

An Equation for Engine



Team: Extreme Speed Motorsports

Vehicle: Honda Performance Development (HPD) ARX-04b Coupe

Race Series: TUDOR United SportsCar Championship and FIA World Endurance Championship Series

Current Turbo of choice:
Twin EFR-6258s



Team: Jager Racing/Yimi Sport Tuning

Driver: Mark Jager

Vehicle: 2006 Subaru Sti

Racing Venue: Global Time Attack

Current Turbo of choice: EFR-8374



Boosting Excellence

So, you're probably wondering, "What does a new product line of high-performance turbochargers have to do with commercial applications?" The answer lies in the fact that commercial/industrial turbo products have extreme requirements for durability, reliability, and aerodynamic performance. Since modern passenger car applications use turbos smaller than 55mm in turbine wheel diameter, it's the aerodynamic development from the commercial side of the business (i.e. everything larger) that feeds into the perfor-

mance enthusiast's desire for big power production. Boost pressures of 45-50 psi (3 bar+) are the norm, not the exception. Also required is resistance to abusive thrust loads, high vibrations, and robustness for a wide range of lubrication conditions. Additionally, our commercial product validation standards are among the highest in the engine boosting industry – all good things that also benefit the performance enthusiast or racer. Those are the commonalities, but there are also differences. Unlike commercial applications,

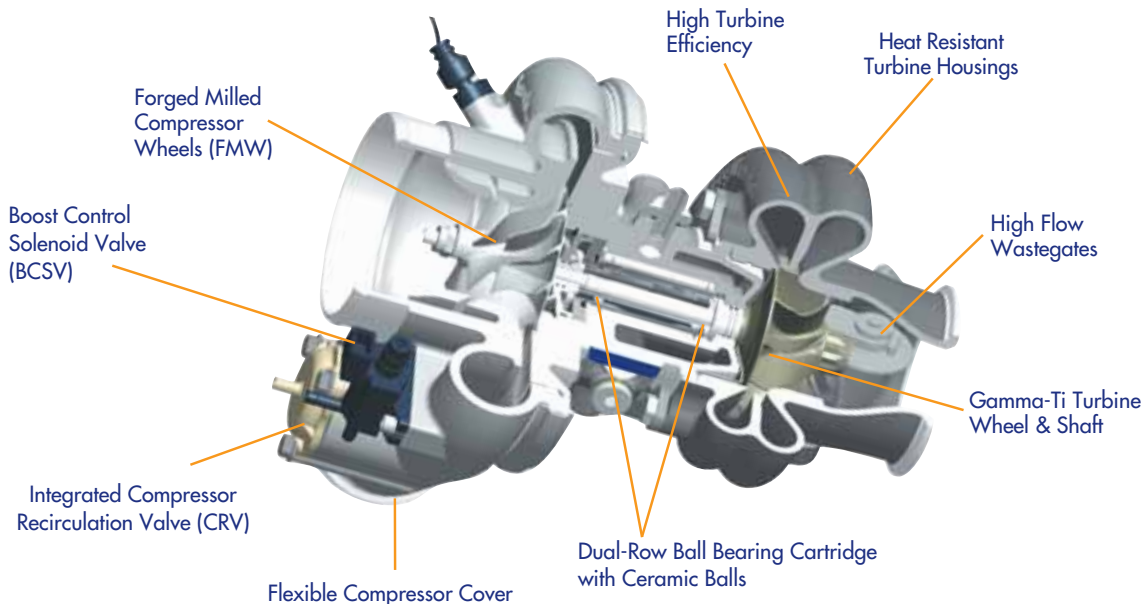
high performance users want lightweight, compact, versatile designs. They also deliver the turbocharger very high exhaust gas temperatures with high expectations for fast response. Cosmetic appearance is also valued as are integrated features that aid the installation process and remove the need for other turbo related accessories. Those performance and packaging requirements are quite common among the modern aftermarket passenger car turbo customer.

So, what happens when you combine all of those necessities and put them in front of passionate car people looking to advance the pace of aftermarket boosting solutions? You discover that something new is required to meet the demands of the next generation turbo consumer. There is a fierce desire to take engine boosting to the next level. It was this need for big power that led to EFR.



EFR 58mm and 80mm Gamma-Ti turbine wheels

E F R P R O D U C T F E A T U R E S E T

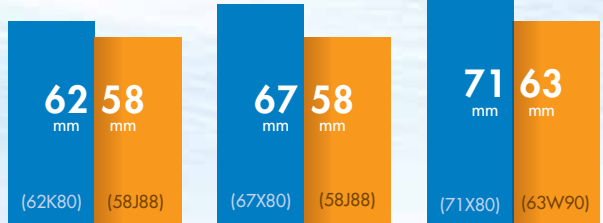




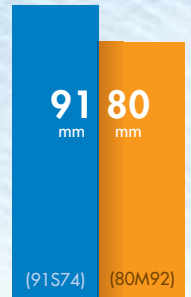
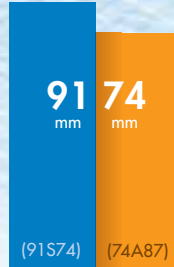
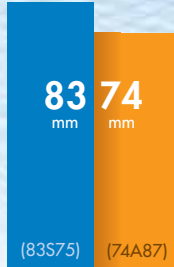
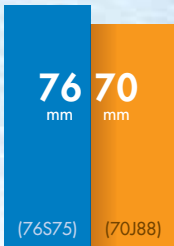
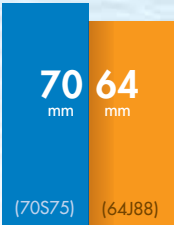
ROTOR GROUPS

COMPRESSOR

TURBINE



Frame size ▶		B1	B1	B1
		450hp	500hp	550hp
Super-Core, Aluminum		11587105002	11587105001	11637105000
Super-Core, Iron		179140	179375	
	A-TYPE B1 Frame Size 0.64 A/R, T25 Flange Single Scroll Wastegated	179150 11581009006	179388 11581009006	
	F-TYPE B1 Frame Size 0.85 A/R, T25 Flange Single Scroll Wastegated		11589880034 11581008000	11639880005 11631008000
	F(v)-TYPE B1 Frame Size 0.85 A/R, V-Band Inlet Single Scroll Wastegated		11589880035 11581008001	11639880006 11631008001
	G-TYPE B1 Frame Size 0.80 A/R, T4 Flange Twin Scroll Wastegated	11589880036 11581008002	11589880037 11581008002	11639880002 11631008002
	I-TYPE B1 Frame Size 0.85 A/R, V-Band Inlet Single Scroll Non-Wastegated		sold as turbine housing kit 11581008003	sold as turbine housing kit 11631008003



	B2	B2	B2	B2	B2
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	550hp	650hp	750hp	1000hp	1000hp
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	12709097006	12769097001	12839097000	12919097000	12919097001
	179354	179350	179257	12919097002	179356



B-TYPE
 B2 Frame Size
 0.83 A/R, T3 Flange
 Single Scroll
 Wastegated

179355
 12641008006

179351
 12701008014

179258
 12741008000

179358
 12801008002



C-TYPE
 B2 Frame Size
 0.92 A/R, T4 Flange
 Twin Scroll
 Wastegated

179389
 12641008007

179390
 12701008016

179357
 12741008001

12809880000
 12801019009



D-TYPE
 B2 Frame Size
 1.05 A/R, T4 Flange
 Twin Scroll
 Non-Wastegated

179391
 12641019016

179392
 12701019047

179393
 12741019002

179394
 12801019001



H-TYPE
 B2 Frame Size
 1.45 A/R, T4 Flange
 Twin Scroll
 Non-Wastegated

sold as turbine
 housing kit
 12741008003

sold as turbine
 housing kit
 12801008006

K E Y

Turbo Assembly
 Turbine Housing Assembly

EFR 6258-A

EFR 6258-G

225 - 450 HP Turbo



F E A T U R E S

- Gamma-Ti turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

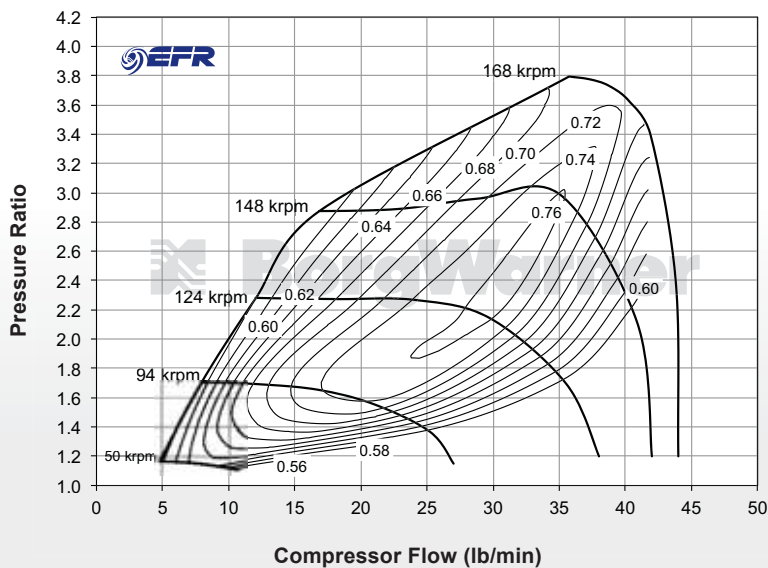
Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
6258-A	179150	Iron	179140	11581009006	0.64	T25	Single	Yes
6258-G	11589880036	Aluminum*	11587105002	11581008002	0.80	T4	Twin	Yes
6258	-	Aluminum*	11587105002	-	-	-	-	-
6258	-	Iron	179140	-	-	-	-	-

Turbo Frame Size	B1
Comp. Wheel Inducer Dia. (mm)	49
Comp. Wheel Outer Dia. (mm)	62
Turbine Wheel Outer Dia. (mm)	58

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP Applicable to all 6258 Units



OPTIONAL HARDWARE

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets



Compressor Cover with 90° Outlet

11621003002

EFR 6758-A**EFR 6758-F****EFR 6758-F(v)****EFR 6758-G**

250 - 500 HP Turbo

**F E A T U R E S**

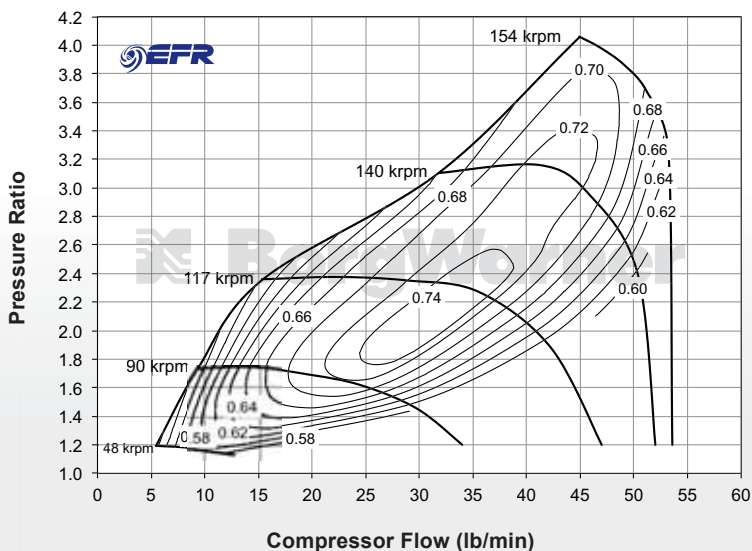
- Gamma-Ti turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
6758-A	179388	Iron	179375	11581009006	0.64	T25	Single	Yes
6758-F	11589880034	Aluminum*	11587105001	11581008000	0.85	T25	Single	Yes
6758-F(v)	11589880035	Aluminum*	11587105001	11581008001	0.85	V-Band	Single	Yes
6758-G	11589880037	Aluminum*	11587105001	11581008002	0.80	T4	Twin	Yes
6758-I	-	-	-	11581008003	0.85	V-Band	Single	No
6758	-	Aluminum*	11587105001	-	-	-	-	-
6758	-	Iron	179375	-	-	-	-	-

Turbo Frame Size	B1
Comp. Wheel Inducer Dia. (mm)	54
Comp. Wheel Outer Dia. (mm)	67
Turbine Wheel Outer Dia. (mm)	58

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP Applicable to all 6758 Units**OPTIONAL HARDWARE**

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets



Compressor Cover with 90° Outlet
11671003001

I- Type Turbine Housing
11581008003

EFR 7163-F

EFR 7163-F(v)

EFR 7163-G

300 - 550 HP Turbo



F E A T U R E S

- Gamma-Ti mixed flow turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

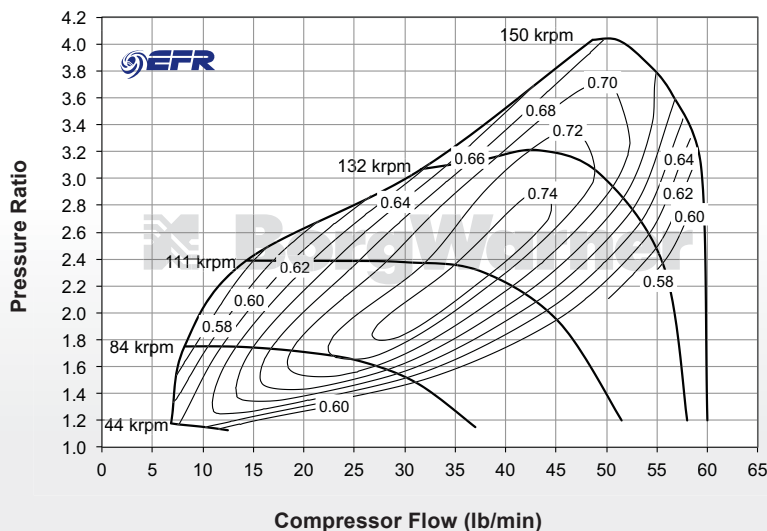
Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
7163-F	11639880005	Aluminum*	11637105000	11631008000	0.85	T25	Single	Yes
7163-F(v)	11639880006	Aluminum*	11637105000	11631008001	0.85	V-Band	Single	Yes
7163-G	11639880002	Aluminum*	11637105000	11631008002	0.80	T4	Twin	Yes
7163-I	-	-	-	11631008003	0.85	V-Band	Single	No
7163	-	Aluminum*	11637105000	-	-	-	-	-

Turbo Frame Size	B1
Comp. Wheel Inducer Dia. (mm)	57
Comp. Wheel Outer Dia. (mm)	71
Turbine Wheel Outer Dia. (mm)	63

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP Applicable to all 7163 Units



OPTIONAL HARDWARE

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets



Compressor Cover with 90° Outlet	I-Type Turbine Housing
11711003001	11631008003

EFR 7064-B

EFR 7064-C

EFR 7064-D

300 - 550 HP Turbo



F E A T U R E S

- Gamma-Ti turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

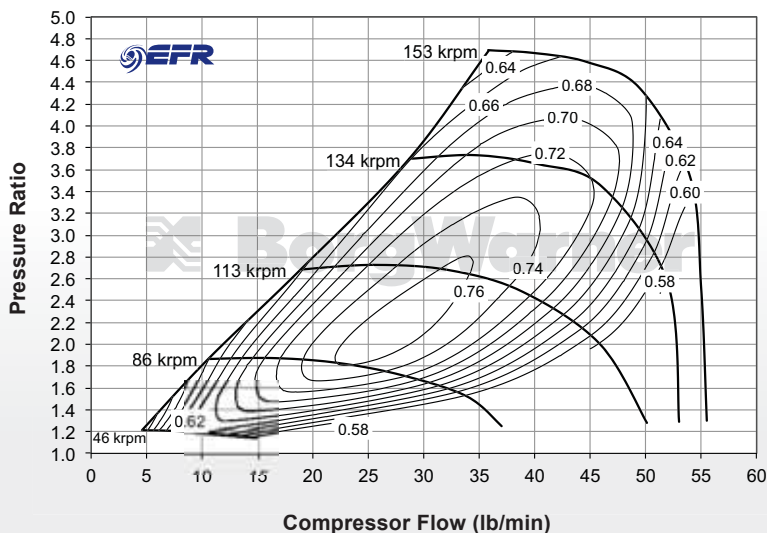
Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
7064-B	179355	Iron	179354	12641008006	0.83	T3	Single	Yes
7064-C	179389	Iron	179354	12641008007	0.92	T4	Twin	Yes
7064-D	179391	Iron	179354	12641019016	1.05	T4	Twin	No
7064	-	Aluminum*	12709097006	-	-	-	-	-
7064	-	Iron	179354	-	-	-	-	-

Turbo Frame Size	B2
Comp. Wheel Inducer Dia. (mm)	52
Comp. Wheel Outer Dia. (mm)	70
Turbine Wheel Outer Dia. (mm)	64

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP Applicable to all 7064 Units



OPTIONAL HARDWARE

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets

EFR 7670-B

EFR 7670-C

EFR 7670-D

375 - 650 HP Turbo



F E A T U R E S

- Gamma-Ti turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

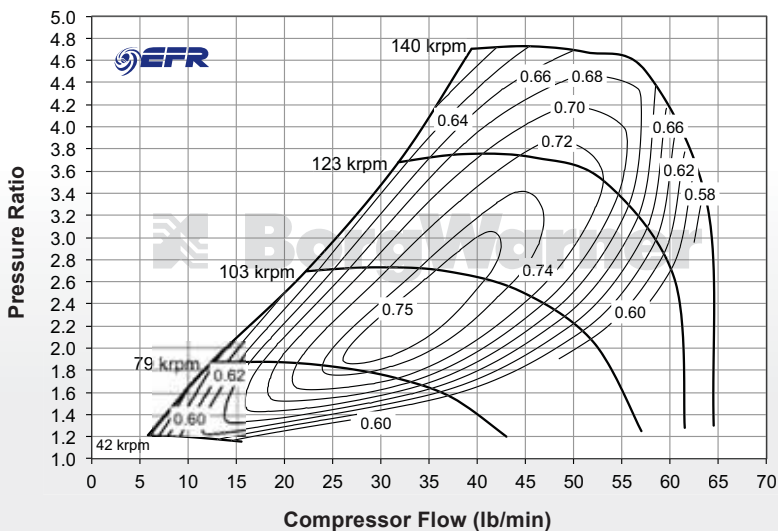
Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
7670-B	179351	Iron	179350	12701008014	0.83	T3	Single	Yes
7670-C	179390	Iron	179350	12701008016	0.92	T4	Twin	Yes
7670-D	179392	Iron	179350	12701019047	1.05	T4	Twin	No
7670	-	Aluminum*	12769097001	-	-	-	-	-
7670	-	Iron	179350	-	-	-	-	-

Turbo Frame Size	B2
Comp. Wheel Inducer Dia. (mm)	57
Comp. Wheel Outer Dia. (mm)	76
Turbine Wheel Outer Dia. (mm)	70

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP Applicable to all 7670 Units



OPTIONAL HARDWARE

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets

EFR 8374-B

EFR 8374-C

EFR 8374-D

475 - 750 HP Turbo



F E A T U R E S

- Gamma-Ti turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

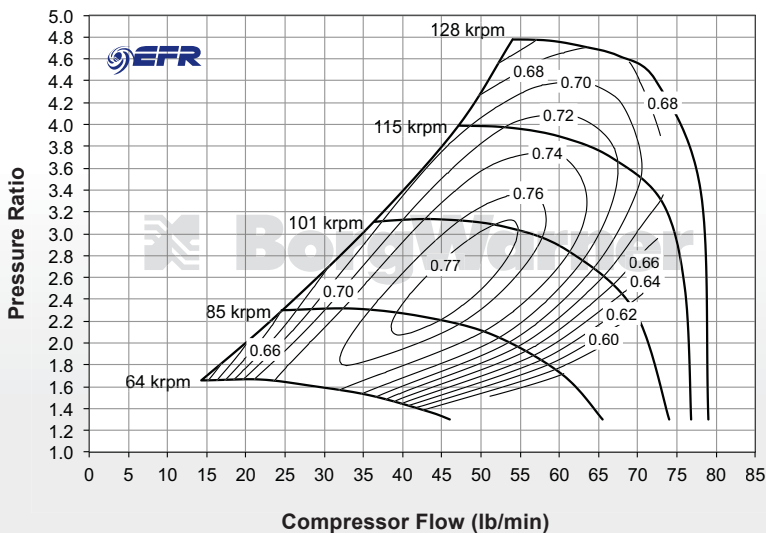
Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
8374-B	179258	Iron	179257	12741008000	0.83	T3	Single	Yes
8374-C	179357	Iron	179257	12741008001	0.92	T4	Twin	Yes
8374-D	179393	Iron	179257	12741019002	1.05	T4	Twin	No
8374-H	-	-	-	12741008003	1.45	T4	Twin	No
8374	-	Aluminum*	12839097000	-	-	-	-	-
8374	-	Iron	179257	-	-	-	-	-

Turbo Frame Size	B2
Comp. Wheel Inducer Dia. (mm)	62
Comp. Wheel Outer Dia. (mm)	83
Turbine Wheel Outer Dia. (mm)	74

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP Applicable to all 8374 Units



OPTIONAL HARDWARE

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets



H-Type Turbine Housing

12741008003

EFR 9174 Aluminum Super-Core

EFR 9174 Iron Super-Core

600 - 1000 HP Turbo



F E A T U R E S

- Gamma-Ti turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

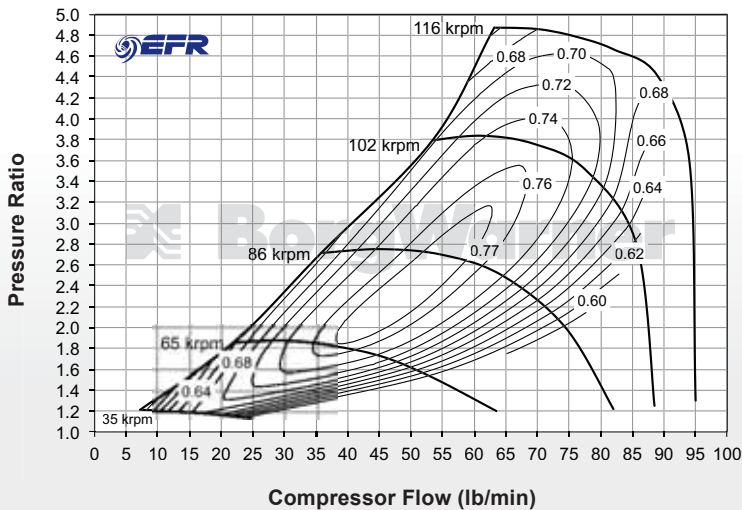
Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
9174	–	Aluminum*	12919097000	–	–	–	–	–
9174	–	Iron	12919097002	–	–	–	–	–

Turbo Frame Size	B2
Comp. Wheel Inducer Dia. (mm)	68
Comp. Wheel Outer Dia. (mm)	91
Turbine Wheel Outer Dia. (mm)	74

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP Applicable to all 9174 and 9180 Units



OPTIONAL HARDWARE

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets

EFR 9180-B

EFR 9180-C

EFR 9180-D

600 - 1000 HP Turbo



F E A T U R E S

- Gamma-Ti turbine wheel
- Integrated Compressor Recirculation Valve (CRV)
- Dual ceramic ball bearing assembly with metal cage
- Boost Control Solenoid Valve (BCSV)
- Forged Milled Compressor Wheel (FMW)
- Extended tip technology
- Compressor cover with speed sensor mounting provisions

Product - (TYPE)	Complete Turbo	Bearing Housing Material	Super-Core**	TURBINE HOUSING				
				Assembly	A/R	Inlet	Scroll	Waste-gate
9180-B	179358	Iron	179356	12801008002	0.83	T3	Single	Yes
9180-C	12809880000	Iron	179356	12801019009	0.92	T4	Twin	Yes
9180-D	179394	Iron	179356	12801019001	1.05	T4	Twin	No
9180-H	—	—	—	12801008006	1.45	T4	Twin	No
9180	—	Aluminum*	12919097001	—	—	—	—	—
9180	—	Iron	179356	—	—	—	—	—

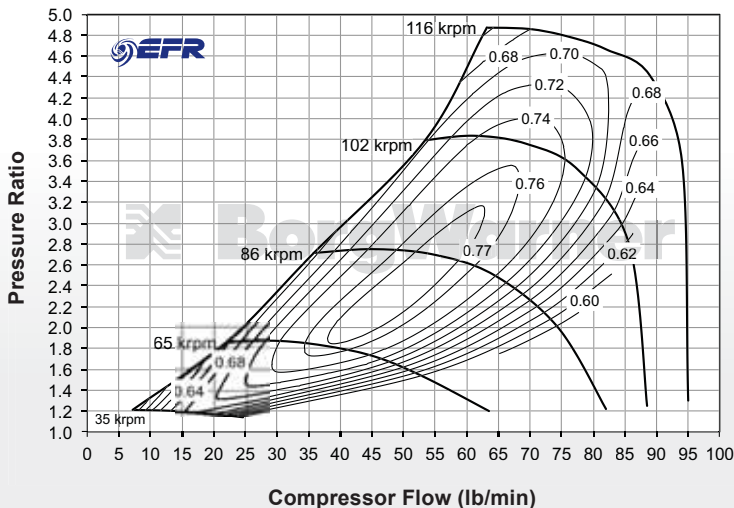
Turbo Frame Size	B2
Comp. Wheel Inducer Dia. (mm)	68
Comp. Wheel Outer Dia. (mm)	91
Turbine Wheel Outer Dia. (mm)	80

*Aluminum bearing housings require cooling

**The following components are not included as part of the Super-Core: Turbine Housing, Clamp Plate Hardware, Wastegate, and Actuator

COMPRESSOR MAP

Applicable to all 9174 and 9180 Units



OPTIONAL HARDWARE

See page 33 for: Speed Sensor, Turbine Gaskets & V-Bands, Oil Drain Gasket & Fitting, Actuators & Brackets



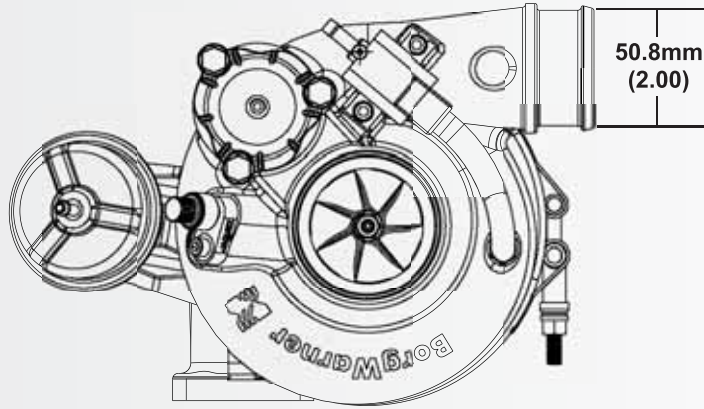
H-Type Turbine Housing

12801008006

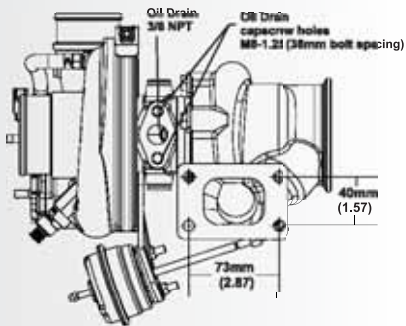
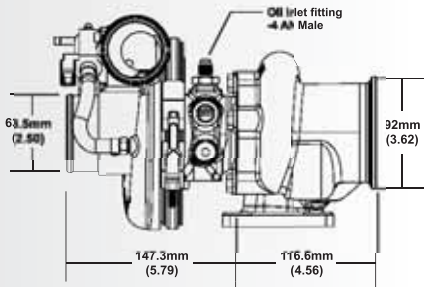
Turbo Frame Dimensions

For all 6258 / 6758 / 7163 EFR models.

B1 FRAME SIZE

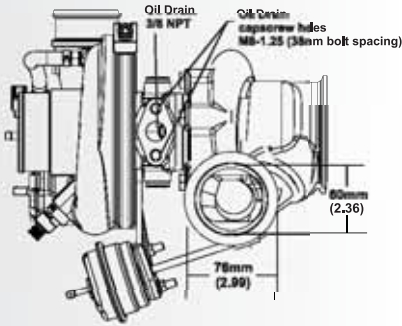
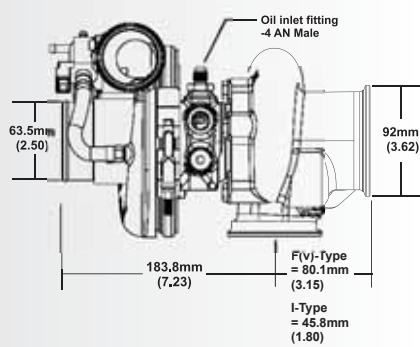


A & F - TYPE

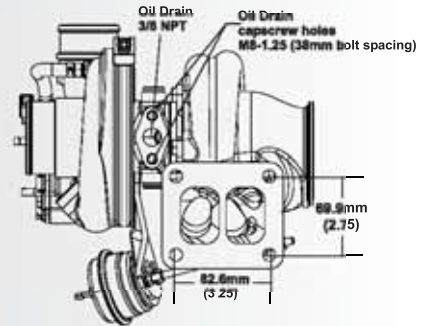
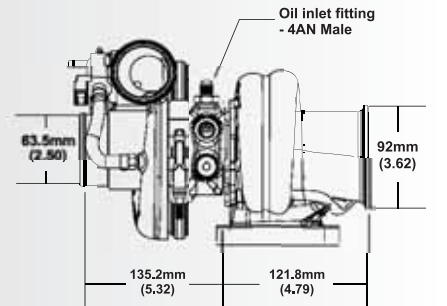


F (V) & I - TYPE

Note: I-type is not wastegated



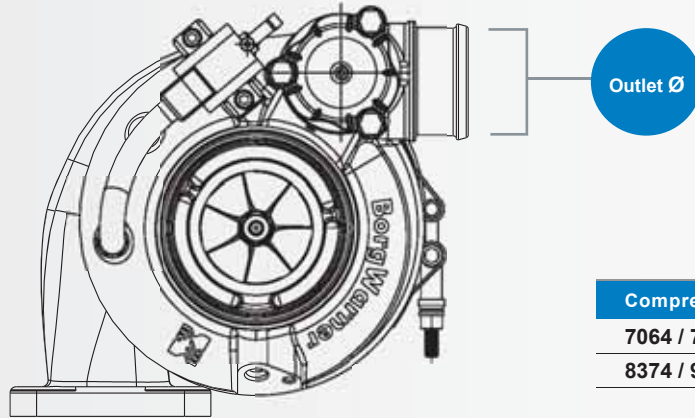
G - TYPE



Turbo Frame Dimensions

For all 7064 / 7670 / 8374 / 9174 and 9180 EFR models.

B2 FRAME SIZE

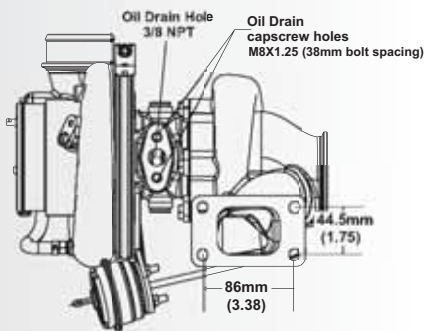
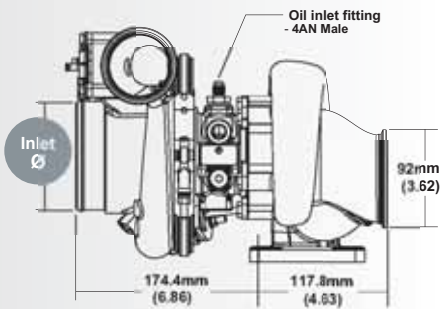


Compressor Outlet Ø

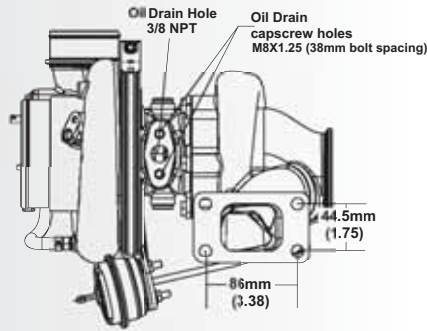
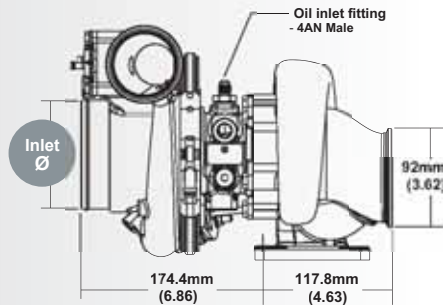
7064 / 7670 = 50.8mm (2.00)

8374 / 9174 / 9180 = 63.5mm (2.50)

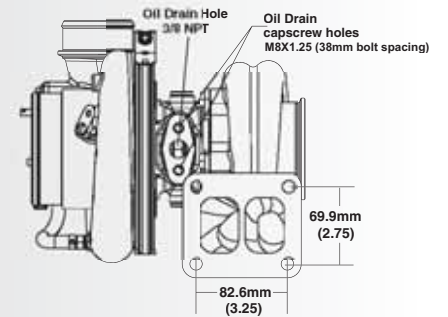
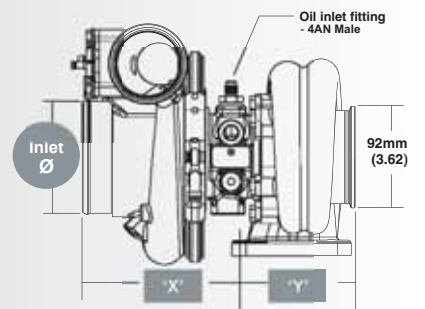
B - TYPE



C - TYPE



D & H - TYPE



Compressor Inlet Ø

7064 / 7670 = 88.9mm (3.50)

8374 / 9174 / 9180 = 101.6mm (4.00)

Dimension 'X'

7064 / 7670 D-Type = 142mm (5.60)

8374 / 9180 D-Type = 148mm (5.82)

8374 / 9180 H-Type = 140mm (5.51)

Dimension 'Y'

D-Type = 98.6mm (3.88)

H-Type = 106.4mm (4.19)

Ancillary Parts

EFR WASTEGATE CANISTER SELECTION GUIDE

Core Assy.	A-TYPE 0.64a/r TH	G-TYPE 0.80a/r TH	B-TYPE 0.83a/r TH	F-TYPE 0.85a/r TH	C-TYPE 0.92a/r TH
6258	179282, 179283, or 179284	179420, 179421, or 179422		179282, 179283, or 179284	
6258*	Optional Super Short Canister 58251107255, 58251107261, or 58251107262				
6758					
6758*					
7163*					
7064			179285, 179286, or 179287		179285, 179286, or 179287
7670					
8374					
9180					

EFR WASTEGATE CANISTER BRACKET KIT SELECTION GUIDE

Core Assy.	A-TYPE 0.64a/r TH	G-TYPE 0.80a/r TH	B-TYPE 0.83a/r TH	F-TYPE 0.85a/r TH	C-TYPE 0.92a/r TH	Each Wastegate Bracket Kit Includes:
6258	179427	179428		179427		(1) Stainless steel bracket
6258*	Super Short Canister 59007119007					(3) Bracket to bearing housing screws
6758						(2) Canister to bracket lock nuts
6758*						(1) Actuator rod nut (outboard side)
7163*						(1) Long 410mm wastegate signal hose
7064			179428	179428	(2) Hose clamps	
7670						
8374			179429		179429	
9180						

EFR CANISTER PRELOAD GUIDE

ROD & SPRING FULL STROKE		LOW BOOST		MEDIUM BOOST		HIGH BOOST	
PRELOAD		59001107255 SUPER SHORT CANISTER		59001107262 SUPER SHORT CANISTER		59001107261 SUPER SHORT CANISTER	
CAPABILITY		WG Crack-Open Pressure (psi)	Full Stroke Pressure (psi)	WG Crack-Open Pressure (psi)	Full Stroke Pressure (psi)	WG Crack-Open Pressure (psi)	Full Stroke Pressure (psi)
(mm / nut turns)	inches (mm)						
0	0.67" (17mm)	4.0 psi	13.7 psi	8.8 psi	20.6 psi	16.8 psi	32.3 psi
1	0.63" (16mm)	4.9 psi	13.8 psi	9.6 psi	20.6 psi	17.3 psi	32.3 psi
2	0.59" (15mm)	5.7 psi	14.0 psi	10.8 psi	20.6 psi	17.6 psi	32.3 psi
3	0.55" (14mm)	6.1 psi	14.1 psi	11.2 psi	20.6 psi	17.8 psi	32.3 psi
4	0.51" (13mm)	6.8 psi	14.3 psi	11.9 psi	20.6 psi	17.9 psi	32.3 psi
5	0.47" (12mm)	7.3 psi	14.4 psi	12.3 psi	20.6 psi	18.1 psi	32.3 psi
6	0.43" (11mm)	8.0 psi	14.4 psi	13.2 psi	20.6 psi	18.6 psi	32.3 psi
7	0.39" (10mm)	8.5 psi	14.6 psi	14.0 psi	20.6 psi	19.0 psi	32.3 psi
8	0.35" (9mm)	9.1 psi	14.6 psi	14.5 psi	20.6 psi	19.3 psi	32.3 psi
9	0.31" (8mm)	9.6 psi	14.7 psi	14.8 psi	20.6 psi	19.4 psi	32.3 psi
10	0.28" (7mm)	9.9 psi	14.7 psi	15.9 psi	20.6 psi	19.6 psi	32.3 psi
		Use with up to 13 psi applied pressure		Use with up to 19 psi applied pressure		Use with up to 31 psi applied pressure	

Note 1: Avoid too little preload. The diaphragm can rub (and wear) against the top of the can. We recommend 3mm of preload as a starting point.

Note 2: Avoid too much preload. Too much preload can cause premature diaphragm wear, but can be used functionally to limit travel and avoid boost droop at high RPM.

Note 3: When using solenoid valve boost control, the signal pressure that the WG canister sees can be bled off. Select a canister that will allow nearly full stroke.

Note 4: The "use with up to" pressures avoid long-term wear. By bottoming out the stroke, the diaphragm can be distressed over the course of time.

Note 5: EFR turbo assemblies come standard with the "Medium Boost" WG canisters. "Low" or "High" as well as Super Short boost actuator canisters can be purchased from an EFR dealer.