PWR'S TURBOCHARGER KIT INSTALLATION INSTRUCTION GUIDE for MR－S (ZZW30) 1ZZ－FE

Contents		Page

1. PRIOR TO STARTING THE INSTALLATION

Read this installation instruction guide before the installation. Fit and remove the original parts following the service manual and this guide.

The installation of this MR-S Turbo Kit is basically onto the normal vehicle.

We do not guarantee the function, performance and safety of this MR-S Turbo Kit if you install in the vehicle not specified.

We accept no responsibility for the damage you suffer when you or other persons modify, dismantle and install this MR-S Turbo Kit and the components in the vehicle(engine) not specified.

This guide and the components are subject to change without notice.

Drive safely on public roads following the Road Traffic Law.

Keep this guide in order to read at any time.

The engine check light is ON when driving after installing this MR-S Turbo Kit. There is no problem if the engine check light is OFF when starting the engine. If the engine check light is ON when starting the engine, you need to have your vehicle checked by a car dealer.

The maximum boost pressure of this MR-S Turbo Kit is set at 0.3kg/cm2-0.4kg/cm2. If you increase the boost pressure with a boost controller or something like that, work this turbo kit at the max boost pressure of 0.4kg/cm2. You need to reprogram the computer rom if you work this turbo kit at more than 0.4kg/cm2.

The calorific value of the engine increases by use of this MR-S Turbo Kit, so raise the heat value of the ignition plug.

Use unleaded high-octane gasoline.

When you run a car excessively with this turbo kit, idle the engine for a while to fully cool down the turbocharger.

Use engine oil for a turbocharged engine higher class than SH.

2. ATTENTIONS

You can install this MR-S Turbo Kit in TOYOTA MR-S (ZZW-30) 1ZZ-FE engine only.

Handle this MR-S Turbo Kit carefully. Do not drop or give a strong shock to this turbo kit.

Ask the service technician to install this turbo kit.

Read this installation instruction guide prior to the installation.

Confirm the components of this turbo kit following the parts list(page 4).

Use the original bolts and nuts not included in this turbo kit.

It is terribly dangerous to modify this turbo kit as the devices around this turbo kit are possibly damaged or the safety is possibly lost.

A part of the original parts should be modified when installing this turbo kit.

Remove the minus terminal of the battery prior to the installation.

Tighten the bolts and nuts certainly with proper tools.

Protect the connection of the pipes and hoses from oil. Remove oil if it sticks to the connections.

Take care of the original parts to be removed at the installation not to be damaged and lost, and mark them to avoid wrong installation.

Protect the pipes, hoses and turbocharger from any dust. It is afraid that it may damage them.

Take care of the vehicle after the installation and check each part following the service manual.

When you handle the parts of fuel system, let fresh air into the place you are working to install in order to protect from fire.

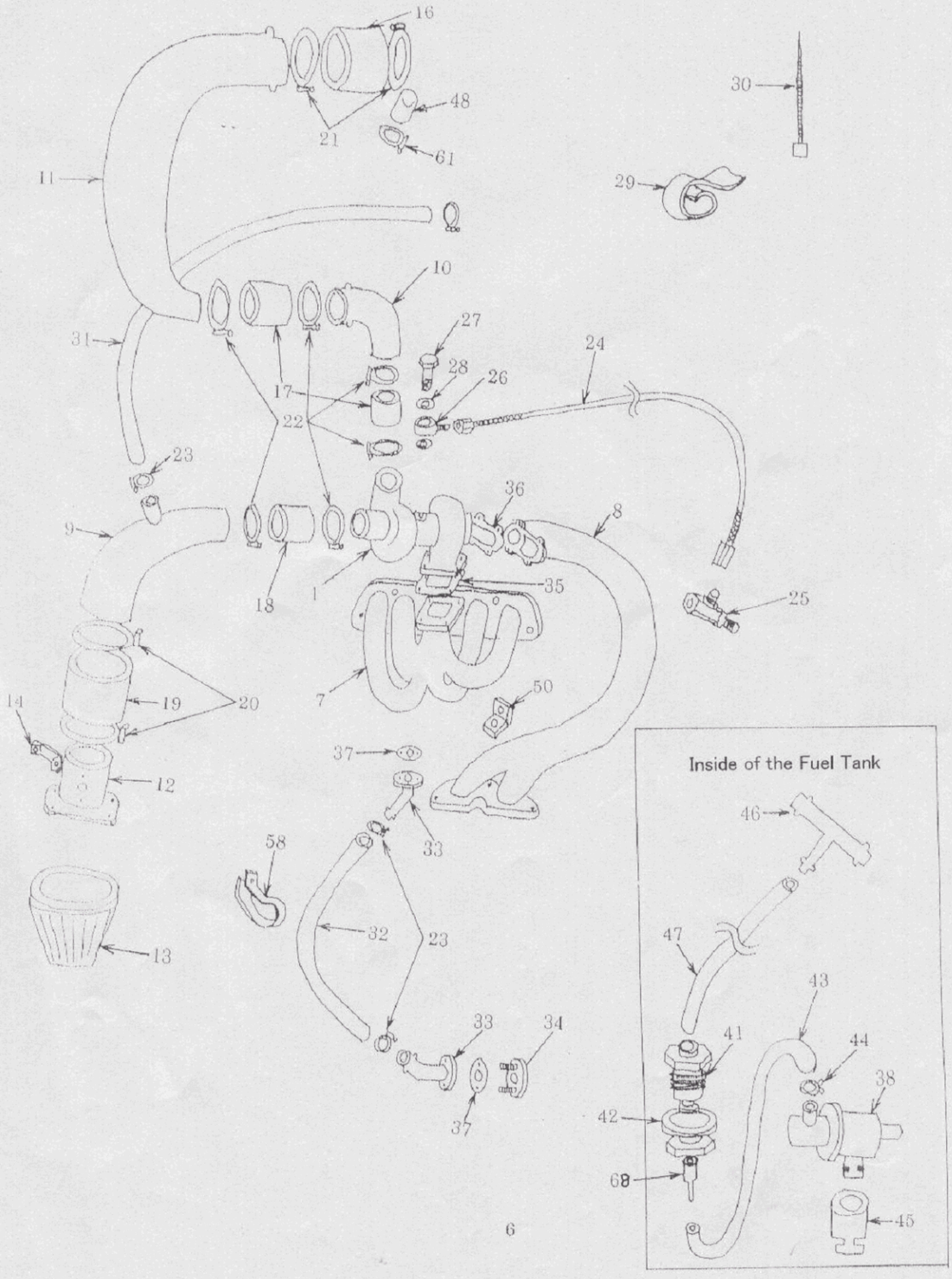
*Contact promptly the shop you purchased this MR-S Turbo Kit from if the model of your vehicle is not suited to this turbo kit.

COMPONENTS LIST for MR-S TURBO KIT

No.	NAME	AMOUNT	PART NO.
1	PE1215S Turbocharger Assembly	1	1310-PE1215S
2	Actuator Binder (assembled into actuator)	2	1321-PE-CR
3	Positioner (assembled)	1	1322-PE-CR
4	Bolt (M4x0.7 L=6 assembled)	4	9-M4x0.7 06B
5	Bolt (M4x0.7 L=8 assembled)	2	9-M4x0.7 08B
6	Actuator Spring K=0.3 (assembled)	1	1333-PE-CR
7	Exhaust Manifold	1	1301-TT111
8	Exhaust Outlet Pipe	1	1302-TT111
9	Air Inlet Pipe	1	1351-TT111
10	Air Outlet Pipe 1	1	1352-TT111
11	Air Outlet Pipe 2	1	1353-TT111
12	Adaptor of Air Flow Censor	1	1354-TT111
13	Air Impulse (air cleaner)	1	AI-T344
14	Air Cleaner Bracket	1	1373-TT111
15	Wire	1	
16	Silicone Hose ϕ70 L=80	1	13-ϕ70x80-SIL
17	Silicone Hose ϕ50 L=80	2	13-ϕ50x80-SIL
18	Silicone Hose ϕ50-ϕ60 L=80	1	13-ϕ50-60x80-SIL
19	Silicone Hose ϕ70-ϕ80 L=80	1	13-ϕ70-80x80-SIL
20	Hose Band ϕ70-ϕ90	2	8-ϕ70-ϕ90
21	Hose Band ϕ70-ϕ90	2	8-ϕ70-ϕ90
22	Hose Band ϕ50-ϕ70	6	8-ϕ50-ϕ70
23	Hose Band ϕ22-ϕ30	4	8-ϕ22-ϕ30
24	Oil Inlet Hose L=1050	1	1317-TT111
25	Oil Pressure Adaptor	1	1411-TT111
26	Oil Inlet Banjo ϕ10	1	1318-TT111
27	Oil Inlet Bolt Banjo M10x1.5	1	1412-TT111
28	Aluminum Washer	2	7-ϕ10x1-AL
29	Heat Blocking Sheet (100x1000)	1	5-SHEET
30	Wrap Band (150mm)	8	6-BAND-150
31	Blow-by Hose ϕ15 L=800	1	1319-TT111
32	Oil Return Hose ϕ19 L=530	1	1316-TT111
33	Oil Return Pipe	2	1314-ON211B
34	Oil Return Flange	1	1315-TT111
35	Turbocharger Exhaust Gasket	1	1361-TT111
36	Turbocharger Gasket Out	1	1362-TT111
37	Oil Gasket Out	2	13-15196-69F00
38	Pressure Regulator Assembly	1	1810-TT111
39	Pressure Regulator Binder (assembled)	1	1811-TT111
40	Pressure Regulator Shim (assembled)	1	1812-TT111
41	Adaptor of Surge Pressure	1	1821-TT111
42	Washer ϕ16	1	1822-TT111
43	Hose of surge Pressure ϕ4 L=120	1	1346-TT111
44	Band ϕ9-ϕ11	1	8-ϕ9-ϕ11
45	Pressure Regulator Adaptor	1	1830-TT111
46	T-joint Hose ϕ8-ϕ4-ϕ8	1	8-ϕ8-ϕ4-ϕ8J
47	Hose of surge Pressure ϕ4 L=2000	1	1345-TT111
48	Cap	1	1341-TT111
50	Outlet Bracket	1	1371-TT111

52	Stud M8x1.25 L=36	8	9-M8x1.25-36B
53	Nut M8	6	9-M8-SUS-NUT
54	Bolt M8x1.25 L=25	2	9-M8x1.25-25B
55	Bolt M10x1.25 L=25	1	9-M10x1.25-25B
56	Bolt M10x1.25 L=40	3	9-M10x1.25-40B
57	Heat Insulator	1	1375-TT111
58	Oil Return Hose Clamp	1	1372-TT111
59	Nut M8	2	9-M8-NUT
60	Bolt M6x1.0 L=15	2	9-M6x1.0-15B
61	Hose Band ϕ17-ϕ25	1	8-ϕ17-ϕ25
63	Bolt M6x1.0 L=18	1	9-M6x1.0-18B
64	Bolt M6x1.0 L=18	3	9-M6x1.0-18B
65	Spring Washer M10	4	4-M10-SW
66	Bottun Bolt M6x1.0 L=12	1	9-M6x1.0-12BB
67	Bottun Bolt M6x1.0 L=8	1	9-M6x1.0-8BB
68	Straight Joint ϕ8-ϕ6	1	8-ϕ8-ϕ6-J

4. Rough Figure for Components



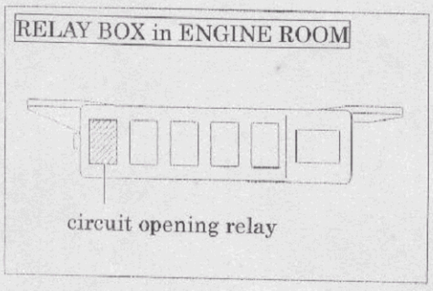
5. ORIGINAL PARTS REMOVAL AND MODIFICATION

*Follow the service manual.

(Use the original gasket, bolts and nuts which are not provided in MR-S Turbo Kit.)

5-1 **Fuel Pump Assembly Removal**

NOTE : WHILE AT WORK, PROTECTING FROM FIRE, KEEP EXTINGUISHER BY HAND.



(1) Remove the circuit opening relay in the relay box in the engine room.

(2) Start the engine, and the engine stops by itself. Then turn the ignition to the OFF position.

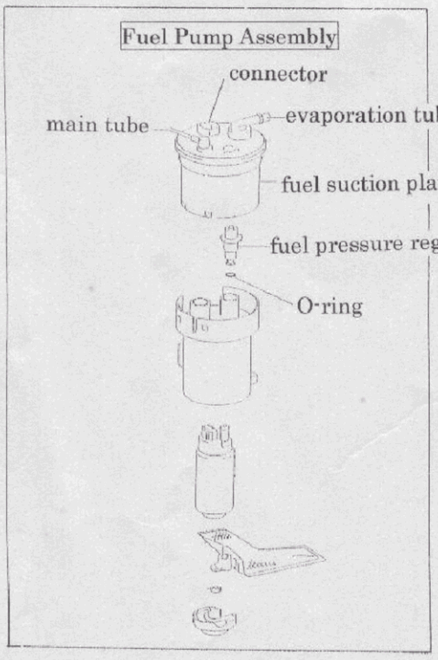
(3) Disconnect the minus terminal of the battery.

(4) Install the circuit opening relay.

(5) Remove the fuel tank cap and release the pressure inside the tank.

(6) Remove the package tray panel behind the driver's seat.

(7) Remove the fuel tank cover and separate the connector of the fuel pump.



(8) Separate the fuel evaporation tube.

NOTE : DO THE ABOVE WORKS BY YOUR HANDS.
DO NOT USE ANY TOOL.
PROTECT THE HOLE OF THE FUEL TANK FROM ANY SMALL DUST WITH ANY SHEET.

(9) Separate the fuel tank main tube.

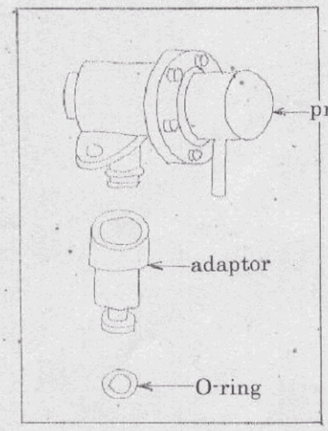
(10) Remove the fuel pump assembly.

(11) Take off the clip of the fuel suction plate with a screw driver.

(12) Separate the connector, and remove the fuel suction plate.

(13) Remove the fuel pressure regulator.

5-2 Fuel Pressure Regulator Installation



(1) Remove O-ring from the original fuel pressure regulator and fit O-ring into provided No.45 adaptor of the fuel pressure regulator.

(2) Fit the adaptor into the fuel tank filter.

NOTE : APPLY GASOLINE TO O-RING NOT TO BE TWISTED.

(3) Fit provided No.38 fuel pressure regulator assembly into the adaptor.

NOTE : Same as the above.

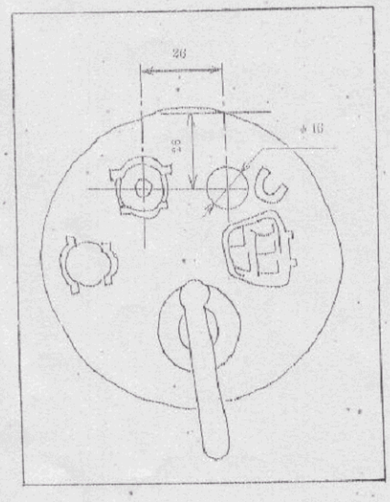
5-3 Fuel Suction Plate Modification

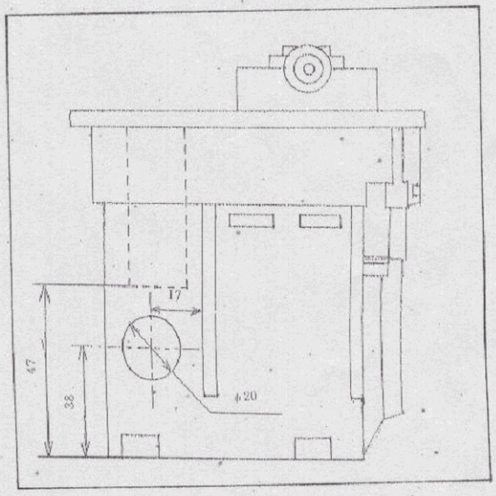
(1) Make a ϕ 16 hole in the upper side(see the following figure) of the fuel suction plate.

(2) Make a ϕ 20 hole in the lateral side(see the following figure) of the fuel suction plate.

(3) Shave off the support pipe holding the original fuel pressure regulator as the dotted line of the following figure.

NOTE : DO NOT SHAVE OFF EXCESSIVELY.





5-4 Air Adaptor Installation

Fit provided No.41 adaptor into the ϕ 16 hole of the fuel suction plate.

5-5 Fuel Pump Assembly Construction

(1) Put provided No.44 band and No.43 hose on the pressure regulator.

(2) Fit the bottom hole of the fuel pressure regulator and the ϕ 20 hole of the fuel suction plate with two tyraps(cable ties).

NOTE : NO BEND IN THE HOSE.

(3) Join the connector and fit the fuel suction plate.

NOTE : CHECK THE SUPPORT PIPE PRESSING DOWN THE FUEL PRESSURE REGULATOR.

5-6 Fuel Pump Assembly Installation

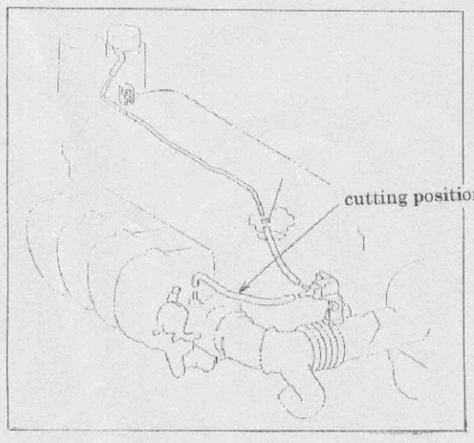
(1) Install the fuel pump assembly.

(2) Connect the fuel tank main tube.

(3) Connect the fuel evaporation tube.

NOTE : CHECK SCRATCH AND SMALL DUST ON THE CONNECTIONS OF PIPES AND CONNECTORS.
AFTER THE INSTALLATION OF THE PARTS ABOVE, CHECK THEM TO BE CERTAINLY FITTED BY PULLING LIGHTLY THE CONNECTORS AND PIPES

5-7 Pressure Hose of Intake Manifold Installation



(1) Cut the canister purge hose and fit provided No.46 T-joint between the hoses.

(2) Fit provided No.47 hose of the air pressure into No.46 T-joint, route the hose through the hole for harness at the right side of the car (the side of the driver's seat), hole the rubber part of the fuel tank cover, route the hose through that hole, and fit the hose into No.41 adaptor.

NOTE : AFTER THE INSTALLATION OF THE HOSE, CHECK THE HOSE TO BE CERTAINLY FITTED BY PULLING LIGHTLY THE HOSE. NO BEND IN THE HOSE.

(3) Install the fuel tank cover and then the package tray.

(4) Close the fuel tank cap.

NOTE : FIX NO.47 HOSE NOT TO MOVE BY TYRAP.

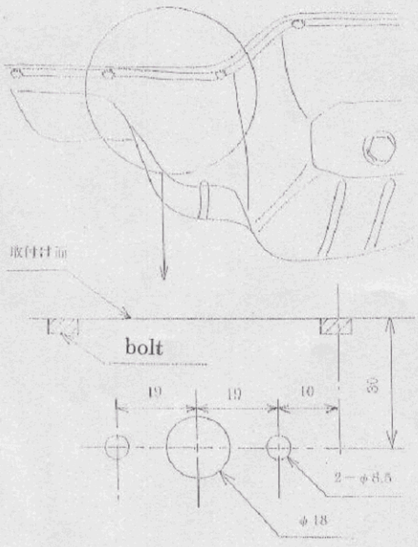
5-8 Oil Pan Removal

(1) Drain engine oil.

(2) Remove the oil pan.

NOTE : LOOSEN THE BOLTS OUTSIDE FIRST AND THEN DIAGONALLY.
REMOVE THE OIL PAN WITH A SEAL CUTTER(special tool).

5-9 Oil Pan Modification and Installation



(1) Make a φ18 hole and a φ8.5 hole in the oil pan (see the figure).

(2) Fit provided No.34 oil return flange into the inside of the oil pan, put provided No.37 gasket between the outside of oil pan and provided No33 oil return pipe, and then fix the oil return pipe with two provided No.59 nuts.

(3) Seal the flange face of the oil pan perfectly with sealant.

(4) Fit the oil pan.

NOTE : TIGHTEN THE BOLTS INSIDE FIRST AND THEN DIAGONALLY.
DO NOT FEED OIL FOR THE OIL PAN FOR ABOUT ONE HOUR AFTER SEALING.

5-10 Knock Sensor Coupler Removal

(1) Remove the original knock sensor coupler.

6-1 Exhaust Manifold and Turbocharger Installation

(1) Fit provided No.7 exhaust manifold temporarily into where the original exhaust manifold was fitted.

(2) Fit two provided No.52 stud bolts into exhaust manifold (upside).

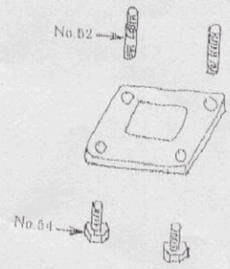
(3) Fit provided No.52 stud bolts into the exhaust gas outlet side of the exhaust housing of provided No.1 turbocharger.

(4) Put provided No.37 gasket between the turbocharger and provided No.33 oil return pipe, and fix them with two provided No.60 bolts (M6x1.0, L=15).

NOTE : THE DIRECTION OF THE OIL RETURN PIPE SHOULD POINT LEFT FROM THE DRIVER VIEWPOINT.

(5) Put provided No.35 gasket between the exhaust manifold and the turbocharger, and fit the turbocharger temporarily.

(6) Tighten the bolts and nuts.



6-2 Outlet Pipe Installation

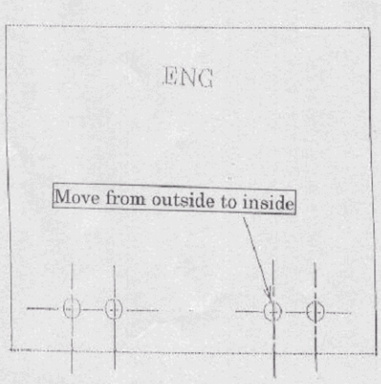
(1) Fit provided No.36 gasket and fit provided No.8 outlet pipe temporarily(use four provided No.53 nuts).

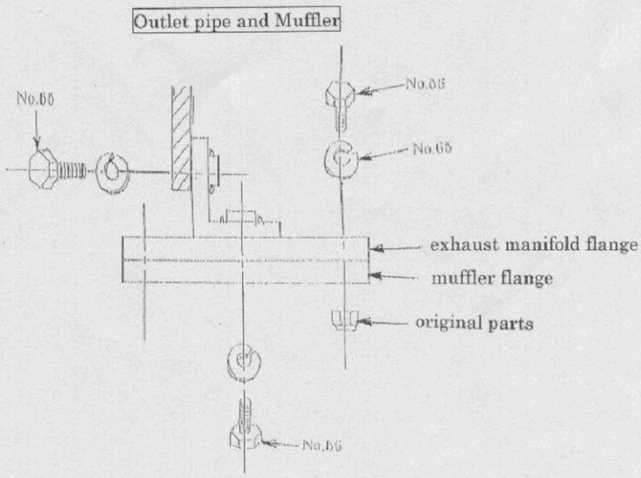
(2) Move the original manifold bracket from outside to inside(see the following figure).

NOTE : REMOVE THE MANIFOLD BRACKET AT THE PASSENGER SEAT SIDE.

(3) Fit the provided No.50 outlet bracket into the original manifold bracket, and connect the outlet pipe and the muffler.

(4) Tighten the bolts and nuts.



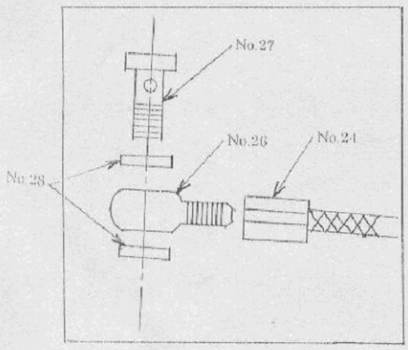


6-3 Air Outlet Pipe Installation

(1) Install provided No.10 and No.11 air outlet pipes following the figure(page 6).

(2) Remove the ventilation hose, and fit provided No.48 cap into the pipe of the surge tank side with provided No.61 band.

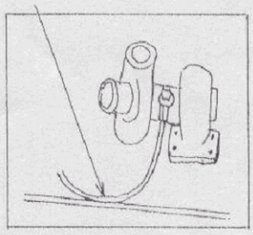
6-4 Oil Inlet Hose Installation



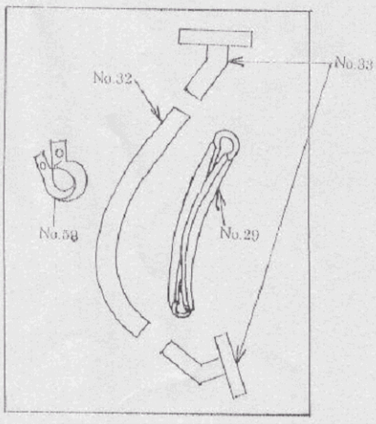
(1) Fit provided No.24 oil inlet hose into the turbocharger.

(2) Fit the oil inlet hose into provided No.25 oil pressure adaptor.

NOTE : FIX THE OIL INLET HOSE NOT TO SWING WITH TYRAP.
WRAP THE PART TOUCHING THE OIL INLET HOSE WITH PROVIDED NO.29 SHEET (100x200) TO PROTECT IT FROM HEAT AND FIX IT WITH WIRE.



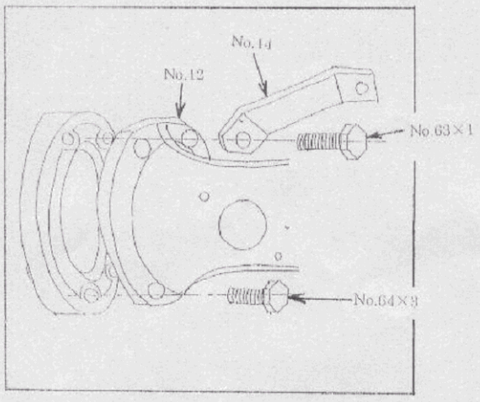
6-5 Oil Return Hose Installation



(1) Connect the oil return pipe and the pipe fitted into the oil pan with provided No.32 oil return hose (use two provided No.23 bands).

NOTE : FIX THE HOSES WITH PROVIDED NO.58 CLAMP NOT TO TOUCH THE DRIVE SHAFT.
WRAP THE OIL RETURN HOSE WHOLLY WITH PROVIDED NO.29 SHEET(100x500) AND FIX IT WITH WIRE.

6-6 Air Inlet Pipe Installation



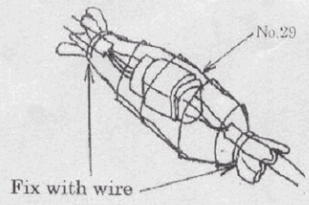
(1) Fit provided No.9 air inlet pipe following the figure (page 6).
(2) Fit the original air flow sensor into provided No.12 adaptor of the air flow sensor.
(3) Fit the adaptor of the air flow sensor into the air inlet pipe.
(4) Fit Air Impulse(air cleaner) into the adaptor of the air flow sensor.
(5) Join the air flow sensor connector.

6-7 Blow-by Hose Installation

(1) Fit provided No.31 blow-by hose into the pipe of the head cover where the ventilation hose was fitted.
(2) Fit the other side of the blow-by hose into provided No.9 air inlet pipe.

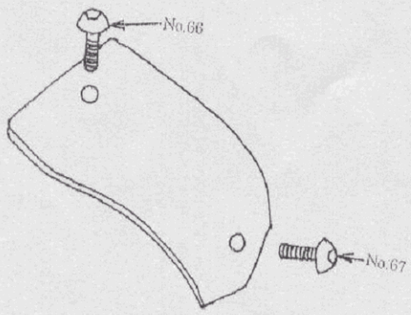
6-8 O2 Sensor Coupler

Wrap the connecting of the left(passenger seat side) O2 sensor with provided No.29 sheet.



6-9 Heat Insulator Installation

Fit provided No.57 heat insulator into the exhaust housing of the turbocharger.



INSPECTIONS AFTER THE INSTALLATION

(1) Replenish engine oil.

(2) Check any oil leak.

(3) Check any slack of each part.

(4) Check any part not installed. If any, look over the installation again.

(5) Check the following clearances not to touch each other when driving.

Oil return hose and drive shaft

Oil return hose and exhaust manifold

Oil inlet hose and throttle valve, etc.

(6) Start the engine, and then check any smell, sound, touch and leak.

Use left tyraps to hold the hoses not to move.

(7) When you excessively run a car with this MR-S Turbo Kit for a long time, for example, at circuit racings, remove the insulator of the engine hood and cool down fully the engine room.