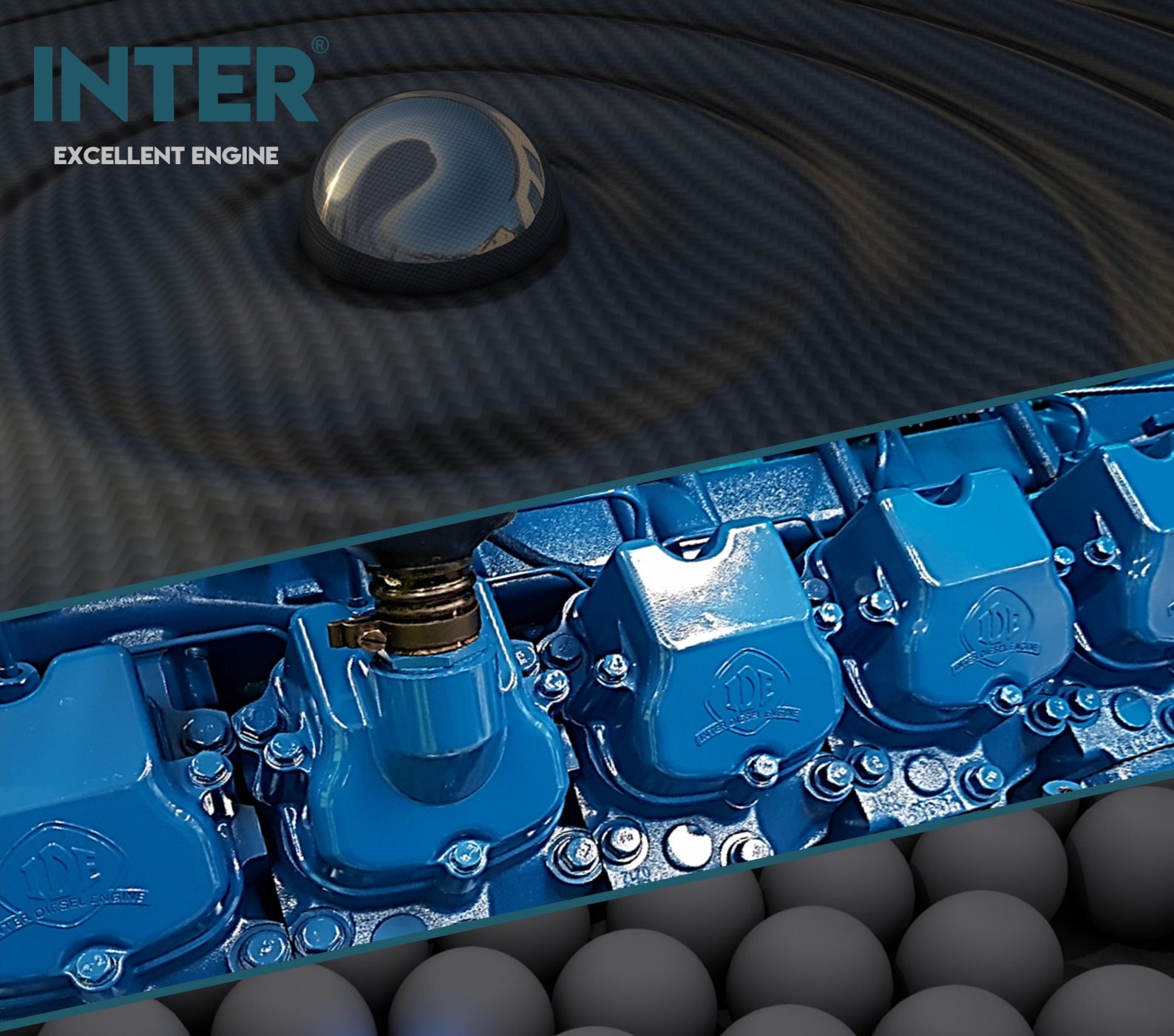
INTER®

EXCELLENT ENGINE



GII

GII SERIES

# INTER ENGINE

# INTER®

EXCELLENT ENGINE


## About INTER

**INTER DIESEL ENGINE** was first established in USA in 1927 as an independent engine manufacturer.

Right now, they manufacture high quality diesel engines from 2 cylinders to 20 cylinders, in the factories that are in Brazil, Argentina, India and China. They manufacture with their original design.

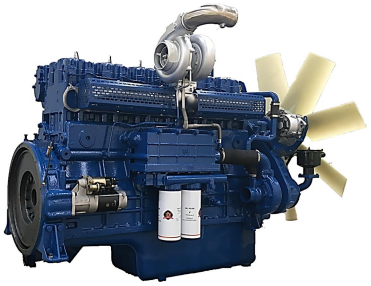
Apart from their own factories, in order to serve and meet the customer needs in other areas, they have their offices and distributors in Germany, UK, Spain, Italy, Turkey and South Africa. These distributors and offices deals with sales, after sales services and spare part supply.

**INTER DIESEL ENGINE** produces diesel engines from 7.5 kW to 3000kW to be used in agricultural equipment's, trucks, buses, tractors, construction equipment, generators, boats and ships.

They export to more than 100 countries and have 45 distributors, 160 dealers and more than 200 after sales service. With this service network, Inter Diesel Engine increases its global market share every day.

### FEATURES AND BENEFITS

- Excellent Design
- High and Dependable Technology
- Heavy Duty
- Durability
- Low Noice
- Low Exhaust Emission
- Low Operating Cost
- World Class Product Support
- Flexible Application
- Direct Injection
- Tier II / Tier III / Tier IV Emission Regulations
- Low Fuel Consumption
- Low Oil Consumption
- Tropical Radiator
- Easy Service & Maintenance
- Mechanical / Electronic Governor
- Compact Design
- Noise Optimized Engine Design



## Diesel Engine and Genset Rating Classifications

*The below ratings represent the engine performance capabilities to conditions specified in TS ISO 8528/1, 8528-4, 8528-5, 8528-8, BS5000, ISO 3046/1:1986, NEMA MG-1.22.1, BS 5514/1.*

**STAND BY POWER RATING (ESP):**

ESP is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Stand By Power rating. This rating should be applied where reliable utility power is available. A Stand By rated engine should be sized for a maximum of an 70% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Stand By Power rating. Stand By ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

**PRIME POWER RATING (PRP):**

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

**UNLIMITED TIME RUNNING PRIME POWER (ULTP):**

PRP (Prime Power) is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

**LIMITED TIME RUNNING PRIME POWER (LTP):**

LTP (Limited Time Prime Power) is available for a limited number of hours in a nonvariable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

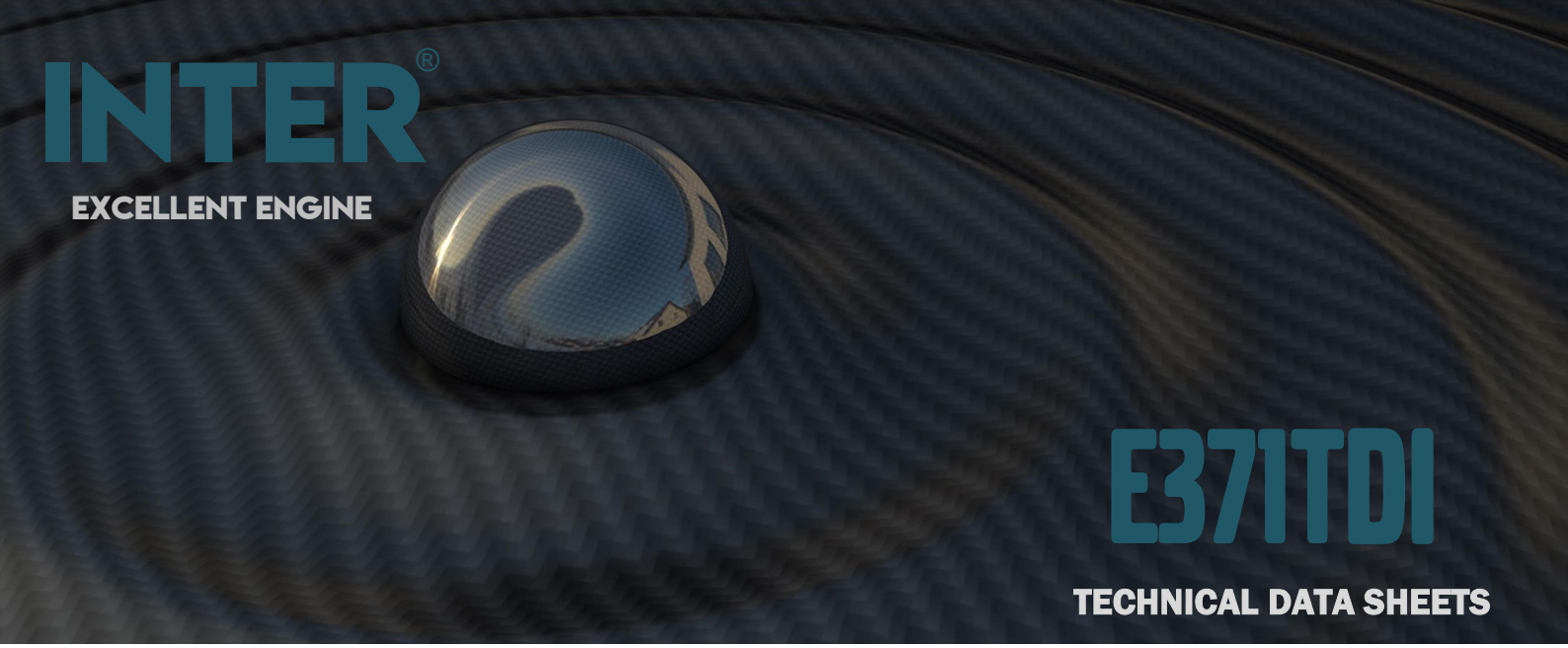
**CONTINUOUS POWER RATING (COP):**

COP is the power that the engine can continue to use under the prescribed speed and the specified environment condition in the normal maintenance period stipulated in the manufacturing plant. And Continuous Power is applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

# E371TDI

**9,73 Liter, In Line Type 6 Cylinder**

**G Drive Engine**




## Diesel Engine Main Technical Parameters

| General | | |
|---|---|---|
| Number of Cylinders | | 6 |
| Configuration | | Vertical, In Line |
| Aspiration | | Turbocharged & Intercooled |
| Combustion System | | Direct Injection |
| Compression Ratio | | 17:1 |
| Bore | mm | 126 |
| Stroke | mm | 130 |
| Displacement | L | 9,726 |
| Governing Type | | Electronic |
| Governing Class | | G3 |
| Rotation | | Counterclockwise |
| Firing Order | | 1-5-3-6-2-4 |
| Emission | | Tier II |
| **Moments of Rotation Inertia** | | |
| Engine | kg • m² | 3,02 |
| Flywheel | kg • m² | 2,35 |
| **Performance Rating** | | |
| Speed Droop | % | ≤0,5 |
| Steady State Speed Band | % | ≤0.5 |
| **Test Conditions** | | |
| Ambient Temperature | % | 25 |
| Atmospheric Pressure | kPa | 100 |
| Relative Humidity | RH (%) | 30 |
| Max. Operating Intake Resistance | kPa | 5 |
| Exhaust Backpressure Limit | kPa | 10 |
| Fuel Temperature (Fuel Inlet Pump) | ºC | 38 ± 2 |
| **Filters** | | |
| Air Filter | | Dry Type, Replaceable |
| Fuel Filter | | With Water Seperator |
| Oil Filter | | Element Type, Particulate Trap |
| **Flywhell Housing and Flex Coupling** | | |
| Flywheel Housing | SAE (J620) | 1 |
| Flex Coupling Disc | Inch (") | 14 |
| **Overall Dimensions** | | |
| Length * | mm | 1854 |
| Width | mm | 887 |
| Height | mm | 1209 |
| Dry Weight | Kg | 980 |

* From front end of radiator to rear end of air filter

| Cooling System | | |
|---|---|---|
| Radiator Type | 50ºC | Tropical |
| Total Coolant Capacity | L | 46 |
| Max. Perm. Coolant Outlet Temperature | ºC | 103 |
| Max. Perm. Flow Resis. (Cool. System And Piping) | bar | 0,5 |
| Max.Temperature of Coolant Warning | ºC | 95 |
| Max. Temperature of Coolant Shutdown | ºC | 98 |
| Thermostat Operation Temperature - Initial Open | ºC | 68 |
| Thermostat Operation Temperature - Full Open | ºC | 71 |
| Delivery of Coolant Pump | m ³/ h | 5,60 |
| Min. Pressure Before Coolant Pump | bar | 0,5 |
| Radiator Face Area | m² | 0,72 |
| Rows | Row | 5 |
| Matrix Density | Per / Inch | 15,5 |
| Material | | Aluminum |
| Width of Matrix | mm | 830 |
| Height of Matrix | mm | 870 |
| Pressure Cap Setting | kPa | 90 |
| Estimated Cooling Air Flow Reserve | kPa | 0,125 |
| Engine Pre Heater Tube (with Circulation Pump) | W | 3000 |
| **Lubrication System** | | |
| Total System | L | 26 |
| Minimum Oil Level | L | 24 |
| Nominal Motor Operating Temperature | ºC | 40 |
| Lubricating Oil Pressure (Rated Speed) | bar | 5 |
| Relief Valve Opens | kPa | 300-400 |
| Oil / Fuel Consumption Ratio | % | ≤0,36 |
| Normal Oil Temperature | ºC | 105 |
| **Electrical System** | | |
| Voltage | V | 24 |
| Starter | kW | 8,5 |
| Alternator Output Ampers | A | 55 |
| Alternator Output Voltage | V | 28 |
| Batteries Capacity | Ah | 2X120 |
| **Fan** | | |
| Diameter | mm | 760 |
| Drive Ratio | | 1,04:1 |
| Number of Blades | | 10 |
| Material | | Plastic |
| Type | | Blowing |

## Diesel Engine Matching Parameters

| 50 Hz @ 1500 r/min | | Stand By | Prime |
|---|---|---|---|
| Gross Engine Power | kW | 276,0 | 251,0 |
| Net Engine Power | kW | 260,0 | 235,0 |
| Fan Power Consumption (Belt Pulley Driven) | kW | 14,0 | 14,0 |
| Other Power Loss | kW | 2,0 | 2,0 |
| Mean Effective Pressure | MPa | 2,73 | 2,49 |
| Intake Air Flow | m ³ / min | 13,80 | 13,20 |
| Exhaust Temperature Limit | ºC | 650 | 650 |
| Exhaust Flow | m ³ / min | 40,20 | 36,55 |
| Boost Pressure Ratio | | 3,26 | 3,09 |
| Mean Piston Speed | m / s | 6,5 | 6,5 |
| Cooling Fan Air Flow | m ³ / min | 612,0 | 612,0 |
| Typical Generator Output Power | kVA | 300 | 273 |
| **Heat Rejection** | | | |
| Energy in Fuel (Heat of Combustion) | kW | 703,0 | 639,0 |
| Gross Heat to Power | kW | 267,0 | 243,0 |
| Energy to Coolant and Lubricating Oil | kW | 143,0 | 130,0 |
| Heat Dissipation Capacity* | kW | 53,0 | 48,0 |
| Energy to Exhaust | kW | 209,0 | 190,0 |
| Heat to Radiation | kW | 32,0 | 29,0 |

*Intake Intercooled System

| 60 Hz @ 1800 r/min | | Stand By | Prime |
|---|---|---|---|
| Gross Engine Power | kW | 276,0 | 251,0 |
| Net Engine Power | kW | 257,2 | 232,7 |
| Fan Power Consumption (Belt Pulley Driven) | kW | 16,8 | 16,8 |
| Other Power Loss | kW | 2,0 | 1,5 |
| Mean Effective Pressure | MPa | 2,41 | 2,19 |
| Intake Air Flow | m ³ / min | 14,63 | 13,98 |
| Exhaust Temperature Limit | ºC | 636 | 594 |
| Exhaust Flow | m ³ / min | 44,97 | 40,82 |
| Boost Pressure Ratio | | 3,30 | 3,20 |
| Mean Piston Speed | m / s | 7,8 | 7,8 |
| Cooling Fan Air Flow | m ³ / min | 612,0 | 612,0 |
| Typical Generator Output Power | kVA | 319 | 289 |
| **Heat Rejection** | | | |
| Energy in Fuel (Heat of Combustion) | kW | 703,0 | 639,0 |
| Gross Heat to Power | kW | 267,0 | 243,0 |
| Energy to Coolant and Lubricating Oil | kW | 143,0 | 130,0 |
| Heat Dissipation Capacity* | kW | 53,0 | 48,0 |
| Energy to Exhaust | kW | 209,0 | 190,0 |
| Heat to Radiation | kW | 32,0 | 29,0 |

*Intake Intercooled System

# INTER®

EXCELLENT ENGINE

# E371TDI

POWER RANGE

FUEL CONSUMPTION

OIL GRADES

DIMENSION

DIAGRAMS

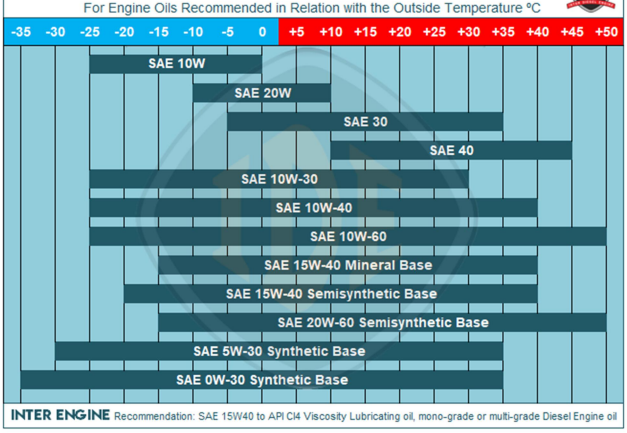
## INTER Diesel Engine Power Ratings

| Engine Model | E371TDI | | Engine Family | ID13 | Engine Series | GII | |
|---|---|---|---|---|---|---|---|
| Speed rpm | Type of Operation | Typical Generator Output (Net) | | Engine Power | | | |
| | | | | Gross | | Net | |
| | | kVA | kWe | kWm | Hp | kWm | Hp |
| 1500 | Stand By (Maximum) | 300,0 | 240,0 | 267,0 | 358,4 | 258,0 | 346,3 |
| | Prime | 273,0 | 218,0 | 243,0 | 326,2 | 235,0 | 315,4 |
| 1800 | Stand By (Maximum) | 300,0 | 240,0 | 267,0 | 358,4 | 258,0 | 346,3 |
| | Prime | 273,0 | 218,0 | 243,0 | 326,2 | 235,0 | 315,4 |

*Generator powers are typical and are based on an average alternator efficiency and a power factor (Cos. Q) of 0.8*

## SAE GRADES

For Engine Oils Recommended in Relation with the Outside Temperature °C




**INTER ENGINE** Recommendation: SAE 15W40 to API CI4 Viscosity Lubricating oil, mono-grade or multi-grade Diesel Engine oil

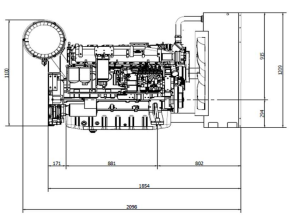
## Fuel Consumption

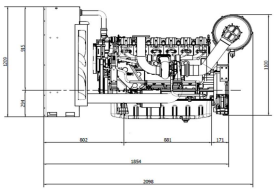
| Percent of Prime power | 50Hz - 1500 rpm | 60Hz - 1800 rpm |
|---|---|---|
| | l/hr | l/hr |
| 110% | 60,98 | 60,98 |
| 100% | 55,45 | 55,45 |
| 75% | 42,03 | 42,03 |
| 50% | 29,04 | 29,04 |

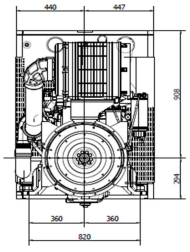
***Note: At calorific value 42700 kJ/kg + 5 %, density 0.860 kg/dm3, temperature 280 K.***

*Fuel specification: BS 2869: Part 2 1998 Class A2 or (DIN EN 590) ASTM D975 D2 Diesel. The fuel must be clean and without water)*

## Diesel Engine Appearance and Installation Dimension Diagram







## INTER ENGINES MAIN AND BIGGEST PARTNERS

INTER® ENGINE GROUP





INTER®

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