Zener Diode Series 1N746 to 1N5369 Overview

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0,5W	1W	5W
1N746 – 3V3	1N4728 – 3V3	1N5333 – 3V3
1N747 – 3V6	1N4729 – 3V6	1N5334 – 3V6
1N748 – 3V9	1N4730 – 3V9	1N5335 – 3V9
1N749 – 4V3	1N4731 – 4V3	1N5336 – 4V3
1N750 – 4V7	1N4732 – 4V7	1N5337 – 4V7
1N751 – 5V1	1N4733 – 5V1	1N5338 – 5V1
1N752 – 5V6	1N4734 – 5V6	1N5339 – 5V6
1N753 – 6V2	1N4735 – 6V2	1N5340 – 6V0
1N754 – 6V8	1N4736 – 6V8	1N5341 – 6V2
1N755 – 7V5	1N4737 – 7V5	1N5342 – 6V8
1N756 – 8V2	1N4738 – 8V2	1N5343 – 7V5
1N757 – 9V1	1N4739 – 9V1	1N5344 – 8V2
1N758 – 10V	1N4740 – 10V	1N5345 – 8V7
1N962 – 11V	1N4741 – 11V	1N5346 – 9V1
1N759 – 12V	1N4742 – 12V	1N5347 – 10V
1N964 – 13V	1N4743 – 13V	1N5348 – 11v
1N965 – 15V	1N4744 – 15V	1N5349 – 12v
1N966 – 16V	1N4745 – 16V	1N5350 – 13v
1N967 – 18V	1N4746 – 18V	1N5351 – 14V
1N968 – 20V	1N4747 – 20V	1N5352 – 15V
1N969 – 22V	1N4748 – 22V	1N5353 – 16V
1N970 – 24V	1N4749 – 24V	1N5354 – 17V
1N971 – 27V	1N4750 – 27V	1N5355 – 18V
1N972 – 30V	1N4751 – 30V	1N5356 – 19V
1N973 – 33V	1N4752 – 33V	1N5357 – 20V
1N974 – 36V	1N4753 – 36V	1N5358 – 22V
1N975 – 39V	1N4754 – 39V	1N5359 – 24V
1N976 – 43V	1N4755 – 43V	1N5360 – 25V
1N977 – 47V	1N4756 – 47V	1N5361 – 27V
1N978 – 51V	1N4757 – 51V	1N5362 – 28V
1N979 – 56V	1N4758 – 56V	1N5363 – 30V
1N980 – 62V	1N4759 – 62V	1N5364 – 33V
1N981 – 68V	1N4760 – 68V	1N5365 – 36V
1N982 – 75V	1N4761 – 75V	1N5366 – 39V
1N983 – 82V	1N4762 – 82V	1N5367 – 43V
1N984 – 91V	1N4763 – 91V	1N5368 – 47V
1N985 – 100V	1N4764 – 100V	1N5369 – 51V

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Zener diodes are essential components in voltage regulation and protection circuits. This guide provides a detailed overview of three popular power ratings: 0.5W, 1W, and 5W Zener diode series, covering part numbers from 1N746 to 1N5369 and voltage ranges from 3.3V to 100V. Whether you're designing a power supply, voltage reference, or surge protection circuit, having a complete voltage chart at your fingertips is invaluable for selecting the right component.

SCE SCOOP

Category: Refrigeration
written by www.mbsm.pro | 22 December 2025

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Understanding the inner workings of a Secop SCE hermetic compressor is essential for any refrigeration technician or engineer. This comprehensive guide breaks down the complex internal components—from the crankshaft to the valve plate—providing a detailed exploded view. Whether you are troubleshooting or

studying mechanical design, our professional analysis offers the clarity needed for modern cooling systems.

CR20-06 A-F-A-E-HQQE

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The Grundfos CR20-06 A-F-A-E-HQQE is a vertical multistage centrifugal pump delivering 21 m³/h at 70.4 m head with a 7.5 kW IE3 motor, designed for demanding water boosting and industrial applications.
Its cast-iron base, stainless-steel internals and HQQE mechanical seal make it a durable, energy-efficient solution for process water, HVAC, boiler feed and general pressure boosting systems.

Introduction

In modern industry and building services, stable water pressure is no longer a luxury but a basic requirement. The Grundfos CR20-06 A-F-A-E-HQQE has become one of the quiet workhorses in this field, combining compact vertical design with serious performance for installations where downtime is simply not an option.

Technical profile of the CR20-06

The pump in the photo is clearly identified on its nameplate as a Grundfos CR20-06 A-F-A-E-HQQE with a 7.50 kW motor operating at 50 Hz and about 2919 rpm.
It delivers a nominal flow of 21 m³/h at a rated head of 70.4 m, with a maximum head up to 88.4 m and a maximum operating pressure of 16 bar at liquid temperatures up to 120 °C.

Main nameplate data

Item	Value
Pump type	CR20-06 A-F-A-E-HQQE
Rated power P2	7.5 kW
Frequency / speed	50 Hz / ≈2919 rpm
Rated flow Q	21 m³/h
Rated head H	70.4 m
Maximum head Hmax	88.4 m
Maximum pressure / temp.	16 bar / 120 °C
Shaft seal code	HQQE (single mechanical seal)
Pump orientation	Vertical, inline
Efficiency (pump)	≈75.6% (MEI ≥ 0.70)

The pump uses a vertical, inline layout with suction and discharge on the same level (DN 50 flanged connections, PN 25 rating), simplifying installation in compact plant rooms and on rigid pipe manifolds.
Its IE3 motor (size 132SB) offers motor efficiencies above 90% at typical loads, helping operators reduce long-term energy costs.

Construction, materials and seal

The CR20-06 belongs to the widely used CR multistage family, where several impellers are stacked in series to build pressure while maintaining moderate

flow.
In this specific model, the base and pump head are in cast iron, while all wetted parts such as impellers and chambers are stainless steel AISI 304, providing a good balance between robustness and corrosion resistance for clean water duties.
The HQQE mechanical seal is a single cartridge seal with silicon carbide/silicon carbide faces, EPDM elastomers and a stainless-steel spring, designed for long service life and easy replacement.
This configuration suits cold and hot water, mildly aggressive media used in HVAC and process plants, and reduces the risk of dry-running damage during commissioning or transient operating conditions.

Typical applications and operating benefits

With its 21 m³/h at 70.4 m operating point, the CR20-06 is well suited to medium-pressure boosting in commercial buildings, industrial wash and rinse systems, boiler feed for small to mid-size boilers, and general process water circulation.
Installers appreciate the inline design, which often allows direct replacement of older horizontal pumps without major changes to the pipework, while plant operators value the quiet operation and low vibration levels of the multistage design.
From an energy perspective, the combination of high hydraulic efficiency and IE3 motor makes this model a strong candidate in projects where life-cycle cost analysis is required or where regulations demand a minimum efficiency index (MEI ≥ 0.70).
Paired with an external frequency converter, the CR20-06 can be turned into a variable-speed booster, maintaining constant pressure in domestic water systems, process loops or district cooling circuits while cutting energy consumption during partial-load operation.

Practical selection notes for engineers

When selecting a CR20-06 for a project, engineers typically start from the required duty point on the pump curve and verify that 21 m³/h at around 70 m head fits the system’s pressure losses, static height and safety margin.
System designers also check NPSH requirements, temperature range from −20 to 120 °C, and maximum ambient temperature up to 60 °C to ensure trouble-free operation in machinery rooms and outdoor installations.
Because the pump offers a maximum operating pressure of 16 bar with PN 25 flanges, it can be integrated into higher-pressure manifolds and ring mains, provided that upstream valves, fittings and vessels share compatible ratings.
For users planning future upgrades, the CR range gives a modular platform: additional models and variants can be combined in parallel booster sets, or replaced one-to-one if system demand increases.

Mbsm.pro, Compressor, GM70AZ, 1/5 hp, ZMC, Cooling, R134a, 150 W, 1.3 A, 1Ph 220-240V 50Hz, LBP capacity, RSIR, −30°C to −10°C

Category: compressor
written by www.mbsm.pro | 22 December 2025

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Le ZMC GM70AZ est un compresseur hermétique à piston fonctionnant au R134a, destiné aux applications à basse pression d’aspiration dans les réfrigérateurs et congélateurs ménagers alimentés en 220–240 V, 50 Hz. Fabriqué par Misr Compressor Manufacturing Co. en Égypte, il fournit une puissance d’environ 1/5 HP et une plage d’évaporation de −30 °C à −10 °C, ce qui en fait une solution courante et fiable pour le froid domestique dans la région MENA

Mbsm.pro, compressors, QD43H, QV30H, QD52H, QD65H, QD75H, WV43YB, QD91YB

Category: compressor
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AFT hermetic refrigerator compressors, including R134a models QD43H, QV30H, QD52H, QD65H and QD75H, alongside R600a models WV43YB and QD91YB, each supplied with starting components and packed in branded cartons for retail or OEM use. The power range spans from approximately 1/10 HP up to 1/4–1/5 HP

Mbsm.pro, compressor, EGM91AA, refrigerators, Freezing, Cooling, R134a, ZMC compressors, 1/4 hp, Lbp

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The EGM91AA compressor from ZMC Egypt is a key component of modern household refrigeration, combining advanced engineering, R134a compatibility, and 220–240 V operation to deliver efficient, reliable cooling performance that appeals to appliance manufacturers and field technicians alike.

Mbsmpro.com, ZB38, 5HP, R404, MBP

Category: Refrigeration
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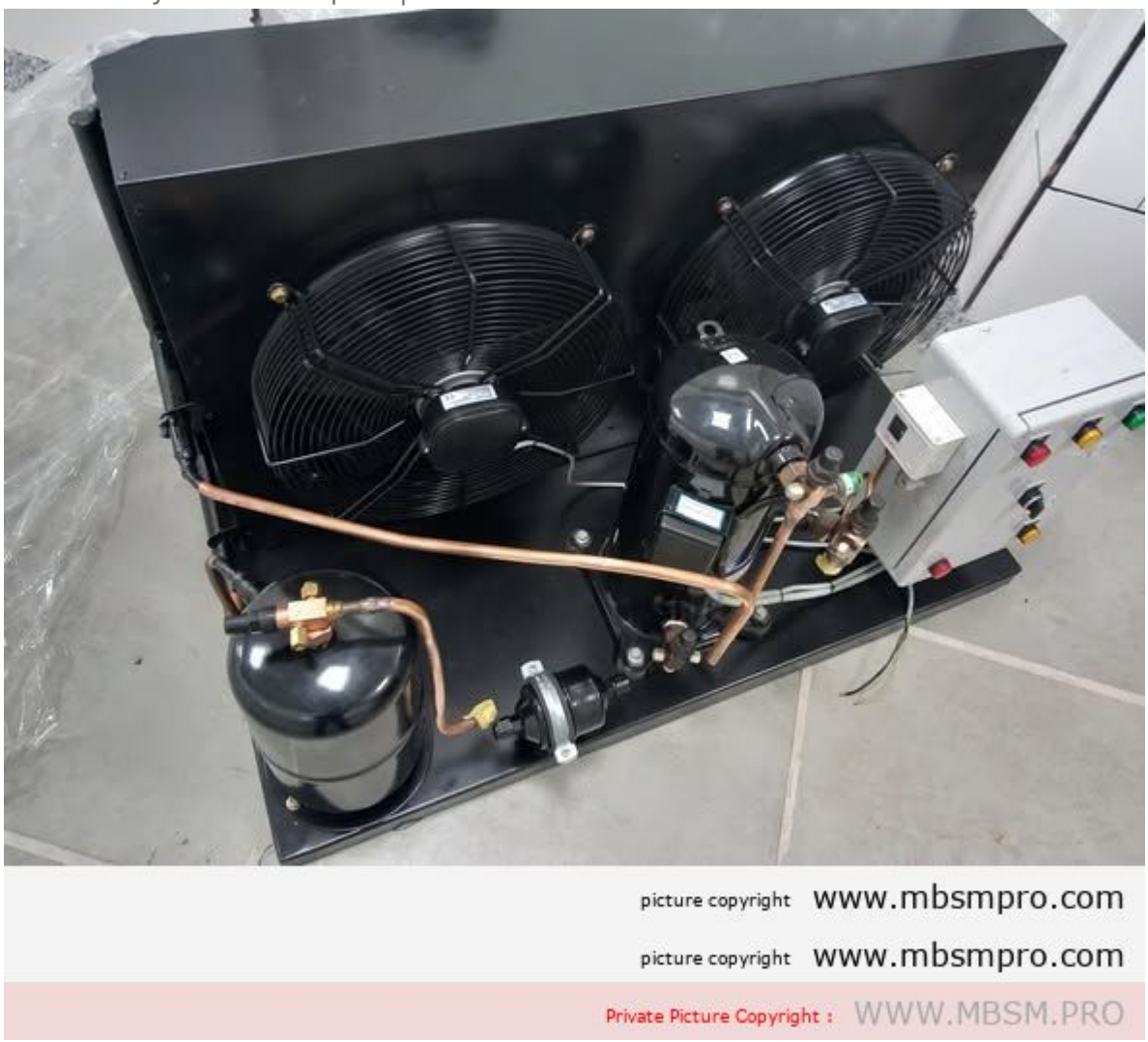

ZB38 5HP R404A MBP scroll compressor has become a reference point in medium-temperature commercial refrigeration, providing a compact, efficient and reliable heart for cold rooms, display cabinets and food service equipment worldwide. This article explores how it works, where it fits best and what technicians should verify before installing or replacing this type of compressor.

Mbsm.pro, LRA to Ton

Category: expertise
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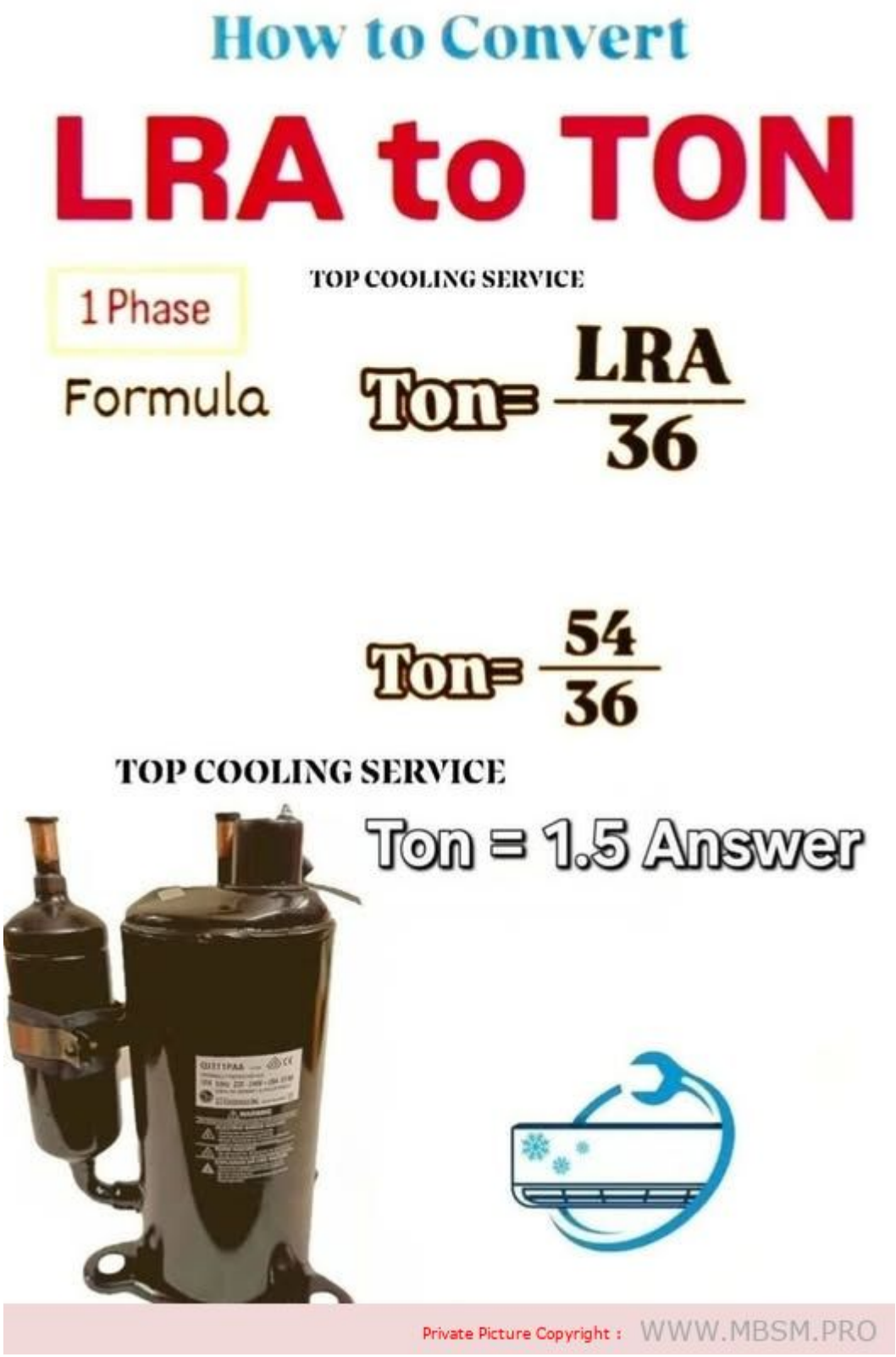

how to convert LRA (Locked Rotor Amps) into refrigeration tons using a simple formula, making HVAC system sizing and diagnostics accessible to field technicians. Using LRA values found on equipment labels, one can quickly estimate system tonnage, ensuring correct sizing for repairs or upgrades in air conditioning and refrigeration systems.

Mbsmpro, Pdf, Convert LRA to Cooling Tons

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R134a compressor, 1/3 HP, LBP, commercial refrigeration, domestic freezer, cooling capacity, COP, mbsm.pro, mbsmgroup.tn, mbsmgroup, mbsmpro, mbsmpro.com, Siberia, Panasonic, Embraco, Secop, Tecumseh, Donper, Cubigel, Zero, ZMC, Samsung

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A technical comparison of the 10 best LBP R134a compressors (1/3 HP) for professional refrigeration and freezing applications—complete with specs, cooling capacities, and application tips.