

EF7



EF7 Engine Integration on Samand

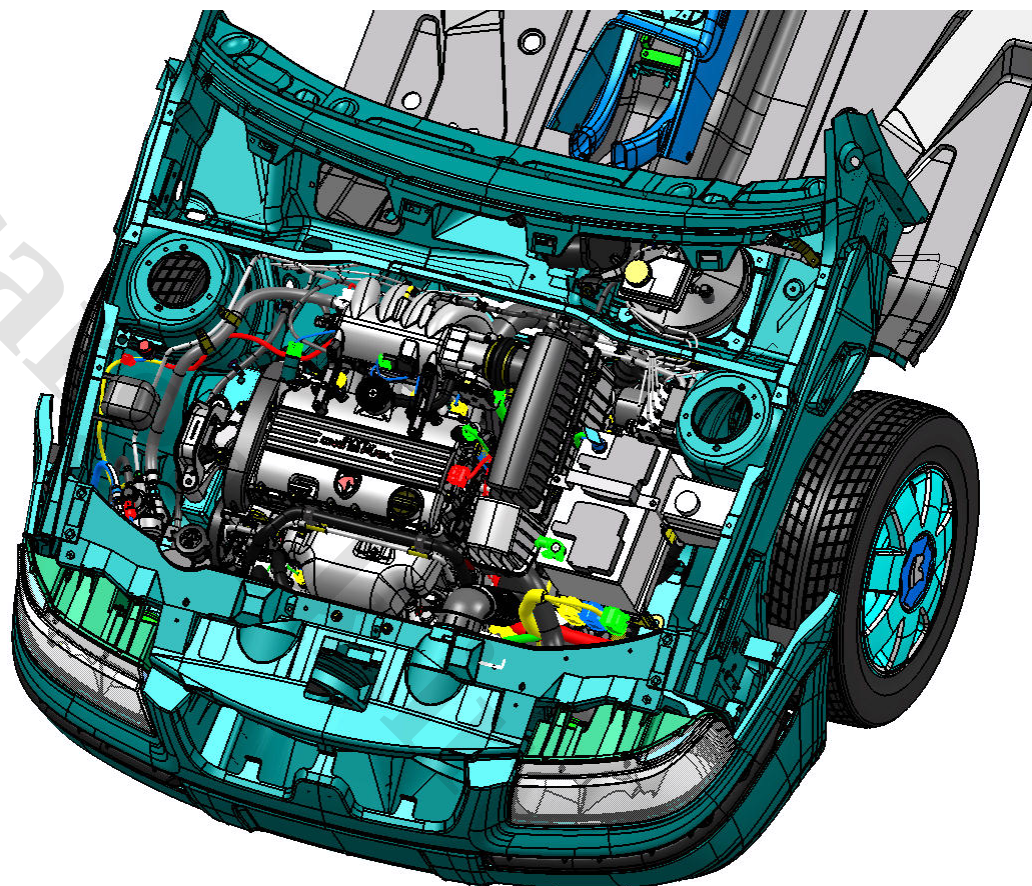




Scope of project

EF7 engine Integration for

- Samand LX
- Samand Basic (SL7)
- P2(Future)





Basic Vehicle Specification

- Base Vehicle – Samand LX
- Powertrain – EF7 1.7ltr
- Fuel types
 - Petrol 95 RON
 - CNG
- Brakes – ABS option
- Suspension – modified to suite CNG & the new 1.7ltr power unit

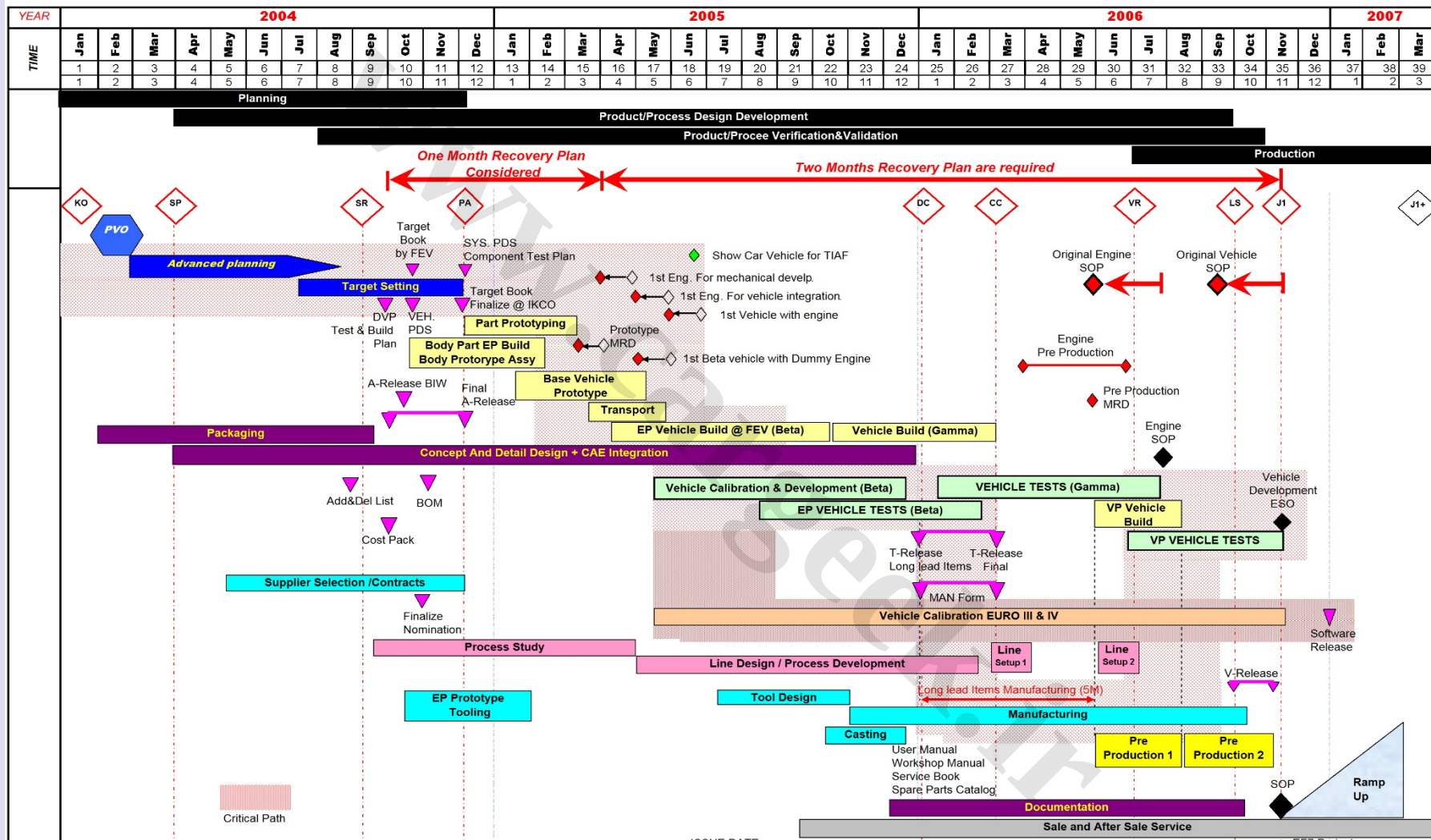
Vehicle Variants Defined in Validation plan

Option List

Variant	CNG	Petrol	Manual	Nat-Asp	ABS		Non - ABS	
					LX	Basic	LX	Basic
V1 Bi-fuel	√	√	√	√	√	-	-	√
V2 Petrol	-	√	√	√	√	-	-	√



EF7 ON SAMAND MASTER PLAN

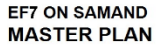


IRAN KHODRO Co.

ISSUE DATE:
15/10/2004

EF7 Project
(Vehicle Integration)

EF7 ON SAMAND MASTER PLAN





Samand Targets influenced by the Introduction of the New EF7 Power-Unit

Key Attributes / Targets

- Safety
- Security
- Package & Ergonomics
- Thermal / Aerodynamics
- Vehicle Dynamics
- Emissions – Euro IV
- Performance / Fuel Economy - World Class Performance
- Noise, Vibration & Harshness (NVH) – PU induced NVH reduced
- Electrical / Electronic
- Interior Climate Comfort Environment
- Weight
- Cost
- Product & Process Design Compatibility
- Customer Life Cycle
- Styling & Appearance
- Craftsmanship



Development Tasks

- Packaging
- Powertrain calibration
- Cooling / HVAC
- Emissions Durability
- Performance & driveability
- Fuel consumption & Economy
- NVH
- Structural / PWT Durability
- Electric / Electronic

EF7 Project team
NPD, IPCO, FEV

- Ride & Handling

EF7 Project and
CNG Team

- Braking

EF7 Project and
Brake Development
Project

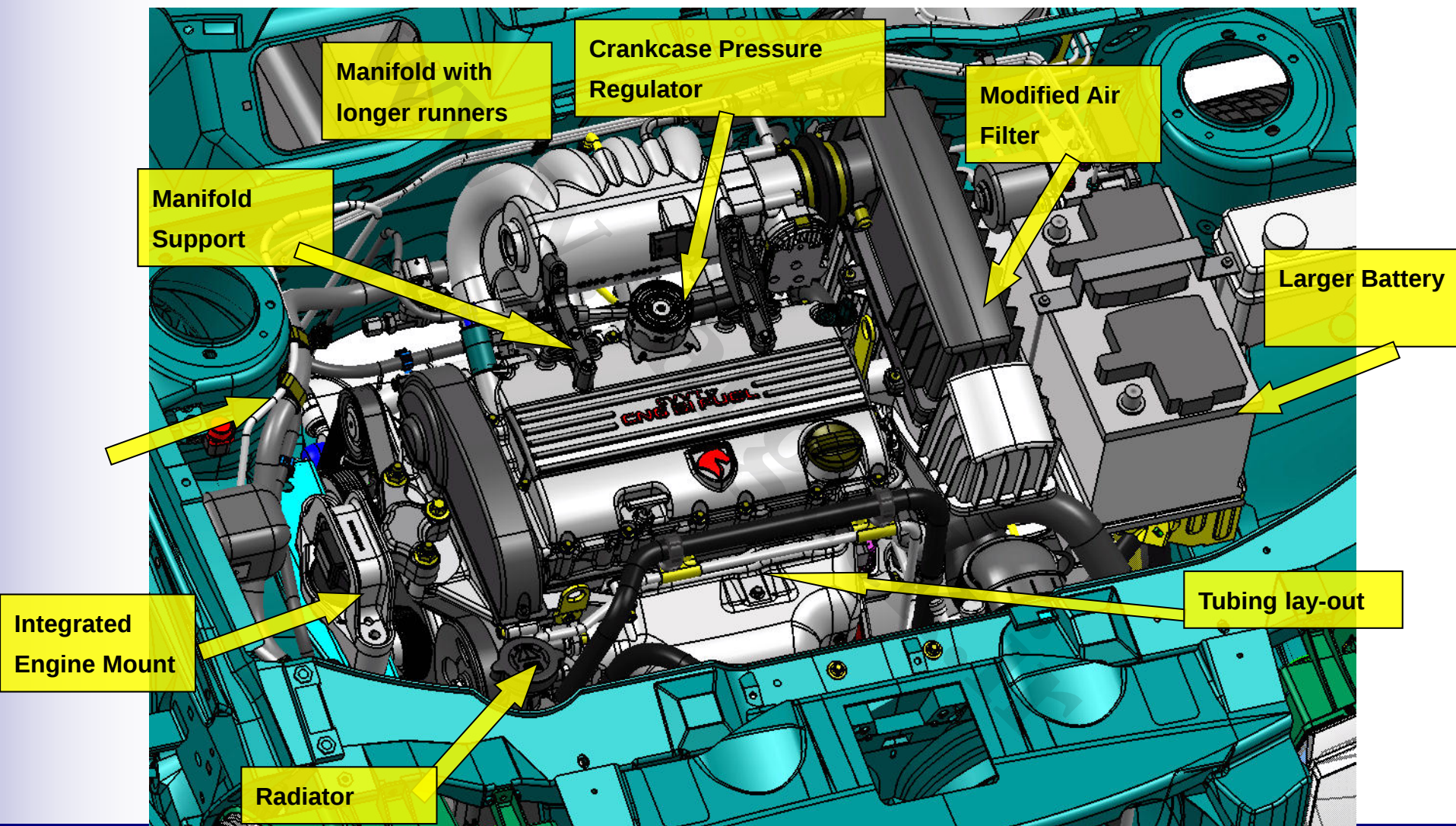


Affected Areas for Engine Installation

- Drive Shaft
- Intake system
- Exhaust system
- Anti roll bar
- Cooling system
- Front end accessory drive
- Engine mount
- Gear Box
- Power steering pump
- ABS system
- Battery new position
- HVAC system
- Brake and suspension
- Electrical

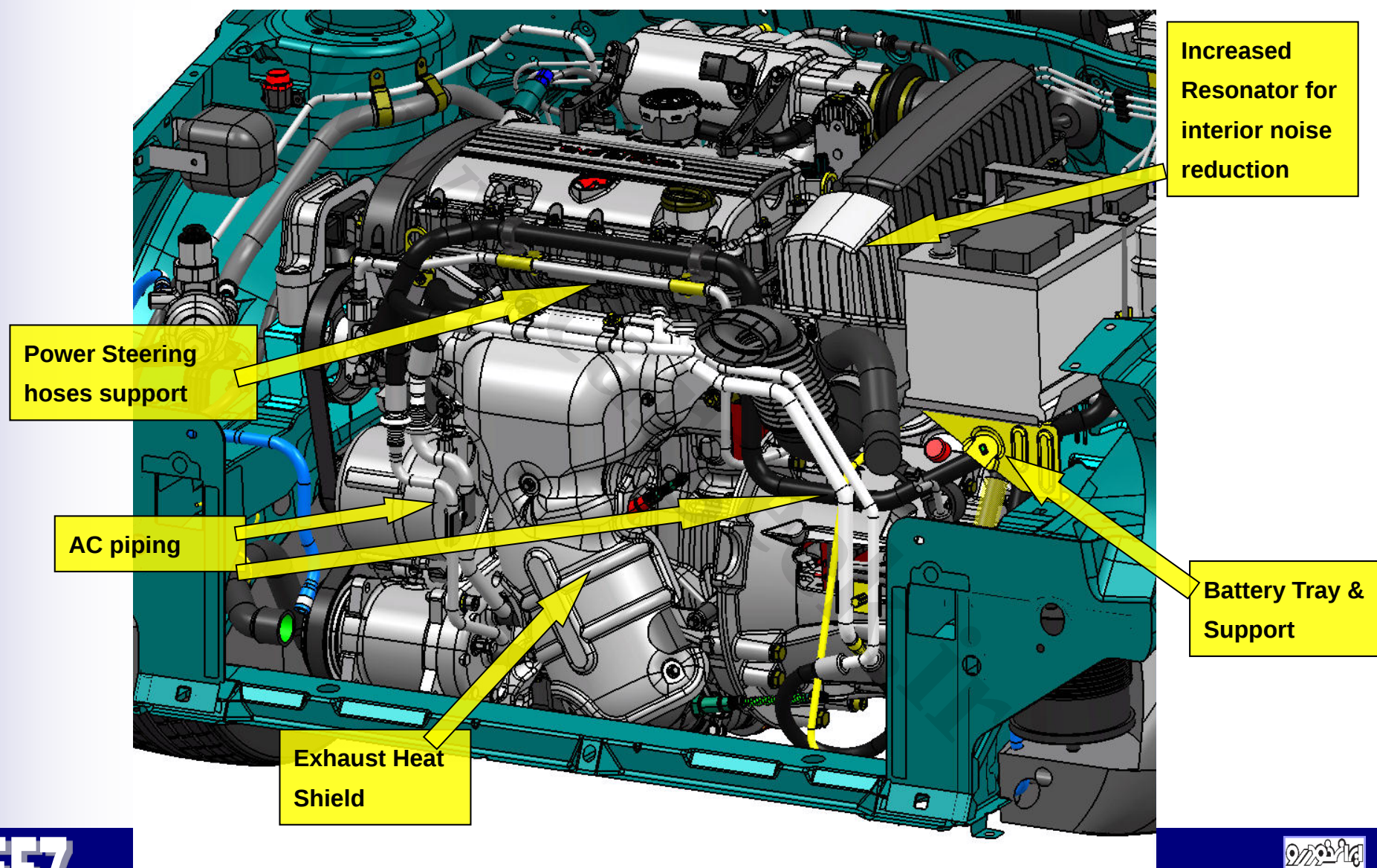


Gamma Package EF7





Gamma Package EF7



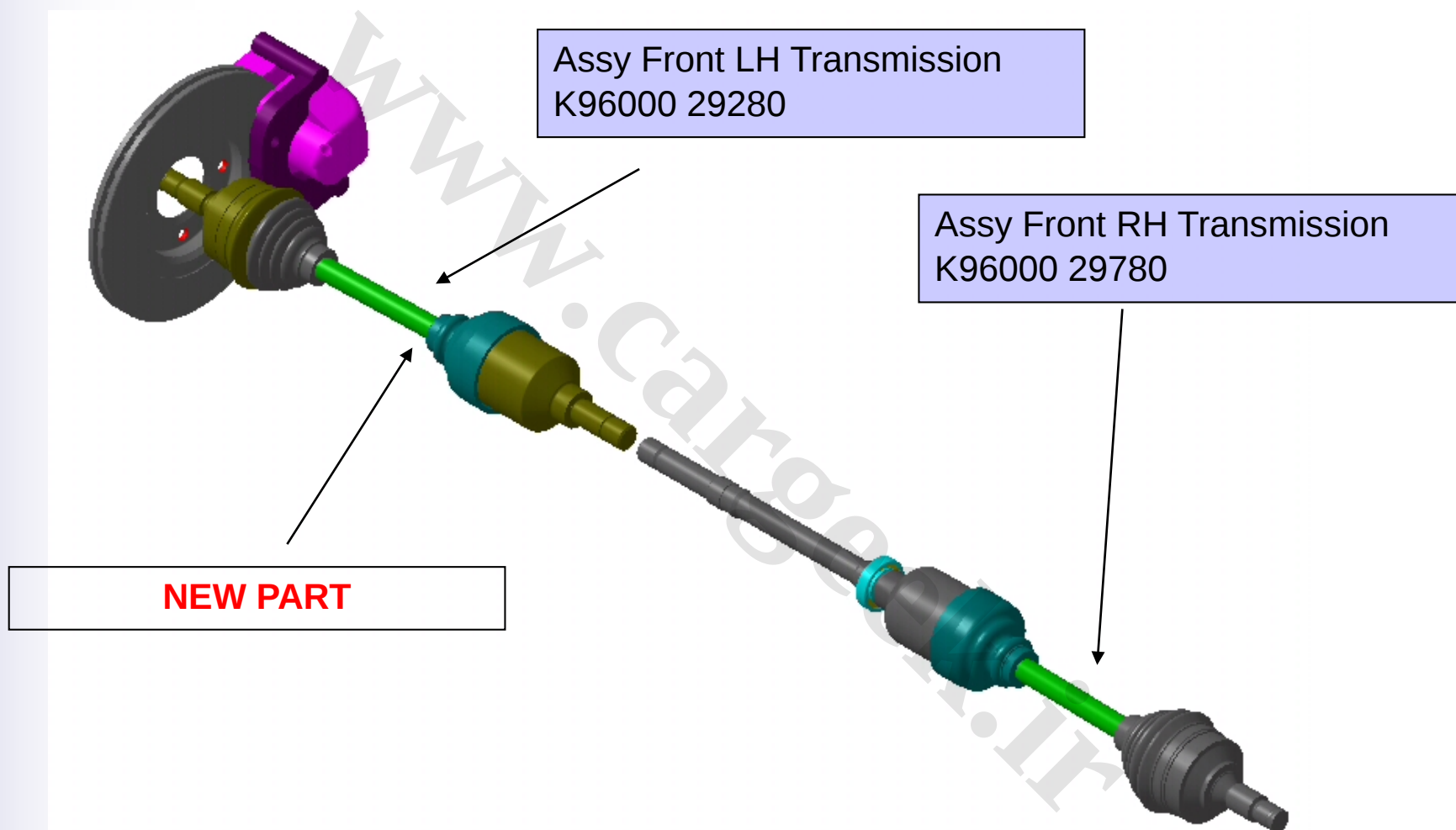


Engine Specification

	XU7 JP L3	XU7 JP4 L4	TU5 JP4	EF7
Disp.Volume (cc)	1761	1761	1587	1650
Power (kW)	70@6000 (95HP)	81@5500 (110HP)	80@5800	83@6000 (74@CNG)
Torque (Nm)	153@3000	155@4250	147@4000	142@3500
Emission Lvl.	E II	E III	E III	E IV
No. of Valves	8	16	16	16
EMS supplier	JCAE	Bosch	Bosch	Bosch

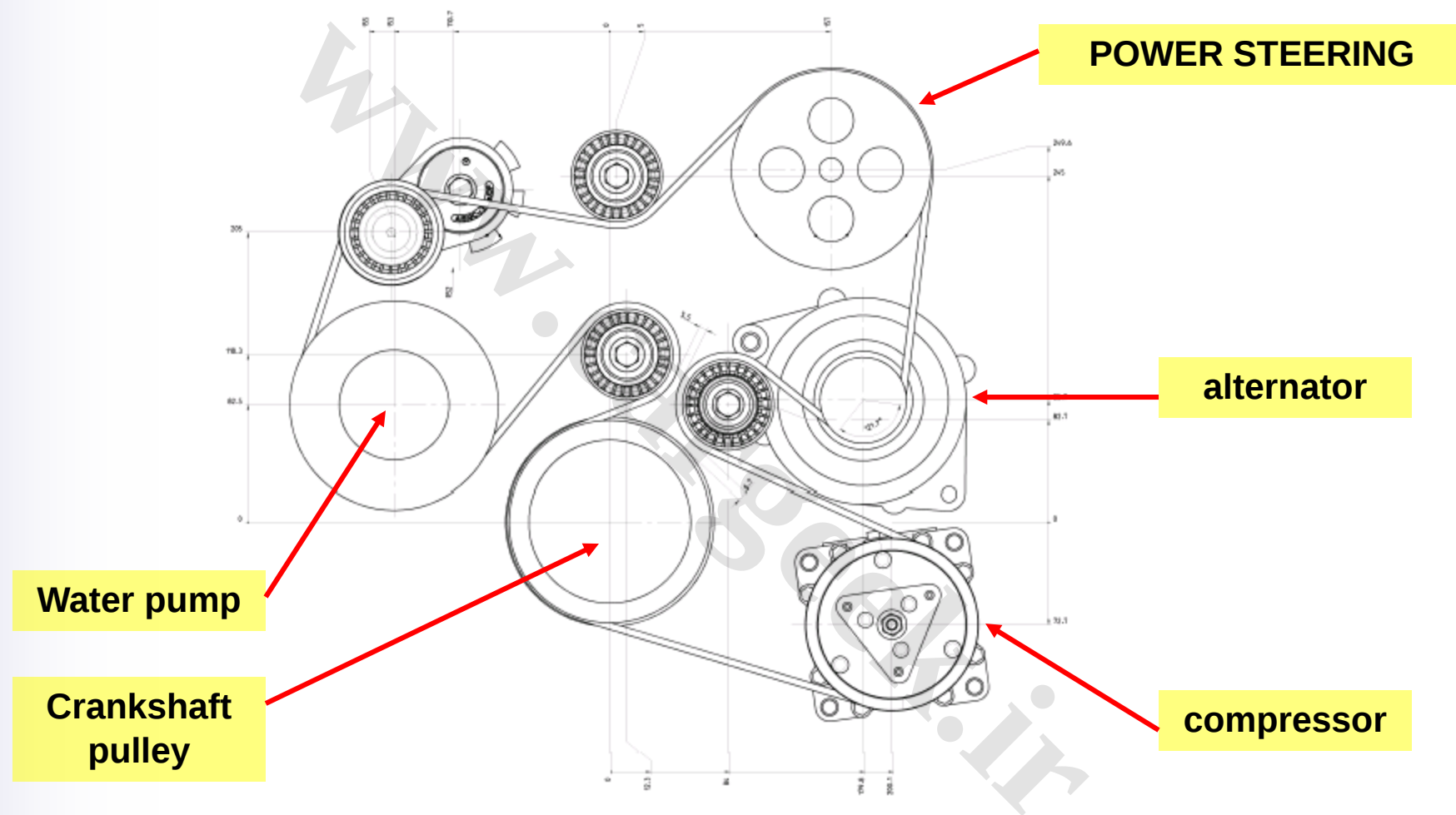


DRIVE SHAFT



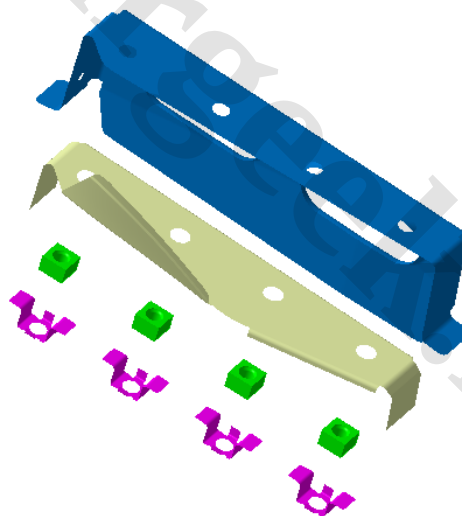
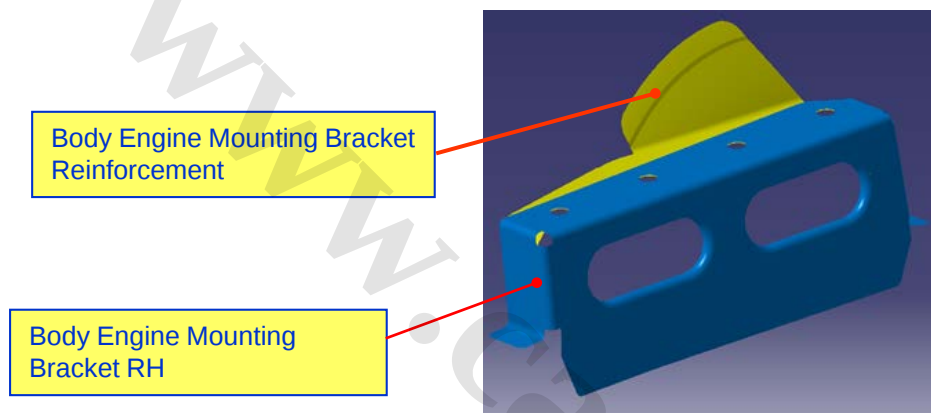


Front end accessory drive



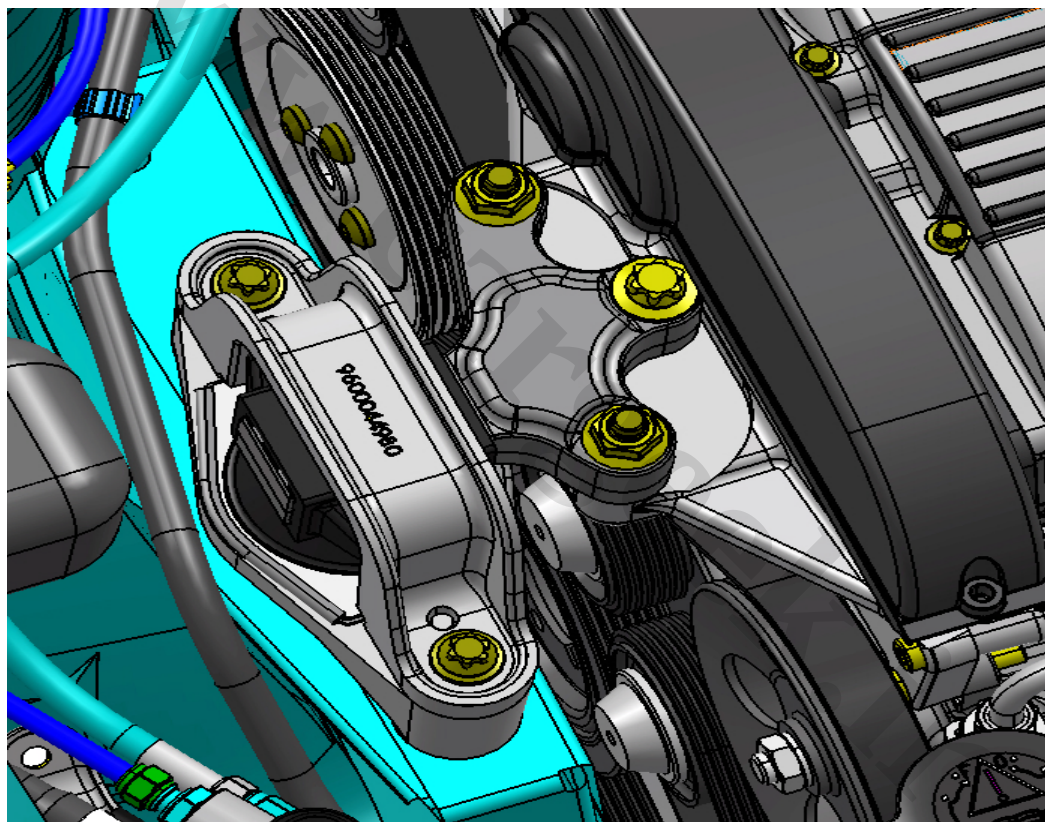


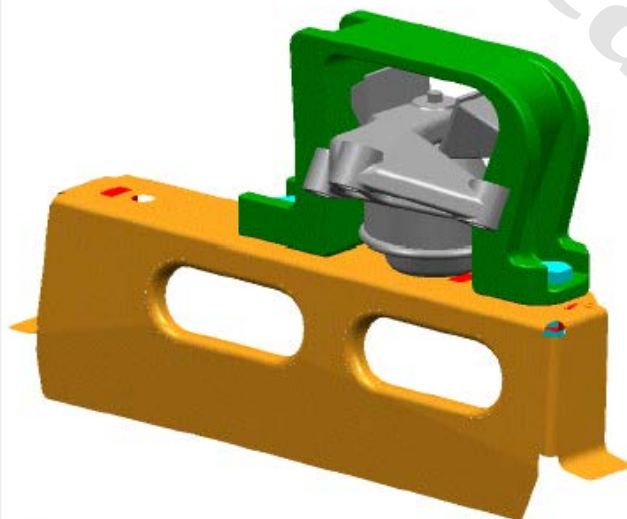
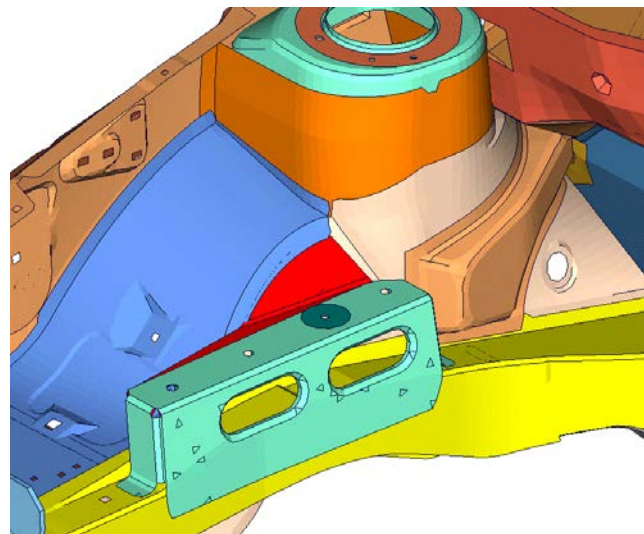
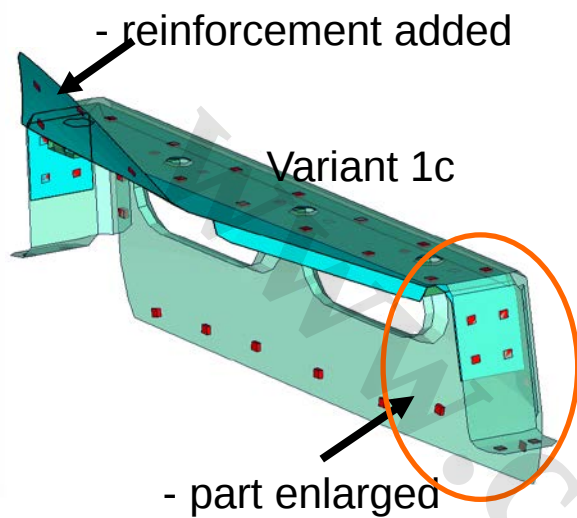
Body Engine Mounting



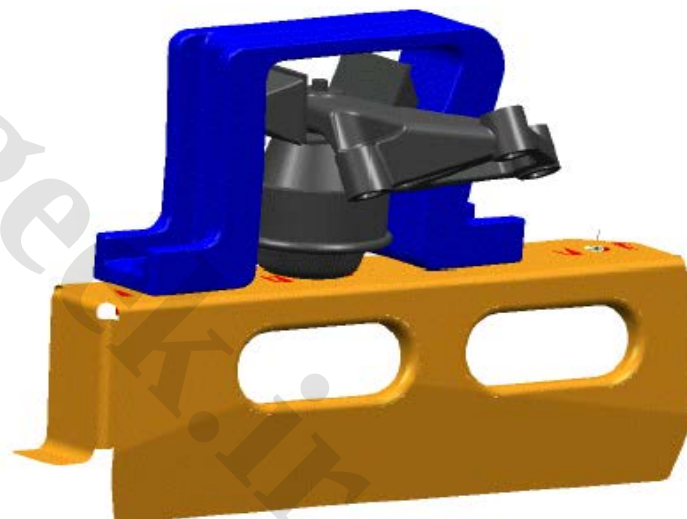


RH ENGINE MOUNTING





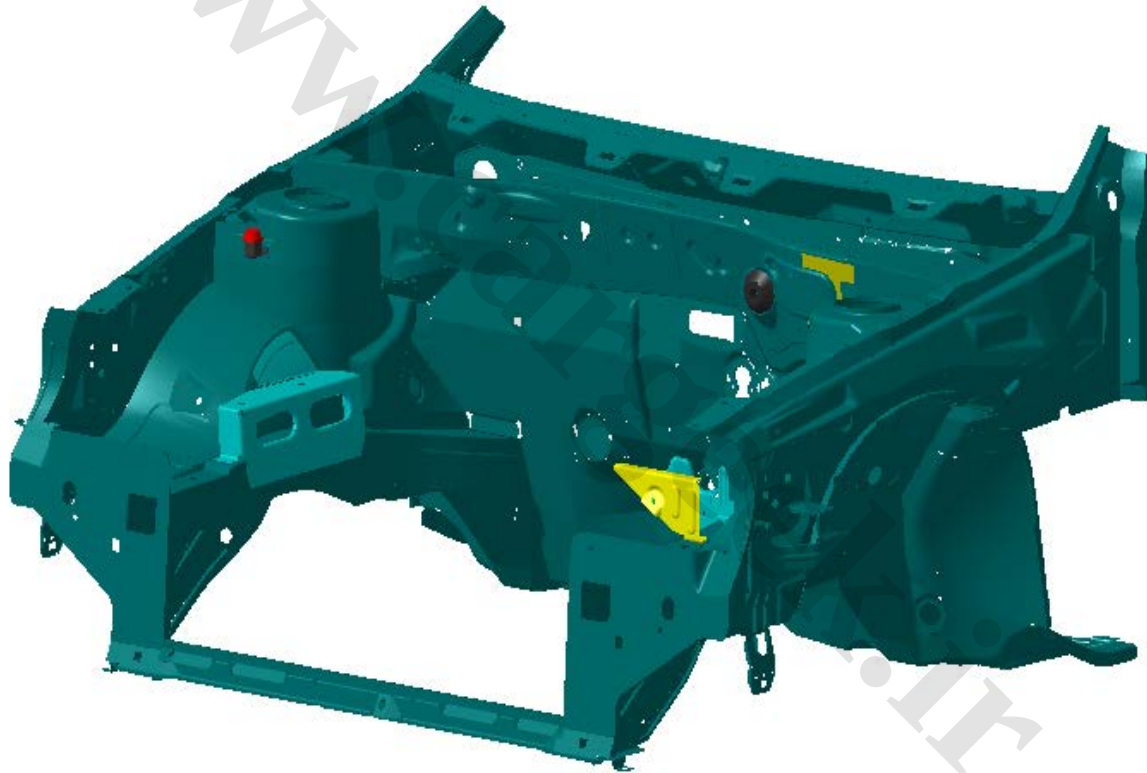
XU 7 installation



EF 7 installation

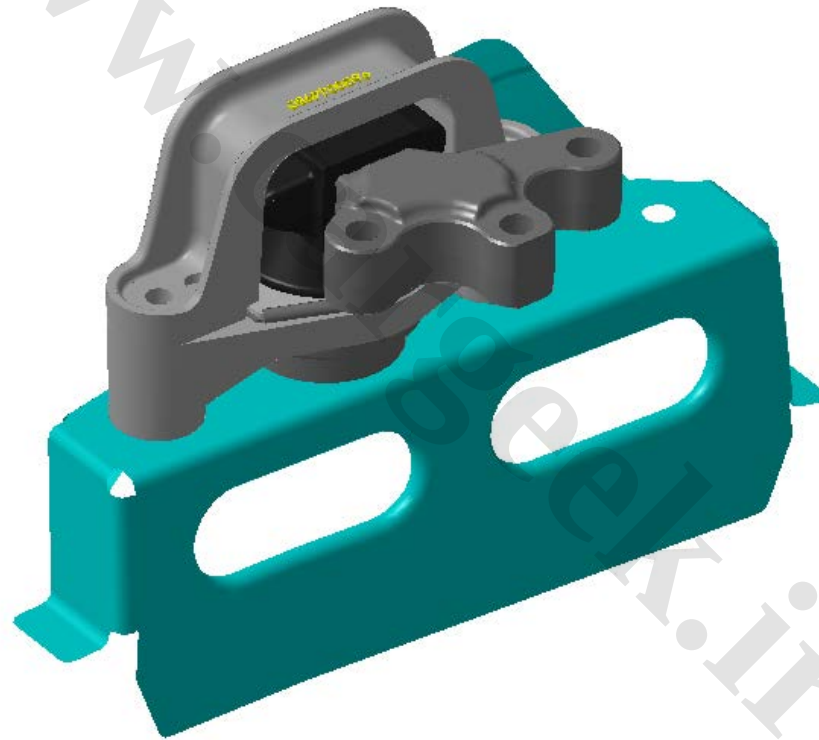


Body modification



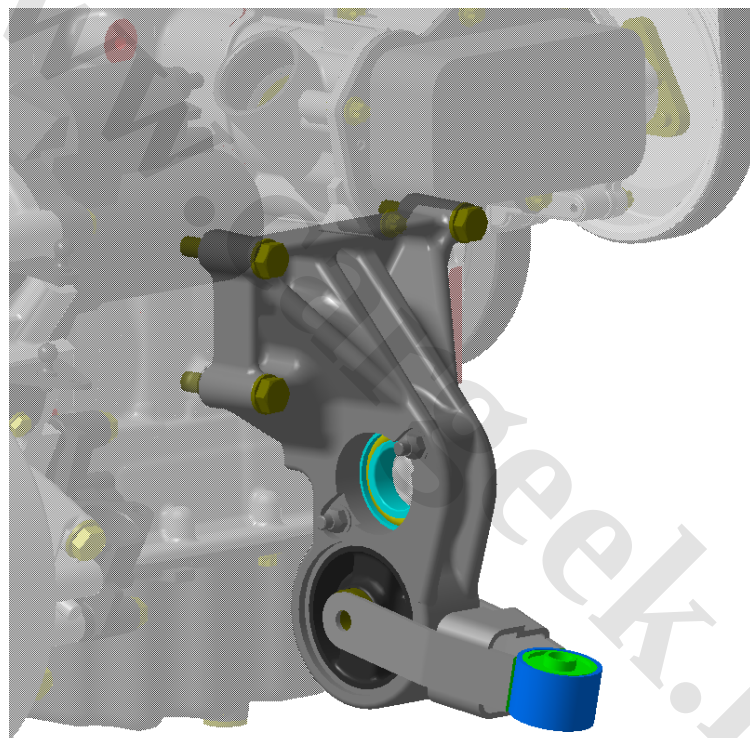


Integrated Engine Mount





Lower Engine Mount





GEAR BOX

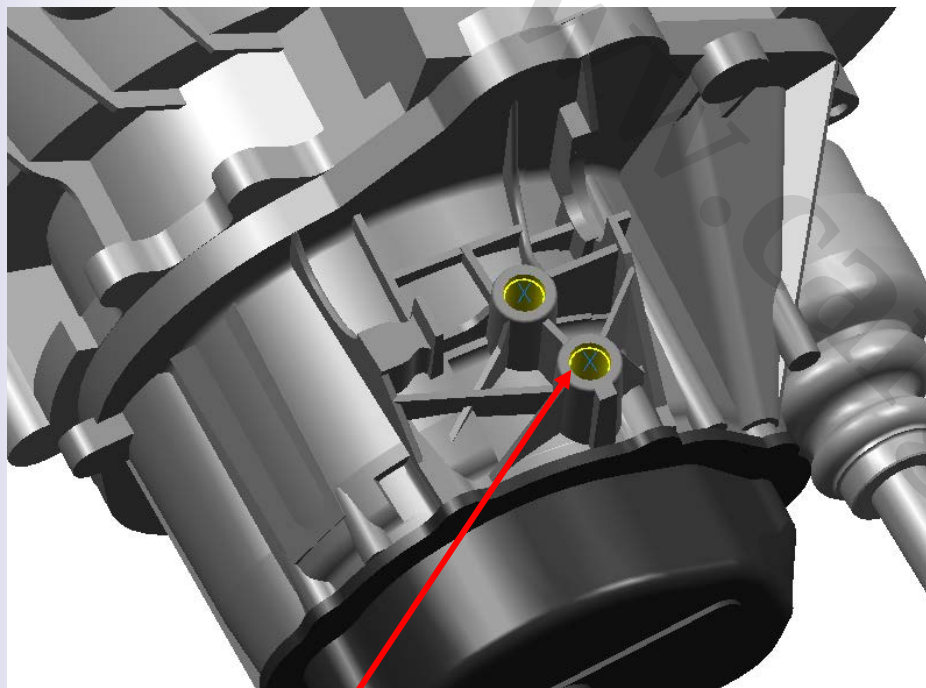
PSA BE3

Gear sets recommended for EF7 transmission

1 st	3.25
2 nd	1.87
3 rd	1.28
4 th	0.95
5 th	0.75
F/D	17/78

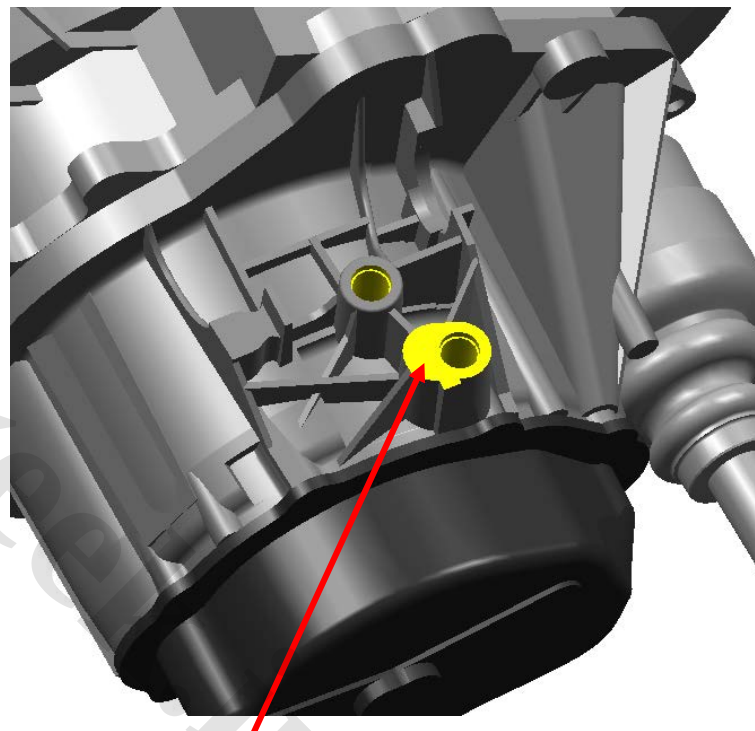


Current design of BE3 gearbox



Original position

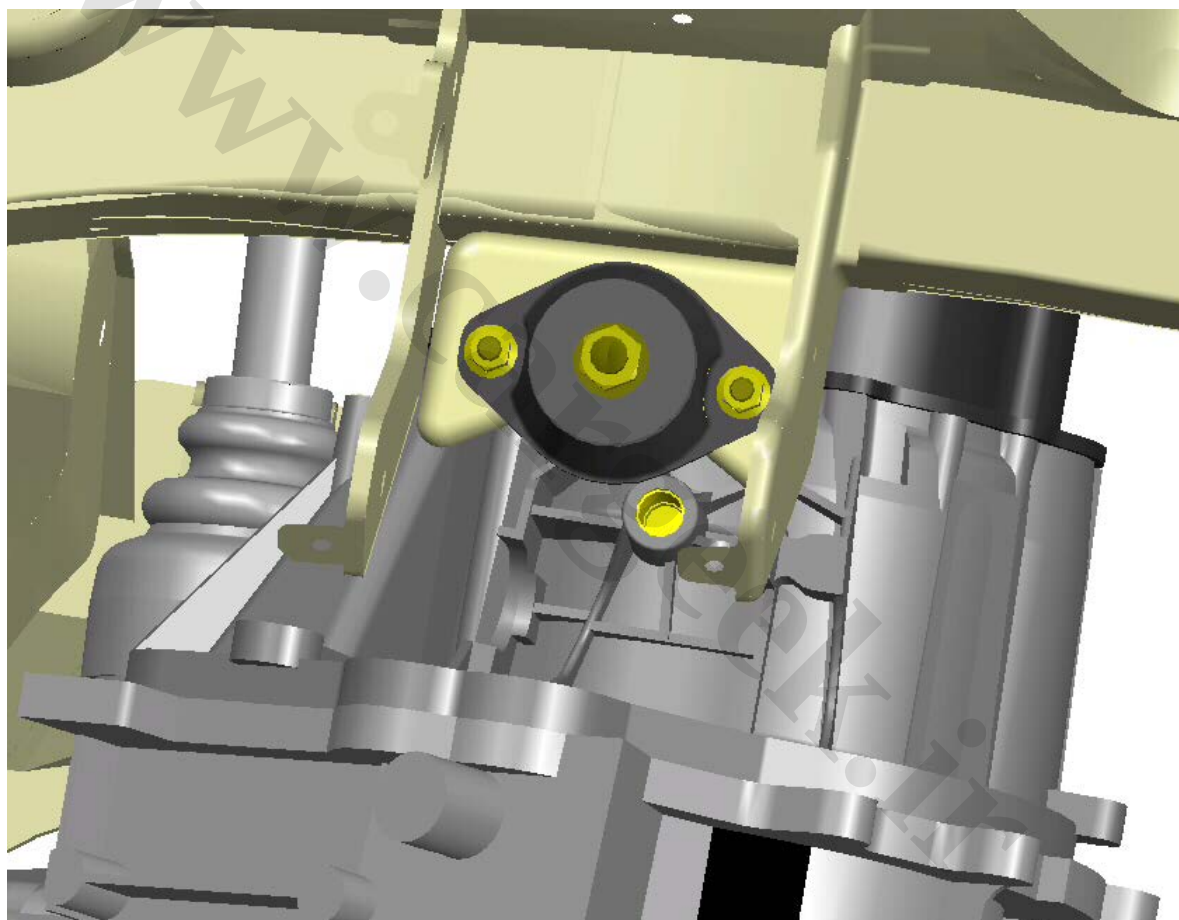
Modification for EF7 installation



Modified Boss

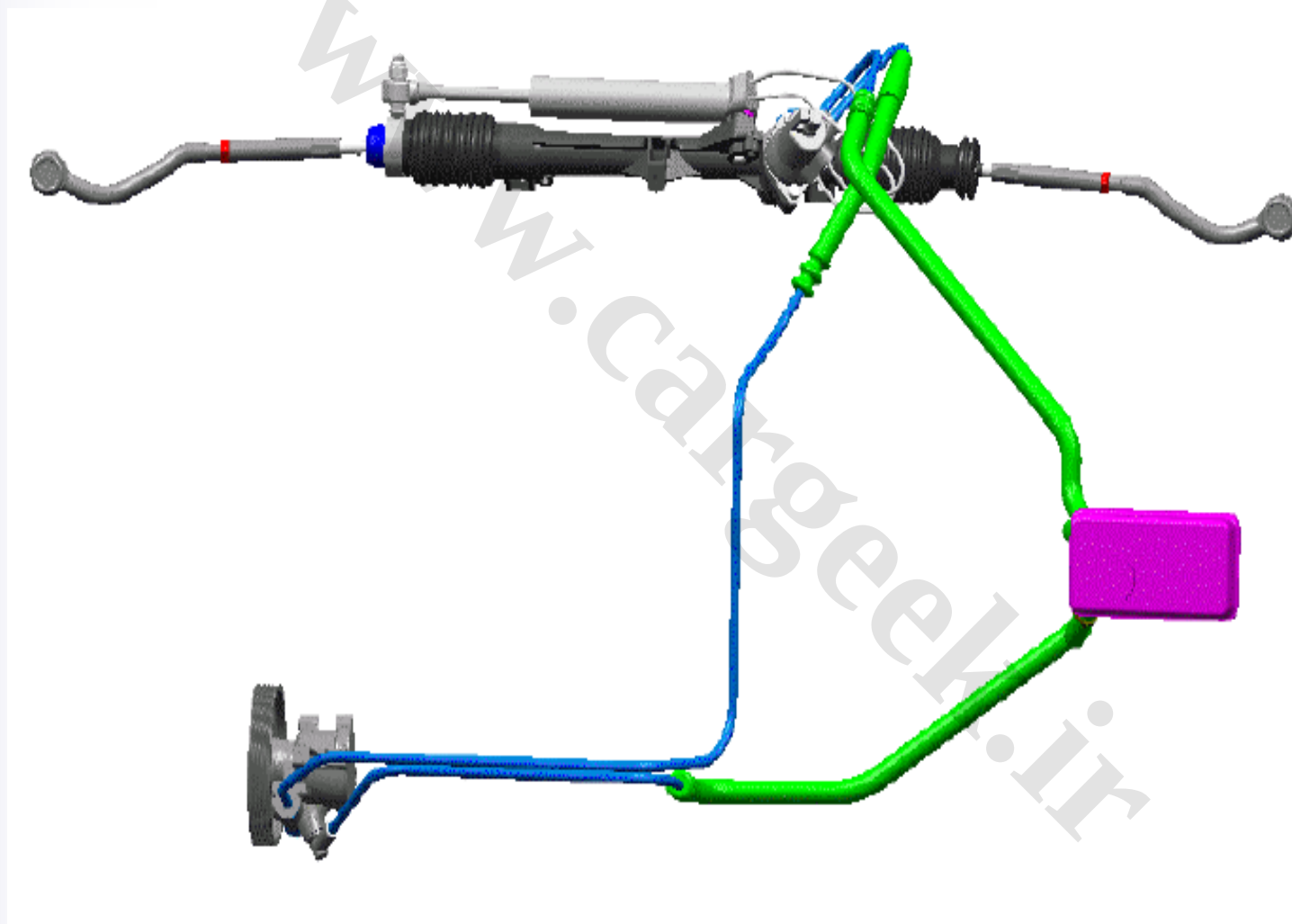


Transmission mount without any change



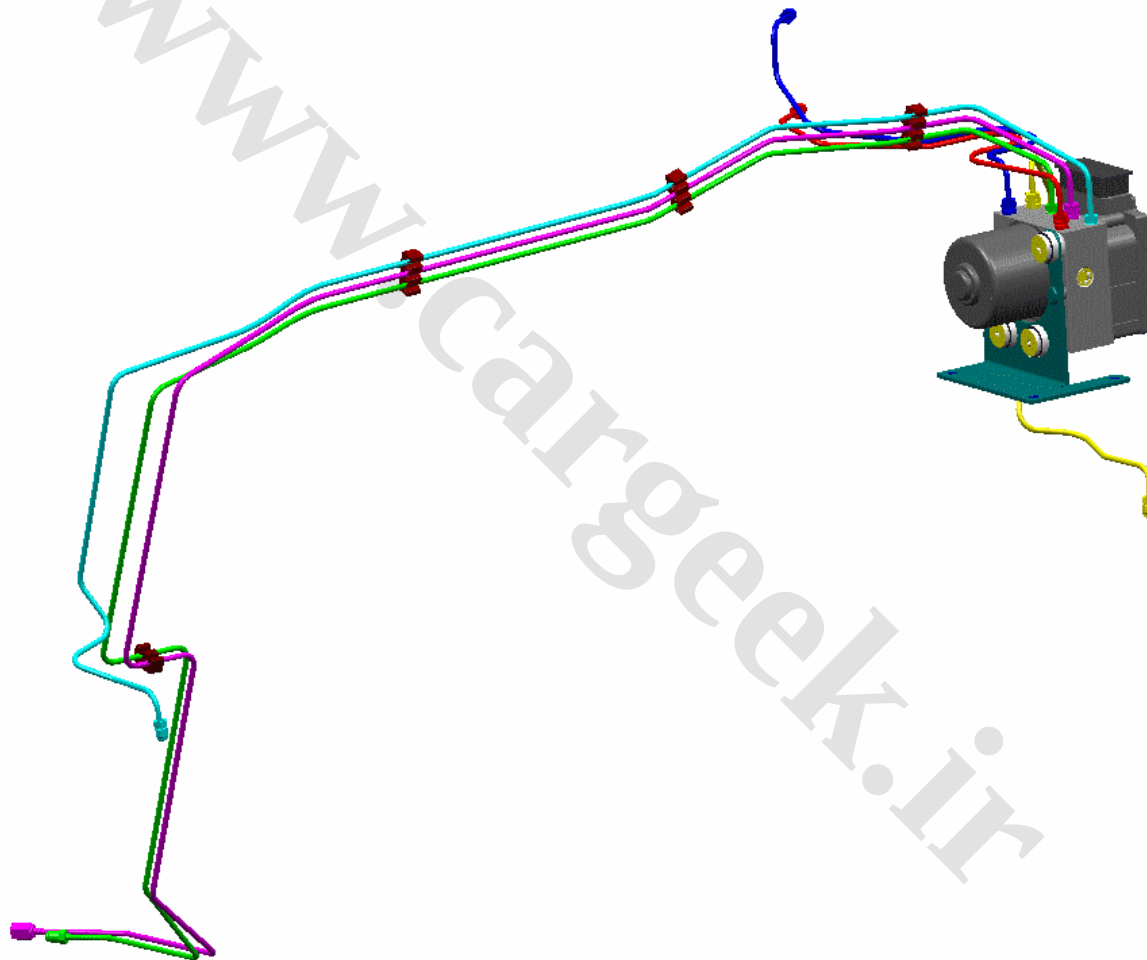


POWER STEERING





ASSY_ABS-SYSTEM



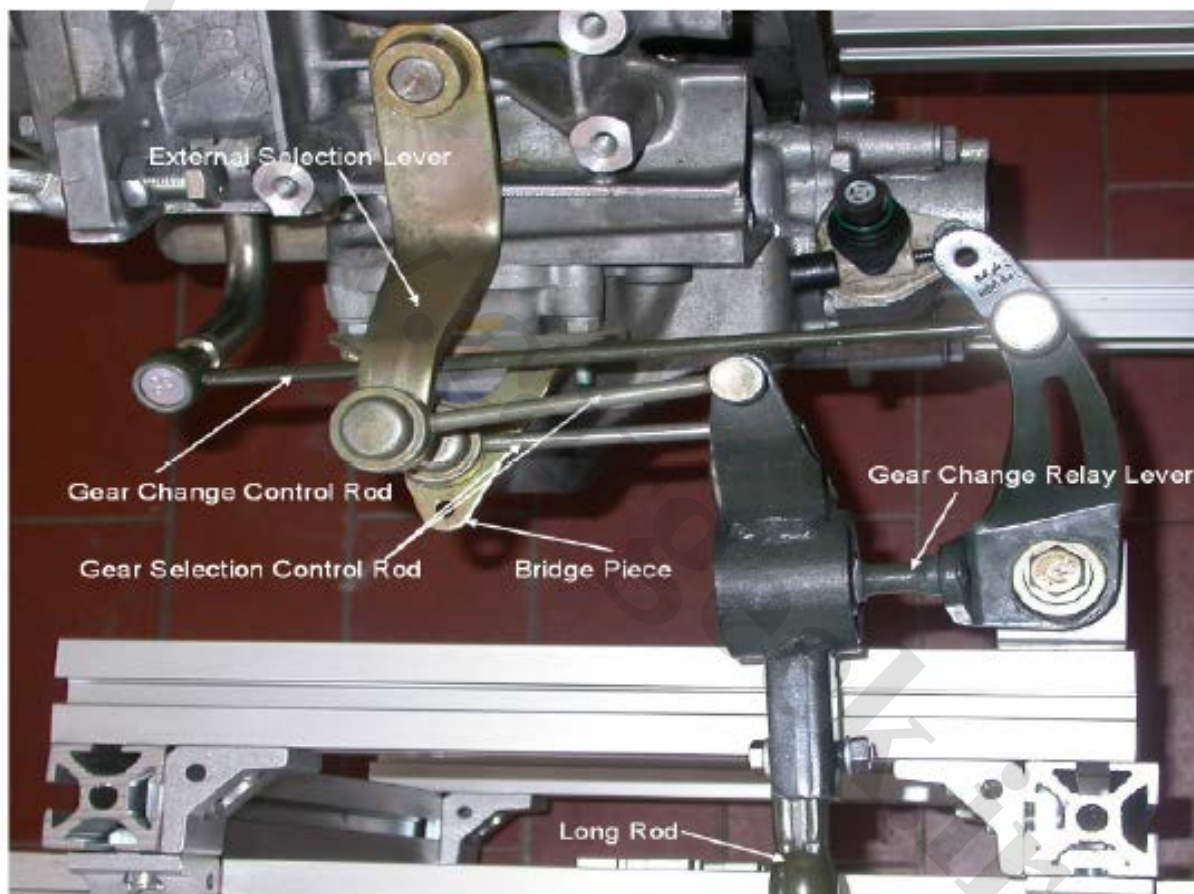


Alternator





Gear Shifting

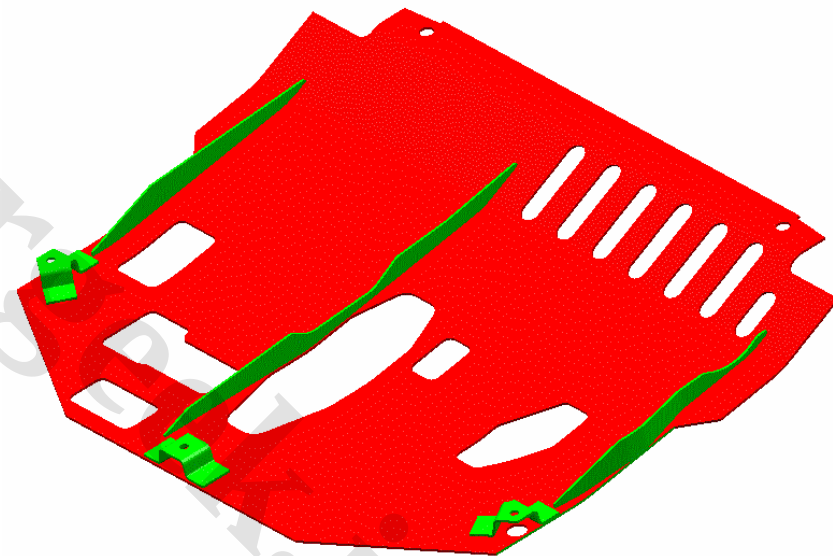
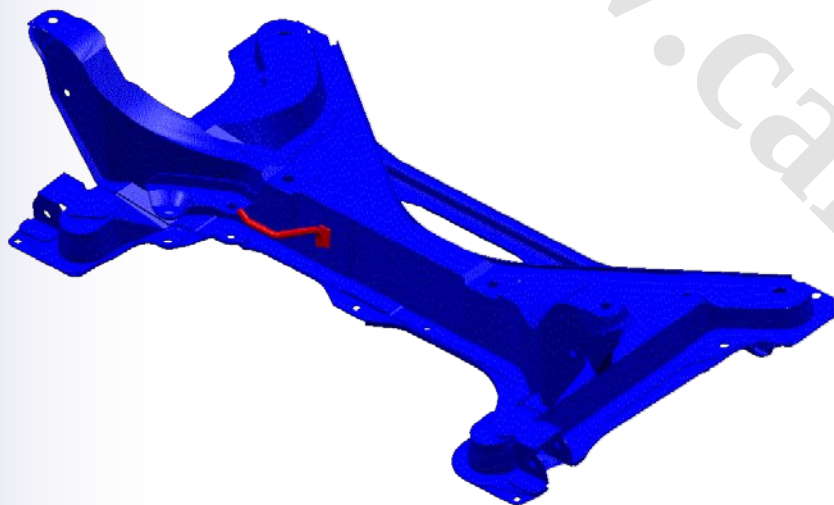


Overview of current outer shift mechanism components of EF7 Samand



*ASSED_FRONT_
CRADLE*

*UNDER_ENGINE_PRO
TECTOR*





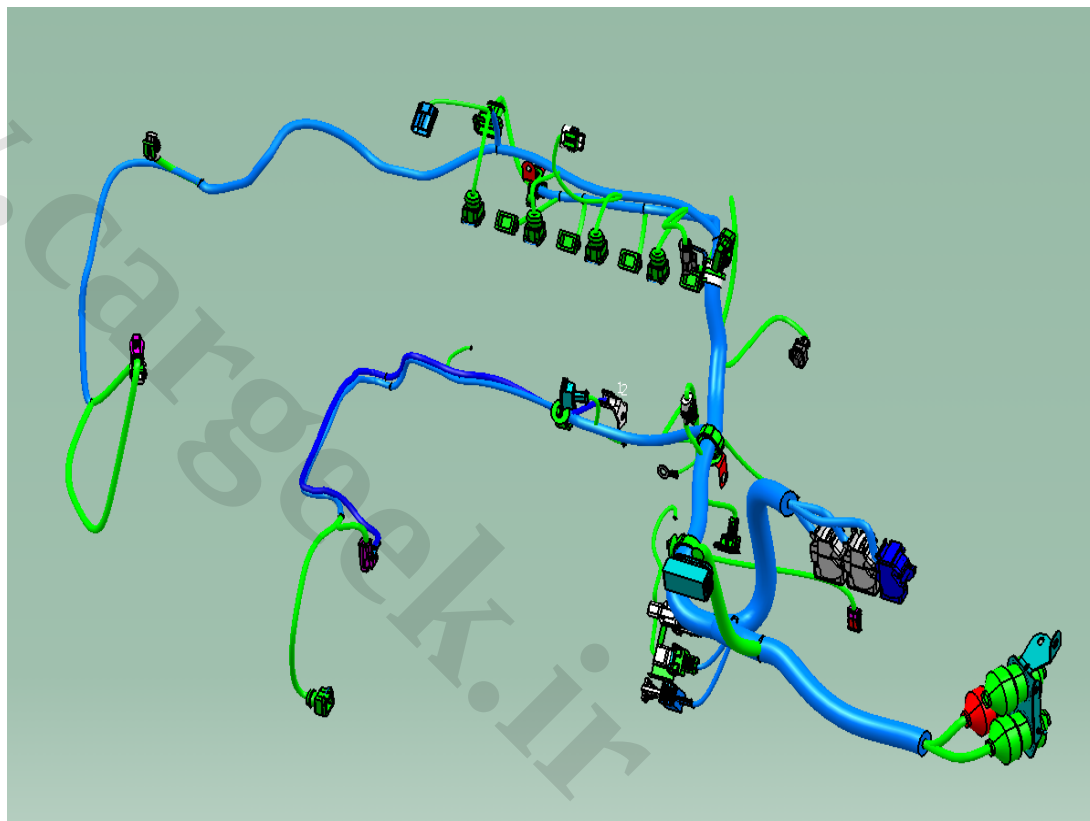
Cradle



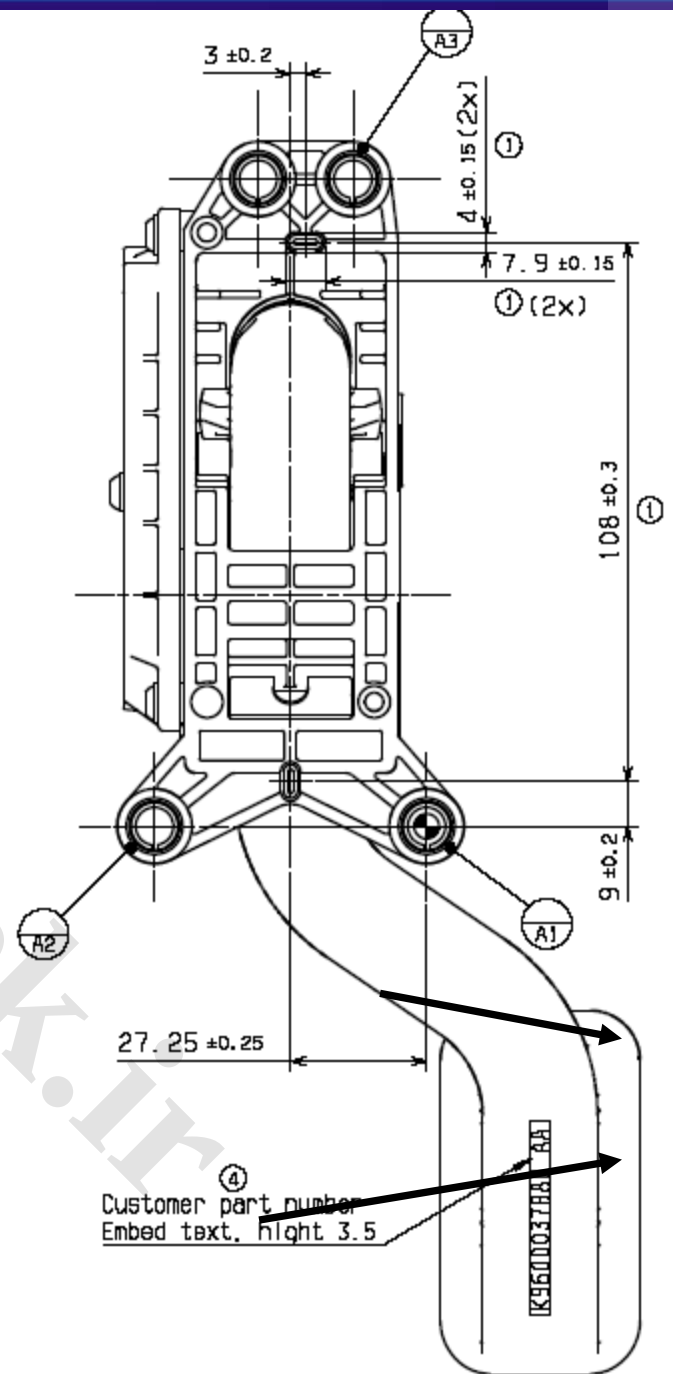
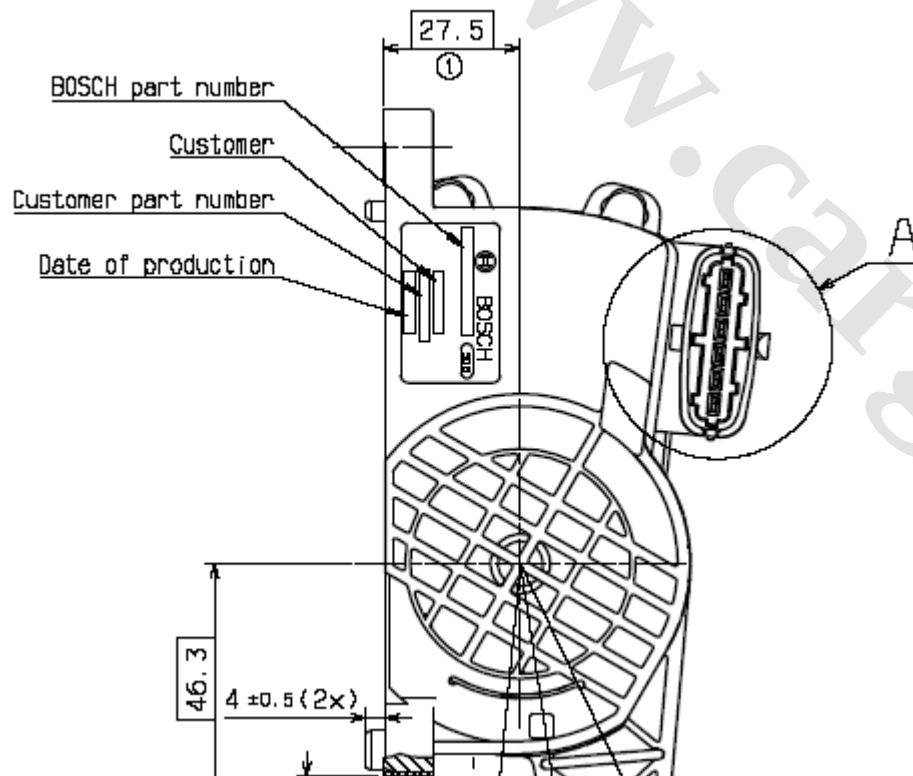


New-harness

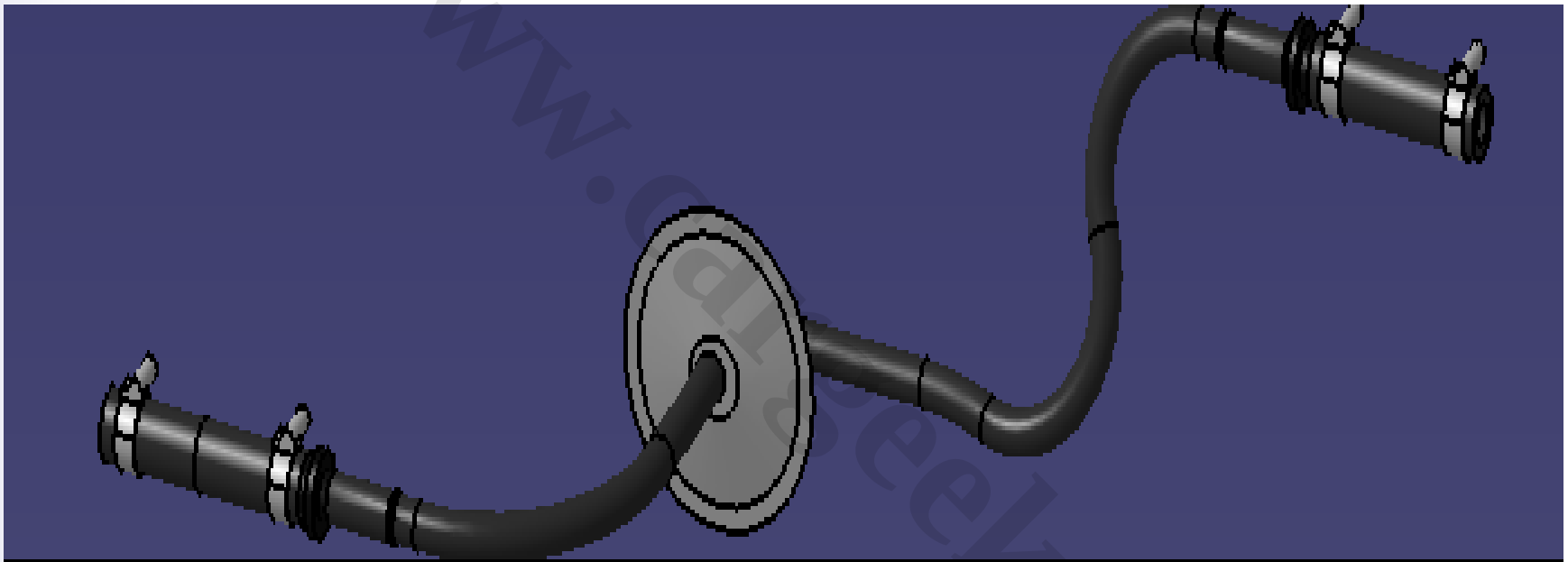
- Front Harness
- Rear Harness
- Engine Harness
- Door Harness



EF7 Pedal Module

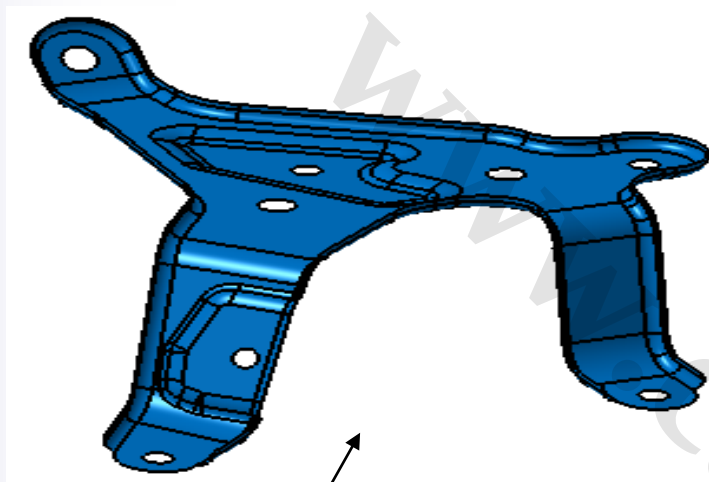


Brake Booster Pipe

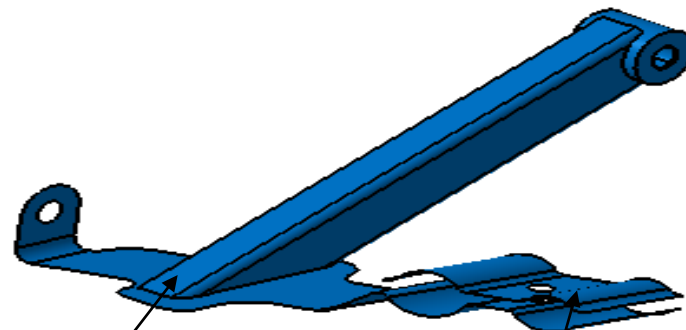




Sheet Metal Parts



**CNG Regulator
Bracket**

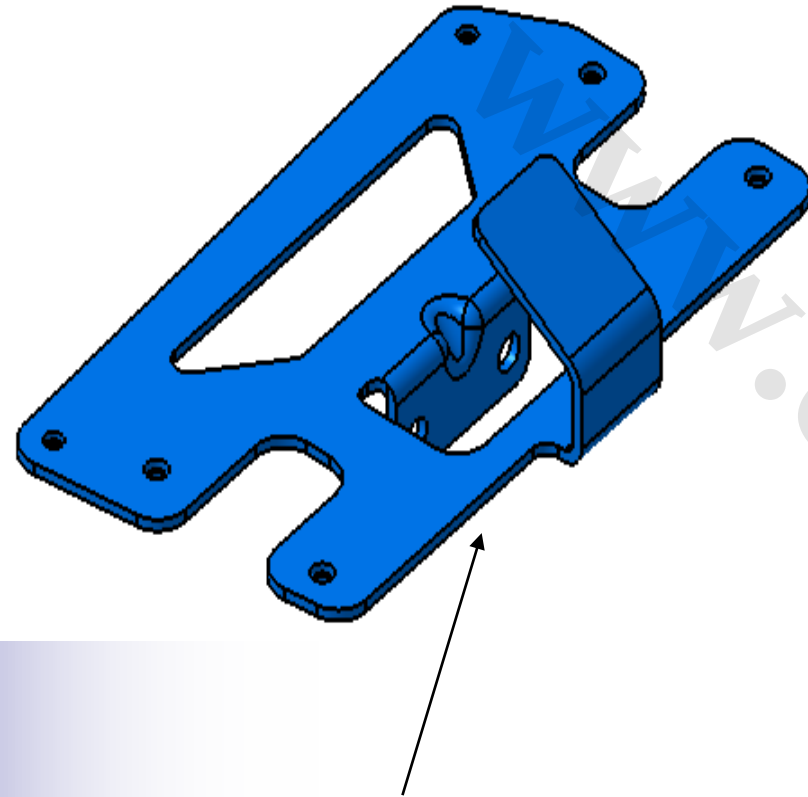


**Ac Pipe Retainer On
Accessory Bracket**

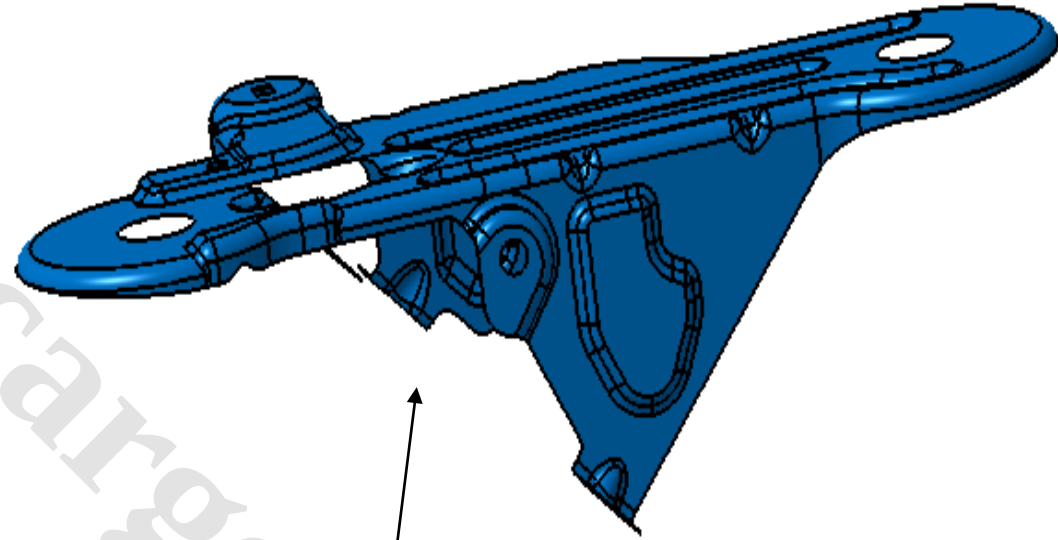
**Ac Pipe
Retainer**



Sheet Metal Parts



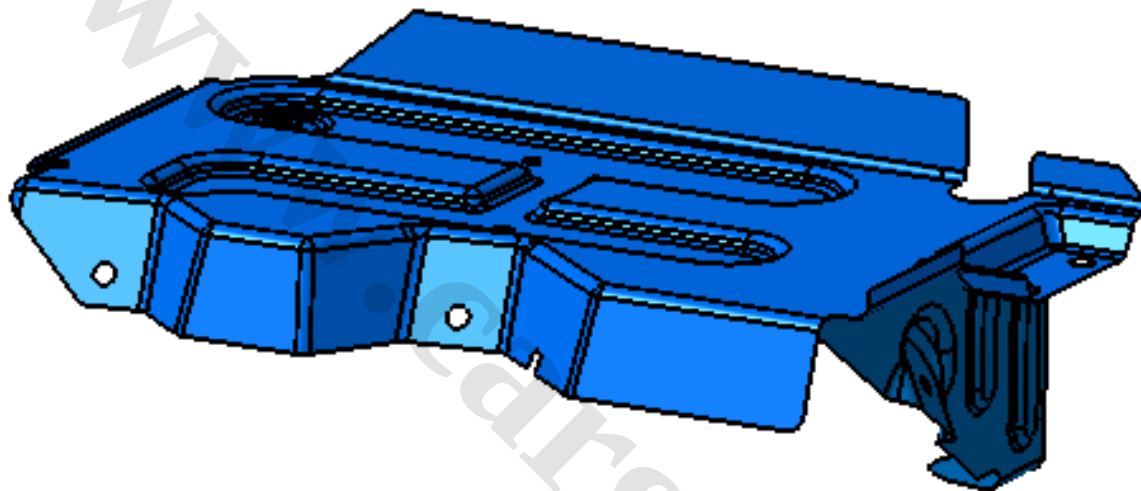
ECU Holder



Air Filter Box Bracket



Sheet Metal Parts

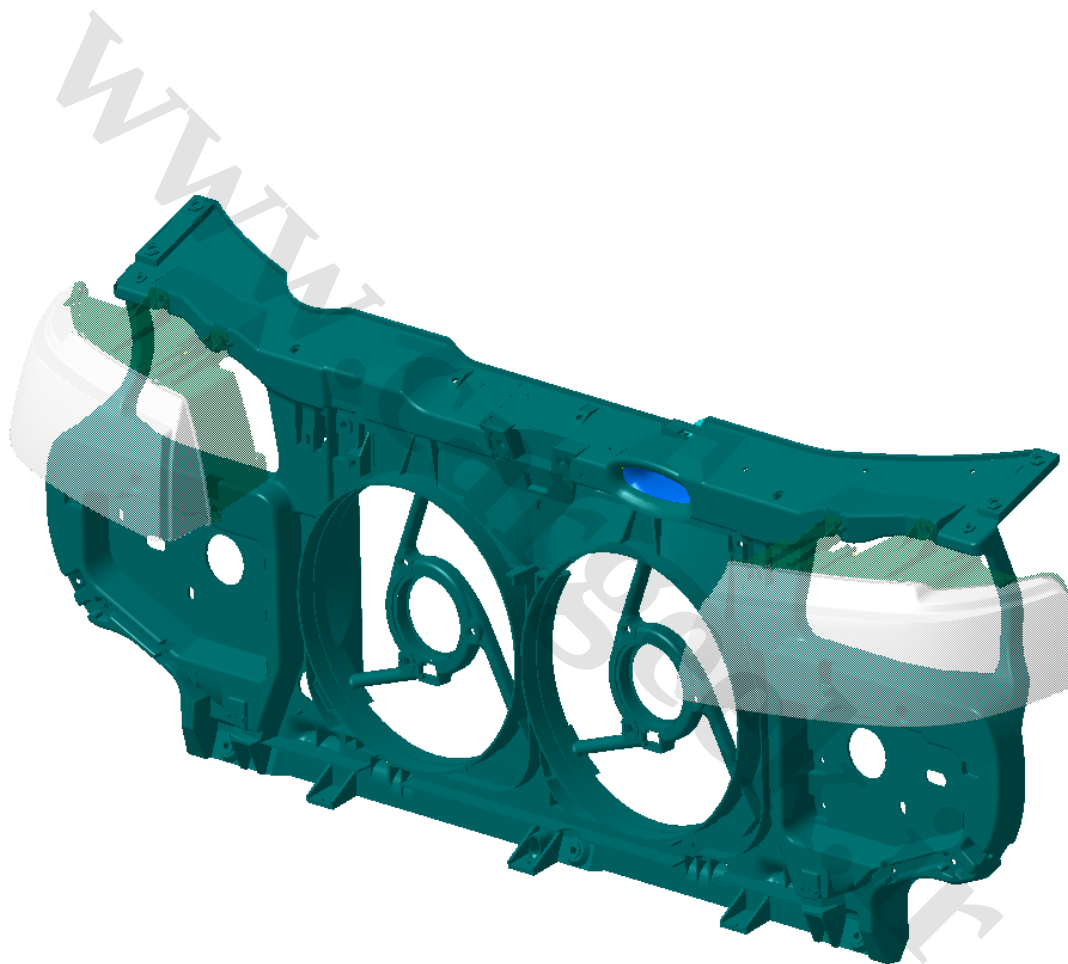


Battery Tray



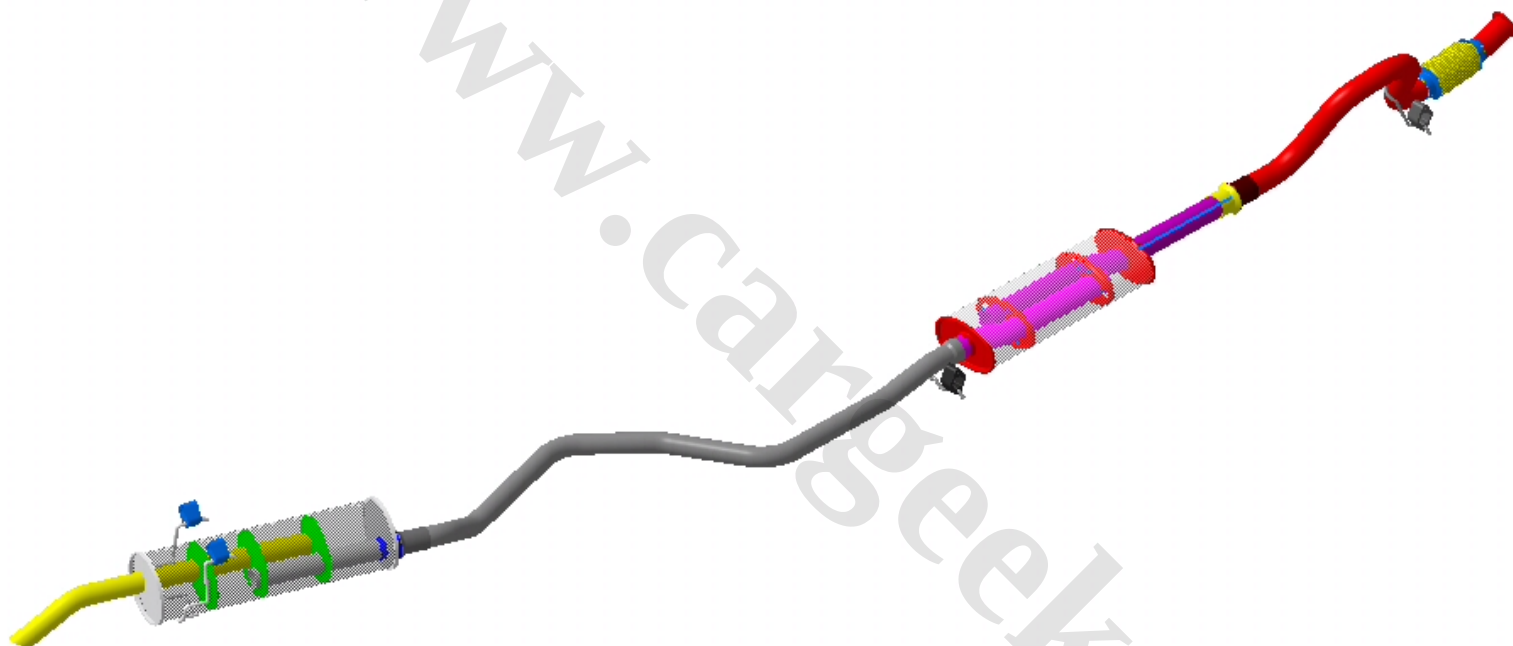
Anti Roll Bar





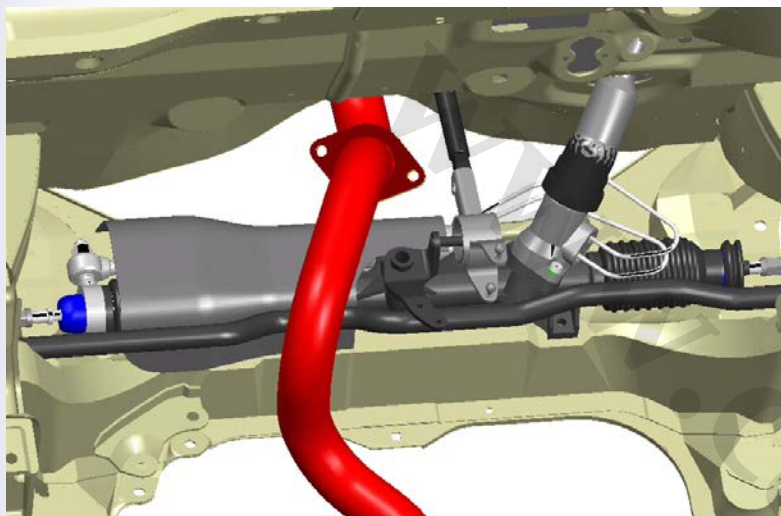


Exhaust System

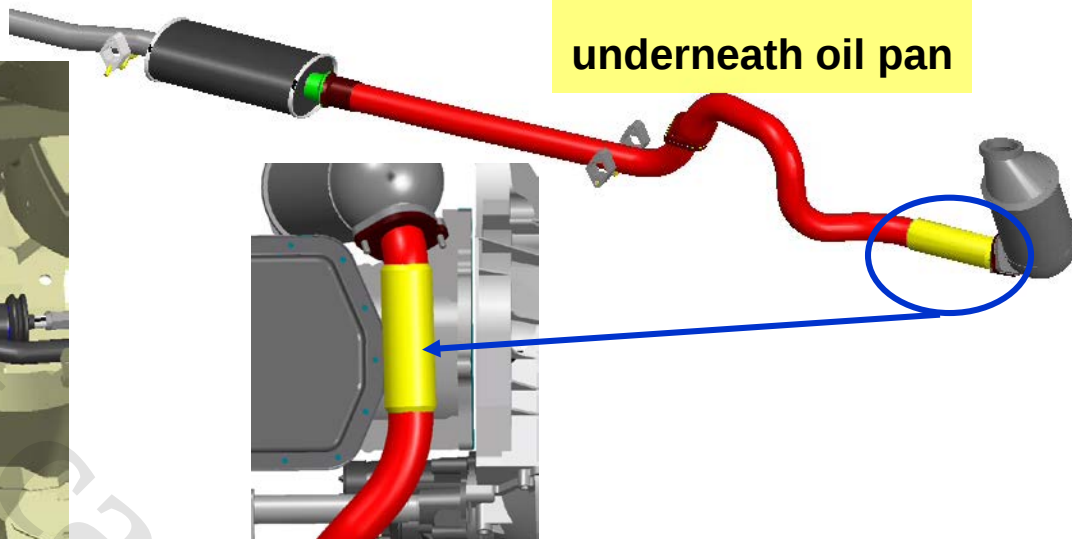




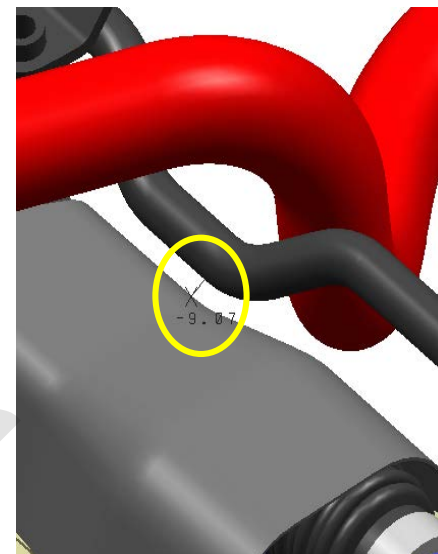
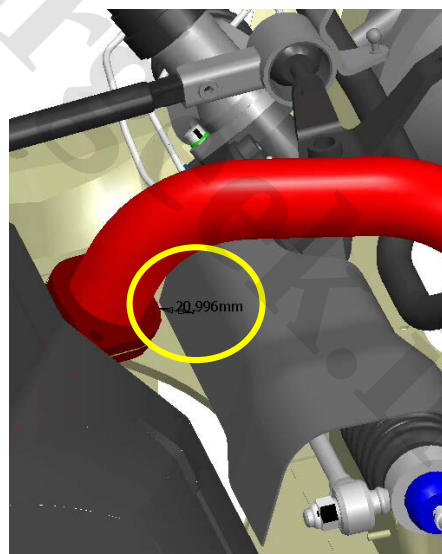
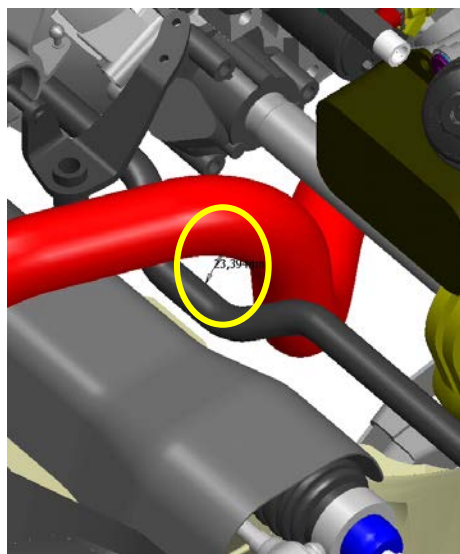
Pipe routing above cradle



Flexible pipe underneath oil pan

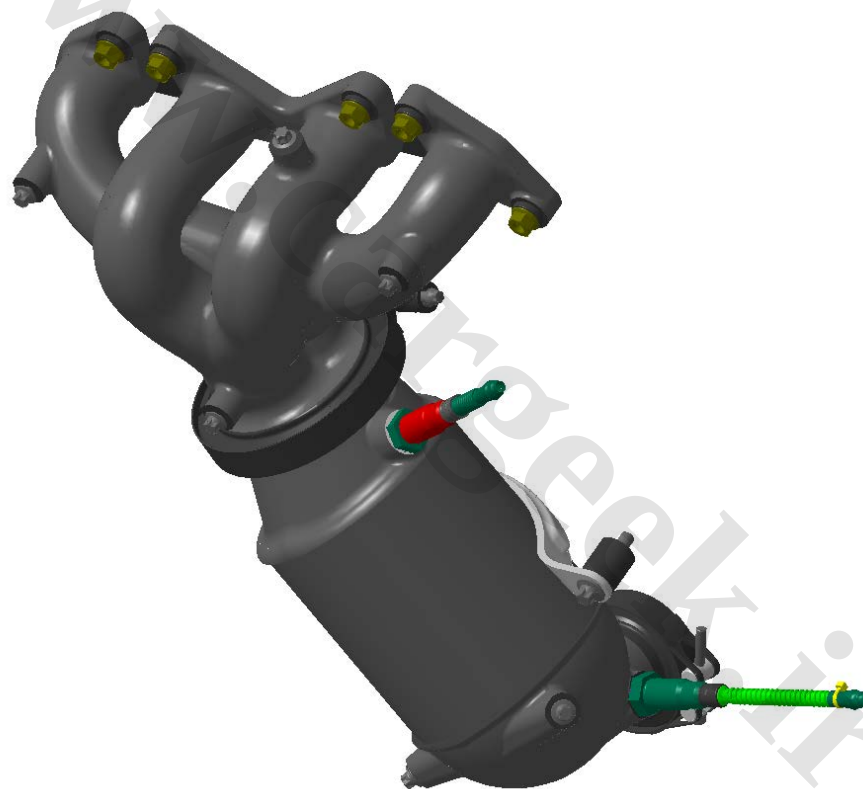


Clearance of Exhaust pipe & Anti Roll Bar



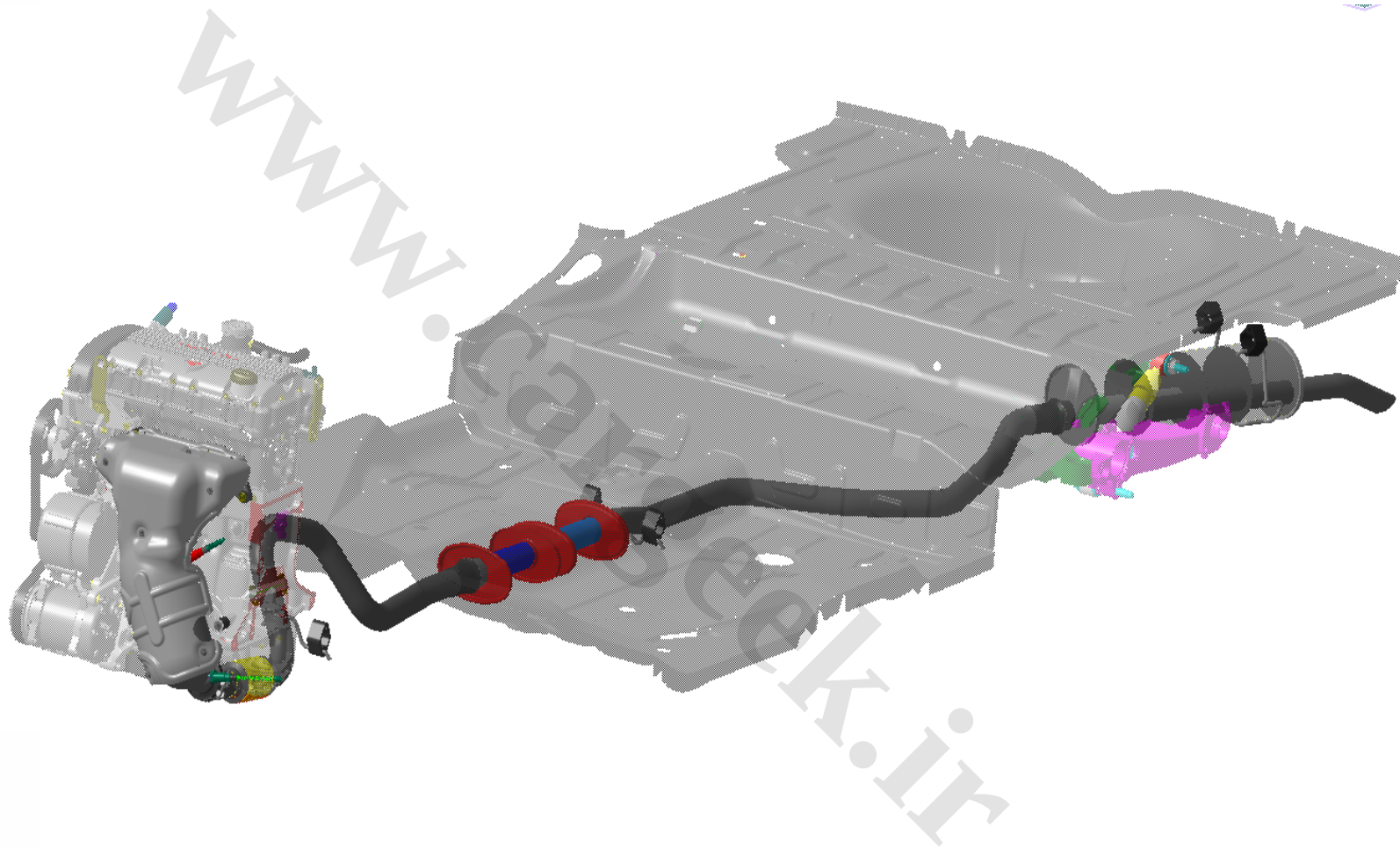


Catalyst





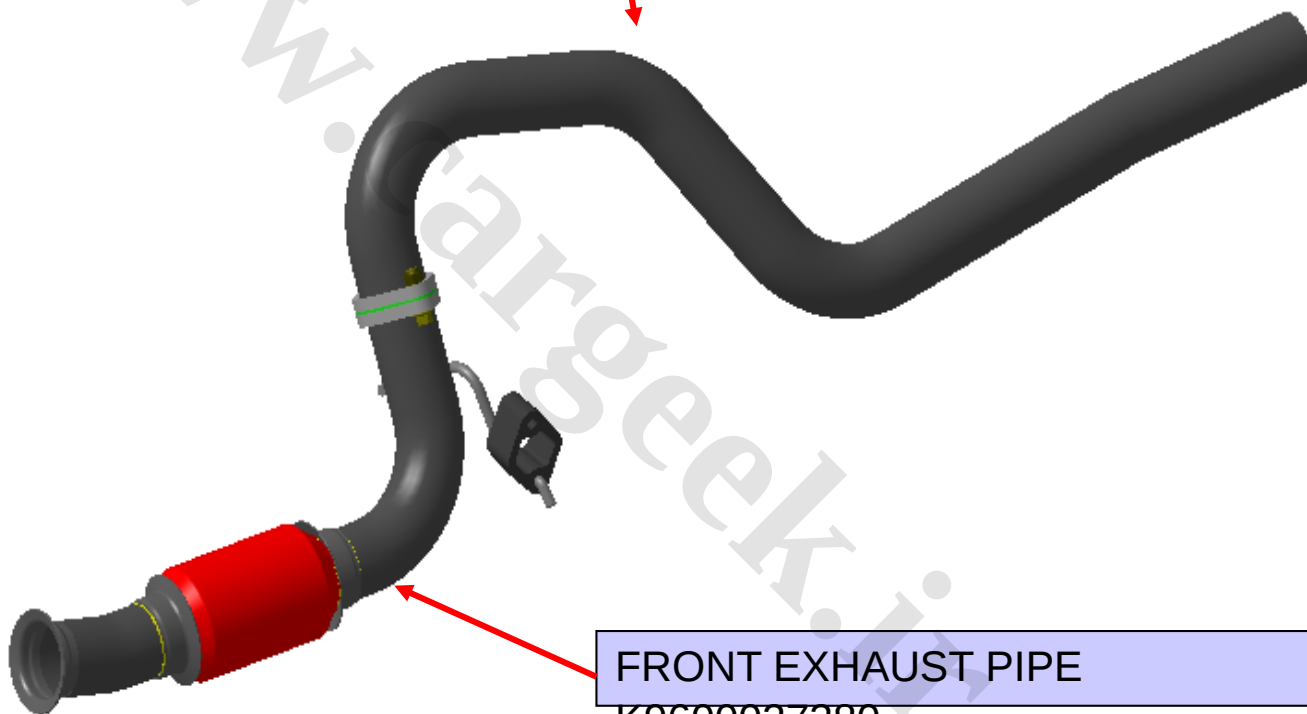
Vehicle Exhaust System





EF7-VEHICLE_EXHAUST_FRONT_PIPE

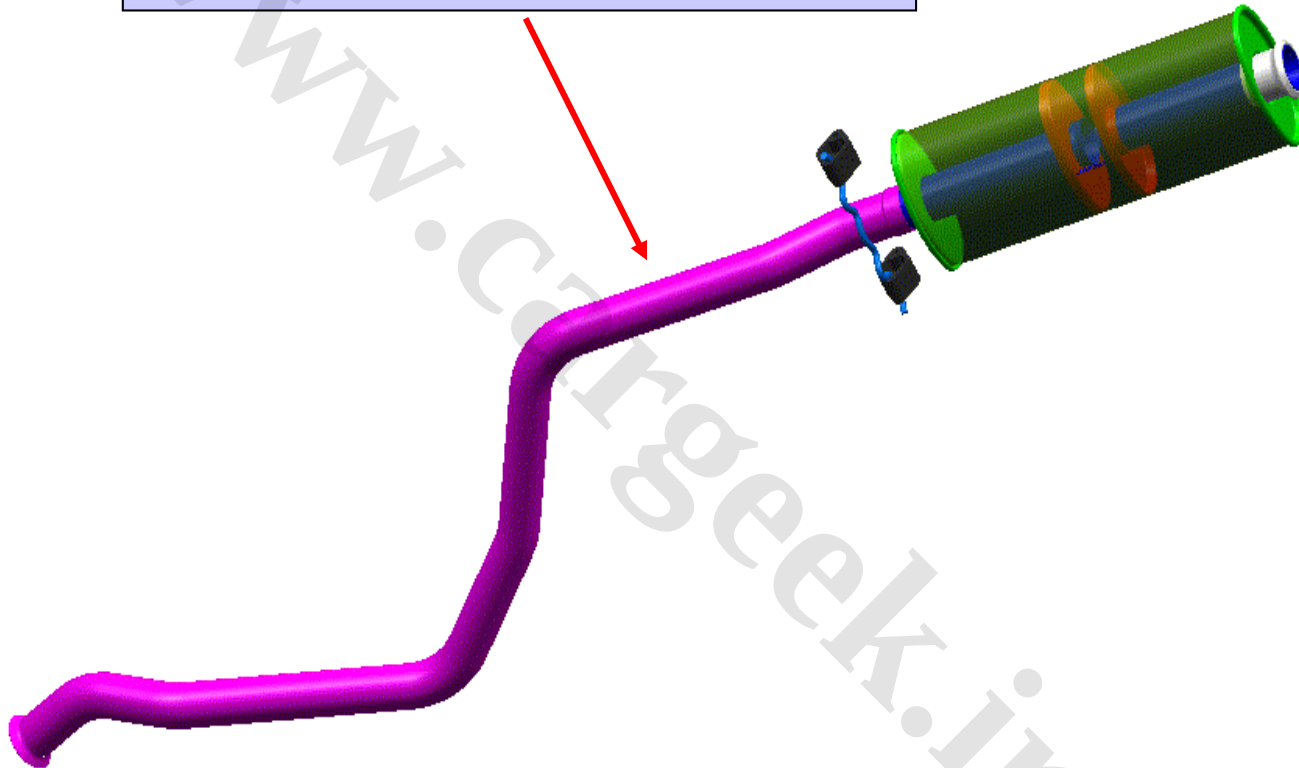
FRONT_INTERMEDIATE_EXHAUST_
PIPE K9600045380



FRONT EXHAUST PIPE
K9600027380

ASSY EXHAUST INTERMEDIATE PIPE

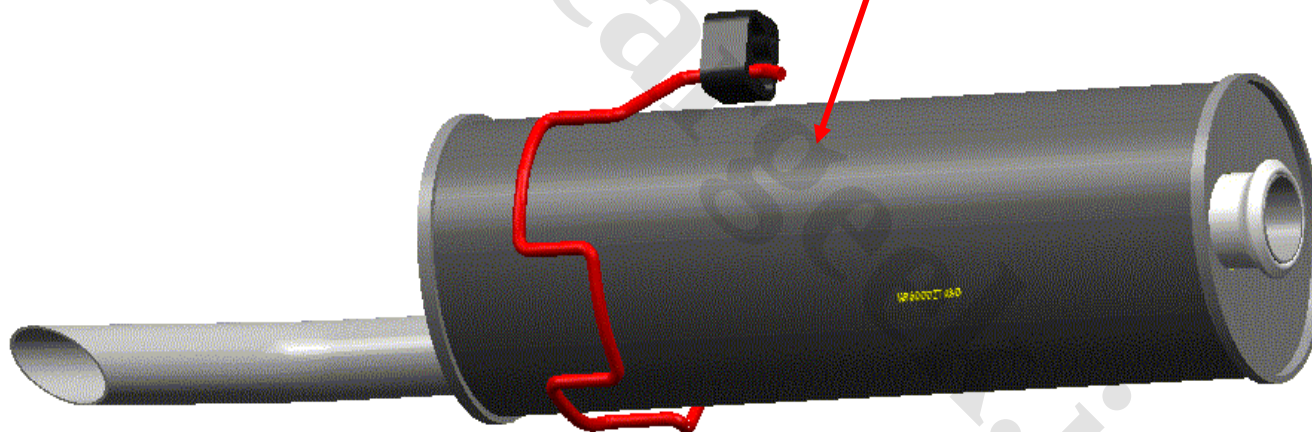
ASSY EXHAUST INTERMEDIATE
PIPE K9600027580





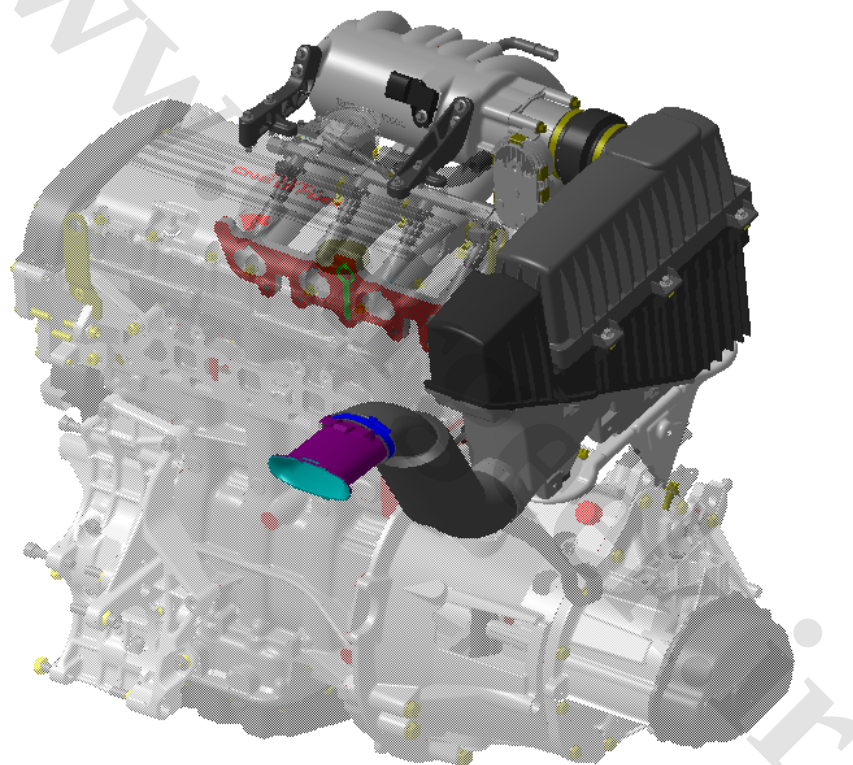
ASSY EXHAUST REAR PIPING

ASSY EXHAUST REAR PIPING
K9600027480





Air Intake



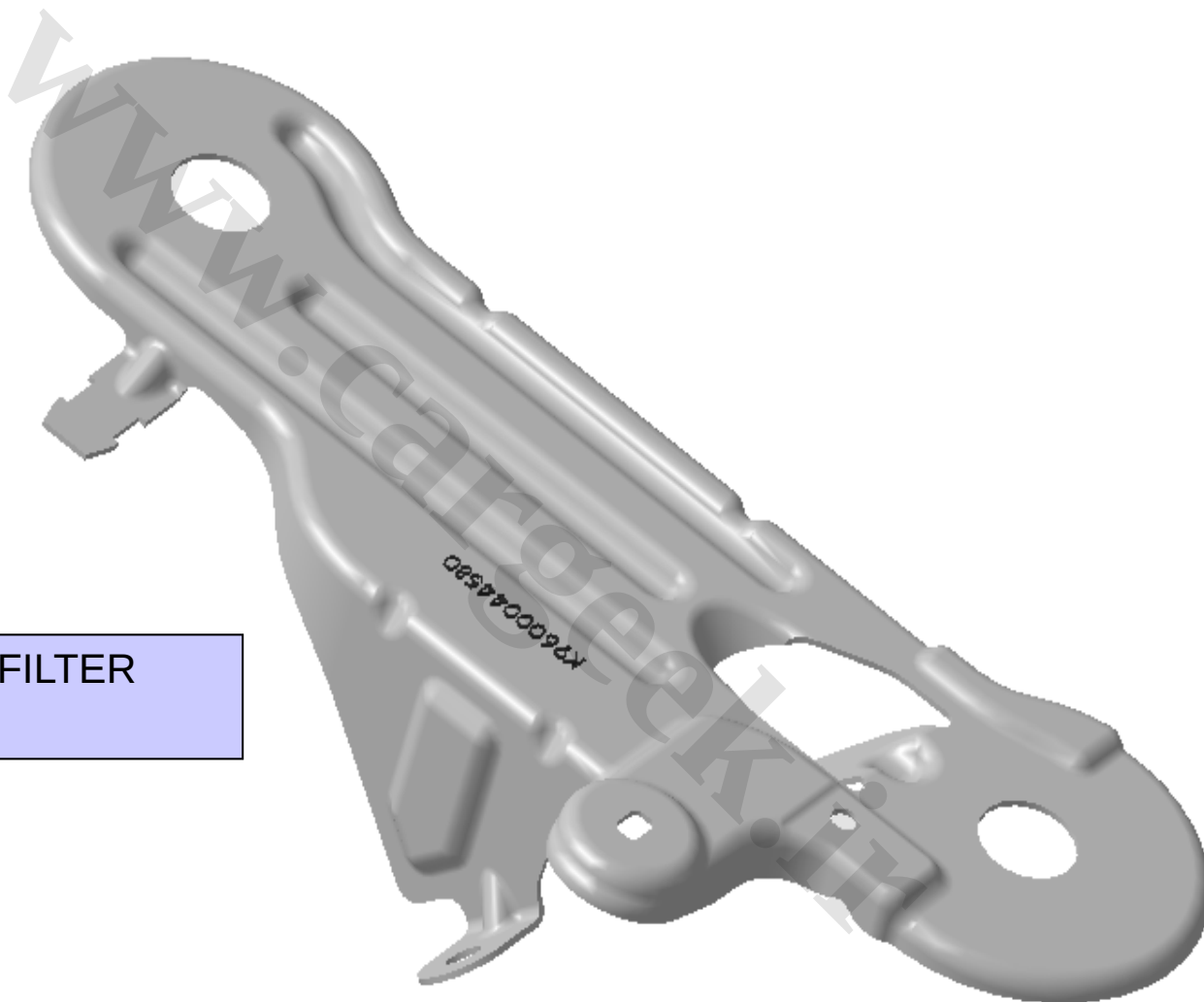


Air Filter Assay





BRACKET AIR FILTER BOX



BRACKET AIR FILTER
BOX
K9600044580



WATER_CIRCUIT





Water Circuit

www.CarGeek.ir

WATER HOSE FROM
THERMOSTAT TO CNG

REGULATOR K9600031380

WATER HOSE FROM
CNG REG. TO
RADIATOR OUTLET

K9600040680

HEATER UNIT OUTLET
WATER HOSE

K9600041480

Heater Unit Inlet Water
Hose from T-Connection
to Heater K9600036880

Heater Unit Inlet Water
Tube T-Connection

K9600036980

ASSY HEATER UNIT
INLET WATER HOSE

K9600028380

RADIATOR OUTLET
WATER HOSE

K9600028680

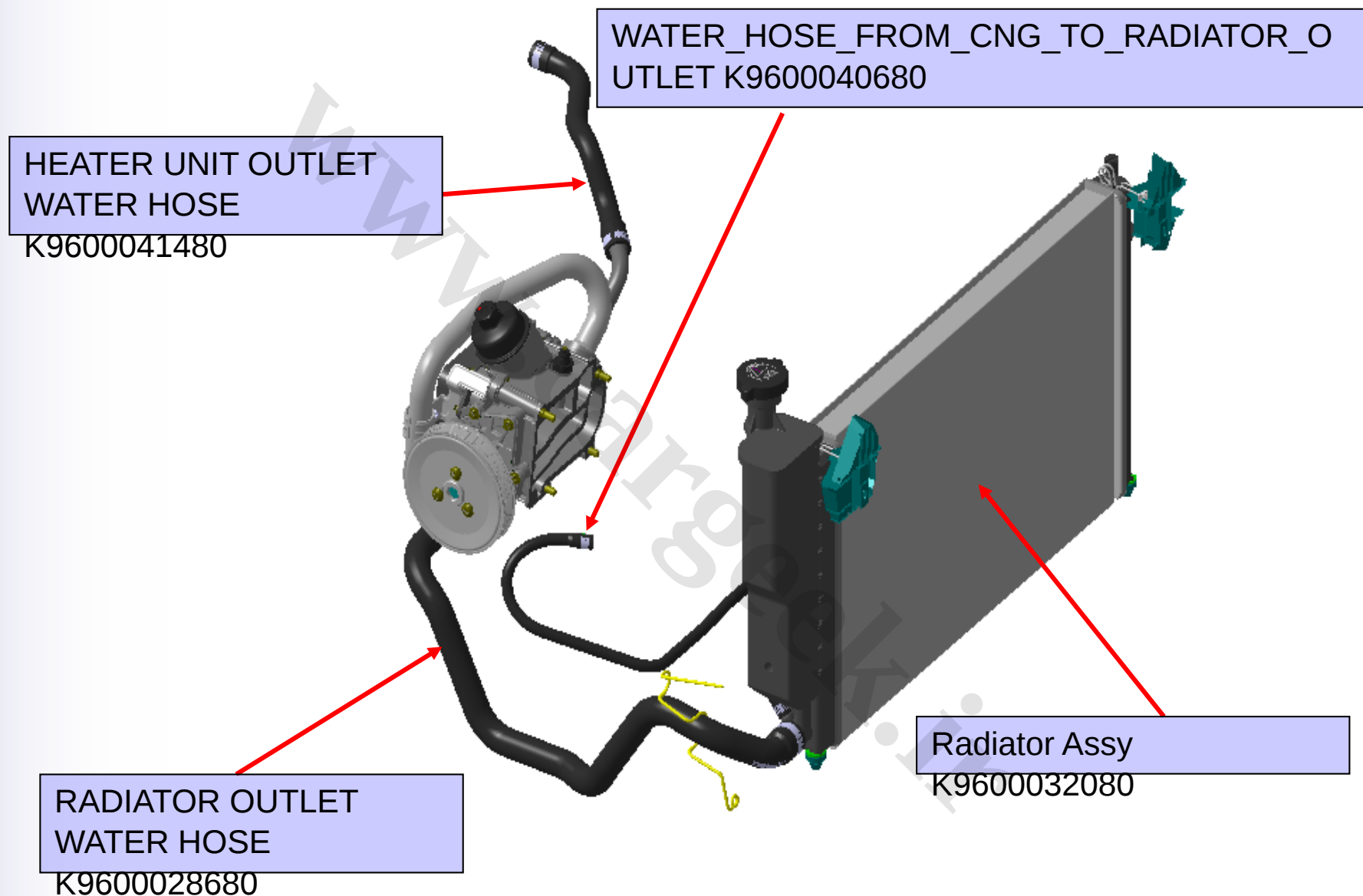
RADIATOR INLET
WATER HOSE

K9600028780



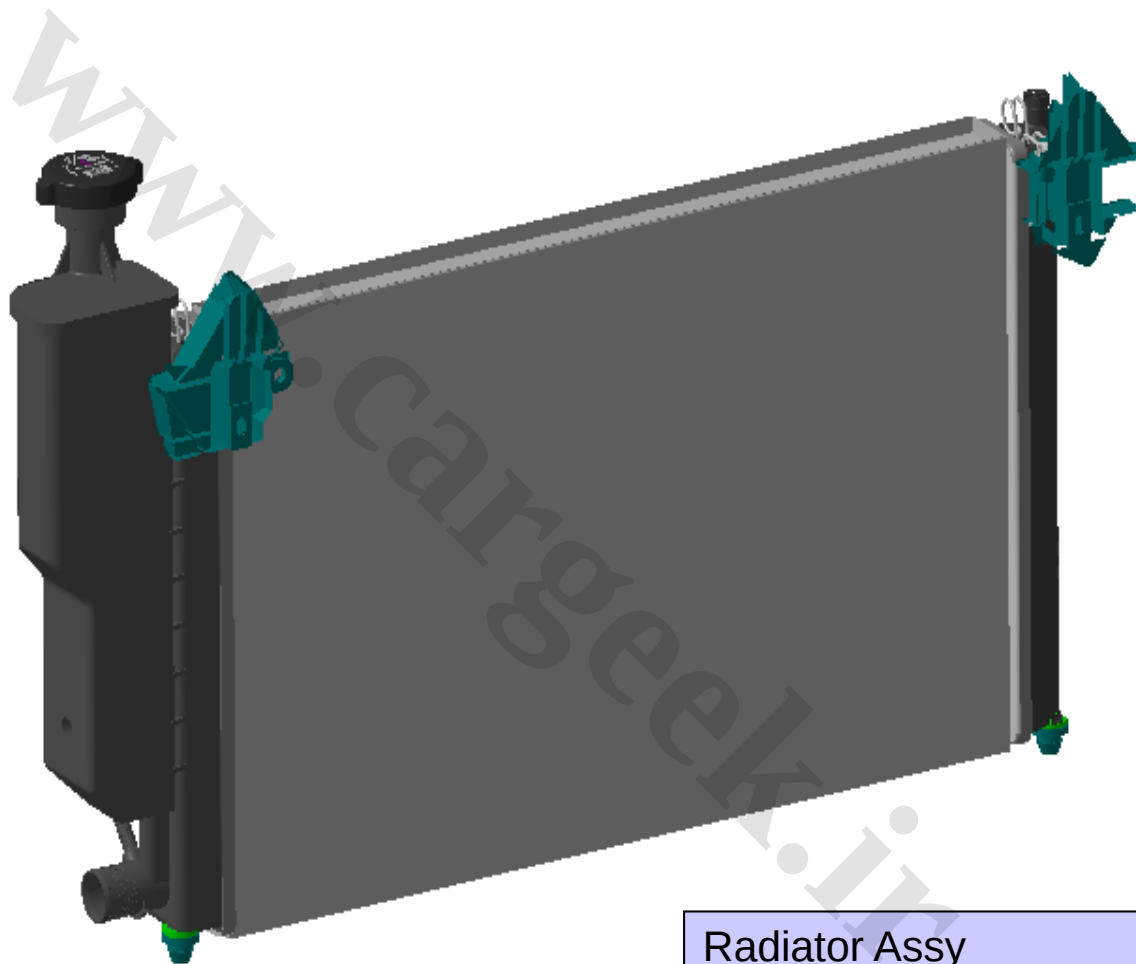
Water Circuit

www.CarGeek.ir





EF7-VEHICLE_RADIATOR



Radiator Assy

K9600032080

EF7-VEHICLE_AIR_CONDITIONING

MFC Condenser Assy with Quick
Connection K9600043380

SUCTION_DISCHARGE_P
IPE_COMPRESSOR_ASS
Y K9600046280

SUCTION_LIQUID-PIPES-
EVAPORATOR
K9600037580

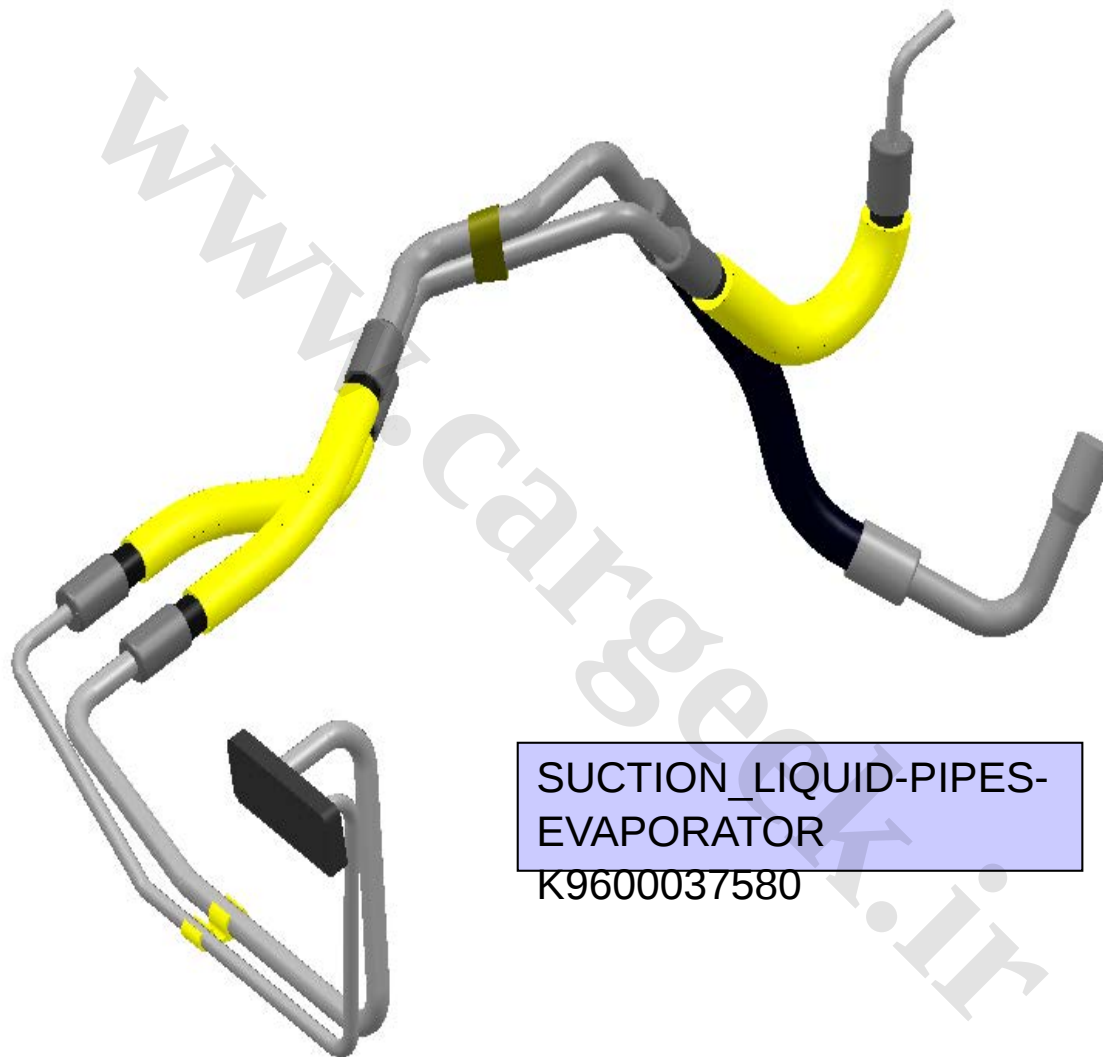
AC_PIPE_RETAINER_O
N_ACCESSORY_BRAC
KET K9600046380

AC-
PIPE_RETAINER
K9600043780

Air Condition
Compressor
K9600031980



EF7-VEHICLE AIR CONDITIONING

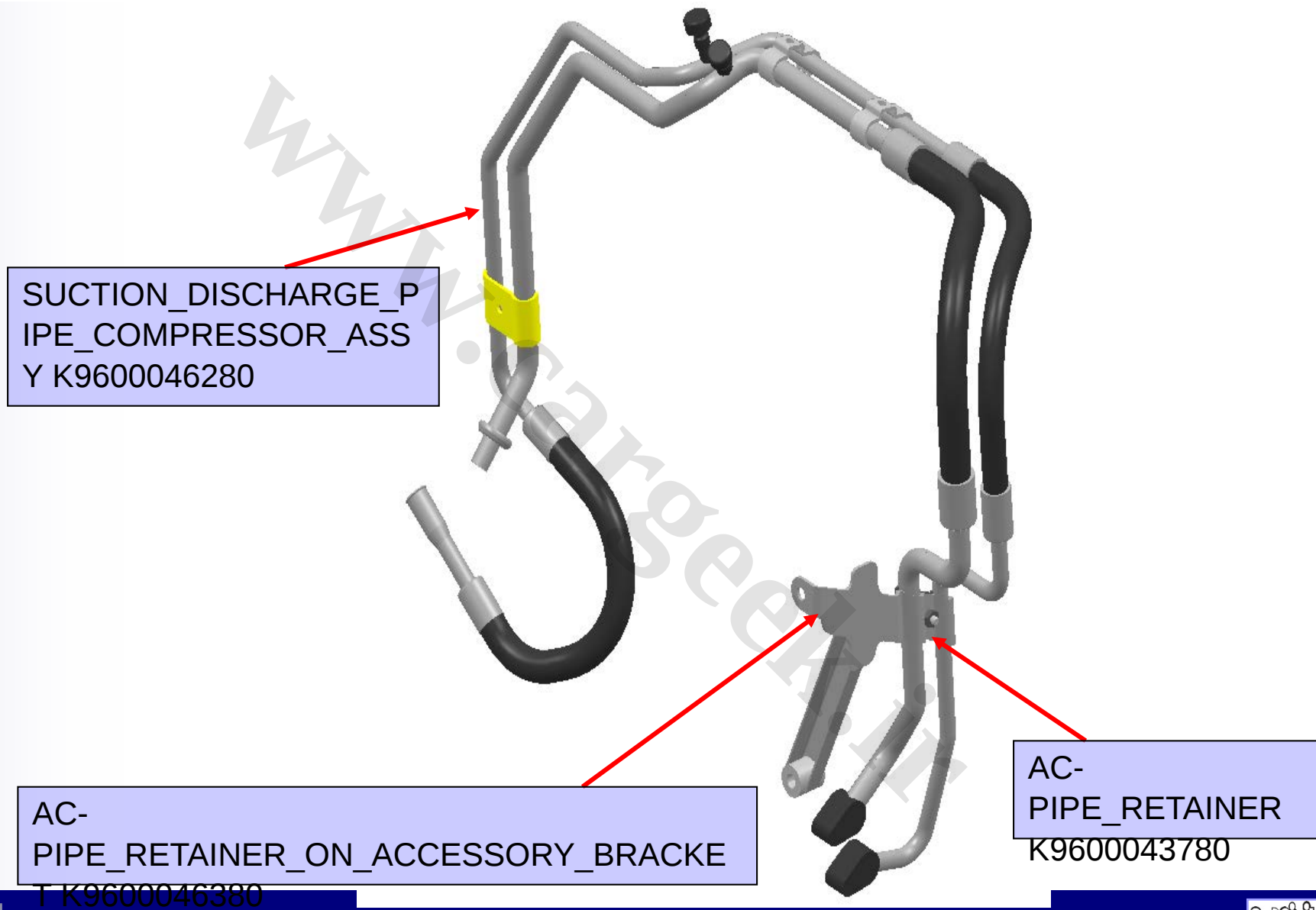


SUCTION_LIQUID-PIPES-
EVAPORATOR

K9600037580

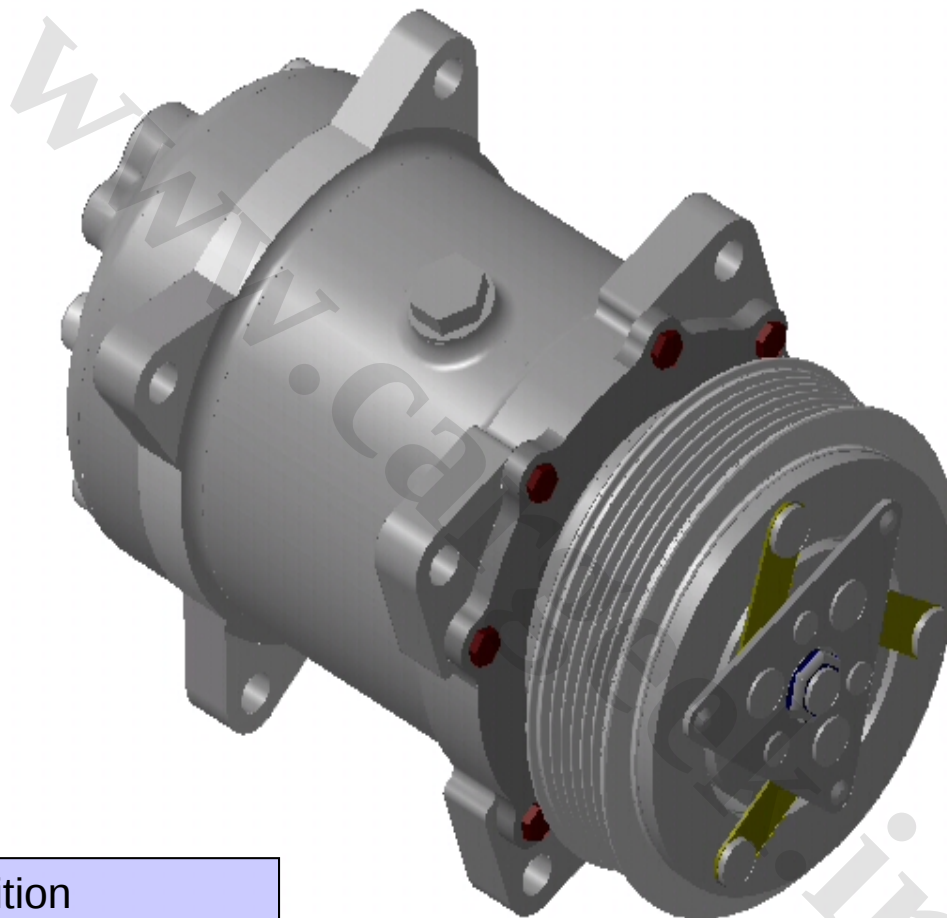


EF7-VEHICLE_AIR_CONDITIONING





Air Condition Compressor



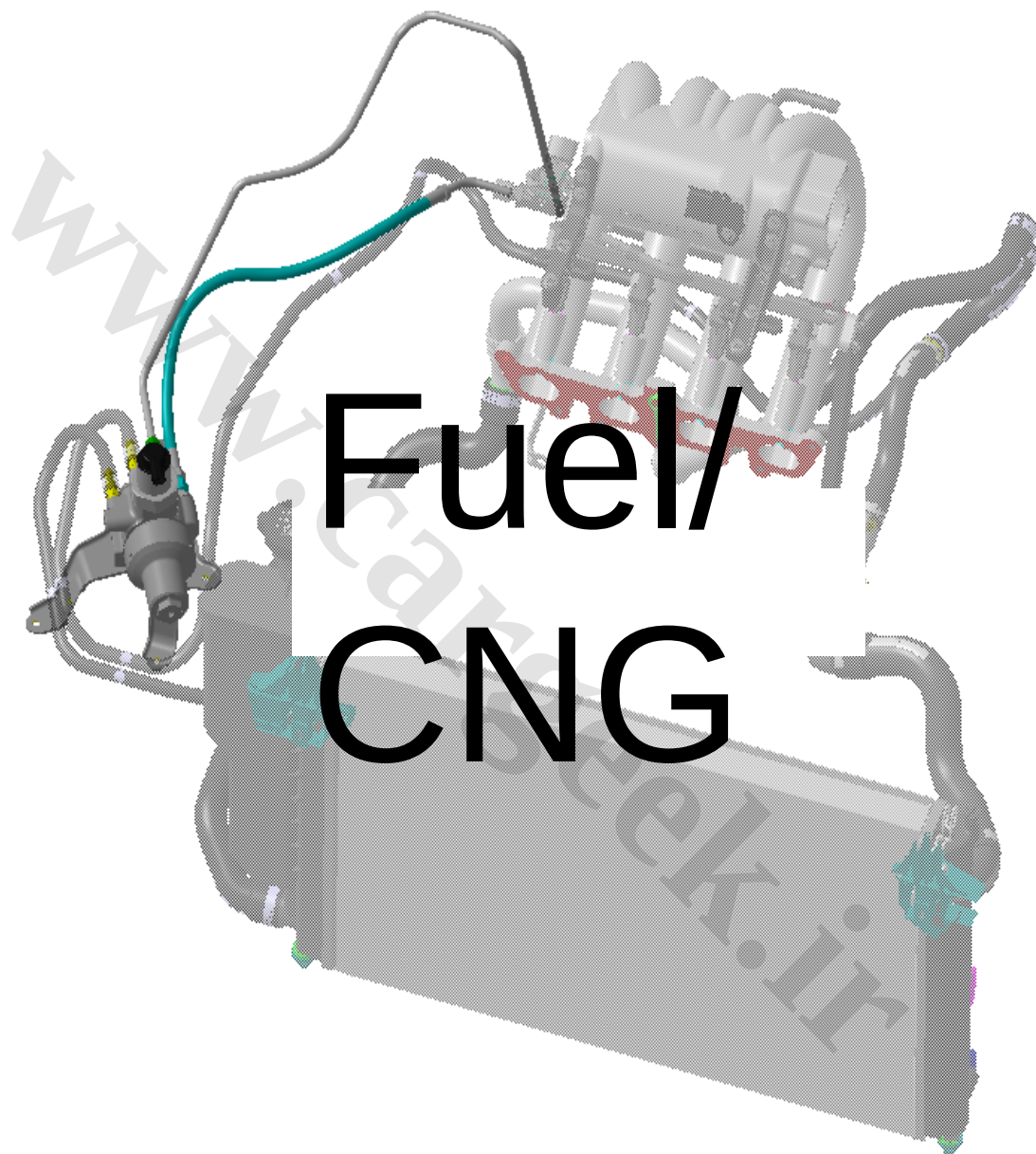
Air Condition
Compressor
K9600031980

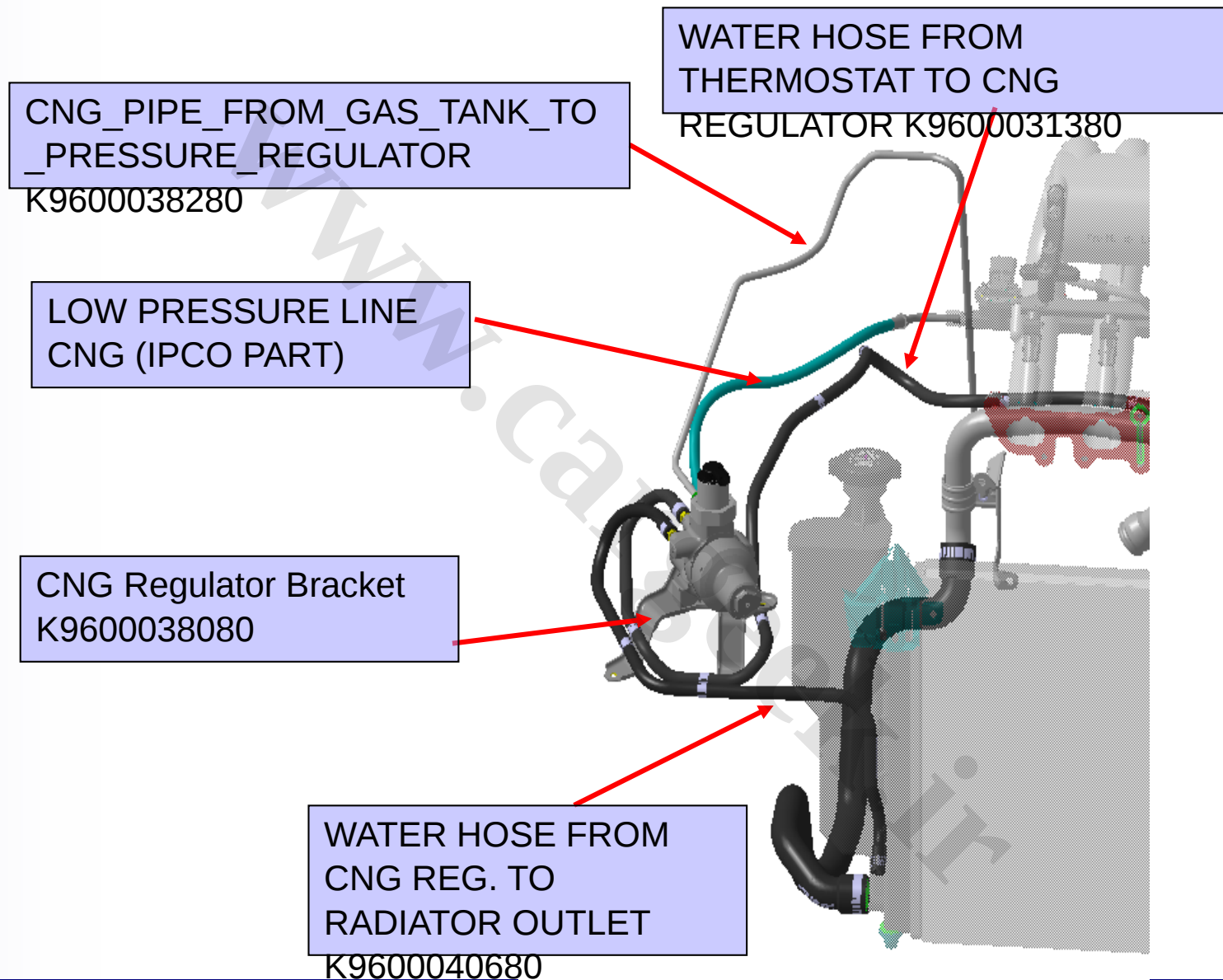


MFC Condenser Assy with Quick Connection



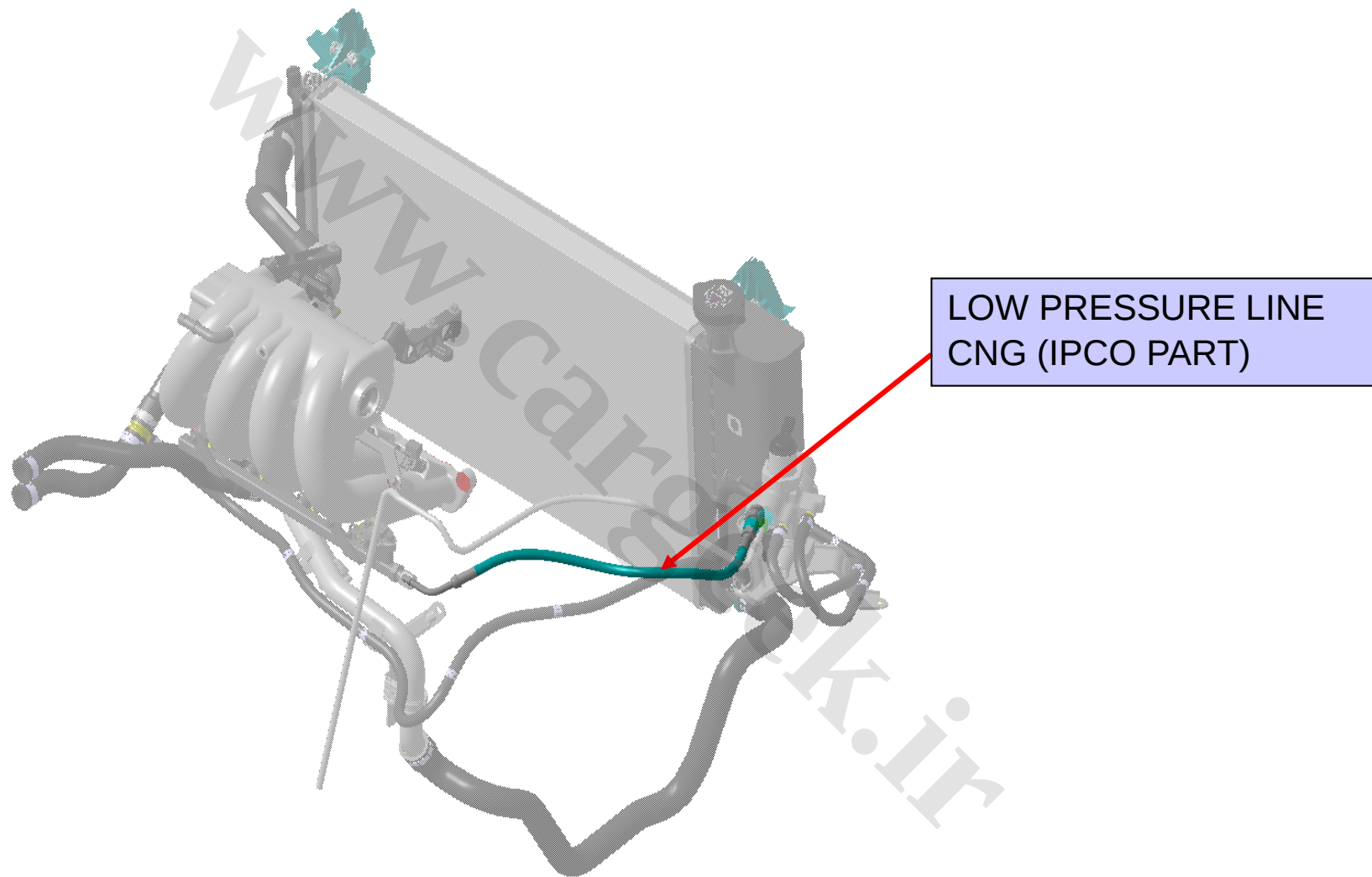
MFC Condenser Assy with Quick
Connection K9600043380





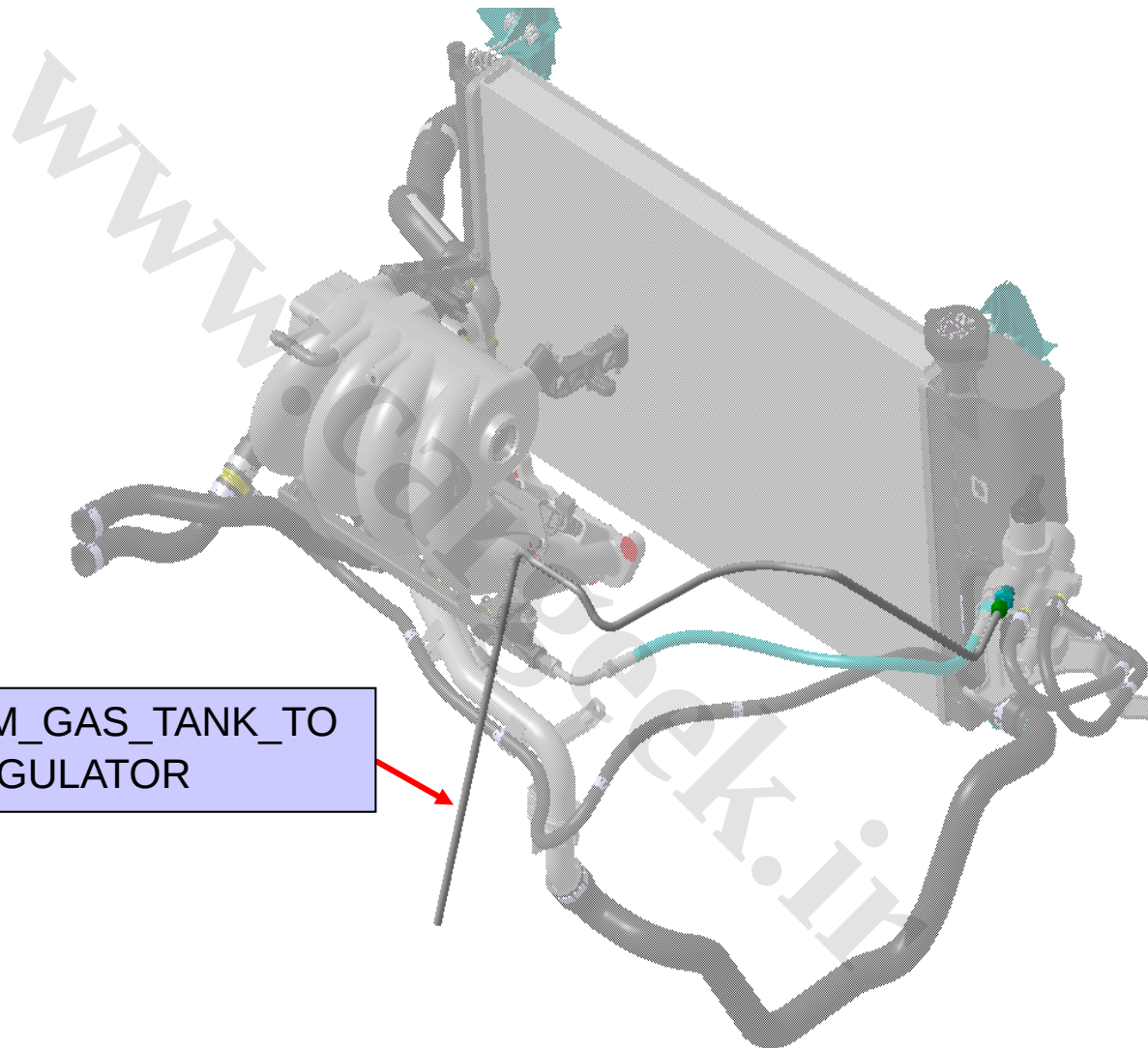


LOW PRESSURE LINE CNG





CNG_PIPE_FROM_GAS_TANK_TO_PRESSURE_REGULATOR

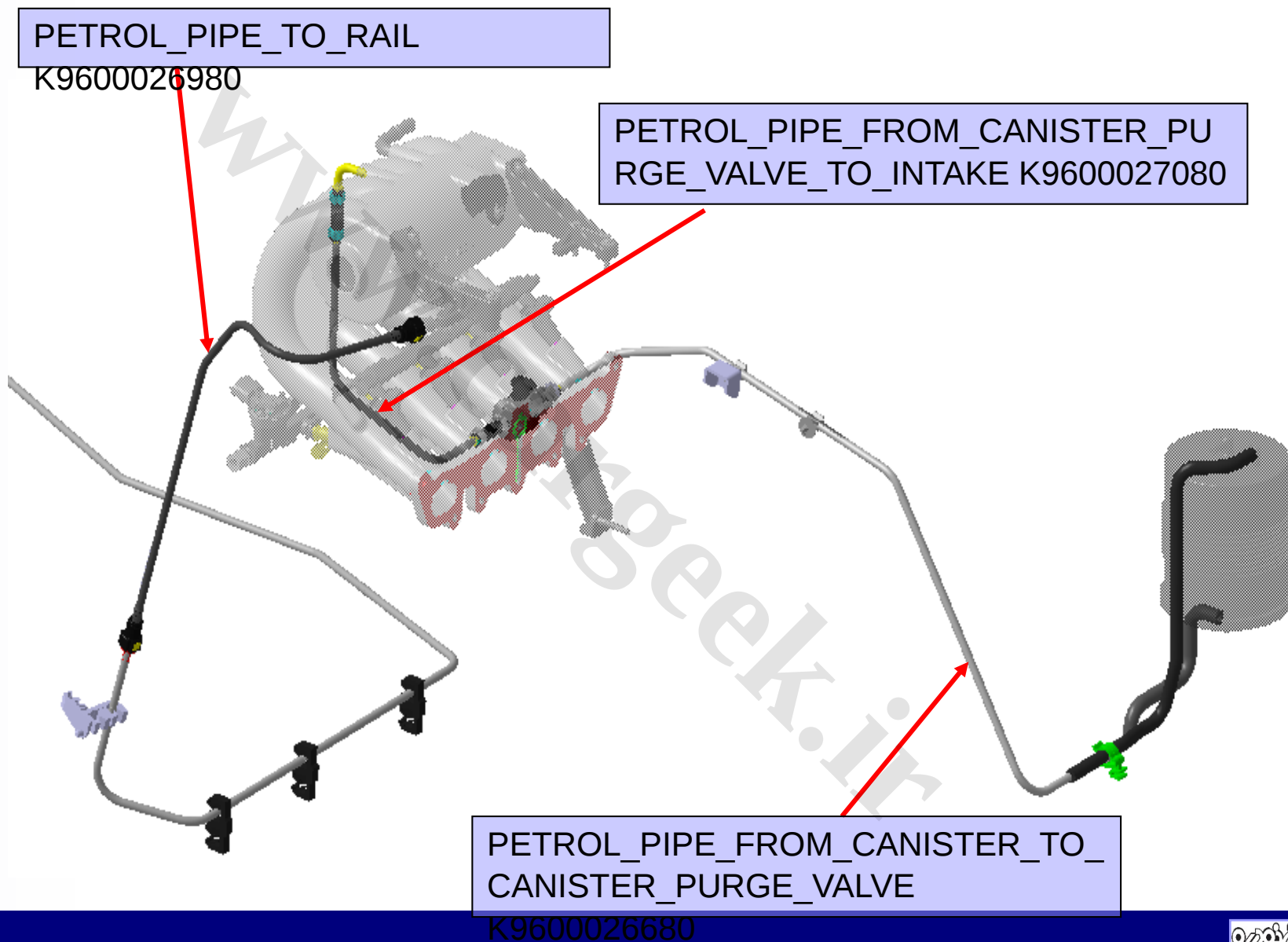


CNG_PIPE_FROM_GAS_TANK_TO
_PRESSURE_REGULATOR

K9600038280

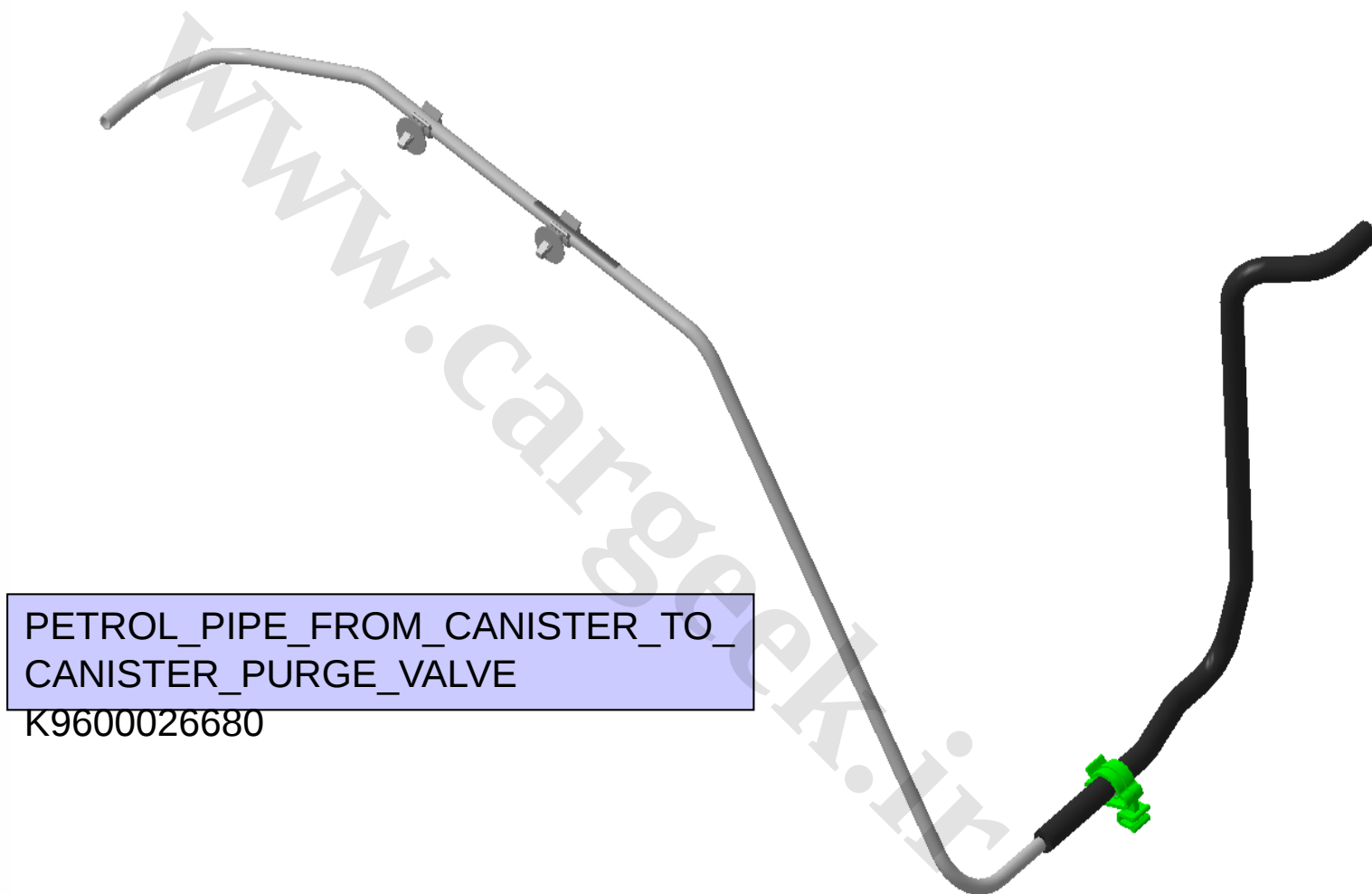


Fuel system



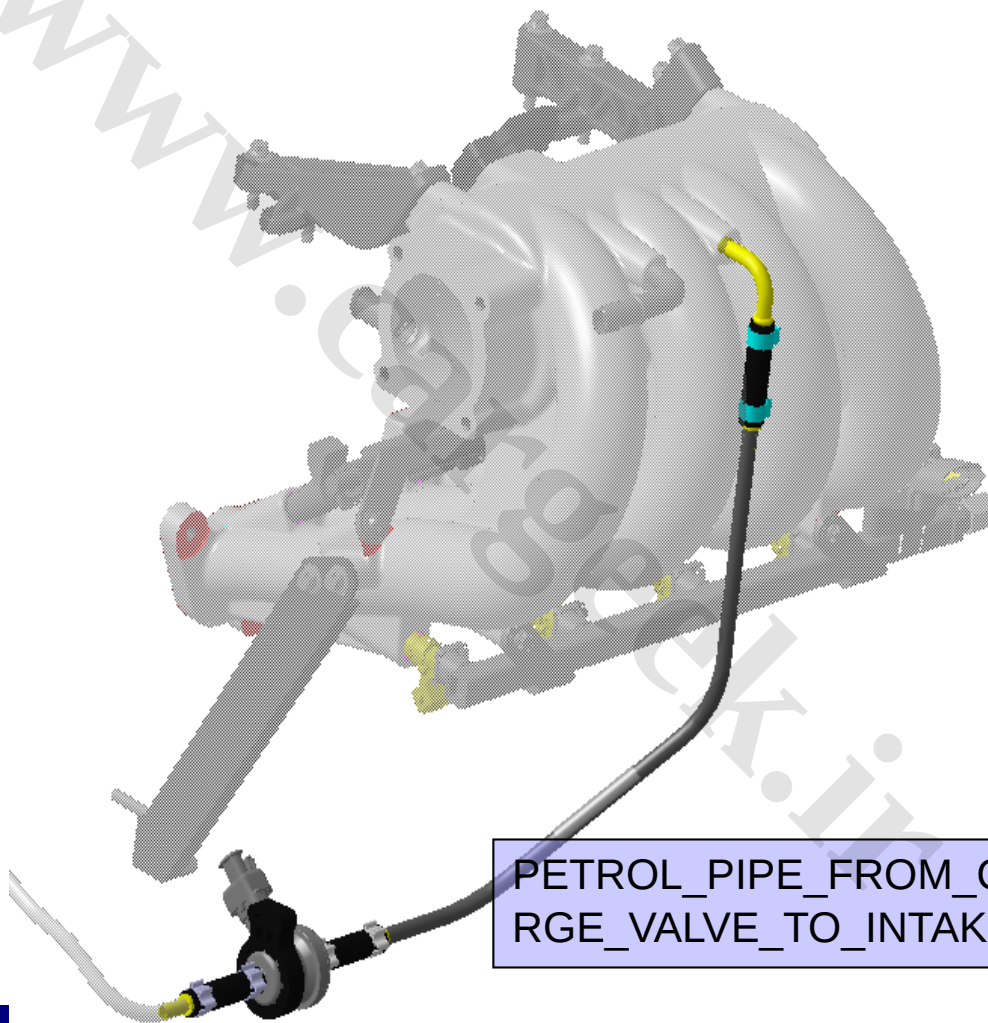


PETROL_PIPE_FROM_CANISTER_TO_CANISTER_PURGE_VALVE





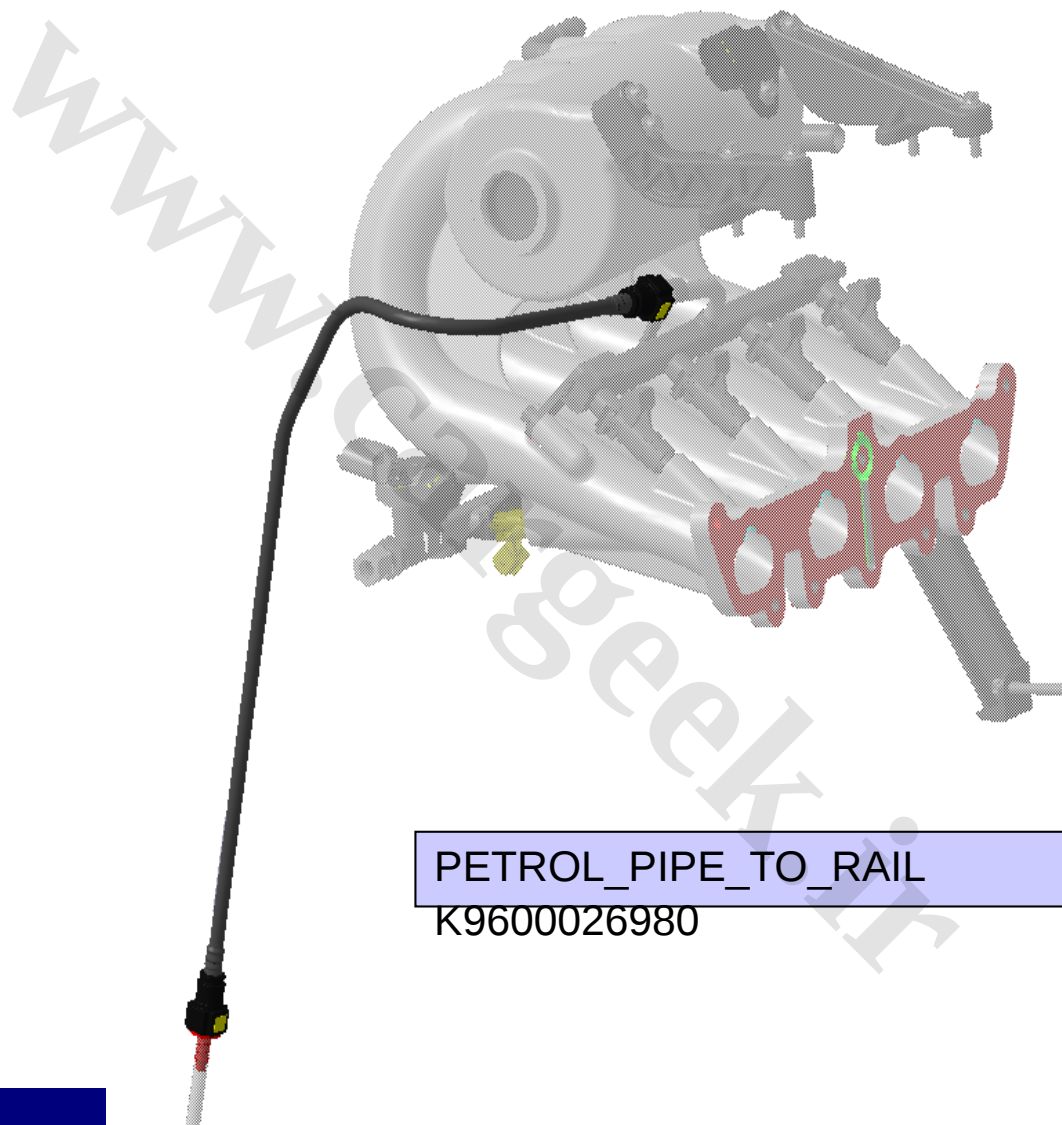
PETROL_PIPE_FROM_CANISTER_PURGE_VALVE_TO_INTAKE



PETROL_PIPE_FROM_CANISTER_PURGE_VALVE_TO_INTAKE K9600027080



PETROL_PIPE_TO_RAIL



PETROL_PIPE_TO_RAIL

K9600026980