, Knock level of A/F Knock Amp. and trim values can be shown.

*A/F Knock Amp. is required separately to show A/F or Knock level. Stock O₂ sensor is used for O₂ monitor. All functions require modification of wiring.

A/F (Air / Fuel ratio) Feedback Function

Trim map can be renewed automatically to be the target A/F values using A/F Feedback Function with A/F gauge or A/F Knock Amp.

Caution : In the area of stock O₂ close-loop (at low load) will be double close-loop control and it does not work properly. Thus, Feedback should be disabled for the area of stock close-loop using A/F Mask map.

*A/F-Knock Amp. is required separately.

Other functions with option parts

AIC Function

Up to 2 additional injectors.

*Injector is required separately.

EIDS Function

When throttle is closed, intake air returns to air flow meter and it affects to air flow meter voltage. The voltage can be fixed to a certain voltage to prevent engine stall.

*SQV is required separately.

Immobilizer Function

When ignition is turned on, if switch is not at setting value, engine will not start.

*Mixture Controller is required separately.

Additional functions with OSC

Additional functions using F-CON iS + OSC set and diagnosis(OBDII) communication with stock ECU.

● Ignition timing of stock ECU can be displayed (As it is signal from stock ECU, it is not information after correction of ignition timing).

● Fuel trim study data of stock ECU can be displayed (on PowerWriter).

● Setting for close-loop area of stock ECU is possible.

■ Vehicle specific harness is required for installation.

F-CON V Pro Ver.4

Full model change of F-CON V Pro for more advanced engine management with HKS' technologies.
The evolved next generation stand-alone ECU with advanced hardware and software with increased input/output ports.



POINT

Features

- Analog voltage input**
For 0 - 5V, up to 20 channels inputs such as throttle angle, water temperature, intake air temperature etc.
- Onboard memory for logging**
8MB onboard memory for storage of log data.
- DC Motor output**
DC motor type electronic throttle that is commonly used for most of vehicles can be controlled up to 2 channels.

- A/F Input**
With sensor connection of A/F Knock Amp., up to 2 channels of linear A/F can be measured.
- Variable valve timing control.**
Variable valve timing control for HKS V CAM System or stock system.
- Other output controls**
Up to 22 channels outputs for relay control or warning lamp etc.

- Knock input**
With sensor connection of knock sensor, trim operation by knock level is possible.
- Fuel, Ignition control**
Up to 8 channels each outputs.
8 cylinders sequential control is possible.

- Onboard atmosphere pressure sensor**
Onboard atmosphere pressure sensor for stable management even by change of environment.
- Boost control**
Using Boost control solenoid valve that is sold separately, boost control is possible.

F-CON V Pro

From street tuning with stock turbine to full tuning with upgraded turbine, L-jetro, D-jetro or speed throttle control are selectable.
With the universal design, it fits to reciprocating, rotary, normal



aspirated, single throttle, multiple throttle, sport injection.
As F-CON V Pro is stand alone system, basically it is applicable for most of electronic gasoline engine control systems.

FUNCTION

■ Various management to control base maps and trim maps for fuel and ignition.

Fuel Control	Ignition Control	Additional control	Option Control
Standard Injection Time map	Standard Ignition Timing map	<ul style="list-style-type: none"> ● Fuel Cut Control ● Ignition Cut Control ● ISCV Control 	<ul style="list-style-type: none"> ● Electric Fan Control ● Fuel Pump Control ● Warning Light Control
Fuel Trim		Ignition Trim	
<ul style="list-style-type: none"> ● Main Trim ● Sub Trim ● Throttle Compensation ● Vehicle Speed Compensation ● Startup Compensation ● Acceleration Compensation 1 ● Acceleration Compensation 2 ● Water Temperature Compensation 	<ul style="list-style-type: none"> ● Intake Air Temperature Compensation ● Exhaust Gas Temperature Compensation ● Fuel Pressure Compensation ● Individual Cylinder Compensation ● Deceleration Compensation ● Scramble Compensation ● A/F Feedback Compensation 1 ● A/F Feedback Compensation 2 	<ul style="list-style-type: none"> ● Sub Trim ● Throttle Compensation ● Acceleration Compensation ● Water Temperature Compensation ● Intake Air Temperature Compensation ● Exhaust Gas Temperature Compensation ● Individual Cylinder Compensation 	<ul style="list-style-type: none"> ● Fuel Pressure Compensation ● Automatic Transmission Shift Compensation ● Scramble Compensation

With the above features, the ideal setup can be found whether your vehicle is being used on the street, the drag strip or the circuit. With features such as the A/F feedback, ignition cut and twin injector control, F-CON V Pro allows professional engine management engineers much flexibility and freedom to tune to a high level. F-CON V Pro can accommodate from basic to full tuned vehicles meaning that the same F-CON V Pro unit can be used throughout the life of the vehicle. F-CON V Pro is available only through authorized F-CON Dealers. Also, F-CON iS can be upgraded to F-CON V Pro (It will be charged).

■ With option "F-CON V Pro I/F Unit Adapter" and sensors, "Exhaust Gas Temp.", "Oil Temp.", "Oil Pressure", "Fuel Pressure", "Water Temp." can be input. (Ver. 3.3 can input "Oil Temp.", "Oil Pressure", "Fuel Pressure" directly.)
"Water Temp." of Meter I/F Unit is called as "Other Temp." on F-CON V Pro and it is used as different data from water temperature used for F-CON V Pro control.
"Exhaust Gas Temp.", "Fuel Pressure" are used for fuel trim management.
*HKS Meter I/F Unit and F-CON V Pro I/F Unit Adapter are required. * Installation of sensors is required.

BLOW OFF

Technology

- **SUPER SQV4** 39
- **SUCTION RETURN KIT** 40
- **SUPER SQV PARTS** 40
- **SUPER SQV4 RACING** 40
- **SUPER SQV4D** 41

SUPER SQV 4



HKS Super SQV (Sequential Blow Off Valve) uses a unique sequential valve structure and a differential pressure control system, which allows for a broad operating range from low boost to high boost. Its Pull-Type relief design ensures stable operation regardless of the amount of boost pressure. The Super SQV will support new generations of turbocharged vehicles.

POINT

High Quality Aluminum Die-Cast Body

Silver-coated aluminum die-cast body. Combines the ultimate in looks and durability in the engine compartment.

High Stiffness Metal Die-Cast Valve

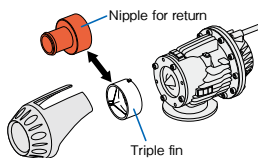
Secondary valve main portion is made of die cast metal. Reliable operation with beautiful looking.

Triple Fin design produces "Super Sound"

Triple Fins set at the center of the funnel produces a dynamic and aggressive sound. An optional special Round Fin can be purchased separately for sound tuning.

Nipple for return is a standard set.

Triple fins and interchangeable nipple for return are included for the each kit.(not for the universal set) With this suction return nipple, you can do the suction return by making return pipe work. Vehicle specific Suction Return kit are available separately (Excluding some vehicles).



Super SQV

Pull-Type Relief Valve Operation
The Pull-Type valve operation offers more precise relief of excess boost and is compatible for a wider range of boost pressure compared to typical push-type blow off valves.

Secondary Valve (Large)
This valve combined with the Primary Valve from the sequential dual valve structure. Optimal blow-off operation from low to high boost ranges without leaking.

Primary Valve (Small)
Lift off the throttle, and the primary valve instantly opens, quickly discharging initial excess boost pressure.

RoHS compliant

The Super SQV is environmentally friendly, and RoHS compliant.

Dual Valve Structure, Sequential System

At low boost ranges the Primary Valve opens, and at high boost ranges the Secondary Valve also opens, resulting in linear response and optimal blow-off operation at all boost levels.

Accelerator ON Valves Closed

As pressure rises in chamber C, pressure is applied to both the Primary and Secondary valves. The higher the boost pressure, the more pressure is applied to the valves, preventing leaks.

Accelerator OFF Primary Valve Opens

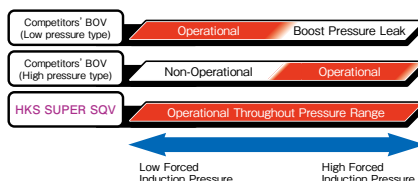
Throttle lift creates a pressure difference between chambers A & B, opening the primary valve bypassing the secondary valve. This creates the **initial discharge**.

Accelerator OFF Secondary Valve Opens

When pressure difference in chambers A & B reach a maximum, the Primary Valve pulls the Secondary Valve to open, creating a **secondary discharge**.

Pull-Type blow off valves will work for any turbocharged vehicle, from stock to highly tuned.

Typical push-type blow off valves require spring load settings for each vehicle specification. If the spring load setting is too low, the valve may leak under high boost and the desired boost setting may not be reached. If the spring load setting is too strong, it may not open at low boost. The Super SQV will operate under any boost pressure setting without leaking.



SUCTION RETURN KIT

- With Super SQV Kit, blow-off air will return to suction like stock air bypass valve to be street legal.
- Although blow off sound will be reduced, more sound will come out from air cleaner.



SILVIA (S15,S14)



SKYLINE (ER34, ECR33)



MAZDA SPEED AXELA (BL3FW)

SUPER SQV PARTS

Option parts for sound tuning

SF120-G(Color: Gold) has the same shape and sound as the standard fin. It sounds high frequency from low boost to high boost.

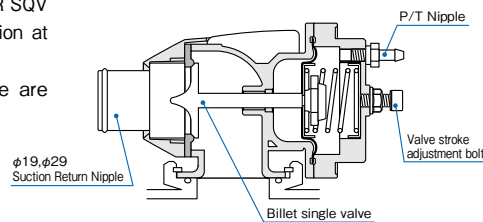
SF100-P(Color: Purple metallic) has two stage sequential sound that sound level of high frequency is low.



SUPER SQV IV RACING

"SUPER SQV IV RACING" that is applicable for highly tuned vehicles with simpler mechanism than SUPER SQV.

- With larger capacity upper case (than normal SQV), it is applicable for highly tuned vehicles with high boost level.
- Valve stroke adjustment bolt can adjust for specification of vehicles.
- Billet single valve (Special for SUPER SQV IV RACING) enables precise operation at high boost level.
- $\phi 19$, $\phi 29$ Suction Return Nipple are included.



COOLING

Technology

- INTERCOOLER KIT 43
- INTERCOOLER PIPING KIT 44
- OIL COOLER 45~46
- DIFFERENTIAL OIL COOLER KIT ... 46
- DCT COOLER KIT 46
- SST FLUID COOLER KIT 46
- AT FLUID COOLER KIT 46

INTERCOOLER KIT



Intercooler is front mounted (excluding some vehicles) to maximize cooling efficiency by air stream.

To cool compressed air that temperature is increased, and to improve combustion efficiency of engine, performance of core, parts selection and layout are decided.

An intercooler that matches with the specification of the engine will maximize efficiency of turbo.

POINT

Intercooler cools compressed air by turbocharger that temperature is increased using air stream, to improve filling efficiency of engine.

It widens setting range for fuel & ignition and increases torque. However, if design of core is optimized only for cooling efficiency, pressure difference (pressure loss) at the outlet of intercooler is increased and intake pressure will be reduced and response will be worse.

HKS greatly reduced pressure loss by thin inner fin and increased number of tubes to keep enough passage for air flow.

Each vehicle has special design of tank and piping layout to prevent from worse response.

With consideration of usage from street to circuit driving or drag racing etc., performance of core, components and layout are designed.

- HKS has lineup of S type for street, R type for circuit driving under hard condition of acceleration, cornering, stopping and power optimized GT type for drag race or for situation that gives priority to cooling performance than response.

- S, R, GT Type Intercoolers best match with HKS' turbine series.

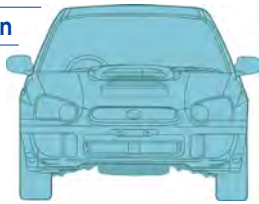
- Shape of tanks and diameter, bending angle of pipe are designed for each vehicle to reduce pressure loss and to improve response.

- Shape of fins and thickness of tanks are designed to lighten the weight.

- Intercooler kit is available for HKS Bolt On Turbo for upgrading.

Stock replacement type = No modification

HKS Stock replacement type intercooler is the type that can be replaced with stock intercooler. No modification is required for body side and stock air duct can be installed to guide air efficiently.



● By ambient temperature or driving condition, there is a case that water temperature is increased significantly. Install a water temperature meter to check. Upgrading of radiator is recommended.

Front mount type = Appearance and cooling performance

HKS Front mount intercooler kits are mounted in front of radiator at the inlet of bumper to have large size core that has superb cooling efficiency. It is applicable for boost up and upgraded turbos. The large size core in the inlet of bumper appeals itself.



LINE-UP

S TYPE

Recommended for light tuning vehicles for 184 - 320kW (250 - 450PS).

S TYPE is designed for street use and it best matches with boost up of stock turbo to GT28 series single turbine class.

On street or winding road, the smooth power can be felt from low/middle rpm range.

① Inner fin

1) Rectangle type

· The fin pitch of rectangle type is optimized for cooling efficiency with small, lightweight design.

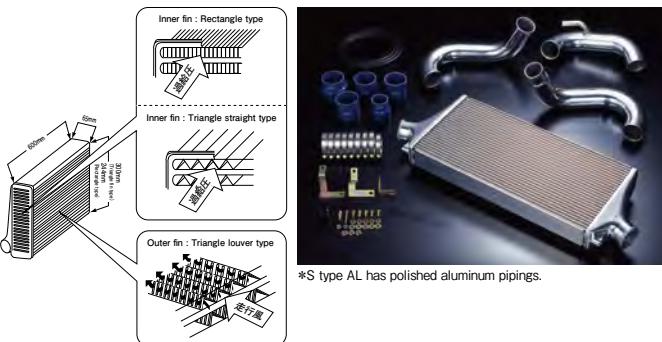
2) Triangle straight type

· To prevent from pressure loss, triangle straight type fin enables smooth air flow.

② Outer fin (Triangle louver type)

· By the louver, air stream has angle and distance to through fin is longer that improves cooling efficiency.

· By the louver, flow area will be large that improves cooling efficiency.



R TYPE

Recommended for 294 - 515kW (400 - 700PS) Heavy tuning vehicles.

R TYPE is targeted for circuit driving and that matches with GT-RS series twin turbine, GT30 series to T51R turbine class.

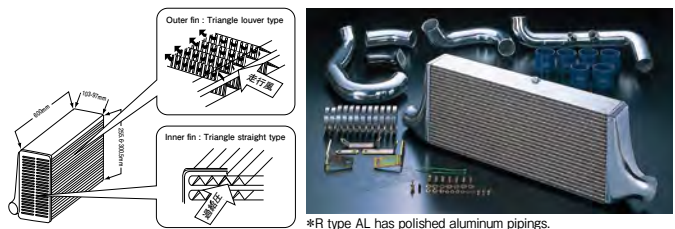
From low or middle rpm at the exit of corner to high rpm at straight, more turbo power at all rpm range. It weighs 25% lighter than the same size of previous products.

① Inner fin (Triangle straight type)

· We adopted triangular straight type for less pressure loss of air flow.

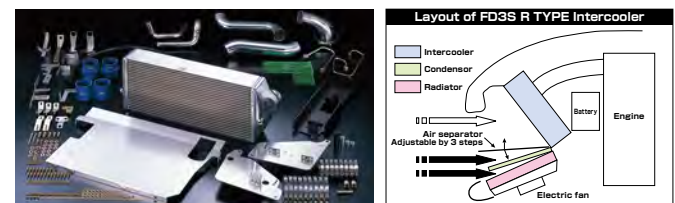
② Outer fin (Triangle louver type)

· Like "S TYPE", we adopted triangular louver type for outer fin.



R TYPE Intercooler Kit V System

"R TYPE Intercooler Kit V System" was developed specially for RX-7 FD3S. The large capacity intercooler core that capacity is up to 500PS and the radiator will be mounted as V-shape. It enables superb driving never before for street, circuit and drifting.



INTERCOOLER PIPING KIT

Boost up is one of the methods to pull out potential of engine. However, stock plastic or rubber intercooler pipes can expand or crack under high boost levels.

In addition to this, stock pipes have many bends which in some places are very tight radius which causes much resistance and pressure drop.

HKS Piping kits are made of aluminum for increased durability and safety.



HKS Piping Kit can be installed as the same layout of the stock piping. No complicated installation procedure is required.

Installing high pressure resistance hoses to joint parts can protect the pipes from heat and pressure, thus full performance of the intercooler can be brought out.

Buff, Alumite, and plating finished aluminum pipes can make the engine compartment appearance more attractive.

INTERCOOLER PIPING KIT

Piping kit which replaces the pipes from the turbocharger to intercooler and the intercooler to inlet manifold. A convenient kit which allows the replacement of pipes which can frequently pop off in higher boost use and is recommended for tuning where the stock intercooler is still used.

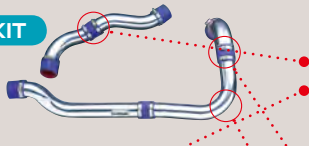
*Components in a kit depends on vehicle.



POINT

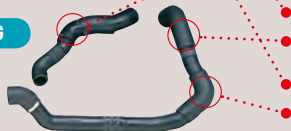
HKS PIPING KIT vs. STOCK PIPING

HKS PIPING KIT



Aluminum pipes prevent intake air expansion and compression under high boost pressure and improve engine response. Durability and safety are better than the stock hoses. Polished pipes improve engine compartment appearance.

STOCK PIPING



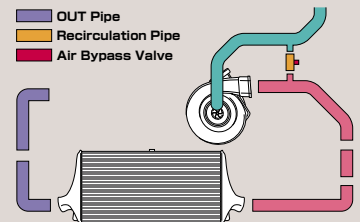
Straight layout and optimal pipe radius minimize pressure loss.

The pipes have been redesigned to decrease the number of bends and to increase bend radius to minimize pressure loss and flow resistance.

●Application:
Supra/JZA80

PIPING LAYOUT

For Single Turbo



PIPING KIT for GT-R

SPECIAL FULL PIPING KIT

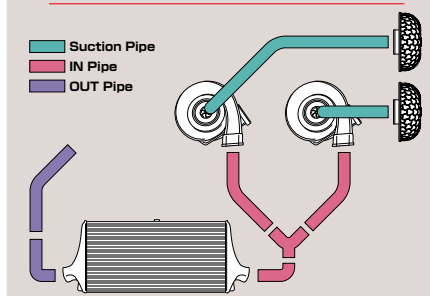


HKS' special model for GT-R. Using this kit for GT-R, which even stock intercooler is front mount, performance and appearance will be ultimate specification.

The looks will be like a demo car (Special model for GT-R).

PIPING LAYOUT

For Twin Turbo



RACING CHAMBER KIT

Junction portion of chamber pipe is designed for smooth flow of intake air. That reduces intake resistance and increases performance of engine. Mirror buffing finish appeals in engine compartment.

It fits to stock air cleaner box (Modification is required) and HKS intake series items. It works from boost up to Sports Turbine KIT.



*with RACING SUCTION RELOADED

OIL COOLER



Extreme increases in oil temperature can break down the oil and decrease its ability to lubricate, cool and clean the engine and can cause damage as a result. HKS Oil Cooler Kits are designed with advanced cooling technology which enables stable oil temperatures to extract the maximum ability from the engine.

POINT

Optimum size of the core and layout design improves cooling performance

Improved cooling performance by the new core design with improved shape of inner fin and optimized row number of tubes.

Vehicle optimized core size and layout enables stable oil temperature and desired horsepower of engine.

The cooling performance of HKS OIL COOLER KIT that is designed with optimized size, layout and other factors for each vehicle model, enables "firm management of oil temperature" to maximize performance of tuning cars.

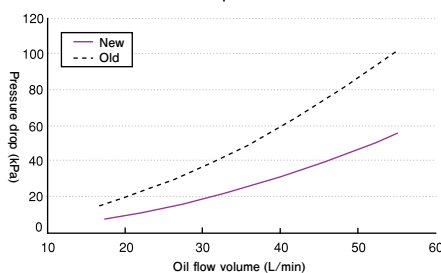
Effect of air guide!

Some vehicle applications contain air guides which maximize the air flow through the oil cooler core during vehicle operation.



In, Out air guide

■ Flow volume vs Pressure drop



Large diameter hose for some vehicle applications

#12 hose is selected for some vehicle application of large displacement vehicles. All kits have vehicle specific designs.

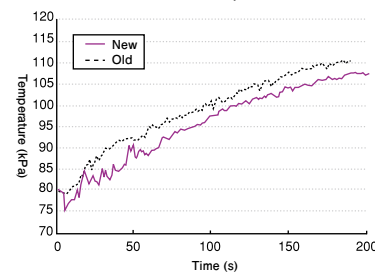
Oil Temperature Controlled by Thermostat

HKS Oil Coolers use high performance cooling cores; so there is the possibility of overcooling which is prevented by the use of a thermostat (some vehicles excluded). This thermostat has high response and able to react quickly to change of oil temperature. Once oil temperature reaches the set level, the oil will flow through the cooler core but bypasses when temperatures drop lower. This allows engine oil to be maintained at the ideal temperature.

*1: In cases where the core or lines become blocked and the oil pressure rises, the thermostat will bypass the core to maintain the correct oil pressure and prevent damage to the oil lines and fittings

- Thermostat Opening Temperature 70°C (±3°C)
- Thermostat Full Open Temperature 80°C (±3°C)

■ Flow volume vs Pressure drop



As shown on the left, pressure drop is greatly reduced and oil temperature will increase slowly.

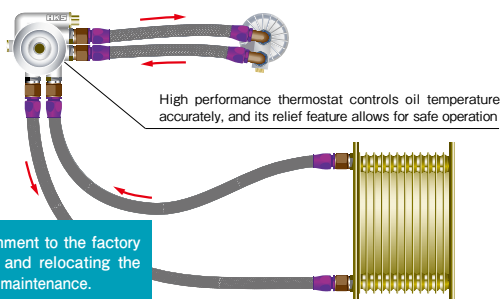
LINE-UP

R and S, 2 types of HKS Oil Cooler

Two types of kits are available with R Type kits: filter relocation type and S Type: sandwich type which holds the oil filter. Both vehicle specific kits and universal kits are available. Kits are designed to manage oil temperature for any specifications or usages. Universal kits allows free installation layout for various applications.

R TYPE

HKS Oil Cooler kit R (Relocation) Type is a filter relocation type for strict control of oil condition.



Installing the attachment to the factory oil filter's position and relocating the filter enables easier maintenance.



The core on the above photo is different from the actual core included in a kit.

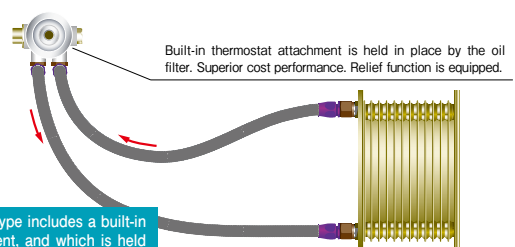
HKS Oil Cooler R Type can relocate the location of an oil filter so the oil filter replacement can be easily done. As remarkable difference from the others, thermostat is activated by temperature of the oil flow out of the engine, that allows engine oil to be maintained at the ideal temperature. This thermostat has high response and relief feature which activates when differential pressure exceeds 200kPa (2.0kgf/cm²).

[Oil Temperature Meter: Oil Pressure Gauge Installation Hole]

- Adaptor Thermo : M12×P1.25 (1hole) , PT1/8 (1hole)

S TYPE

HKS Oil Cooler Kit S (Sandwich) Type is a sandwich type which has a built-in thermostat attachment.



HKS Oil Cooler S Type includes a built-in thermostat attachment, and which is held in place by the oil filter. Minimum number of components allows simple installation.



The core on the above photo is different from the actual core included in a kit.

HKS Oil Cooler S Type includes a built-in thermostat attachment, and which is held in place by the oil filter. Also, it provides superior cost performance.

*Oil filter is not relocation type.

[Oil Temperature Meter: Oil Pressure Gauge Installation Hole]

- Adaptor Thermo : M12×P1.25 (2 holes) , PT1/8 (2 holes)

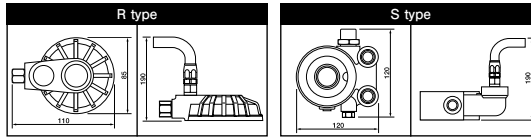
●Note on Installation of Universal Oil Cooler Kit

■Before Purchasing the Product

•There are inapplicable vehicles depending on vehicles' specifications. •Check the following to make sure the kit is compatible with your vehicle.

①Screw Size for Oil Filter Installation

The screw size must be 3/4-16UNF or M20×P=1.5.

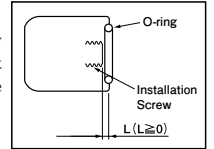


②Clearance for Attachment Installation

To install the engine block attachment, adequate clearance is required. See the diagrams on the right. (In unit of mm)

③Oil Filter

The installation screw portion should not protrude from the o-ring of stock filter.

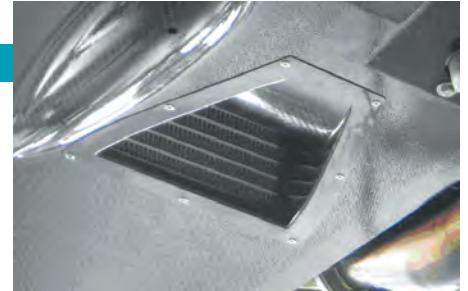


DIFFERENTIAL OIL COOLER KIT

Differential Oil Cooler Kit for R35 GT-R has been released. High performance vehicle R35 GT-R's differential oil temperature tends to be very high under severe conditions such as circuit driving. High differential oil temperature may affect on the lubricant performance and/or LSD's performance. HKS Diff Oil Cooler Kit was developed to solve these problems. HKS Diff Oil Cooler can maintain the differential oil temperature and prevent the oil degradation.

Features

- Oil Cooler Core Size: 200×132×48 (Cooling Fin). This core was designed specifically for R35.
- Installation position of the core is inside the rear under cover. With a special air duct, it can let air into the core and cool it efficiently.
The air duct is made of CFRP. It can match with the factory rear under cover.
- Highly durable AQP Racing Hoses are used for oil hoses.



DCT COOLER KIT

From the street to circuit driving, the HKS DCT Oil Cooler Kit for GR6 DCT has been developed to provide firm shift feeling while assisting in the protection of clutch and transmission. By stabilizing and maintaining maximum oil temperature of the transmission, the life cycle of the oil is extended and maximum water temperature can be also reduced.

Kit components

- Air cooled core
- Special bracket
- Special air duct
- Washer tank
- Special hose
- Oil line attachment
- Other short parts



SST FLUID COOLER KIT

"Fail-safe mode problem due to excessive SST fluid temperature" is the weak point of LANCER EVOLUTION X SST for sport driving. HKS SST Fluid Cooler Kit was developed to solve this problem.

Kit components

- SST fluid pump
- Air cooled core
- Special hoses
- Special fluid filter
- Special fittings
- Special bracket
- Bolts and other short parts



AT FLUID COOLER KIT

Aggressive driving of automatic cars raises the AT fluid temperature. Excessive AT fluid temperature decreases the fluid viscosity which may cause abrasion to the built-in disk and/or plate. HKS A/T Fluid Cooler can reduce the oil temperature while maintaining the automatic transmission performance of tuned vehicles.

Kit components

- Fluid cooler core
- Oil resistant hose
- Special bracket
- Short parts

●UNIVERSAL A/T FLUID COOLER KIT



Kit components

- Fluid cooler core
- φ10 Oil resistant hose (L:2m)
- Short parts

SUPERCHARGER

Technology

● **GT SUPERCHARGER SYSTEM 49~50**

GT SUPERCHARGER SYSTEM



Because supercharger is crankshaft revolution output system, it doesn't need for modification of the exhaust side than of the turbocharger, which result in better exhaust gas purification performance and acceleration is better at low to mid RPM. In addition to these advantages of the traditional supercharger,

HKS developed a new product GT SUPERCHARGER which eliminated the disadvantages, such as "mechanical noise", "dimensions and weight of the device" and "resistance at high rpm". It has achieved both environmental friendly performance and power. It's the next generation supercharger system.

TECHNOLOGY

●Centrifugal compressor

Like compressor of turbo, forced induction is by revolution of compressor wheel in the housing. Noise is less, lightweight, compact, high flow volume and applicable for high boost level than other conventional supercharger types.

●Traction Drive is the drive type of compressor wheel

Traction drive system (Dia. A)

- ①Output from crankshaft is transferred to the pulley of GT Supercharger through the belt.
 - ②The revolution of the pulley is transferred to the input ring inside front housing.
 - ③The input ring revolves 3 rollers inside and through the spindle in the center of them, it revolves the compressor wheel.
- The rollers do not contact with the spindle directly and output from the rollers is transferred through the oil film of special traction oil that circulates inside (Dia. B).

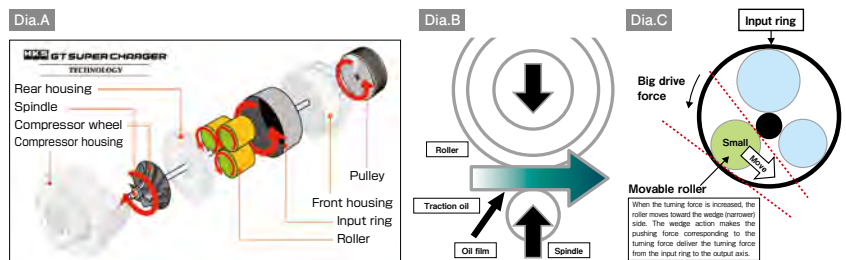
By this mechanism, mechanical noise is greatly reduced compared with conventional gear type centrifugal superchargers. It enables large speed increasing ratio and high output revolution of compressor that enables compact size of compressor and compact unit system.

The "Torque response traction drive system" that the roller moves towards wedge side and it has pushing force depending on the transferred torque, was newly developed.

It has higher fuel efficiency at regular rpm range and high transferring efficiency at high rpm range (Dia. C).

It greatly improves durability than conventional traction drive type. The traction oil circulates by the integrated oil pump and external pump is not required.

Oil cooler kit for traction oil is included in the kit.



LINE-UP

HKS GT SUPERCHARGER

GT Supercharger Universal Type GTS4015HP•GTS7040•GTS8550•GTS8555

HKS GT SUPERCHARGER is lightweight and compact. Universal units are available.

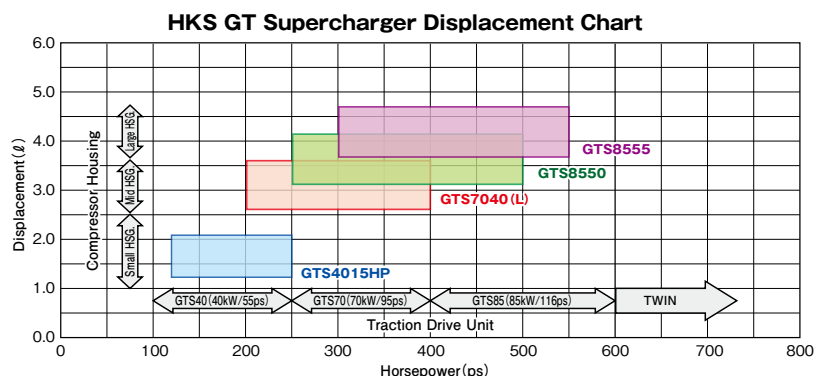
● GT SUPERCHARGER Universal Kit Parts

- GT SUPERCHARGER Main Unit
- Oil Cooler
- Oil Tank
- Traction Fluid
- Hose Assembly for Traction Fluid×2
- Short parts, etc.

*The pulley is not included in the GT SUPERCHARGER ASSEMBLY; it must be purchased separately.

GT SUPERCHARGER UNIVERSAL TYPE Position chart

*The positioning chart with the target horsepower and displacement of the engine. Use to select a GT Supercharger unit.



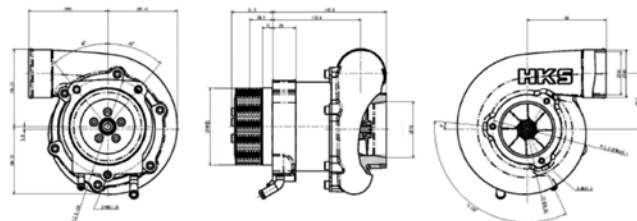
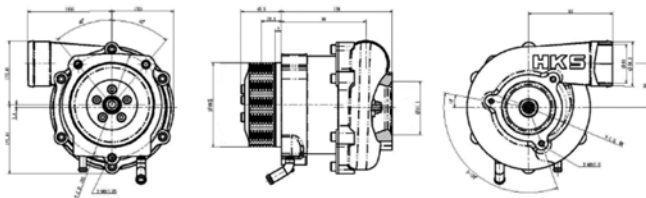


GT SUPERCHARGER UNIVERSAL TYPE Series Appearance

GTS4015HP						
MODEL	MAX IMPELLER SPEED	MAX PRESSURE RATIO	MAX FLOW	POWER RANGE	DRIVE UNIT RATIO	UNIT WEIGHT
	rpm	—	—	ps	—	kg
GTS4015HP	110,000	2.6	8.1	100-150	9.875	3.5

GTS7040						
MODEL	MAX IMPELLER SPEED	MAX PRESSURE RATIO	MAX FLOW	POWER RANGE	DRIVE UNIT RATIO	UNIT WEIGHT
	rpm	—	—	ps	—	kg
GTS7040	110,000	2.5	22	200-400	9.444	4.2

GTS8550-GTS8555						
MODEL	MAX IMPELLER SPEED	MAX PRESSURE RATIO	MAX FLOW	POWER RANGE	DRIVE UNIT RATIO	UNIT WEIGHT
	rpm	—	—	ps	—	kg
GTS8550	100,000	2.6	26	250-500	9.368	5.3
GTS8555	100,000	2.6	28	300-550	9.368	5.3



*Reference Dimensions of each unit. Refer when universal unit is installed.

*Caution In order to use the universal kit, pulley and other parts to have drive force are required separately.

Selection of pulley for GT SUPERCHARGER

Select a pulley to use within MAX IMPELLER SPEED.

Diameter of crank pulley (mm) / GTSC pulley (mm) × Unit Ratio × Max. RPM =
Within Max Impeller speed (rpm)

GT SUPERCHARGER SPECIFICATION

MODEL	MAX IMPELLER SPEED	MAX PRESSURE RATIO	MAX FLOW	POWER RANGE	DRIVE UNIT RATIO
	rpm	—	—	ps	—
GTS4015HP	110,000	2.6	8.1	100-150	9.875
GTS7040	110,000	2.5	22	200-400	9.444
GTS8550	100,000	2.6	26	250-500	9.368
GTS8555	100,000	2.6	28	300-550	9.368

GT SUPERCHARGER Pro KIT

- PRO KIT is the material kit that includes main parts necessary to install the Supercharger. With this kit, the original setup of the Supercharger is possible according to the usage situation and/or tuning level.
- Upgrading the engine internal parts can achieve higher engine output.

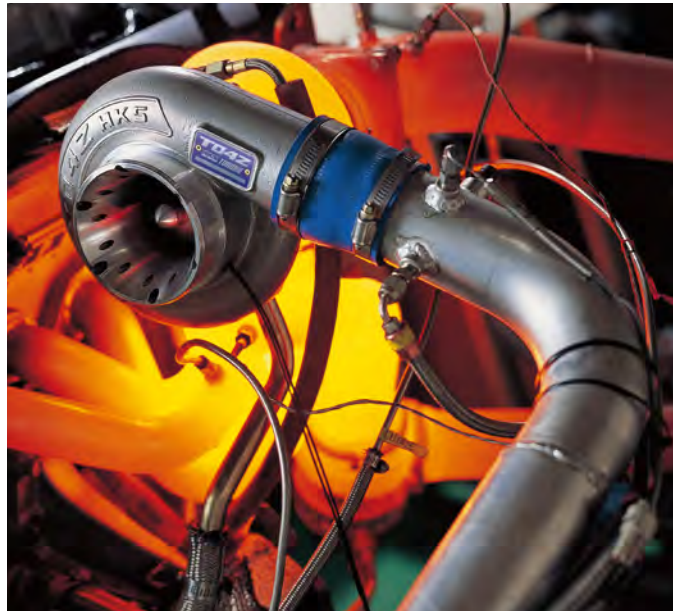
Pro Kit components			
■ GT S/C Unit	■ Suction pipe	■ Pulley/Belt	■ Traction Oil Tank
■ Super Power Flow	■ S/C Bracket	■ Relief Valve	■ Traction Oil
■ Intercooler	■ Chamber pipe	■ Traction Oil Cooler	■ Suction pipe

TURBO

Technology

- TURBINE KIT 53~54
- EXTENSION KIT 55
- GT EXTENSION KIT 55
- ACTUATOR UPGRADE KIT 55
- POWER ASSIST KIT 55
- GT ACTUATOR UPGRADE KIT ... 55
- TURBINE & OTHER PARTS 56~59

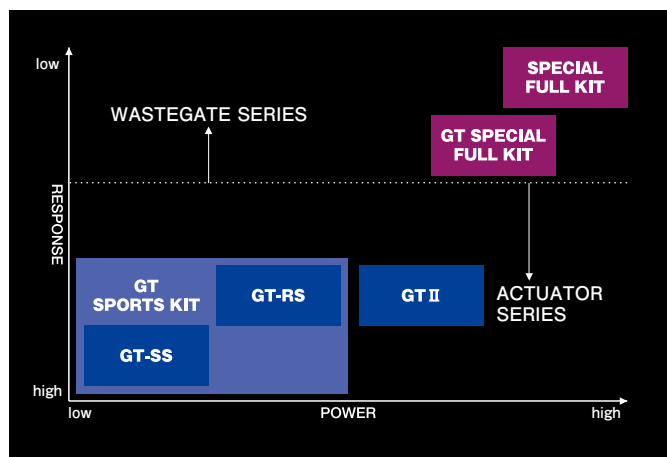
TURBINE KIT



There were many famous turbines in HKS' History. And that's the history of the tuning itself. We have optimized those turbines for each automobile and with other necessary parts we made turbine kit for light to heavy tuning. HKS' turbine kit can fulfill any desire of tuning.

Our turbine kit is developed under the tough situation such as street or motorsport competition. We have tested in all situation of driving environment and collected the data. By continuous development for further power and response, we have developed world's best tuning turbine kit.

POSITION



2 types of boost control systems

■ Actuator type



Suitable for small to mid power spec from street to circuit.

In the boost pressure control, the boost level is detected by pressure in surge tank and it bypasses surplus exhaust gas from turbo housing to extension.

■ Wastegate type



Suitable for a high power circuit and drag race spec.

In the boost pressure control, the boost level is detected by pressure in surge tank and it bypasses surplus exhaust gas from the wastegate to front pipe.

LINE-UP

SPORTS TURBINE KIT (Actuator series)

Suitable for small to mid power spec from street to circuit.

The compact system and stock exhaust layout enables low cost turbine upgrading.



FULL TURBINE KIT (Wastegate series)

Suitable for a high power circuit and drag race spec.

The wastegate on the exhaust manifold is operated by detected pressure in surge tank and it bypasses surplus exhaust gas from the wastegate to front pipe directly.



SPORTS TURBINE KIT

HKS turbine kit of actuator series can allow a low price by using actuator controlled turbine. The turbines are HKS' ball bearing type "GT Turbine" and "GT II Turbine". One from 5 types of lineup can be selected for the vehicle and the objective


GTII8260/7460R KAI/7460KAI JZX100

HKS original design ball bearing turbo. Great cost performance




GT2835 KAI/2835/2530KAI RB20-25

For beginner to intermediate driver




GT-SS BNR32-BCNR33-BNR34

Best for who want overhaul of normal turbine. Easy drivability with extra horsepower




GT-RS RB20-25

For faster driver at race track without losing drivability



DX30/27 L880K

For fun sport car driving experience




FULL TURBINE KIT

Turbine kit for high power with wastegate control turbine. A turbine can be selected for the vehicle and the objective from big power & high response GT turbine and awesome T04 series. The kit includes exhaust manifold, wastegate, bypass pipe, front pipe, etc. for hard tuning vehicle.


T04Z BNR34

For extreme power




GT3240/3037S CZ4A

A big turbine & a big power




T04S FD3S

A big turbine for a low price



GTII7460x2 R35

For serious track driving



EXTENSION KIT

A stock extension is designed to merge the main port (turbine exhaust) and bypass port (wastegate actuator) in turbine exhaust housing. This causes the exhaust stream from the main port to interfere with the bypass port stream when the actuator is opened. The primary and secondary exhaust pressure will rise causing the boost pressure to drop, which can cause a loss in power.

The HKS Extension Kit will optimize the turbine performance with minimal power loss.

The HKS Extension Kit utilizes an individual main port (turbine exhaust) and bypass port (wastegate actuator) to reduce the exhaust gas interference and provide a smoother exhaust flow. This will also reduce back pressure and improve the boost response throughout the RPM range. Even with the stock turbine, the exhaust gas merges in the exhaust housing. This exhaust gas interference can be prevented by a divider on the extension flange. The pipes connect at the lower part of the extension where the exhaust gas pressure is lower. The main pipe's diameter is enlarged at the turbine outlet so the swirl flow caused by exhaust gas interference can be reduced. This will also prevent the secondary exhaust pressure from rising, and stabilize the boost pressure to increase the engine output. The flange is made with a high structural steel material, and the piping is made with a high heat resistant and durable stainless steel(SUS304). These components will also improve the engine compartment appearance.



GT EXTENSION KIT

GT Extension for internal wastegate turbocharger smooths exhaust gas flow from turbine to front pipe. It reduces secondary exhaust gas pressure of turbine. Response and power of turbocharger will be improved.



ACTUATOR UPGRADE KIT

Boost level drops at high boost, high rpm. The cause of this problem is the boost range of actuator operation.

As stock actuator is designed for street driving, the boost range of actuator operation is low and as boost level goes high, boost becomes unstable and drops.

HKS "Actuator Upgrade Kit" has high boost range of actuator operation. In addition, the initial pressure is adjustable that enables boost level adjustment with the actuator unit only.

*To increase boost pressure, use fuel cut cancellation device (FCD) and fuel management device (F-CON etc.).

*Boost Pressure value is recommended boost level for stock engine. By vehicle specification, upgrading of engine internal parts may be required even within the Boost Pressure value.



POWER ASSIST KIT

A new concept kit at low cost to increase horsepower without boost controller for vehicles with actuator type turbo.

This item will solve the boost drop problem at high boost level due to the mechanism of actuator.

Functions of "Upgraded Actuator", "FCD(Fuel cut cancellation device)", "Fuel management device(w/ preprogrammed data)" will enable increasing of horsepower by boost up without troublesome fuel setting.

Specially developed fuel management system "PAC/Power Assist Controller" is included.



GT ACTUATOR UPGRADE KIT

Great cost performance for easy power increasing by installation to stock turbine.

■Easy power up

By replacement with stock actuator on the stock turbine, easy power increasing is enabled by increased boost level.

■Cost performance

As the first step of power increasing, the stock turbine can be used as it is.

■Boost pressure adjustment is possible

The length of the actuator rod is adjustable that enables adjustment of boost level.

(Caution for installation and operation)

If boost level is increased without management device, due to lack of fuel, engine might be damaged. To increase boost pressure, use fuel cut cancellation device (FCD) and fuel management device (F-CON etc.).

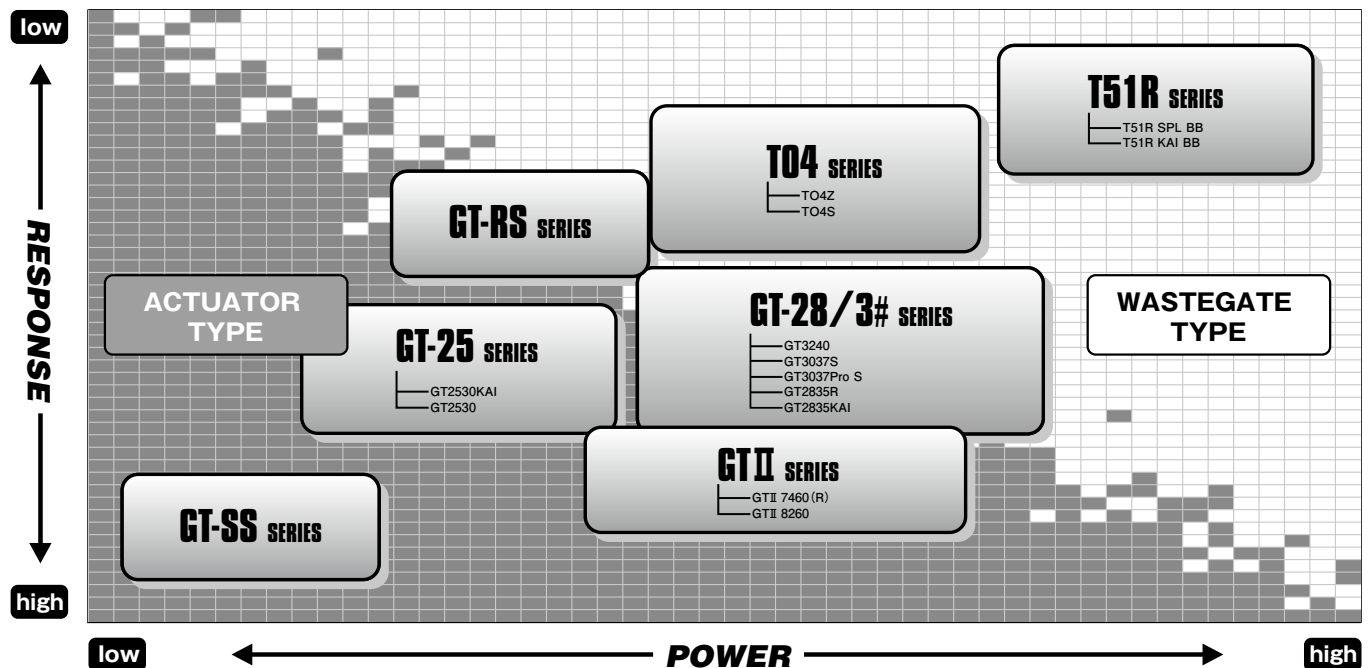


TURBINE & OTHER PARTS



Here is the line of turbine products from GT turbine series which pursuit more power, better response and wider air flow volume range and high efficiency, to the top product of its kind and world's famous T series/big single T51R SPL BB.

LINE-UP



POINT

GTII 7460/8260 SERIES

Extreme performance that does not sacrifice initial spooling.

- Turbine assy is HKS original design ball bearing turbo.
- Wheel sizes of intake/exhaust are larger than stock for more air flow volume with ball bearing mechanism to prevent from response becomes worse.
- With the twin scroll and larger bypass port design, exhaust gas back pressure at high rpm is reduced and load on the engine is also reduced.
- Heat-resistant steel of turbine wheel and turbine housing improved durability and reliability.
- Special turbine design for the engine characteristic.

GTII TURBINE



GT-SS/RS SERIES-GT25 SERIES

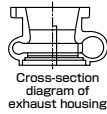
Sport type turbine which pursuits the balance of "Power" and "Response".

To achieve this goal, HKS has re-examined all the components of the turbocharger and employed new parts. First, we analyzed turbine wheel to recover energy of the exhaust gas efficiently, and designed new wheel which improves the gas flow characteristic. Also HKS has developed and adapted exhaust housing to apply the exhaust gas to the wheel and to put out efficiently. We have adapted the ball bearing to the shaft which has great balance between low friction and durability. HKS analyzed and developed every little details of housing and scroll cross-section shape to prevent from the surging problem.

GT28/ GT30 SERIES

All new ball bearing turbine has quick response and big power.

- **The ball bearing for shaft supporting** : Better response and less friction.
- **New design of compressor wheel** : Newly designed compressor performs more efficiently than old one. Even at the high boost level, it can provide high power without losing efficiency.
- **New design of turbine wheel** : Provides superior revolution motion in the wide range of gas flow volume from low rpm to high rpm, and has efficient energy recovery of exhaust gas.
- **HKS original design and manufactured exhaust housing.**
 - Newest design of round section scroll shape.
 - High efficiency and super small housing rise the exhaust gas speed which will provide the better response.
 - Turbine outlet is large diameter tapered shape that prevents from excessive exhaust gas pressure.

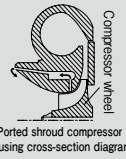


- *Ball bearing turbine requires to maintain oil pressure and quantity. Adequate oil pressure of turbine supply side is 207kPa~415kPa(2.1kgf/cm²~4.2kgf/cm²). Use the recommended parts.
- *Idle the engine for a while before stopping of the engine.
- *Ball bearing turbine must have water line for cooling. Use the recommended parts for water cooling.

Overcoming the surging problem by "ported shroud".

Surging problems tend to occur with high horsepower turbines. To prevent from the problem, ported shroud designed is used for GT2835ProS/GT3037ProS/GT3037S/T51R KAI/T51R SPL. It can provide high power without losing turbine response.

● Surging is the problem that the turbine is rotating and not sending the air. The "ported shroud" let air out and circulates smoothly when surging occurs. On the other hand, at high boost level, it can intake the air from the hole of "ported shroud" and will be higher efficiency.



TO4 SERIES

New design turbine is compliant for large displacement engines for high boost level, high air volume and high power.

[Newest features of TO4Z]

- **Optimized ported shroud** : The optimized ported shroud prevents from surging problem at mid rpm range.
- **New design of turbo housing** : The inlet of turbo housing is 2 ports and optimal length which improved both response at low rpm and more power at high rpm. The new design also protects from exhaust gas leakage by skewness of flange of turbo housing.
- **Water-cooled center housing** : Water-cooled center housing endures under tough condition.
- **Ball bearing** : The ball bearing at shaft supporting lowers the friction and provides better response.
- **Left hand screw lock nut** : For more reliability of turbine, left hand screw nut is employed for the locknut of shaft.
- **Polished finishing** : The polished compressor housing contributes the look and feel of the engine room.



[Basic features of other TO4 series]

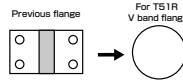
- **Applicable for the wide range of engine displacement** : For 2 liters class engine, it can be used for top speed trial using high rpm or for 3 liters class engine, as it spools from the middle rpm, it can be used for drag racing.
- **High power type compressor wheel** : The new design compressor wheel has capacity of high power up to about 700ps. In order to be applicable for high horsepower, to strengthen, the inlet of compressor wheel has cutback work.
- **Smooth and efficient exhaust housing** : New design of exhaust housing provides better exhaust efficiency.

T51R SERIES (PAT.No.3033902)

High power at high rpm from the single turbine.

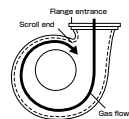
- **Optimized cross-section shape from gas inlet flange to scroll** : If a circle is compared with the same area of a rectangle, the outer circumference is shorter. The shorter outer circumference means small surface friction* that will achieve high performance of turbine efficiency. T51R which has the same outer circumference with the previous flange(same as the RB20/RB25 type genuine flange) could increase area by 30%. This enabled 800ps over turbine with compact and light weight design that still has 30% increasing of gas flow without loss. (*1) Surface friction: Loss of gas flow speed when it hits the surface.

- **V band flange will not lose the sealing function even at high boost level** : With the previous rectangle flange design with 4 bolts, at high temperature, the portion could have distortion and leakage of exhaust gas. T51R improves the sealing greatly by clipping outer circumference with V band.



- **Scroll cross-section shape for high turbine efficiency** : The turbo housing cross-section shape has the ideal gas flow and keeps the loss at a minimum level.

- **Machinery work to the turbo housing and stable performance of turbocharger** : T51R series have efficient exhaust gas flow to the turbine wheel by having additional machinery work to the cast metal turbo housing which provides more precise dimension and stabilizes the performance of turbocharger. All other manufacturers use the cast housing and there is individual difference. HKS is the only one who does machining work to the cast housing.



- **Optimized turbo housing inlet flange diameter and the compressor housing outlet diameter** : Flange diameter of turbo housing inlet of T51R SPL is optimized for more than 2.8ℓ engines. Compressor housing outlet shape is designed for high air flow volume.

- **Tapered shape outlet to prevent from unnecessary exhaust pressure rising** : T51R has design of taper angle outlet for the minimum loss.

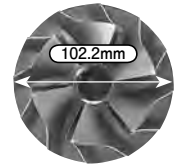
- **Heat-resisting steel to endure high exhaust temperature of rotary engine for the turbo housing** : After the setting, exhaust gas temperature of reciprocating engine becomes 950°C and the temperature of rotary engine becomes 1050°C. The heat-resisting steel can sustain the exhaust temperature of rotary engine that is much hotter than reciprocating engine.

- **High efficient internal scroll shape of compressor housing** : Same as the turbo housing concept, the compressor housing has circular shape.

■ "T51R BB" is the ball bearing specification for better response

Boost increasing time is 11% shorter than conventional bearing with ball bearing design for turbine blade shaft.

The diameter of a compressor wheel



T51R SPL (BB)



T51R KAI (BB)



T04Z/T04R



GT3240



GT3040



GTI8260



GT3037



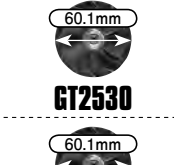
GTI7460 (R)



GT2835



GT-RS



GT2530



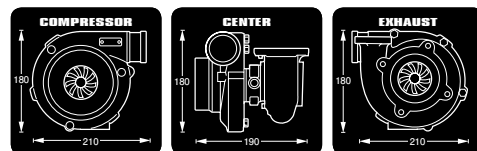
GT-SS

High Power

Quick Response

GT TURBINE

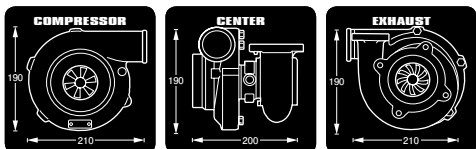
GT-SS, RS, 25, 28 SERIES



*The above-mentioned size is a reference value.

GT3# SERIES

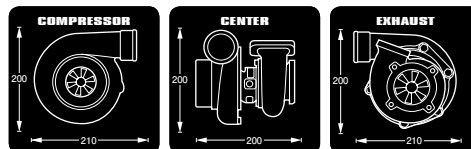
Photo:GT3037S



*The above-mentioned size is a reference value.



Photo:GT3240



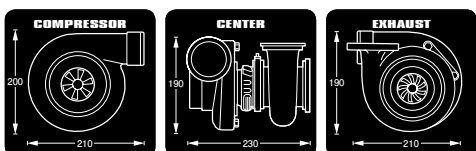
*The above-mentioned size is a reference value.



BIG SINGLE TURBINE

T04 SERIES

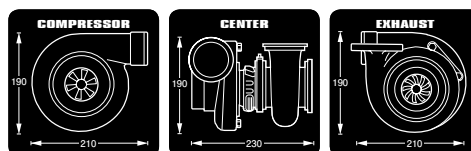
Photo:T04Z



*The above-mentioned size is a reference value.



Photo:T04S

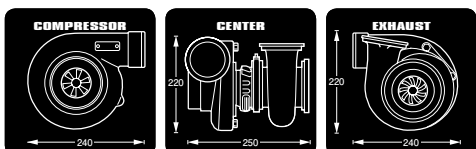


*The above-mentioned size is a reference value.



T51R SPL

Photo:T51R SPL
(PAT.No.3033902)

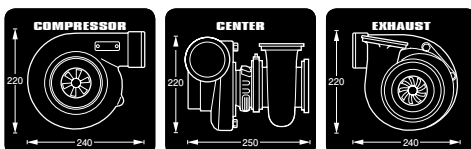


*The above-mentioned size is a reference value.



T51R KAI

Photo:T51R KAI
(PAT.No.3033902)



*The above-mentioned size is a reference value.



PARTS AROUND TURBO

φ100 SUCTION FUNNEL



OIL LINE FILTER

By installation of oil line filter in the turbine bearing oil inlet line, it will protect from logging up foreign materials in the orifice.



OIL OUTLET PARTS



PARTS AROUND TURBO

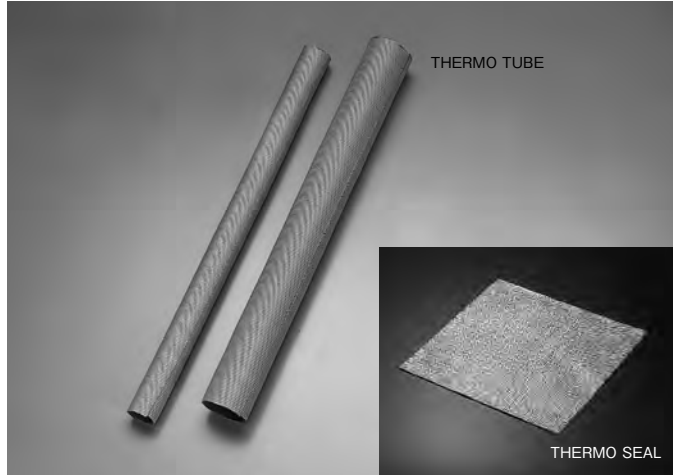
FLEXIBLE HOSE



WASTEGATE PARTS



INSULATION



GTII WASTEGATE



With the smaller design, there is more room for layout. And the installation with the V band makes it easier for maintenance. 2 types of valve diameter of $\phi 60$, $\phi 50$ can have the stable control of boost level for different sizes of turbochargers. There are 4 wastegate springs for $\phi 60$ and 3 for $\phi 50$ (2 are already installed in the products) are included, therefore it's possible to change from wide range of boost pressure setting.

φ60 Valve

- $\phi 60$ valve is the same as GT wastegate but smaller and lightweight body that has the about the same lift amount and flow characteristics.
- The weight is 1,509g that is 2/3 of GT Wastegate (2,246g).

φ50 Valve

- $\phi 50$ valve is the same as the SPL(racing) wastegate with the new lightweight design.
- The weight is 1,443g that is 3/4 of SPL (racing) wastegate (1,890g).

Setting for supercharging pressure

φ60 Valve

- ① 58.8~98.1kPa (0.6~1.0kgf/cm²)
- ② 88.3~127.5kPa (0.9~1.3kgf/cm²)
- ③ 127.5~166.7kPa (1.3~1.7kgf/cm²)
- ④ 166.7~205.9kPa (1.7~2.1kgf/cm²)

φ50 Valve

- ① 78.5~107.9kPa (0.8~1.1kgf/cm²)
- ② 107.9~137.3kPa (1.1~1.4kgf/cm²)
- ③ 137.3~166.7kPa (1.4~1.7kgf/cm²)
- ④ 166.7~196.1kPa (1.7~2.0kgf/cm²)

- Compact and lightweight design with the same lift amount/flow characteristic as the GT wastegate.
- The upper case is alumite finishing and housing is stainless cast steel for the beautiful exterior.
- G coupling for installation of upper cases and lower case.
- Installation to exhaust manifold with V band.
- Spring change work is more efficient by using included special tool.

*As the shape of outlet flange and direction are different from GT Wastegate, bypass pipe must be made to install to some Full Turbine Kit.

GT WASTEGATE SPRING



Spring	Outer		Center (silver)
	soft (white-blue)	hard (red-green)	
Color	soft (white-blue)	hard (red-green)	
Code No.	1405-RA033	1405-RA034	1405-RA031
Spec	O.D $\phi 58$	O.D $\phi 58$	O.D $\phi 45.4$
	I.D $\phi 49.6$	I.D $\phi 48$	I.D $\phi 36.4$
Boost pressure	Free length 135	Free length 111	Free length 76
58.8~98.1kPa (0.6~1.0kgf/cm ²)	●		
88.3~127.5kPa (0.9~1.3kgf/cm ²)		●	
127.5~166.7kPa (1.3~1.7kgf/cm ²)	●		●
166.7~205.9kPa (1.7~2.1kgf/cm ²)		●	●

FUEL Technology

- **2-Jet type-INJECTOR UPGRADE 61**
- **INJECTOR UPGRADE 61**
- **FUEL UPGRADE KIT 61**
- **FUEL DELIVERY KIT 61**
- **FUEL REGULATOR 61**
- **FUEL PUMP..... 61**
- **HIGH-FLOW SURGE TANK KIT ... 62**

FUEL PARTS

Injectors need to be upgraded to increase level of tuning like replacement to upgraded turbo.

2 Jet type large capacity injectors are specially designed for each engine and various types of injectors are available to support fuel supply.

2-Jet type-INJECTOR UPGRADE



14002-AK001



14002-AK002



14002-AK003



14002-AN001



14002-AN002



14002-AN003



14002-AM001



14002-AF001



14002-AF002

HKS original 2-Jet type Injector Upgrades were designed specifically for certain engines; therefore, installation is very simple. For higher combustion efficiency, this injector was designed to inject fuel toward the valve head with better fuel atomization.

Injection toward Valve Head

Injection direction was carefully adjusted toward the valve head; therefore, the A/F response delay due to sticking fuel on the surface can be improved.

Improved Fuel Atomization

As the injection range gets wider, the atomized particle size becomes smaller; therefore, combustion efficiency can be improved with less black smoke. Also, the fuel atomization improvement can lead better low-temperature startability and A/F response which improves torque.

HKS 2-Jet type Injector



Other 2-hole Injector



Injection toward the valve head and better fuel atomization ensure efficient fuel vaporization.

Fuel vaporisation properties are clearly worse than HKS 2-Jet type injectors. Fuel which was not vaporized correctly can flow into intake port and causes knocking.

INJECTOR UPGRADE

HKS' large capacity injectors are precision units engineered to deliver the fuel needed on high-performance applications.



1402-RN008



1402-RN010



1402-RN009



1402-RA002

FUEL UPGRADE KIT

Large capacity injector and fuel pump kit that is required for high power specifications.



FUEL DELIVERY KIT

Purple alumite delivery pipe that is required to upgrade fuel system for horsepower enhancement.

Select HKS Top feed type injector 550cc, 680cc, 1000cc, Aeroquip fuel line and HKS Adjustable Fuel Regulator.



FUEL REGULATOR



FUEL PUMP

▼In tank type



Large capacity fuel pump (for BNR34)

HIGH-FLOW SURGE TANK KIT

Separated tank type new Surge Tank Kit was developed for R35 GT-R that make your engine room cooler.

By the flow test of each cylinder, HKS has designed it to eliminate the variability of cylinders, which produces more stable power output.

The HKS Surge Tank will provide cooler physical appearance, too.

HKS Surge Tank Pro Kit includes Delivery Pipe for additional injector installation, which is necessary for high-power tuning.

HKS original material and design

- Separate type cast tanks.
- Designed for GT1000 spec: Enlarged port diameter, optimized ports and cylinder distribution design.
- Applicable for high horsepower. Even with the different shape from the stock design, the performance is not affected.
- The tank dimension is optimized for quick and smooth response. HKS surge tank is not just to maximize the power only with the large capacity design but the design is for smooth air flow for quick response.
- The ports of the tank side have funnel shape for high flow efficiency.

Easy installation

- The layout of stock parts such as air temperature sensor, nipples, blow-by pipe and tuning pipe to connect between right and left banks are the same that enables easy installation.
- No modification of pipe or complicated work is required.

Twin injector for better performance

- With the Twin Injector Pro Kit included in the Full Kit set, extra fuel supply that is required for high horsepower is enabled.
 - Desired size of injector for secondary side is selectable separately.
 - The attachment type design enables installation of stock injectors (Standard attachment) or others.
- *The injector holes of the Surge Tank for Twin Injector Pro Kit are closed with bolts. It can be used for single injector.



*Special gold emblem of Surge Tank

Appearance



[Main Components]

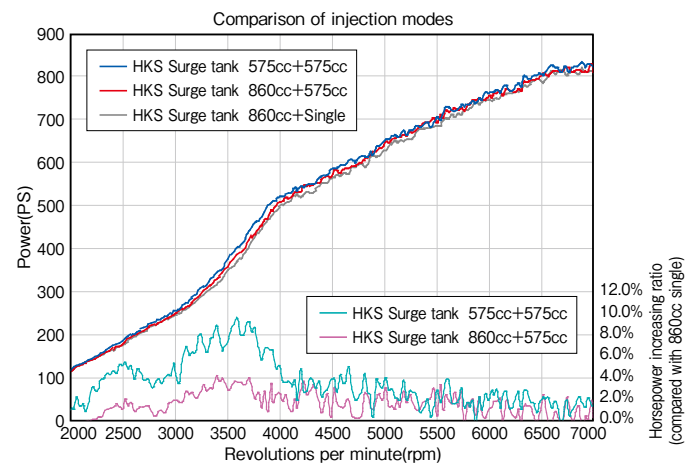
HIGH-FLOW Surge Tank

- Surge Tank Assy
- Bracket set

Twin Injector Pro Kit

- Fuel delivery assy (Union AN6/M16 pre-installed)
- Injector holder ×6
- Adapter Assy
- Bolt, washer, etc.

Surge tank performance graph

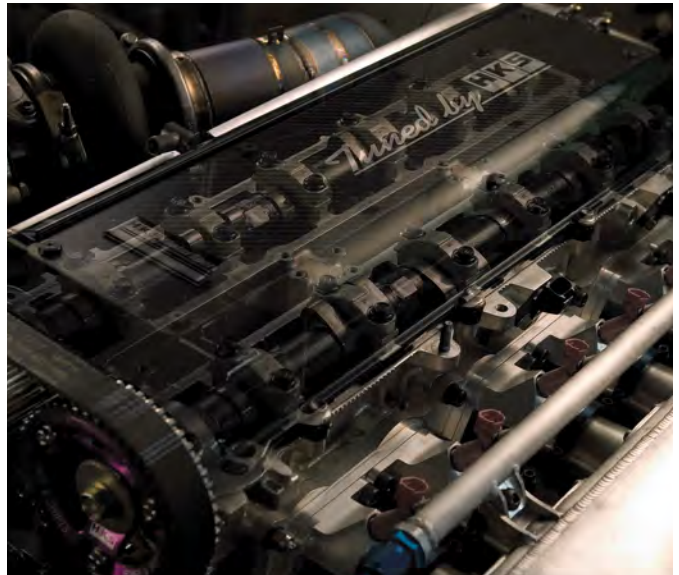


ENGINE

Technology

●CAMSHAFT	65	●FORGED PISTON KIT+	
●CAM-PULLEY	66	CONNECTING ROD SET	71
●RB26 V CAM SYSTEM ...	67~68	●FORGED PISTON KIT	71
●LASH KILLER KIT	68	●CONNECTING ROD	71
●CAPACITY UPGRADE KIT	69	●CYLINDER LINER	71
RB26DETT 2.8ℓKIT	69	●RB26DETT OIL PUMP UP GRADE KIT	71
VR38DETT 4.1ℓKIT	69	●METAL HEAD GASKET	72
SR20DET 2.2ℓKIT	70	●CYLINDER HEAD BOLT SET	72
2JZ-GTE 3.4ℓKIT	70	●Fine Tune Timing Belt	73
4B11 2.2ℓKIT	70	●Fine Tune V-Belt	73
4G63 2.3ℓKIT	70		
EJ20 2.2ℓKIT	70		

CAMSHAFT



The concept behind the HKS camshafts was to produce something that the customers would be truly happy with. This sounds simple on the surface but this is something very challenging. When the development team looked carefully at the details, the ultimate conclusion they drew was to look at the core purpose of the cam itself (to smoothly allow air into and out of the combustion chamber) and a good camshaft would do this job for the maximum efficiency.

POINT

▶ HKS requirements for high performance camshaft

The camshaft that induct much air and exhaust smoothly.
It is to achieve accurate valve stroke motion under any circumstances.

▶ Overwhelming power at high rpm

Objective of previous tuning camshafts were increasing power at high rpm. However, HKS was not sure if these items surely pulled out maximum potential of engines. After analyzation, camshaft that base shape is copy of stock camshaft will be distorted at high rpm that disable accurate valve stroke motion. HKS totally changed to solve the problem.

- The dimension and shape of shaft are redesigned to have enough strength.
- Change of material.
- Redesign of cam lobe by consideration of weight, movement and deformation of all power train components. As a result, it became "the camshaft that can pull out power as desired".

▶ Accelerator response at low - middle rpm

HKS pursued "linear accel response" at low to middle rpm range that is mostly used. To achieve the feeling, it is required to increase filling efficiency in the range. However, there is a trade-off to achieve this without losing performance at high rpm. Thus, HKS had basic development direction not to just easily increase duration. The design direction was to set high lift to have more flow area while valve is opened. After a lot of R&D and testing, we broke through the trade-off. As a result, in addition to the performance at high rpm, the performance of engine is maximized at low to middle rpm range. Besides, applying for the initial wear (manganese phosphate coating (Special surface treatment)) and increased durability are achieved.

▶ Stable idling

"By installing high duration camshaft, idling will never be stable". This used to be a problem that users needed to sacrifice. HKS worked seriously to solve the problem and achieved stable idling that is similar to stock camshaft without rough revolution because of optimized overlap of intake and exhaust camshafts.
* By duration, valve timing, specification of engine, the feeling will be different.



SR20(PS13)



4G63(CT9A)



RB26 STEP Pro V

▶ Things that true "In-house" production enables

When HKS refer to "in-house", it does not simply mean to produce everything with our own facilities. HKS does build from the ground up instead of improvement of items from the vehicle manufacturers. The design, processing, test and production are all linked together. Besides, the testing and redesigning are done several times during development. The results of this R&D are reflected on the final production of the items. All of this is necessary to provide customers a product which they can be truly feel happy with and to maintain HKS' position as the pioneer in the tuning industry.

From "Bolt-on" to Full Tune-up Specifications. The Right Profile to Extract Maximum Performance from Engine

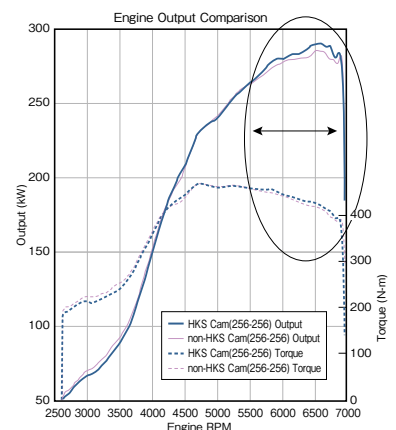
Variation line-up SS-CAM(STEP1)

- HKS SS-Cam are designed to fit unmodified cylinder heads with stock valve springs to be a simple bolt on camshaft kit that can give added performance without changing any other parts or the valve timing.
- By changing camshafts, cam duration and lift is altered and the optimized valve timing is also changed. HKS SS-CAMs have been tested on the engine bench to find the optimum valve timing and the knock pin has been relocated in a modified position to offer perfect valve timing by simply replacing stock cams without adjustment.

STEP2/STEP3(Pro)

- STEP2
Offering more power over SS-CAMs by increased lift. Strengthened valve springs (RB26 also require Piston recess modification and Cam clearance modification on cylinder head) are required.
- STEP3(Pro)
Camshafts designed for further power and high rpm over STEP 2. The following parts will be necessary for installation: (SR20) HKS Lash Killer Kit, Strengthened Valve Springs.

■ Power graph (SR20DET/SS-CAM)



CAM-PULLEY

Revolution of camshaft is managed by timing belt and cam-pulley from crankshaft.

The roll of cam-pulley is transferring revolution power to camshaft precisely. HKS CAM-PULLEY has valve timing adjustment function that enables desired setting by the tuner.



LINE-UP

SLIDE CAM-PULLEY

"SLIDE CAM-PULLEY" that reviewing of the material, design and surface processing enabled lighter, stronger and more accurate design.

● **Highly durable and lightweight pulley by new material and design**

Using a super light duralumin (A2014) as its main material that the strength has increased by 50% and hardness by 30% (over previous version). This change in material has allowed the design change that has also allowed the unit to be substantially lighter (10% less load on RB engines) and it decreased load on valve train and improved response of the engine.

● **Nickel plating increases anti-frictional properties**

Gear section is nickel plated for surface hardness increase (Hv: 350 → 500 (compared to older version)) to withstand strengthened timing belts and any foreign objects that may get caught between the gear and belt.

CAM-SPROCKET

Accurate valve timing control(angle adjustable)

As cam duration and other engine specifications changes, the ideal valve timing will also change. As both intake and exhaust cam duration increase, the overlap amounts can be adjusted for optimum performance. All HKS Camshafts come with recommended valve timing which can be achieved by using these sprockets in conjunction with HKS camshafts. These sprockets are compatible with standard camshafts.

*1 notch is 2 degree of crankshaft.

(Note: Please ensure that when using these sprockets, timing chain cover must be installed.)

RB26 V CAM SYSTEM STEP1 · STEP2 · STEP PRO

Sold only in Japan

Using variable valve timing technology, "V CAM SYSTEM" evolves the RB26 engine to a new level. HKS V Cam System for RB26 solves the issue of low-mid rpm torque while allowing the engine to continue producing power at high RPM.

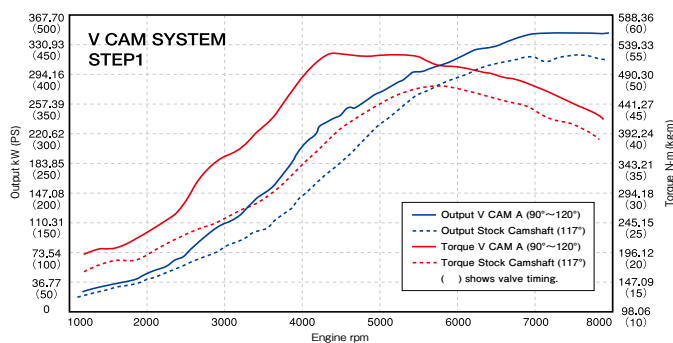
STEP1, STEP2 and STEP PRO are available. Select an appropriate type for desired performance.



STEP1

● Features

- The cam has duration of 248° which seems a little conservative. However, with the variable timing, power increases can be found at from low to high RPM.
- Torque is increased at low to middle rpm that improves drivability on street such as acceleration during overtaking on upslope or highway and for better lap time in circuits by improved acceleration from the slow speed corner. It accelerates easily even with higher gear. The acceleration feeling from the vacuum to boost increasing area is like increased displacement.
- Improved valve timing will allow for more complete combustion leading to improved fuel efficiency and cleaner exhaust emissions.
- HKS V CAM System is compatible with the stock pistons. (When using with the thinner head gaskets or modified cylinder head, the clearance between valve and piston may be insufficient.)
- Exhaust Camshaft should be selected depending on turbocharger. (Recommended: GT-SS - 256°, GT2530KAI - 264°)



Test vehicle specification

- Engine : RB26DETT(EX side 256°)
- Cooling : Intercooler & Piping Upgraded
- Turbine : GT2530 x 2
- Fuel : Upgraded Pump (280L/h), Injector 600cc
- Intake : Super Power Flow, Airflow-less
- Engine management : F-CON V Pro (D-jetro),
- Exhaust : HKS Metal CAT, HKS Muffler
- EVC

STEP PRO

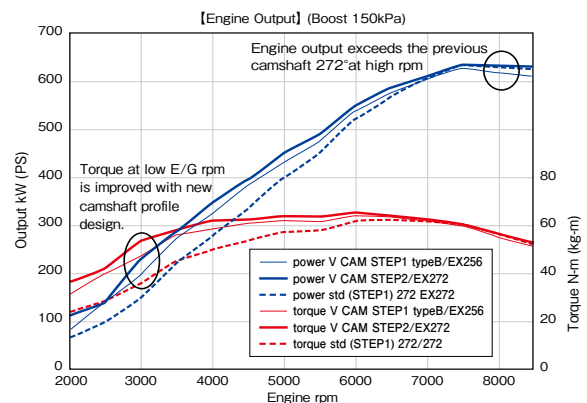
● Features

- V CAM SYSTEM for higher levels of tuning compared to STEP 1 and STEP 2.
- Specially designed camshaft that has duration of 264° and valve lift 10mm. By reviewing material of camshaft, the profile and valve timing are changed. STEP PRO is suited to higher power outputs at high rpm.
- Billet camshaft is used to enhance strength even when used with upgraded valve springs at high RPM (recommended limit 8800rpm). Added strength facilitates a hollow cam design that allows STEP PRO to be 560g lighter than STEP1 and STEP2.
- Valve timing has 50° adjustment range from 80°~130°
- Exhaust camshaft can be selected to suit vehicle specifications.
- STEP2 Valve Springs are required.
- Recess modification of the cylinder head is required.

STEP2

● Features

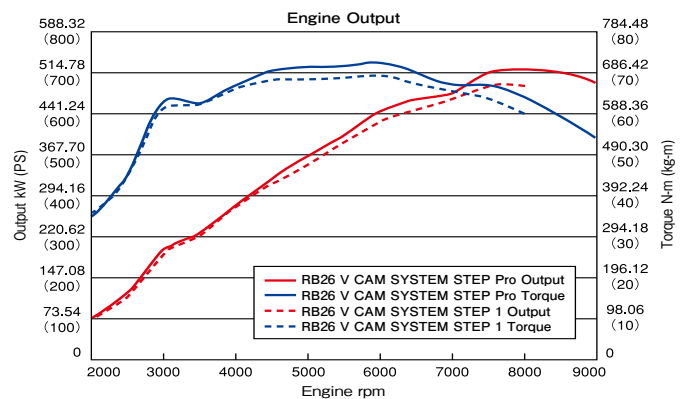
- Specially designed camshaft for STEP 2 has duration of 264°, valve lift 8.7mm. Acceleration at high rpm is smoother than conventional STEP 1 camshaft (272IN - 272EX). STEP 2 is suited to higher power output at all range of engine rpm.
- Because of characteristic suitable for high rpm, with upgraded valve springs, it can be used up to 8,500rpm.
- Engine output and torque are greatly improved at all engine RPM range compared to conventional STEP 1 (272IN/EX). Users can easily feel the performance difference. Compared with the previous STEP1 typeB (EX 256°), for vehicles with more than 600ps, horsepower and torque are improved at all rpm range.



Test vehicle specification

- HKS 2.8L KIT STEP1 φ87
- HKS Head Gasket 1.2mm
- HKS GT2530KAI x 2
- HKS Reinforced Head Bolt
- HKS F-CON V Pro
- HKS Racing Suction Reloaded Intake Kit
- HKS Fuel Delivery Kit
- HKS 1000cc Injectors
- HKS Spark Plug M45

*Boost Pressure - 150kPa *This result on the graph above is obtained by in-house engine bench test. The result may vary depending on measuring instruments



Test vehicle specification

- HKS RB26DETT 2.8L KIT STEP2
 - Exhaust Camshaft : HKS Camshaft
 - Turbine : T04Z (Boost - 1.2kg/cm²)
 - CAT : HKS Metal Catalyzer
- STEP2 272° Valve lift - 10.2mm

Components

	STEP1	STEP2	STEP PRO
Special Intake "V CAM"	248°	264°	264°(Billet Construction)
Variable Valve Timing Unit(High torque compatible Vane Type, Ni plated pulley)	Variable amount 30°	Variable amount 50°	Variable amount 50°
Special Intake Cam Cover	Unpainted	Unpainted	Unpainted
Control Unit	F-CON V Pro Ver. 4.0	F-CON V Pro Ver. 4.0	F-CON V Pro Ver. 4.0
Oil Control Valve (Electromagnetic type)	○	○	○
Oil Filler Cap	HKS	HKS	HKS
Cam Angle Sensor (High accuracy type)	○	○	○
Oil Line (From Engine to Cam Cover)	○	○	○
Other short parts	○	○	○

Other Necessary Parts

	STEP1	STEP2	STEP PRO
Exhaust Camshaft	Select according to turbo size	Select according to turbo size	Select according to turbo size
HKS Forged Piston Kit	Recommended	Required	Required
HKS Oil Pump Upgrade *	Recommended	Recommended	Recommended

*Stock $\phi 77$ (Standard) and $\phi 81$ (N1) are exist but may not provide enough oil pressure at low rpm to adjust valve timing. For this reason, HKS Oil Pump is recommended.

Notes for Usage

[RPM Limits] STEP1 : 8,000rpm (Stock rev limiter)
 STEP2 : 8,000rpm (Stock valve spring)
 : 8,500rpm (Upgraded valve spring is required/Available separately)
 STEP PRO : 8,800rpm (Upgraded valve spring is required/Available separately)

[Oil/Water Temperature] When Oil is at lower temperature, higher viscosity may prevent valve timing from reaching the desired timing.
 Cam will not advance if water temperature is below 20°C

[Engine Oil] Recommended : SUPER OIL (RB), Racing Pro Oil 10W-50.

[Timing Belt] Please check for the tension and wear in every 10,000km and adjust/replace if necessary.

4A-G Inner Shim / SR20DE(T) Lash killer Shim

SHIM

Code No.	Shim Thickness(mm)
13755-003158	1.05
13755-005158	1.1
13755-007158	1.15
13755-009158	1.2
13755-011158	1.25
13755-013158	1.3

Code No.	Shim Thickness(mm)
13755-015158	1.35
13755-017158	1.4
13755-019158	1.45
13755-021158	1.5

Code No.	Shim Thickness(mm)
13755-027158	1.65
13755-029158	1.7
13755-031158	1.75
13755-033158	1.8
13755-035158	1.85
13755-037158	1.9
13755-039158	1.95
13755-041158	2
13755-043158	2.05

Code No.	Shim Thickness(mm)
13755-045158	2.1
13755-047158	2.15
13755-049158	2.2
13755-051158	2.25
13755-053158	2.3
13755-055158	2.35
13755-057158	2.4
13755-059158	2.45

Code No. (コードNo.)	Shim Thickness(mm)
13755-061158	2.5
13755-065158	2.6
13755-067158	2.65
13755-069158	2.7
13755-071158	2.75
13755-073158	2.8
13755-075158	2.85
13755-077158	2.9

CAPACITY UPGRADE KIT

Increasing of engine displacement changes performance drastically. Great torque to accelerate from low to middle rpm is the advantage of increased displacement. For drivers who need "more power and more torque", HKS has designed a series of capacity upgrade kits to suit each engines characteristics. Increased displacement offers more torque at lower engine speeds and by using the highest quality materials, the durability required for high levels of tuning is achieved. Nickel coated pistons which have strong anti-

knocking properties combined with fully counterweighted crankshafts and high strength connecting rods (rods optional in some kits) combine to extract maximum performance from the turbocharger and increase torque.

CAPACITY UPGRADE KITS that are durable for high performance tuning, were developed to compete in various competitions such as drag race, track race, time attack, drifting with HKS' know-how of engine building.

RB26DETT 2.8ℓ KIT

For RB users that require more low and mid rpm torque, the RB26DETT 2.8ℓ KIT is ideal. STEP ZERO, STEP 1, and STEP 2 are available to suit the specifications of each user.

[STEP ZERO]

- Piston : Special forged material
- Connecting Rod : Special forged material. H-beam design for maximum strength and durability. WPC shot-peening also contributes to strength as well as preventing metal fatigue.
*Stock connecting rods can also be used.
- Crankshaft : Special forged material and fully counterweighted. The lightweight design improves response.
- The maximum rpm is 8000rpm. Recommended for stock or GT-SS turbine.

[STEP1]

- Piston : Special forged material
- Connecting Rod : Used the forged material from high specification with H beam design for maximum strength and durability. WPC shot peening also contributes to strength as well as preventing metal fatigue. (For STEP ZERO, STEP 1)
*Stock connecting rods can also be used.
- Crankshaft: Special forged material and fully counterweighted that is superior to revolution balance and enables use at high rpm.
- The maximum rpm is 8500rpm. Recommended for GT2530KAI.
- Recommended for race spec engines that require high power and response.

[STEP2]

- Piston : Forged piston with Nickel plating for anti-knocking properties and top piston ring stability. Piston Skirt is molybdenum coated for friction reduction, clearance optimized and smoother initial running-in.
- Connecting Rod : Used the forged material from high specification with H-beam design for maximum strength and durability. WPC shot peening also contributes for strengthening as well as preventing metal fatigue. (Special design for STEP2)
*Stock connecting rods can also be used.
- Crankshaft: Special forged material and fully counterweighted that is superior to revolution balance and enables use at high rpm. Pin journals and center has been hollowed to lighten the rotating mass to improve the throttle response.
- Recommended for race spec engines that require high power and response.
- The maximum rpm is 9000rpm. Recommended for GT-RS Twin, T04, T51R KAI, etc.



STEP Selection guide

	Max. RPM	Recommended turbine
STEP ZERO	8000rpm	Stock / GT-SS
STEP 1	8500rpm	GT2530KAI
STEP 2	9000rpm	GT-RS / T04 / T51R

Compression ratio w/ stock cylinder head

Thickness of gasket (mm)	Compression ratio (ε)
1.2	8.7
1.6	8.4
2.0	8.1

	HKS RB26DETT 2.8ℓ KIT	Stock RB26DETT
Bore	φ87.0	φ86.5
Stroke	77.7mm	73.7mm
Displacement	2,771mℓ	2,568mℓ

VR38DETT 4.1ℓ KIT

HKS has developed upgrade kit for R35 GT-R for some more power! People who are not satisfied with 800+ and want more power on R35, this is the kit you need. We have made it for a longer stroke to gain on the lower RPM for the big turbine. So you can have absolute power even on the normal RPM. This high-end, made in Japan products of piston, conrod and crankshaft are made by billet method.

Compression Ratio with Stock Cylinder Head

Thickness of gasket (mm)	Compression ratio (ε)
0.8	8.7

	HKS 4.1ℓ KIT	Stock
Bore	φ95.5	φ95.5
Stroke	95.5mm	88.4mm
Displacement	4,104mℓ	3,799mℓ



SR20DET 2.2ℓ KIT

As a popular tuning base engine, the SR20DET 2.2ℓ KIT was developed to provide not only low-mid rpm torque required for street and drift use, but also the high rpm power required for drag racing and other circuit use. Feedback and R&D from the HKS Hiper Silvia has resulted in a balanced kit for strength and lightweight.

Compression Ratio with Stock Cylinder Head

Thickness of gasket (mm)	Compression ratio (ε)	
	STEP1	STEP2
1.2	8.7	8.8
1.6	8.4	8.5
2.0	8.2	8.3

	HKS 2.2ℓ KIT STEP1	HKS 2.2ℓ KIT STEP2	Stock
Bore	φ86.5	φ87.0	φ86.0
Stroke	91.0mm	91.0mm	86.0mm
Displacement	2,139mℓ	2,164mℓ	1,998mℓ



2JZ-GTE 3.4ℓ KIT

This kit was developed with drag racing in mind. HKS 2JZ-GTE 3.4ℓ KIT will enable approximately 1000ps with great torque.

Using nickel plated pistons for anti-knocking, H-beam connecting rods and billet full counter weighted crankshaft.

Compression Ratio with Stock Cylinder Head

Thickness of gasket (mm)	Compression ratio (ε)
1.2	8.8
1.6	8.6
2.0	8.3

	HKS 3.4ℓ KIT	Stock
Bore	φ87.0	φ86.0
Stroke	94.0mm	86.0mm
Displacement	3,352.8mℓ	2,997.3mℓ

4B11 2.2ℓ KIT

Designed under the concept of "Race Specification at Low Cost". This kit has been tested not only on the engine bench, but through circuit testing and analysis.

Using with the HKS GT3240 Full Turbine Kit, it can achieve 580PS and 72kgm, which is the same engine specification of the Tsukuba record time holder of CZ200S.

Compression Ratio with Stock Cylinder Head

Thickness of gasket (mm)	Compression ratio (ε)
1.0	8.7
1.2	8.6
1.5	8.4

	HKS 2.2ℓ KIT	Stock
Bore	φ86.5	φ86.0
Stroke	91.0mm	86.0mm
Displacement	2,139mℓ	1,998mℓ



[Features] 1. Great benefits from increased displacement!

Kit increases 4B11 displacement from stock of 1,998cc to 2,139

The difference in displacement creates a massive difference in torque and also makes it

possible to match large size turbines for maximum power. HKS tests have found that over 70KgM torque output is possible.

*HKS demo car with this kit and GT3240 Full Turbine Kit has already proven its ability by achieving a time of 57 seconds at Tsukuba 2000 circuit.

2. "Race Specification" at an incredible price!

In order to have as many people enjoy the big torque of this kit as possible, great cost performance was achieved.

*Many competitors use an OEM crankshaft to reduce costs. The HKS crankshaft has been designed and made for racing specifications by using the most suitable materials and manufacturing processes. Forged pistons, forged connecting rods and a crankshaft made from special forged materials allows this kit to be suitable to even for 600PS.

3. Circuit test proven & "Made in Japan" reliability!

After plenty of testing on the engine bench, the kit was also tested in conjunction with the GT3240 Kit to produce the 600PS CZ200S which went on to perform at various time attack events. This data was analyzed to deliver maximum performance but most importantly reliability.

Naturally, this item is made in Japan at HKS' internal manufacturing facilities.

4G63 2.3ℓ KIT

Using feedback from the time attack machine "CT230R", "4G63 2.3ℓ KIT" was developed.

It is not conventional 2.2L but the "2.3L" is applicable for large size turbos.

Both STEP1 and STEP2 include "Billet crankshaft" for competition purposes. Select either STEP1 or STEP2 for the usage.

The piston recess is applicable for V CAM SYSTEM STEP Pro for further upgrading.

Compression Ratio with Stock Cylinder Head

Thickness of gasket (mm)	Compression ratio (ε)
1.2	9.0

	HKS 2.3ℓ KIT (STEP1)	HKS 2.3ℓ KIT (STEP2)	Stock
Bore	φ85.5	φ86.0	φ85.0
Stroke	96.0mm	96.0mm	88.0mm
Displacement	2,204mℓ	2,231mℓ	1,997mℓ



[STEP1] φ85.5 Piston included. At the next overhauling, φ86.0 can be used. The 2.3L spec can be enjoyed for a long time.

[STEP2] φ86.0 is included as the high end specification. The piston has "Nickel plating" for great anti-knock property.

EJ20 2.2ℓ KIT

"EJ20 2.2ℓ KIT" provides torque improvement for the mid speed range of the EJ20 engine.

Nickel plated φ92.5 forged pistons were specifically designed for this kit. The billet crankshaft was designed to increase the stroke. Range of EJ20 engine tuning can be broadened.

This kit is compatible with stock connecting rods.

Compression Ratio with Stock Cylinder Head

Thickness of gasket (mm)	GC8 III~VI	GDB, BE5
0.6	—	8.3
1.4	8.1	—

with φ93 bore gasket

	HKS 2.2ℓ KIT	Stroke
Bore	φ92.5	φ92.0
Stroke	79.0mm	75.0mm
Displacement	2,123.5mℓ	1,994.3mℓ

FORGED PISTON KIT + CONNECTING ROD SET

The piston and connecting rod set for strengthening the engine and have more tuning possibility. It's designed to be applicable for forced induction tuning. The small end and big end of connecting rod are balanced for installation without modification of stock crankshaft.



FORGED PISTON KIT

- Clearances of forged piston depend on the item. Refer to the product manual.
- Compression ratio is the value with the specified gasket thickness and stock cylinder head.



CONNECTING ROD



CYLINDER LINER

Cylinder Liner set for high level tuning of SR20DET. SR20 engine has an aluminum block which is not strong enough to withstand the condition for high power tuning. These sleeves can provide the necessary strength and has been designed to match the piston rings in the most efficient manner. For maximum results, HKS recommends using SR20DET 2.2L KIT (21004-AN001) with this product. This product is compatible with both 86mm and 87mm pistons for flexible applications.

RB26DETT OIL PUMP UP GRADE KIT

Newly designed case shape improves durability and oil flow amount. HKS Oil Pump Upgrade provides reliable oil supply for tuned engines.

Features

- Larger rotor increases oil flow volume compared to the previous model of pump.

- New improved design now includes adjustable oil relief pressure (the alternator must be removed.). Utilizing outer shim enables adjustment to be visible.

- Thickness of driving rotor's contact portion is increased and contact surface shape is optimized.

- Thickness increase and material upgrade retain twice as much of rotor strength as the stock pump.

- HKS Oil Pumps have reviewed the case design to retain sufficient rotor strength and to reduce oil flow resistance after applying pressure.



Oil pressure adjustment part



[Specifications]

Description	HKS		STOCK
Supply volume (L/min.) @6000rpm	65	38%UP	42-47
Oil pressure adjustment mechanism	Available	(Adjustable when installed)	Not Available
Rotor Material:	SCM435		Liquefied sintered Alloy
Outer Size Outer Diameter:	φ88		φ81
Tooth Width (mm):	12.4	12%UP	11.0
Tooth Number (mm):	10:11		12:13
Min. Thickness Inner (mm):	7.4	37%UP	5.4
Outer (mm):	5.0	11%UP	4.5

METAL HEAD GASKET

The performance requirement from Head Gasket..

As the cylinder block and head are not rigid body, when the head bolts are tightened, the gap between the surfaces and the surface pressure applied is not even across the whole surface. Moreover, due to combustion pressure and vibration while driving, the conditions are continually changing and the contact surface is being continually beaten. As a result, a good gasket must ensure that contact surface pressure is spread as evenly as possible and also adapt quickly to the ever changing gaps that can appear in the contact surface to maintain a good sealing with good pressure.

*Compression ratio is for reference when using a stock cylinder head with stock pistons.

$\text{Compression Ratio } \epsilon = \frac{V_1 + V_2}{V_2}$	V1 : Displacement per cylinder (cc) V2 : Combustion Chamber Capacity (cc)
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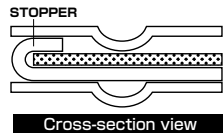


STOPPER TYPE HEAD GASKET KIT

This kit includes :
Head Gasket, exhaust manifold, throttle and intake manifold gaskets.

STOPPER TYPE HEAD GASKET

A high pressure sealing is formed around the combustion chamber through the use of stoppers which create a step within the gasket for optimum sealing. By making the stopper part of the plate also allows the fold to be smaller while maintaining structural integrity. One side of the plate is completely flat meaning that it can be layered with the stopper to allow stoppers to be used in even the tightest of locations around the combustion chamber forming a high quality sealing. Compared with other gaskets of the same thickness, there are more layers in these gaskets giving flexibility because of thinner each layer, which allows the gasket to maintain a good sealing even when the engine tries to vibrate and move.



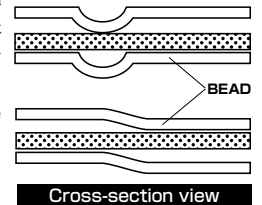
DRAG METAL HEAD GASKET KIT

HKS Drag Metal Head Gasket Kit utilized and designed specifically for drag racing engines. The durability is enhanced to handle the boost pressure up to 200kPa (2kg/cm²) maintaining the surface pressure and preventing gas leakage. This is a grommet-type gasket.

This kit includes :
Head Gasket, exhaust manifold, throttle and intake manifold gaskets.

BEAD TYPE HEAD GASKET

A bead is a type of spring used to maintain surface pressure which is very well suited to head gasket use. The beads are laid out to provide optimum pressure and seal around the combustion chamber. By carefully designing and adjusting the bead shape and heights, precise control of surface pressure is achieved for optimum results. Using a combination of 3 different types of beads allows maximum efficiency and performance. Opposed bead are used if higher surface pressure is required.



CYLINDER HEAD BOLT SET

The reinforced head bolt set was developed to prevent from "Extension of cylinder head bolt/reduced tightening force" or "deformation of washer" due to high boost level. New material was selected to make these cylinder head bolts for higher durability. The washer is carburizing processed, thickness is increased and inner diameter was reduced to increase the seating area.

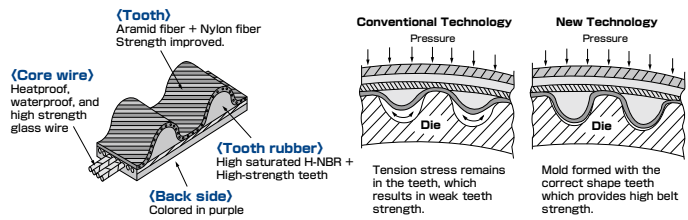
Fine Tune Timing Belt

The timing belt is best suited for use with HKS Slide Cam-Pulley. Optimized belt strength for each engine application makes the Fine Tune Timing Belt ideal for use with HKS Slide Cam-Pulleys for high power/high RPM engine.

- Belt strength has been optimized for each engine application and designed to allow stable belt tension even when heat expansion occurs in the engine
- Previous timing belt manufacturing techniques have evolved with applying pressure from the outside to the teeth. This applies tension to teeth making them weaker. By forming a mould with the correct shape of teeth, will allow the teeth shape to be formed without compromising belt strength and can decrease the belt skipping at high torque engine.
- Teeth rubber is made from H-NBR grade rubber for additional strength.
- Balancer belt for 4G63 is also available. By combining both timing belt and balancer belt, the load and stress can be reduced for both engine and chassis

***Necessity of Changing the Balancer Belt**

The balancer belt is designed to reduce engine vibration by creating a vibration in the opposite direction to the engine. When used at high RPM such as on circuits, the vibration will naturally increase which causes more load on the balancer belt. Moreover, the balancer belt rotates at double speed of the crankshaft which will cause the belt to stretch at a faster rate compare to the other belts. This stretch will eventually put the balancer shaft out of synchronization with the crankshaft, causing more vibration and then eventually the belt may break up. For this reason, HKS recommends that when the timing belt is changed, the balancer belt should also be changed with a strengthened item to allow the balancer for effective, accurate and reducing stress on the engine and chassis.



*Material and/or molding method may be slightly different depending on application.

Fine Tune V-Belt

The Engine compartment dress-up item "Fine Tune V Belt."
Latest technology protects vehicles' conditions while improving engine compartment appearance.

Using the latest technology gives the following benefits

- Increased durability at high temperatures in the engine bay of tuned vehicles.
- Increased performance in cold weather and condition.
- Lightweight and good friction tolerance properties which means that excess tension is not required while anti-sound properties reduces belt squeal.

*Back face is blue colored with HKS logo.

Blue is used in HKS intake hose which is for coordination in the whole engine bay.

Colored nylon fabric used for good anti-color fading properties.

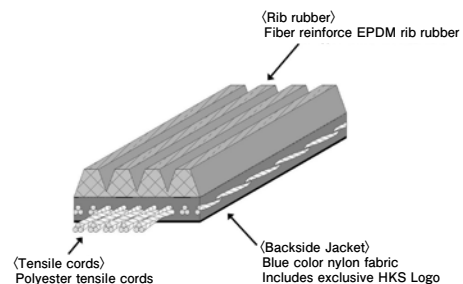
HKS logo, product name, and belt length are printed on each belt.

EPDM (Ethylene Propylene Diene Monomer) Rubber was selected

- Better durability and performance in hotter or colder conditions with improved friction tolerance.
- Much lighter than previous version of belt.
- Short fiber mixture in rib rubber improves the performance over previous version.

◎ Performance Comparison with Stock Belt

High Temperature Durability	Low Temperature Durability	Abrasion Resistance	Weight	Noise
4 times greater	10 times greater	30% improved	17% lighter	Less



Fine Tune V Belt

POWER TRAIN

Technology

- **HKS CLUTCH** 75
- **HKS TRANSMISSION SERIES** ... 76
- **MOTOR SPORT GEAR**..... 77
- **REINFORCED PIVOT** 77

HKS CLUTCH



LINE-UP



Single Plate clutch LA Clutch up to 450PS*1 and LA Clutch Twin up to 700PS*1. The basic concept of both models is common that is to eliminate uncomfortable vibration during clutch engagement operation by using "MG Composite Disc*2" that starting operability is as easy as stock with torque transferring capacity more than other metal type clutches. With Disc Damper, noise from transmission is prevented and drive train is protected. Twin type has "Pivot Ring" on the pressure plate that enables superior operation during clutch engagement operation even with twin clutch mechanism.

*1: Test data at HKS.

*2: MG Composite Disc is a hybrid material of metal and glass fiber.



Pivot Ring

MG Composite Disc

LA CLUTCH

HKS LA Clutch (Light Action) combines accurate high level power transfer from engine to transmission while offering easy to use clutch feel which is particularly noticeable when the clutch is half engaged. It eliminates uncomfortable vibration during clutch engagement operation by using "MG Composite Disc*2" that starting operation is as easy as stock with torque transferring capacity more than other metal type clutches. With Disc Damper, noise from transmission is prevented and drive train is protected.



■ New Material "MG Composite Disc" for ease of use and high torque transfer.

- A new metal/glass fiber face material has allowed a high level of heat resistance and anti-fading property.
- With a torque limit of 520Nm (53kgm), an approximate 450ps can be handled on the new generation single plate clutch with easy operability.



■ Disc, Cover, Flywheel in one complete "bolt on" set.

- Designed to be a simple installation without any modification even for pull type clutches. LA Clutches include complete set of disc, cover and flywheel.
(Replacement of release bearing is recommended. Lancer Evolution models would require removal of suspension component that needs new split pins of nuts)



■ Lightweight Flywheel, Lightweight Cover for improved acceleration and throttle response.

- Lightweight flywheel enables improvement of throttle response.
- Lightweight cover is made from a lightweight grade of aluminum meaning that the whole clutch assembly weighs approximately 81% (For Lancer Evolution) of stock clutch assembly.



■ Optimized Cover for light pedal pressure

- By reviewing and optimizing cover design, pedal pressure is very similar to stock clutch which is just not achievable by other clutch kits that changes only the cover and disc. *Pedal pressure depends on each application.



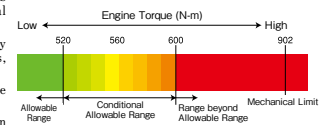
■ "Strap Drive" mechanism and Disc Damper for transmission protection and quiet operation

- "Strap Drive" eliminates rattle noise and enables fine disengagement with high clutch input response. Disc damper reduces gear noise and protects transmission from impact torque.



Precaution for Use

- "Allowable Range" is the range of engine torque which is allowable unless the clutch is overheated by intentional clutch half-engagement.
- "Conditional Allowable Range" is the range slippage may occur due to rough operation, kickback from tires, components' distortion.
- "Range beyond Allowable Range" is the range that slippage occurs when a clutch is being engaged at high RPM.
- "Mechanical Limit" is the point that slippage occurs when accelerating during driving.



LA CLUTCH TWIN

Despite the support of approximately 700ps, the main concept for the Twin Plate LA Clutch remains the same. Using "MG Composite Discs" to reduce shudder and achieve even better driving feeling compare to stock clutch. Disc dampers are used to reduce gear noise and protect the transmission from shock torque. The LA Twin also has a "Pivot Ring" within the pressure plate to offer superior partial engagement feeling like no other twin plate clutch.



■ Lightweight Cover and Redesigned Diaphragm Spring

- Normally, high capacity clutches come heavy pedal feeling. HKS has insisted on a diaphragm spring design and used its properties to achieve a pedal which is easy to use on the street but also has a firm feeling for accurate control even on the circuit. Cover is made from high strength and low mass forged aluminum.



■ 8.5 Inch "MG Composite Disc" with Damper

- A newly designed 8.5 inch disc is used to support high torque levels. Adding a damper reduces gear noise and protects the power train from shocks and damage. A stable frictional coefficient makes the clutch easier to use and eliminates judder during starting. The independent design enables lightweight and high rigidity. It also helps firm disengagement without compromising of shift feeling.



■ Accurate Disengagement and Friction/ Wear Balance form "Lifting Plate"

- Lifting plates attached to both sides of the center plate ensures that the center plate center when disengaged. This extends clutch disc life and also reduces the mechanical noise that is heard on multi plate clutches.



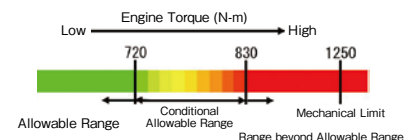
■ "Pivot Ring" for Superior Half Engaged Clutch Feeling

- A low strength ring shaped spring on the pressure plate (pivot ring) increases the half engaged zone of the clutch. This gives a much smoother driving feeling which lacks on high capacity clutches



■ "Lightweight Flywheel" for Improved Response

- An ideal flywheel weight for each vehicle is calculated and tested in order to reduce the weight for improving response but not to make it too light that the vehicle becomes uncomfortable to drive. The overall weight of the kit is lighter than stock clutch.

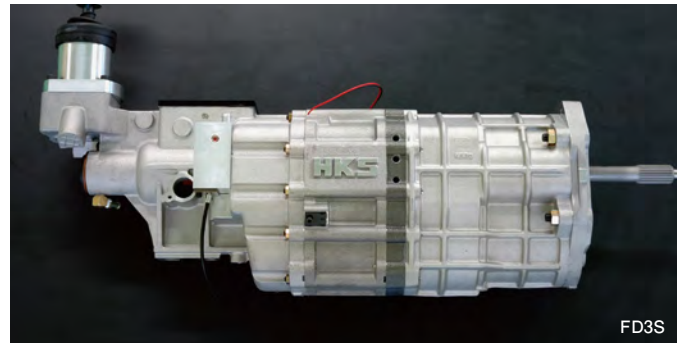


HKS TRANSMISSION SERIES



SR20DET

Through HKS' many years of motorsports activities, HKS has felt the need for the development of a transmission that can be used to accurately transfer engine torque at even the highest levels such as drag racing. Development from years of experience in the drag, drift, time attack and circuit racing, helped us design and develop fine transmission. We have done enormous testing and the production is "in-house" to ensure the feedback from racing to directly into the products.



FD3S

POINT

■ Dog Engagement System For Strength And Reliability

A dog engagement system offers more power transfer capacity compared to synchronic systems giving added strength and reliability and with correct driver operation, fast shifting is possible.

■ Helical Gears Used To Reduce Gear Noise While Maintaining Strength.

High strength gear portion combine with a helical gear design which slants the teeth at an angle. This allows more gear area to mesh which improves strength and also significantly reduces noise compared with straight cut gear type transmissions.

■ High Strength And Durability from a Specially Designed Case.

● High Strength/Durability

High strength and durability can be achieved by specially designed transmission case. This case was redesigned for maximum strength to handle load on each part.

● Efficient & Easy Installation

Efficient and easy installation is possible as the whole unit is assembled in the special transmission case. Disassembling of transmission is not required like other transmissions and not so much modification to the body or chassis is required like universal transmissions.

■ Original Design Sequential Transmission

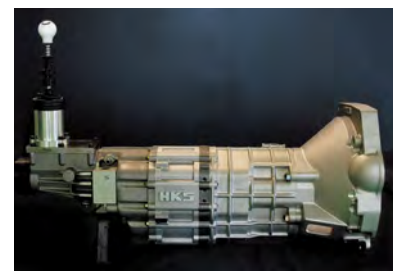
Using a barrel cam which converts the I pattern straight shift movement to H pattern, allowed HKS to create a sequential transmission based on a reliable H pattern manual transmission. Quick and accurate gear changes are now possible with particular attention paid to the load and stroke of each gear change to give racing feeling to your car.

The position of 6th gear of H pattern transmission has sequential system which creates the 5-speed sequential transmission with direct gear ratio of 5th gear. This type of transmission is very practical for drag races and drift driving. Usually, changing the final gear to increase the top speed causes problem for starting. Low gear ratio type HKS Sequential Transmission is available to solve this problem.

*Shift indication is for neutral lamp only.



Barrel Cam



■ Overhaul Service is Available

For the optimal performance of HKS Transmission series, regular maintenance is required. HKS provides professional maintenances using in-house transmission bench and other necessary overhaul equipment. Maintenances and overhauls are implemented after detailed examination of a transmission's condition.

*It is recommended to maintain (or overhaul) HKS Transmission every 1,000 to 3,000km. If neglected, gears and/or dog parts may be damaged.

*HKS GEAR OIL G-1200/G-2500 (Not for Sequential type) must be used.



■ About production of HKS Transmission series

- HKS Transmission series are products on order.
- The lead time can be 4 or 5 months after order.
- The lead time for overhaul depends on condition of the item. The lead time and cost will be advised after inspection of the item.

BRAKE SYSTEM

Technology

● HKS BRAKE SYSTEM..... 79

OIL & PLUG

Technology

- HKS OIL SERIES 81~85
- SUPER FIRE RACING SERIES ... 86

HKS OIL SERIES



LINE-UP

All products of HKS OIL SERIES are 100% Synthetic.

High spec (vertical label on the left)

Premium Pro 0W-20

Premium Pro 20W-60

HIPER ESTER base

Racing Pro -5W-30

Racing Pro 0W-40

Racing Pro 10W-50

Poly- α -olefin (PAO) base HIPER ESTER mixed

NEW **HR -4W 31**
HIPER ESTER mixed For NA (GR/VQ)

NEW **HR 0W-42**
HIPER ESTER mixed For NA (F20C/F22C/B18C)

EVO X 3.5W-37
HIPER ESTER mixed For 4B11

4G63 5.5W-38
HIPER ESTER mixed For 4G63

EJ 7.5W-42
HIPER ESTER mixed For EJ20/25

13BT 10W-45
HIPER ESTER mixed For 13BT

JZ-G 10W-50
HIPER ESTER mixed For 1JZ/2JZ

RB 15W-55
HIPER ESTER mixed RB20/25/26

Hydrogenated base

Super Racing 0W-25 SM-CF equivalent

Super Racing 10W-35 SM-CF equivalent

Super Racing 10W-45 SM-CF equivalent

Super Racing 10W-55 SM-CF equivalent

NEW **Super Racing Diesel 10W-33 SM-CF equivalent**

Super Racing Diesel 10W-44 equivalent

Low viscosity ← **Low Oil temperature** → **High** → **High viscosity** (horizontal labels at the bottom)

Cost performance (vertical label on the left)

ENGINE OIL

The performance parts manufacturer HKS produces oil as one of performance parts that are designed to have optimum lubrication and oil film with any specification of vehicles and at any driving conditions.

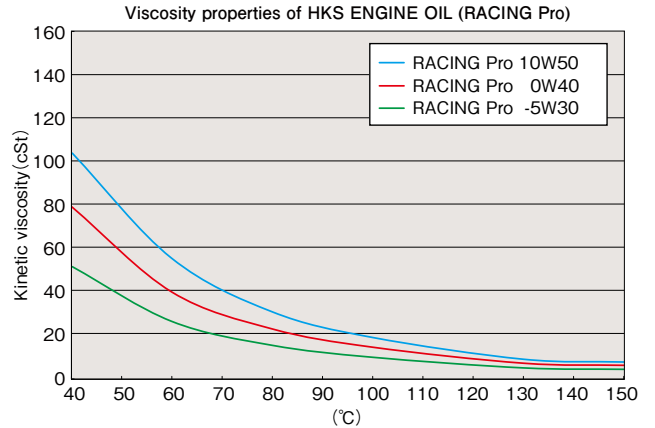
Even at more than 100°C of oil temperature that is hard condition for engine oil, all HKS oils are designed to be optimum viscosity at the high oil temperature.

PRO OIL SERIES (For authorized shops only)

The newly developed "HIPER ESTER" is the base oil of Pro oils series that enables remarkable lubrication performance and low friction. The desired viscosity can be set by mixing 2 different viscosities "of Premium Pro" oils.

3 types of viscosities of "Racing Pro" are applicable from hard tuned turbocharged vehicles to the latest normal aspirated vehicles. These are flagship engine oils from the performance parts manufacturer "HKS".

- Viscosity : 0W20/20W60 (Premium Pro)
-5W30/0W40/10W50 (Racing Pro)
- Base oil : 100% synthetic (Hiper Ester base)
- Non-polymer



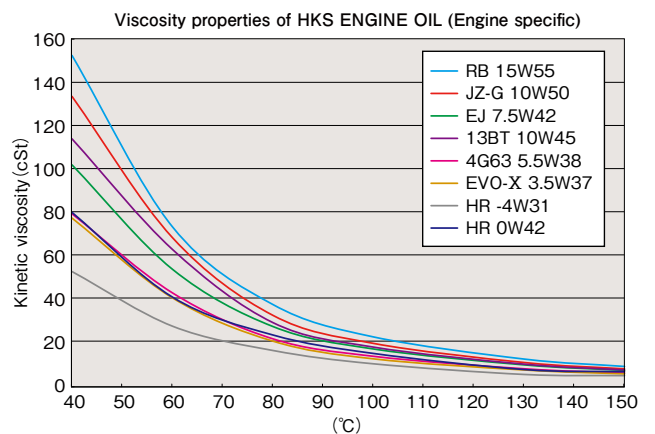
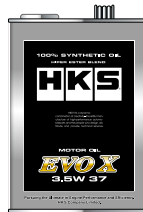
Engine Specific Oil Series

Previous oils were designed universally for turbo or normal aspirated engines.

Each HKS' engine specific oil series has performance optimized viscosity for each different engine type.

100% synthetic base oil contains Hiper Ester that enables to have high lubrication performance and oil film at high oil temperature.

- Viscosity : -4W31 (HR) /0W42 (HR) /3.5W37 (EVO-X) /
5.5W38 (4G63) /7.5W42 (EJ) 10W45 (13BT) /
10W50 (JZ-G) /15W55 (RB)
- Base oil : 100% synthetic (HIPER ESTER mixed)
- Non-polymer



SUPER RACING SERIES

■ SUPER RACING

The latest production technology enables high cost performance 100% synthetic oil.

4 different viscosities are applicable for any vehicles such as turbo, NA or eco-car.

- Viscosity : 0W25/10W35/10W45/10W55
- Base oil : 100% synthetic

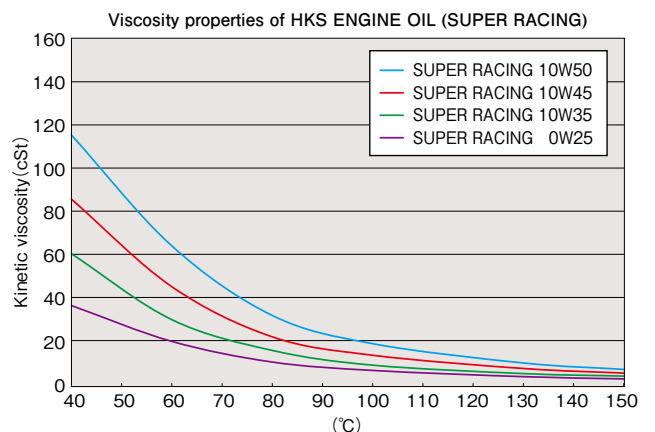


■ SUPER RACING DIESEL

100% synthetic oil is applicable even for vehicles equipped with the latest DPF.

Low ash property. The viscosity property is kept up to high rpm and high load area.

- Viscosity : 10W33/10W44
- Base oil : 100% synthetic



BRAKE FLUID

SUPER BF5

Upgrade Your Brake System

Dry boiling point at 282°C, Wet boiling point at 184°C. The excellent viscosity characteristics can be exerted when used in cold climates because of its high performance at low temperature even with its high boiling point. Intensive research of the kinetic viscosity under various driving conditions for street use enables stable braking in any conditions.



F-706

Wide range brake fluid with high boiling point and optimum kinetic viscosity

Multi purpose brake fluid for street and circuit. Dry boiling point at 306°C, Wet boiling point at 195°C. Even with the high dry point, the superior viscosity property at low temperature enables the best pedal feeling.

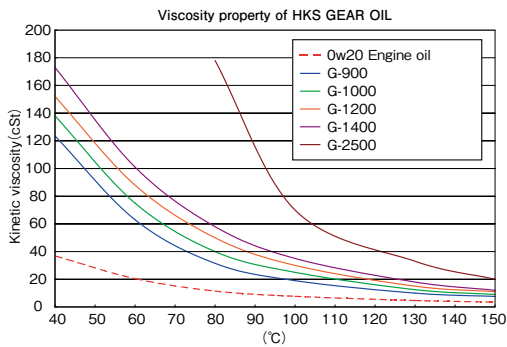


ITEM	Ref. Std. (BF5)	SUPER BF5	F-706
Dry Boiling Point	260°C+	282°C	306°C
Wet Boiling Point	180°C+	184°C	195°C
Kinetic Viscosity(mm ² /s) @40°C	1500 or less	965	1734
	@100°C	1.5+	2.296

GEAR OIL

GEAR OIL G series

Street and race proven HKS Gear Oil range has been renewed with clearly marked viscosities with a range of 5 different type varying from #90 to #250. Using 100% synthetic non polymer oil for the most efficient lubrication from economy to high power applications, which require firm and low friction lubrication of gears.



Application

Application		Application of G series Gear Oil					
		FF (4WD)		FR			
Type of package	1L x 6 / 20L	TM	TM	TM	TM / High power	DIFF	DIFF
(Equivalent to GL5)	GEAR OIL TYPE	TM	TM	TM	TM / High power	DIFF	DIFF
	LSD	None	Installed	—	—	None	Installed
Ex SS Gear	G-900	⊙	⊙	⊙	⊙	▽	▽
	Stock gear	Stock gear	Stock gear	Stock gear	Stock gear		
Ex FF Gear	G-1000	⊙	⊙	⊙	⊙	⊙	⊙
	AWD, FF Diff. gear	EVO,EJ,3S	EVO,EJ,3S	RB,SR,JZG,13B etc	RB,SR,JZG,13B etc	RB,SR,JZG,13B etc	RB,SR,JZG,13B etc
Ex GT-R Gear	G-1200	⊙	▽	⊙	⊙	⊙	▽
HKS dog	High power vehicles	EVO,EJ,3S	LSD Weak	RB,SR,JZG,13B etc	RB,SR,JZG,13B etc	RB,SR,JZG,13B etc	LSD Weak
Ex SS Diff	G-1400	▽	▽	▽	▽	⊙	⊙
	Stock differential. LSD Strong					Stock differential	Stock differential. LSD Strong
Ex Drag Gear	G-2500	▽	▽	▽	▽	▽	▽
HKS dog	Special use like Drag race						

⊙ : Recommended ▽ : Professional use based on Experience

DCTF-1 / Dual Clutch Transmission Fluid

Transmission fluid with improved low temperature kinetic viscosity and strengthened oil film property at high temperature.

- Compared to the R35 (GR6) factory fluid, the flow properties at low temperature is improved so the ordinary use of the transmission can be smoother, and the oil film strength at high temperature is improved. HKS DCTF-I has more advantages than the factory fluid for high load driving.
- Comparing to the factory fluid which is very expensive and difficult to purchase, HKS DCTF-I is less expensive, and its availability is more reliable. Replace the factory fluid with HKS DCTF-I when overhauling or changing the fluid at regular interval.
- The base oil of HKS Transmission Fluid is 100% synthetic. (The factory transmission fluid is made of semi-synthetic oil.)



GASOLINE and DRAG HIGH OCTANE BOOSTER

DRAG GAS

Race gasoline developed utilizing expertise and technology for drag race activities.



- High octane (110 Octane) & high energy fuel to reach full engine potential.
- Unleaded high octane gasoline. Vehicles with catalytic converters can run on this gasoline.
- Initial boiling point is 37.5°C. Excellent starting performance.
- No bad exhaust fume
- Wide combustible range and setting range. Best torque can be reached at A/F12 to 12.5:1. Comparing to other commercial high octane gasoline, A/F will be about 1.5 leaner at the same volume of fuel.
- Superior anti-knocking characteristic. Best to use for vehicles with high compression, high boost level, and advanced ignition timing. If an engine setting is based on using usual premium gasoline, with Drag Gas, knocking will not occur and there will be more safety margin.
- Supplied in a portable 20 liters can.

Cautions for Setting : In order to increase horsepower with usual premium gasoline, limitation of horsepower is decided by the point of knocking. As HKS Drag GAS has anti-knocking characteristic, knocking does not occur. Thus, other factors should be considered such as heat range of spark plug due to pre-ignition.

DHOB

New gasoline additive was developed from development know-how of DRAG GAS.



When a can of this product is mixed with 50 liters gasoline, about 2 octane increases for premium gasoline and about 4.5 octane increases for regular gasoline. For a track, it will add safety margin against knocking. In addition, it has cleaning effect of fuel injector.

DDR / Direct Deposit Remover

High concentration hyper polyether amine (PEA) deposit remover

- Deposit in combustion chamber and spark plug due to tuning or long period operation will be easily removed.
- It is an additive for gasoline to recover performance of engine.
- A bottle (225ml) per 75 liters of gasoline. As it is In-tank type, it is easy to use.
- It is applicable for any gasoline engines including normal port injection, direct injection, carburetor and rotary engine.
- *It cannot be used for diesel engines.



DDR DIESEL / Direct Deposit Remover Diesel

High concentration hiper-succinimide deposit remover

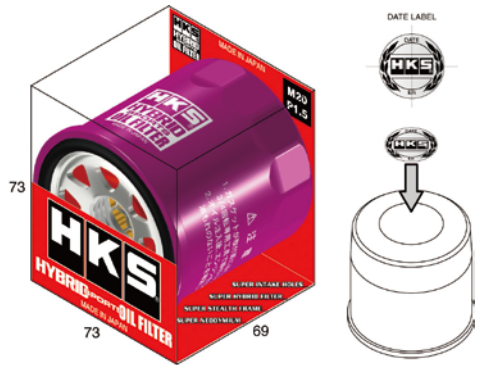
- Deposit on the spark plug and/or combustion chamber can be easily removed.
- High concentrated Hiper-succinimide can remove deposit on injectors of the diesel engine so the original engine performance can be easily recovered.
- A bottle (250ml) per 75 liters of gasoline. As it is In-tank type, it is easy to use.
- It is effective to use every 6 months or 5000km.
- *For diesel engines only.



HYBRID SPORTS OIL FILTER

Features

- A new concept oil filter which improves oil pressure drop and flow properties by approximately 30% compared to current sports oil filters. Large diameter of "Super Intake Hole" and newly developed low resistance hybrid filter allow low pressure loss. Engine response is also improved by reducing the stress on the engine.
- Most sports oil filters are prerequisite for using the high viscosity oil and therefore filter paper strength is prioritized whilst sacrificing absolute pressure loss properties. HKS Hybrid Sports Oil Filter has readdressed filter strength and overall structure to provide the oil flow that the engine requires and pursue HKS' ideals in what is required from a sports oil filter.



Composition

In the interest of general versatility, unit size has been standardized at $\phi 68 \times 65 \text{mm}$. Filtration performance JIS standard is 25μ whereas HKS is 20μ making the filter compatible with most standard engine requirements.

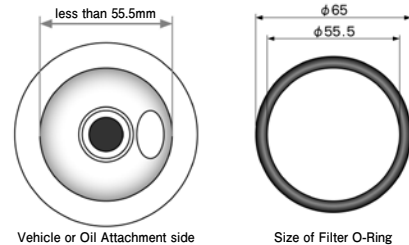
Filter Life

Under normal usage, it is recommended that the filter is changed in every 10,000km or 6months. For Sports driving, the recommended distance is approximately 1/3 - 1/2 of the previously mentioned figure (as the engine revolutions are several times that of normal driving). However, to maintain optimum low pressure loss properties, it is recommended to change the filter every 3000km when an oil change is performed.

Compatibility Condition

● Oil filter compatibility condition

- Please confirm that the filter unit size of 68x65 and center bolt thread is compatible.
- Oil filter is compatible with vehicles or oil attachments where the oil filter seal internal diameter is less than 55.5mm



Warning *Installation to vehicles which does not meet the above conditions may result in engine damage due to loss of oil.



* Super Hybrid Oil Filter



● Super Neodymium Magnet

Neodymium, which is becoming the standard for oil filters, is placed at the back of the filter where oil can collect, picking up small metal particles and fragments.

● Super Stealth Frame

This familiar design forms the basis of high strength and low pressure loss. This applies to oil flow also to achieve the best results. Includes strengthened relief valve.

● Super Hybrid Oil Filter

Unwoven cloth and special plastic fiber composite is used ensuring high strength and low pressure loss. A refined but tough filter has been achieved which can withstand high pressure and high viscosity.

● Super Intake Hole

The intake hole, where compressed oil comes in to the filter has been made larger. A unique pic shape design has allowed maximum oil flow whilst retaining seal strength.

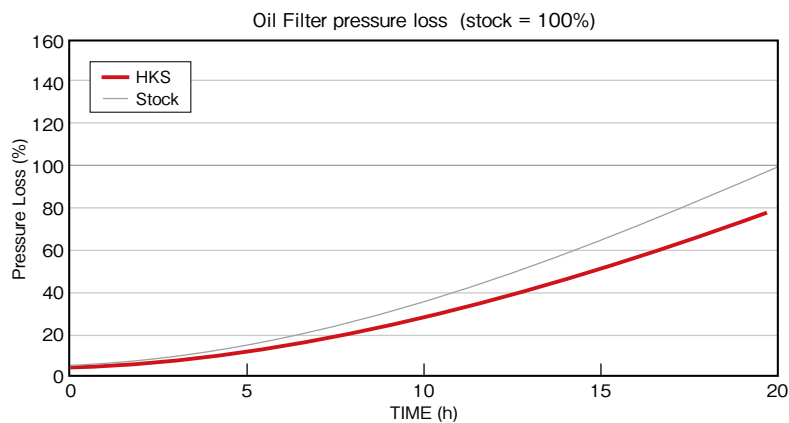
● Super Intake Flap

Using a silicon base flap, compressed oil is sent smoothly to the outer edge of the filter increasing flow speed and is compatible with the large diameter intake hole. Also acts as a reverse flow valve.



Performance

HKS Hybrid Oil Filter's low pressure loss properties means that even standard specification engines can benefit from reduced engine resistance and improves engine response.



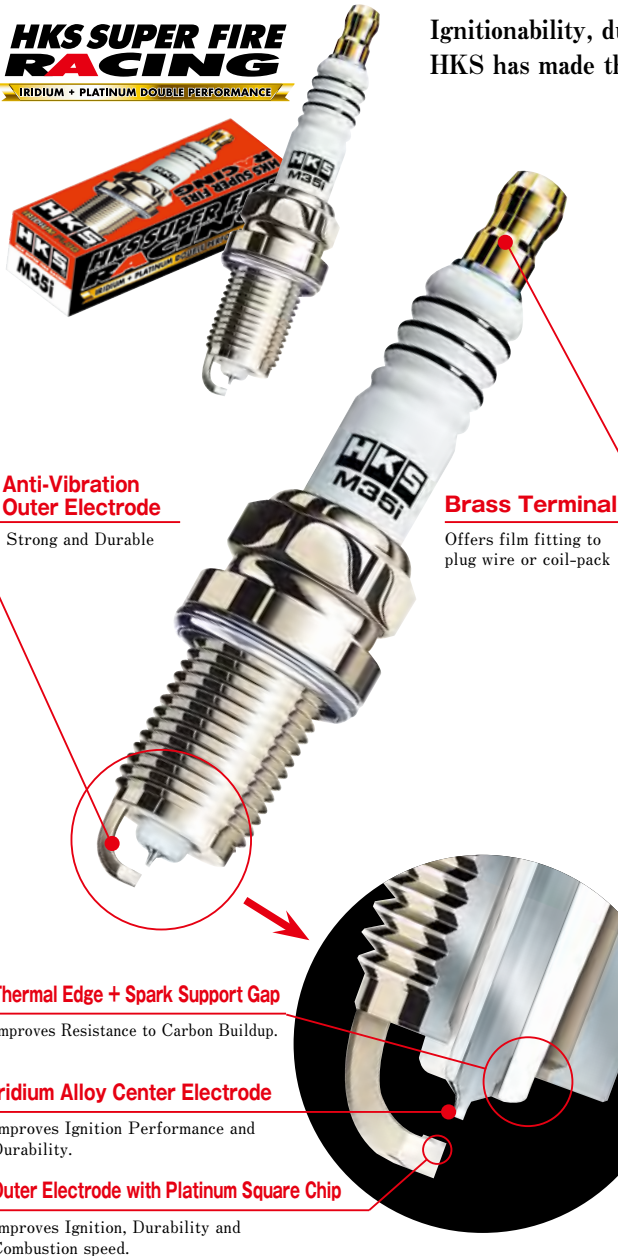
HKS SUPER FIRE RACING

HKS Plug ignites faster and efficient for the best fuel efficiency and the best performance in all situation and environment. It's very important to provide safe and stable ignition for engine to perform at a maximum power. HKS Super Fire Racing plug is the best spark plug for extreme racing driving and also works fine from stock to tuned engines.



SUPER FIRE RACING M SERIES Ultimate spark plug "M".

HKS SUPER FIRE RACING
IRIDIUM + PLATINUM DOUBLE PERFORMANCE



Ignitionability, durability, anti-wetting all improved.

HKS has made the best spark plug for both tuning engines and stock engines.

Features

■ 0.6mm Iridium Alloy Center Electrode

Iridium Alloy Center Electrode reduces voltage requirement as well as improving ignition performance and durability.

■ Outer Electrode with Platinum Chip

Improves durability and with the iridium center electrode improves ignitionability.

The Outer Electrode features a shortened tip design and tapered shape while maintaining the necessary space for proper ignition.

■ Short Type Outer Electrode (Anti-Vibration)

The outer electrode has been shortened and engineered with the ideal shape to decrease weight for resistance against vibration. This anti-vibration design improves longevity of the outer electrode.

■ Thermal Edge

After long idling or various combustion conditions, carbon buildup can occur and causes misfires. The Thermal Edge of the ceramic insulator will discharge to decrease carbon deposits.

■ Spark Support Gap

Discharges will occur in the Spark Support Gap (space between the tip of insulator and the base of the outer electrode) to prevent from carbon buildup.

Performance and Efficiency

- **Increased Ignition Performance** : Decreased voltage requirement strengthens ignition performance under harsh conditions like lean mixture or high boost pressure. By having enough space around electrodes, combustion speed will be faster that improves torque, response and combustion efficiency.
- **Improved Durability** : New material and design improve durability, which allows for use under hard combustion conditions like continuous high load during circuit driving or aggressive tuning.*Improper combustion condition or wrong heat range selection might cause damage to spark plug.
- **Decreased Carbon Deposits** : Thermal Edge and Spark Support Gap prevent from carbon buildup for better ignition under various combustion conditions.

Special Design RE-type for Rotary Engines

Rotary engines have a different mechanism and combustion condition from reciprocating engines. RE-type spark plugs are specially designed to meet the different requirement for rotary engines. The straight shape platinum outer electrode enables reliable ignition performance.



GOODS

● HKS GOODS 89

