General Description

The C38 is the most powerful centrifugal supercharger of the Rotrex standard product range. Countless number of large scale applications can be boosted by this very efficient and silent unit which supplies air flow up to 0.63 kg/s.

Impeller speeds of up to 90,000 rpm are achieved through the patented hi-speed planetary traction drive which combines small size with exceptional performance and durability.

The very low noise and vibration characteristic as well as the high efficiency of these superchargers set the industry standard for what is achievable.

Applications

The C38 range is designed for four stroke gasoline engines with a supercharged output up to 530kW. Where one supercharger is not enough, it is possible to use two units to support large amounts of power in a twin-charger configuration. The C38 is also ideal for the supply of clean pressurized air for other applications such as industrial systems, fuel cell power plants etc.

The groundbreaking compact size enables a very flexible supercharger installation particularly on engine applications with tight space and where weight and size are essential.

Rotrex uses as standard an 8 ribbed poly V-belt pulley in high strength steel. Pulley diameter ranges from 70 to 110mm in 5mm steps.

The supercharger can be ordered with the compressor housing mounted in one of six different outlet positions with 60 degree intervals to allow easy adoption to any application. For specific outlet positions please refer to dimension drawing found in this document.

Oil system

The supercharger features an integrated dual-action oil pump that works as a dry sump scavenging pump in addition to being the oil supply pump. The self-contained oil system allows flexible positioning of the supercharger on the vehicle and has the benefit of fitting the supercharger without worrying about tampering with the oil system of the engine or any other accessory.

The Rotrex C-type supercharger has been developed and extensively tested with the special Rotrex traction fluid. To maintain the ultimate level of performance and durability it is very important that the unit is exclusively run with special Rotrex traction fluid. Make sure the inlet oil temperature is within the range specified in the table on the next page. Any deviation from the standard Rotrex oil circuit requires approval from Rotrex.

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Characteristics

Characteristic	Symbol	C38-61	C38-71	C38-81	C38-91/92
Power range[1]	P_{range}	200-410kW (272-557hp)	210-455kW (286-620hp)	220-485kW (300-660hp)	260-530kW (354-720hp)
Max flow rate	M_{flow}	0.48 kg/s	0.55 kg/s	0.58 kg/s	0.63 kg/s
Max pressure ratio	PR_{max}	2.90	2.82	2.85	2.94
Drive ratio	N	1:7.5			
Max drive efficiency	η_{max}	97%			
Pulley diameters available	$\varnothing_{pulley}$	70, 75, 80, 85, 90, 95, 100, 105, 110 mm 8 rib steel - PK profile			
Unit weight	M	6.0 Kg (13.2 lbs)			
Rotational direction	$Rin_{direction}$	Clockwise rotation, as seen from pulley side			
Peak input shaft speed	Rin_{max}	12,000 rpm			
Peak impeller speed	$Rout_{max}$	90,000 rpm			
Min inlet oil temperature	$Toil,in_{min}$	-40°C (-40°F)			
Max inlet oil temperature	$Toil,in_{max}$	+80°C (176°F)			
Mounting torque Pulley bolt	M10	70Nm (52 ft-lb)			
Mounting torque Bracket bolts	M8x85	15Nm (11 ft-lb)			
Mounting torque Oil banjo bolts	M10x1	21Nm (15.5 ft-lb)			

[1] Power output is dependent on engine type, cooling, cam-timing etc.
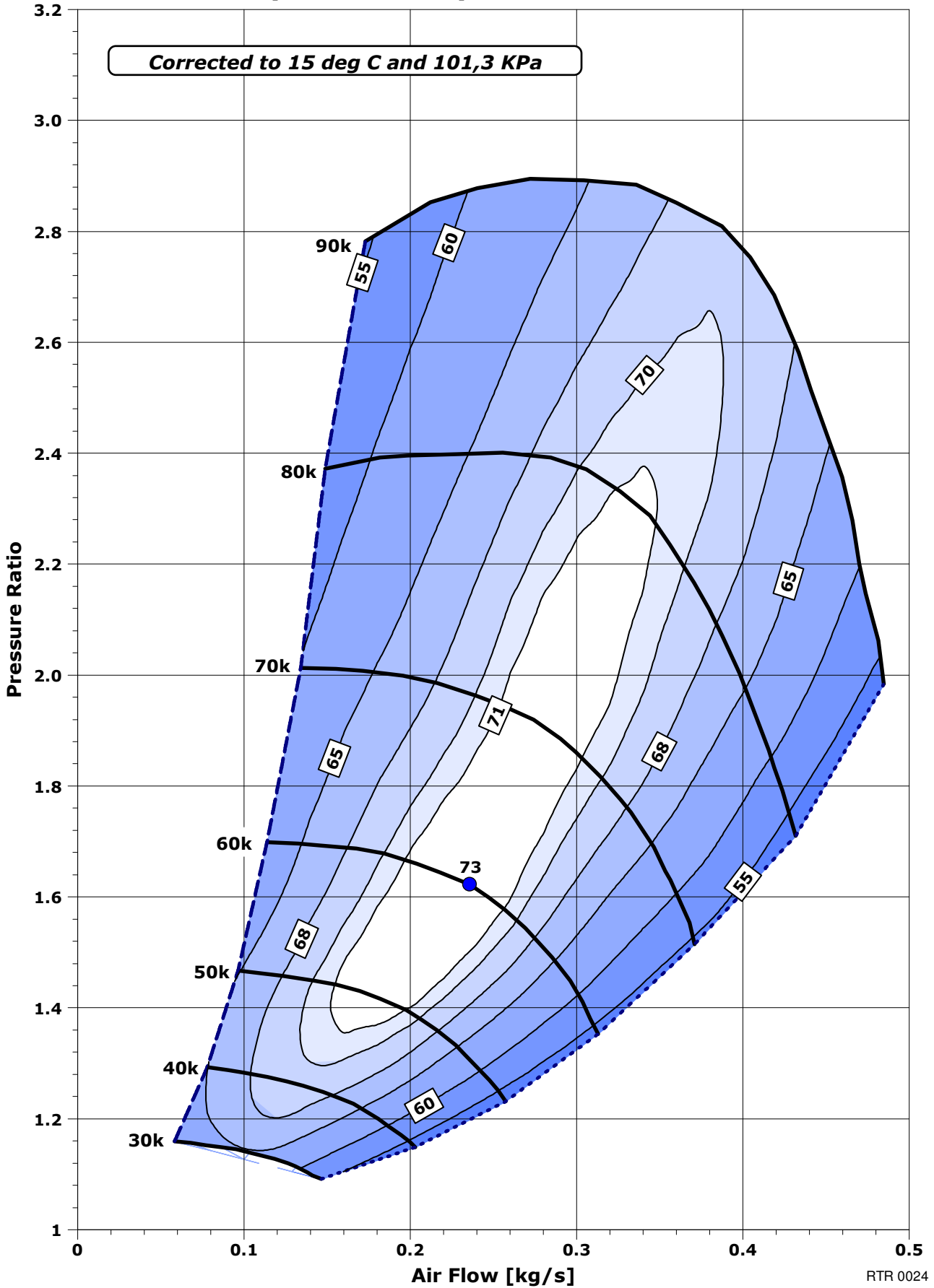
Conversion Toolbox	
Temperature conversion	OR $\quad °F = \dfrac{9}{5} \times °C + 32$
Kg/s to CFM conversion	$CFM = \dfrac{kg}{s} \times 1731.8 \qquad \dfrac{kg}{s} = \dfrac{CFM}{1731.8} \qquad @15°C \text{ and } 0.1013MPa$
Kg/s to lb/min conversion	$\dfrac{kg}{s} = 0.0075 \cdot lb/min \qquad lb/min = \dfrac{kg/s}{0.0075}$

C38-61 Compressor map

Corrected to 15 deg C and 101,3 KPa

Pressure Ratio vs Air Flow [kg/s]

RTR 0024

C38-71 Compressor map

Corrected to 15 deg C and 101,3 KPa

Pressure Ratio vs Air Flow [kg/s]

Speed lines: 30k, 40k, 50k, 60k, 70k, 80k, 90k

Efficiency islands: 55, 60, 65, 68, 70, 72, 75
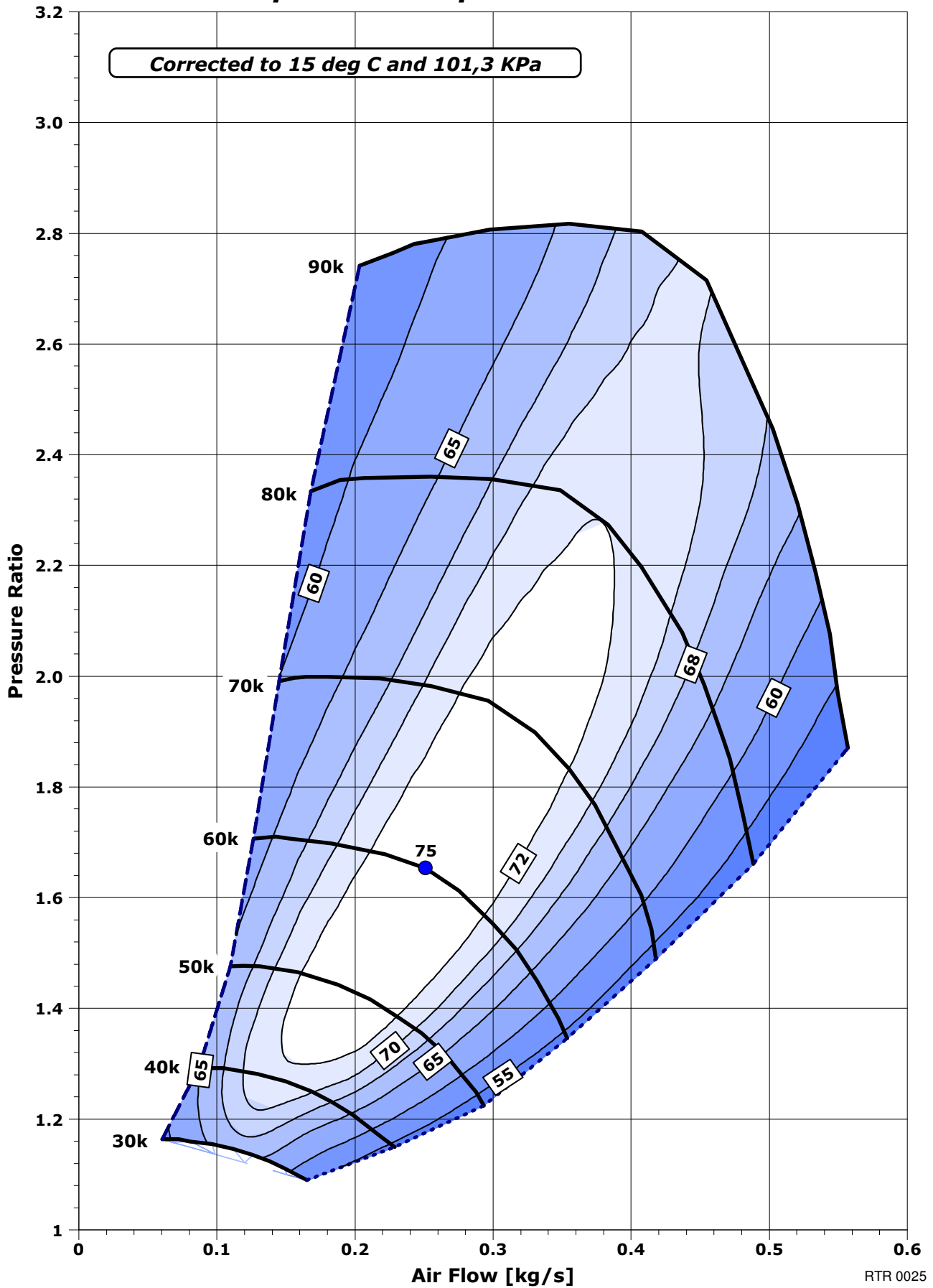
RTR 0025

C38-81 Compressor map
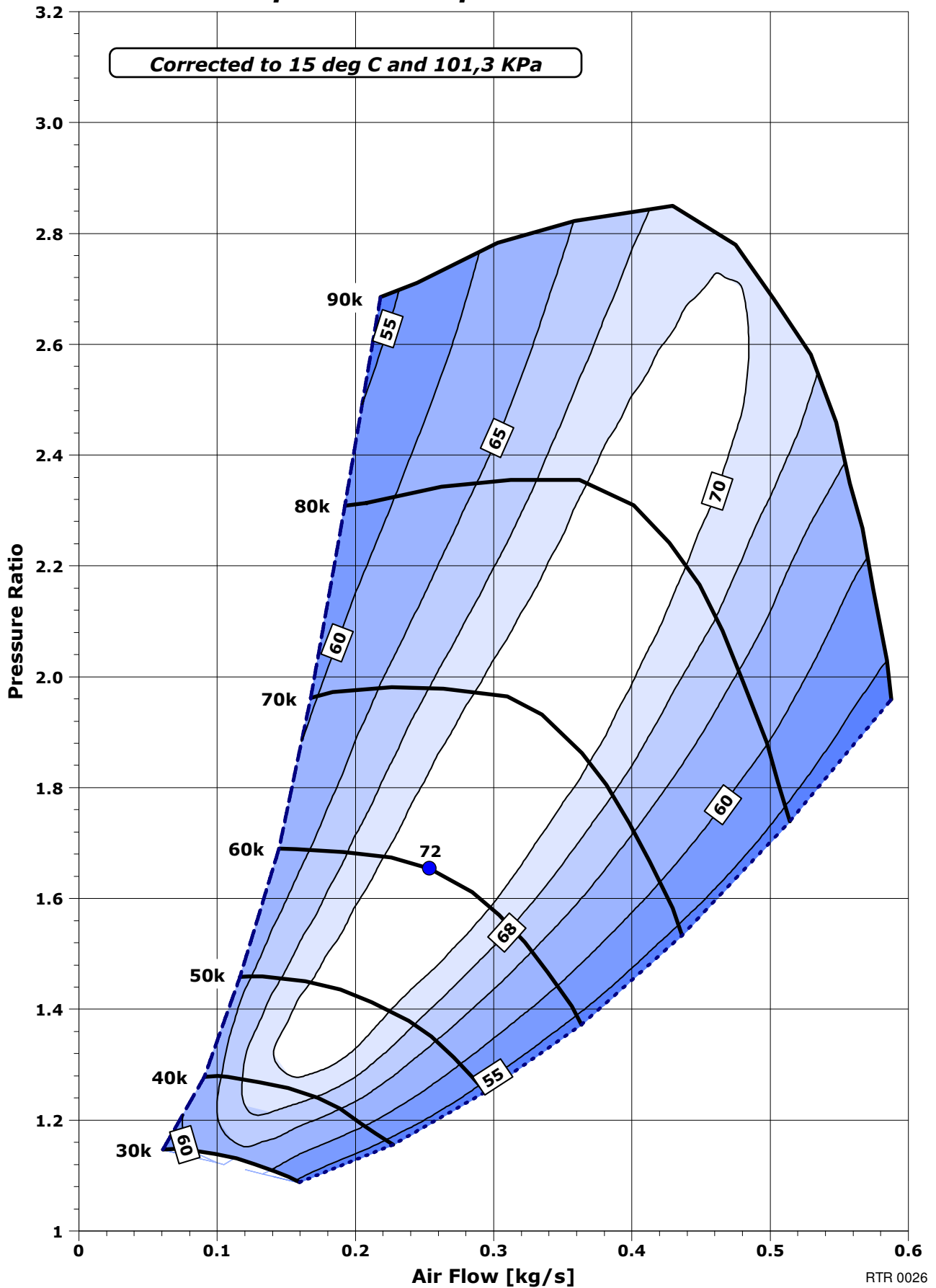
Corrected to 15 deg C and 101,3 KPa

Pressure Ratio vs Air Flow [kg/s]

RTR 0026

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C38-91/92 Compressor map

Corrected to 15 deg C and 101,3 KPa

Pressure Ratio vs Air Flow [kg/s]
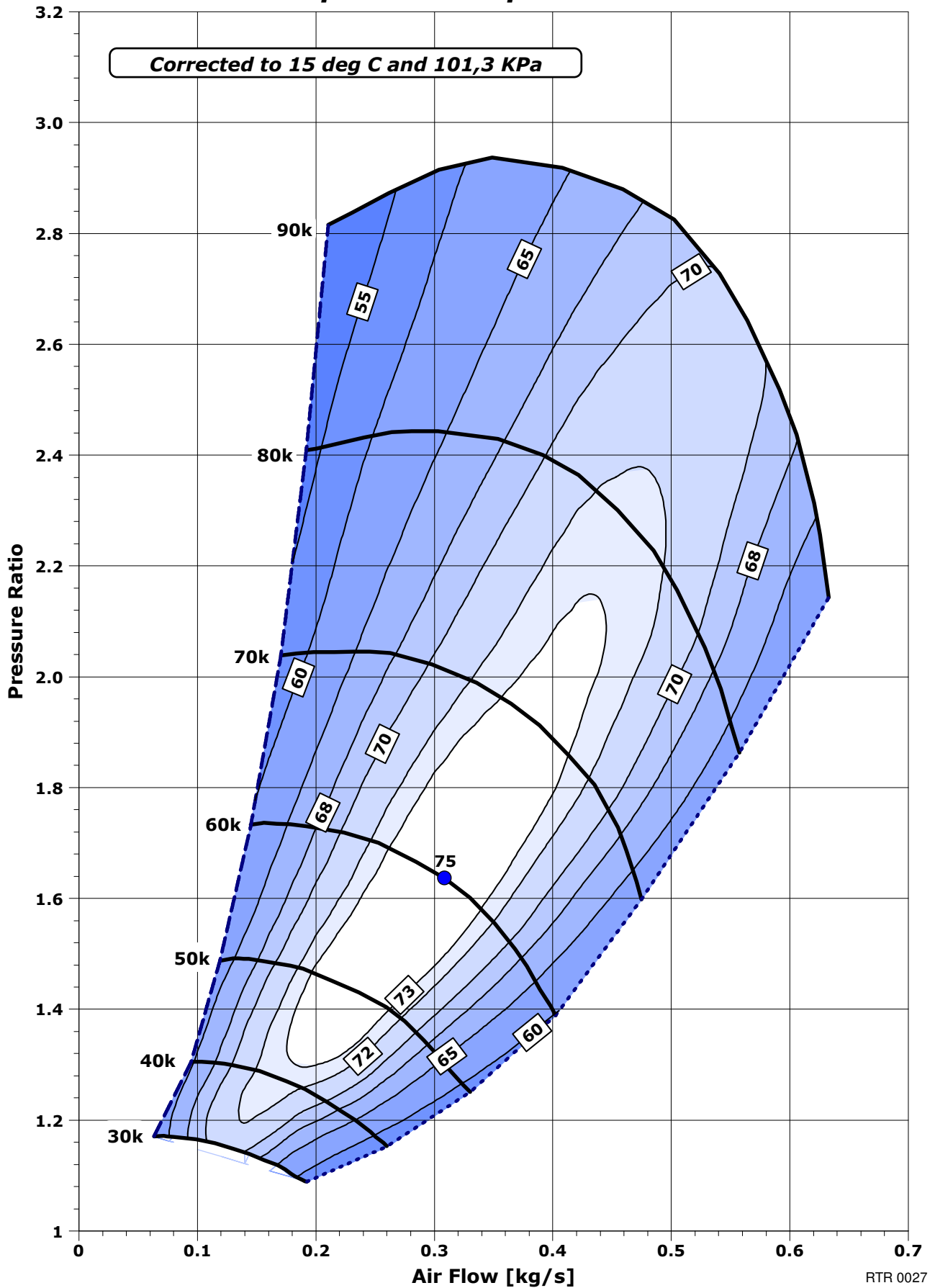
RTR 0027

Technical Data Sheet

Dimensions

Possible outlet directions

0° 60° 120° 180° 240° 300°

The supercharger must be positioned with the flat surface facing down and within ±15° from horizontal.

All dimensions in millimeters

	A	B	C	D	E
C38-61	66	76	51	188	25
C38-71	68	76	51	188	25
C38-81	70	76	51	188	25
C38-91	70	76	53	196	25
C38-92	70	89	53	203	30

Pulley ⌀	70	75	80	85	90	95	100	105	110