

**OUR POWER, YOUR SATISFACTION**



## **DIAMOND SERIES**

Industrial pumps

DN / JN series



### Flanged Industrial Series

The DN and JN Diamond series is the best solution for the industrial sector in pumping a vast range of fluids. They are synonymous with strength, reliability, performance and application flexibility.

Designed according to the most demanding standards, they comply with the requirements of standard API 676.

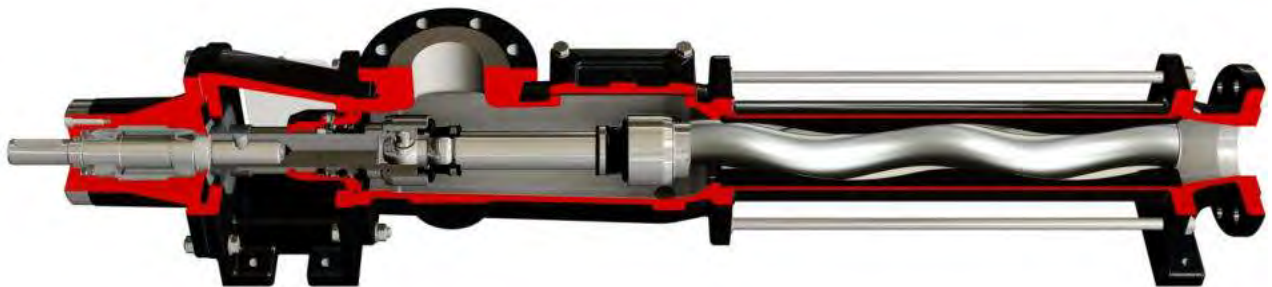
Suitable for pumping viscous and non-viscous products, with or without solids of any nature, they are an ideal solution for those seeking a standard product with advanced technology with unbeatable cost benefits in the current single screw pumps market.

The DN and JN series are distinguished for the type of fitting of the pump to the drive

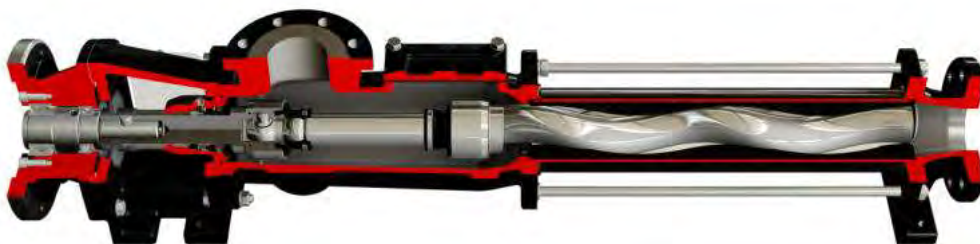
- **DN Series:** the drive is coupled directly to the pump via a flange. This solution is extremely cost effective and compact, considerably reducing installation costs and simplifying maintenance. The forces generated by the hydraulic part are supported by the drive itself. Each drive used is adequately selected based on their specific technical parameters and are subject to numerous duration tests with heavy loads. The DN series is the reference point for almost all pumps installed in the industry.



- **JN Series:** the drive is connected to the free bare shaft via a flexible coupling. This solution is the best solution in terms of performance and durability. All the forces generated by the pump are absorbed by the bearings in the housing. These bearings have very high resistance against loads. They are assembled with extreme precision on the highest quality manufactured parts. It is the best solution when you want to guarantee duration and reliability, yet with greater installation space requirements. The bearing unit designed by us is modular and can be adapted to a DN series pump with lantern. It is state of the art for this type of installation.



- **FN Series:** The drive is connected directly to the pump via a flange of the modular bearing unit. This is the most versatile solution because it allows to use gearbox with flange and standard output shaft, the connection with hydraulic and pneumatic motors, by keeping the simplicity and the compactness of the classic coupling flange solution and at the same time it ensures total reversibility and higher performance of the bearing unit. This modular bearing unit can be applied on all the Diamond series pumps and it allows a quick maintenance of the drive. FN is synonym of modularity and reliability with any kind of drive.



**Patented Pin Joint:** The pin-type joint, the actual heart of the single screw pump, is the best solution of its type on the market. It offers greater duration, reliability and reduced maintenance costs, managing to combine extreme compactness with unrivalled strength. Its particular manufacturing enables the sub-division of axial loads and torque in different elements, making it one of a kind. As well as the above, replacement of worn parts is cheap thanks to the bushes in the worn zones, avoiding costly replacement of parts (rotor, drive shaft, and female drive shaft. To resist high pressure in the pump casing up to 12 bar, the joint can be hydraulically balanced.



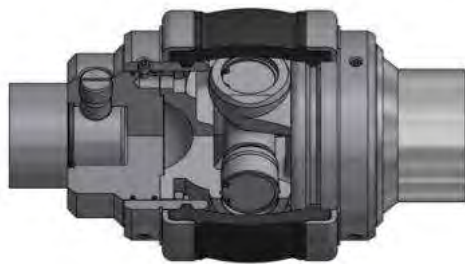
**Materials:** The parts in contact with the product of the DN and JN Diamond Series pumps can be manufactured in various materials. From the version in cast iron to stainless steel (AISI 304 and AISI 316), as well as other materials on request such as Duplex and Super Duplex. Also, in the version in cast iron, the rotating parts are still manufactured in stainless steel AISI 420 or on request in AISI 304 / AISI 316.

**Low pulsating flows:** Tensional stress and pulsating flow are very low. The centrifugal effect is reduced to a minimum thanks to the low operating speeds and mainly the axial development of the pump.

**Base plates:** The base plates, characterized by considerable thicknesses are very strong. Available in carbon steel or stainless steel. They can also be provided according to standard API 676, in a trolley version, with anti-vibration housing or on skids, according to the client's specifications.



**Cardan Joint:** Cardan joint is the best solution for heavy application with high pressure inside the pump casing. It improves the allowable torque up to 4 times torque with the same pump size. It is available with internal metal joint protection to for an additional improvement of the rubber service life.



**Shaft sealing:** Different sealing systems can be installed, each solution being suitable to specific usage. The types available are: single mechanical seal, internal or external, single mechanical seal with quench, double mechanical seal back to back or tandem, gland packing with flush or without.

The shaft seal variants are all interchangeable on the standard pump. Each solution was carefully engineered while taking into consideration all the operating conditions. As well as changing the type of shaft seal, you can also install various types of mechanical seals based on the application.

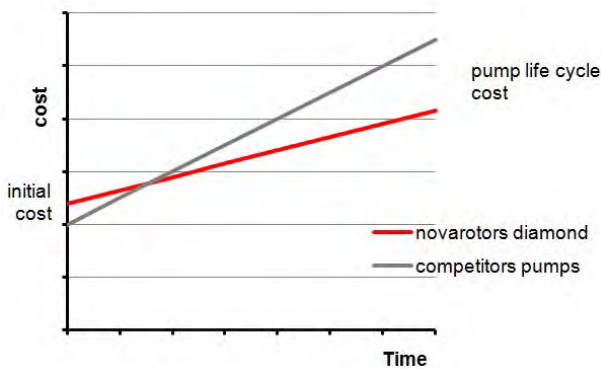
The compartments are suitable for installation of the seals manufactured according to the standards ISO EN 12756. As well as this, it is possible to use cartridge seals from the main manufacturers, also available according to standards API 682 category 1 and 2.



**Modularity:** The Diamond series is based on the concept of modularity in every characteristic: hydraulic parts, casing, seals, base plates, housing, drive shafts. Each part can be manufactured in a series of variants without changing the structure of the machine, while keeping the main spare parts standard.



<p><b>Performance:</b> Duration, efficiency, reliability and low consumption. With the Diamond series, we have reached the maximum levels of technological development in every aspect.</p>	<p><b>Versatility:</b> The Diamond series was designed to be versatile whatever its use. For this reason it can be set up with various options and accessories suitable for every field of application. As well as the above, the peculiar features of the single screw pump are naturally taken advantage of with various types of fluids pumped, from low to the highest viscosity, clean and containing solids varying in size and nature.</p>
<p><b>Efficiency:</b> Maximum performance level, exceptional operating efficiency thanks to the optimum volumetric yield and high pressure and is consumption reduced to a minimum. All the Diamond series hydraulics efficiencies were calculated to guarantee the maximum found on today's market.</p>	
<p><b>Motorizations:</b> All the drives which are installed on the Diamond series have been tested for long periods and subject to strict and rigorous technical checks. We can install both electric and hydraulic motors.</p> <p>All the models of reducers and variators present determined characteristics in terms of strength, size of the bearings and the quality of the gears.</p>	<p><b>Quality</b> Each part is manufactured according the highly restrictive quality specifications. Finishes and precision of each part are the basis of each pump manufactured. All parts are subject to specific controls based on their characteristics and functionality.</p>



**Maintenance:** The Diamond series is designed to ensure easy maintenance and normally require the replacement of a minimum number of components.

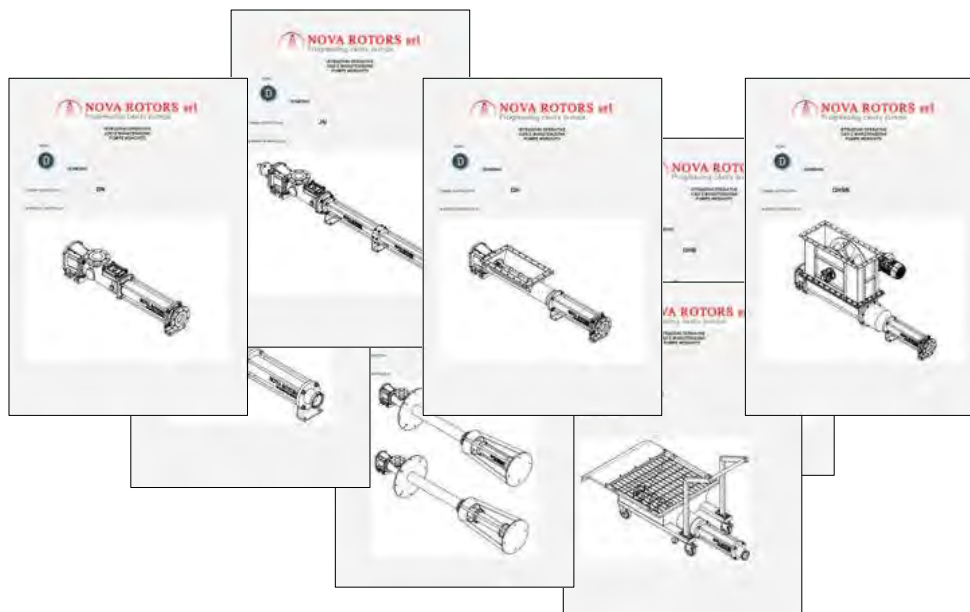
In particular the joint bushes allow the replace of the same without having to replace shafts and rotors.

The costs of maintenance are really reduced. The cost of the pump, considered in his full life cycle, is highly competitive.

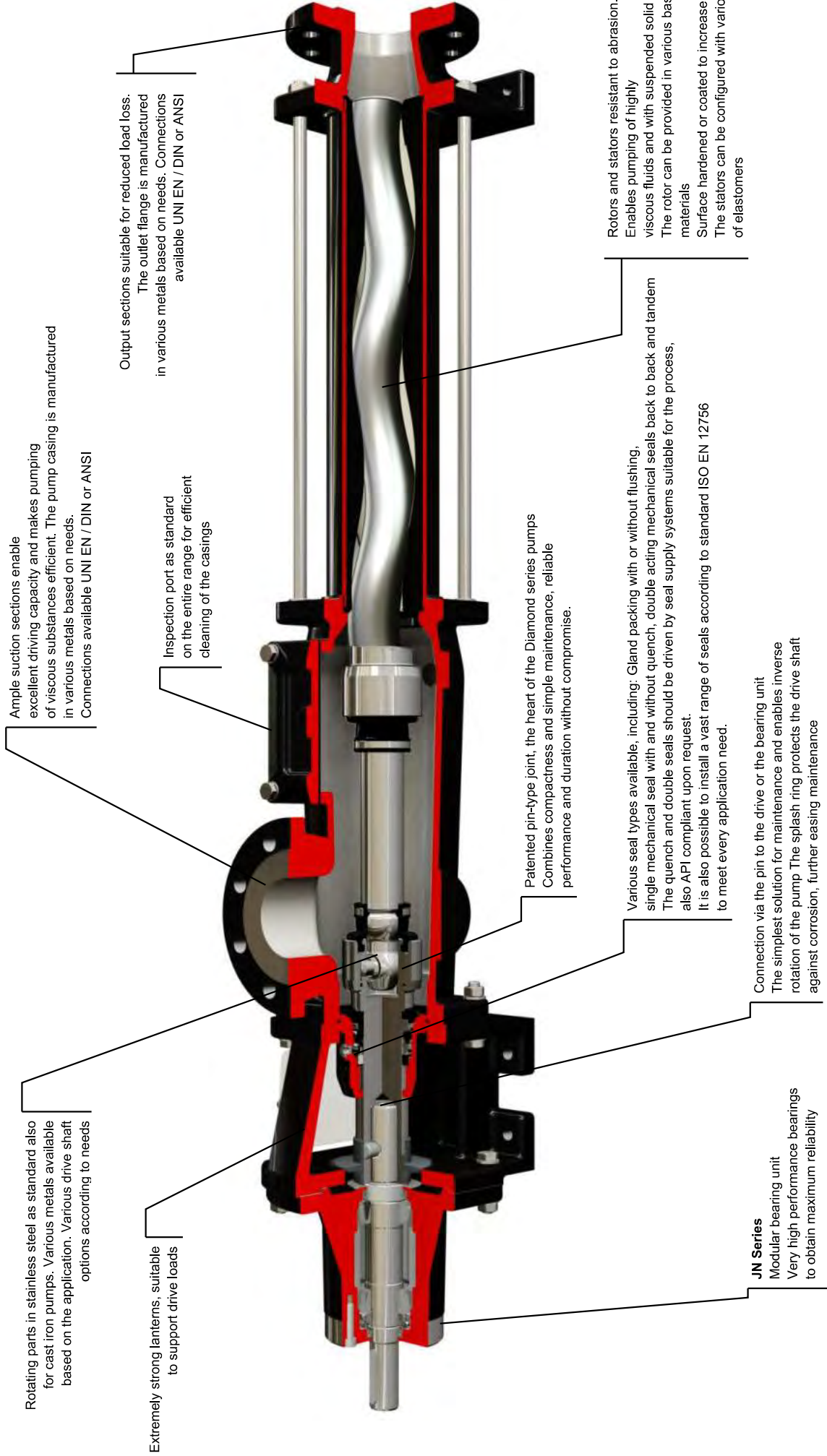
<p><b>Cost / benefit:</b> The Diamond series, thanks to the compactness of its elements combined technical success without comparison at very competitive costs. The modularity allows you to make the right solutions depending on the application to avoid paying for features you do not need, all in favor of its competitiveness.</p>	<p><b>Self-priming:</b> The peculiarities of the hydraulic parts of the progressive cavity pump allow excellent self-priming (up to 7m). The Diamond series were designed to create the minimum loss possible in the pump body, thanks to large sections and a joint compact design and fluid dynamic.</p>
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**Ease of installation:** The pumps of the Diamond series are easy to install due to compactness, simplicity of operation and operational flexibility thanks to the various features included.

**Detailed documentation:** Each pump comes with clear and detailed operating instructions. Orders are followed by experienced and qualified staff that integrates in providing detailed documentation on demand and specific for the product supplied.



# Detailed characteristics



Rotating parts in stainless steel as standard also for cast iron pumps. Various metals available based on the application. Various drive shaft options according to needs

Ample suction sections enable excellent driving capacity and makes pumping of viscous substances efficient. The pump casing is manufactured in various metals based on needs. Connections available UNI EN / DIN or ANSI

Output sections suitable for reduced load loss. The outlet flange is manufactured in various metals based on needs. Connections available UNI EN / DIN or ANSI

Inspection port as standard on the entire range for efficient cleaning of the casings

Extremely strong lanterns, suitable to support drive loads

Patented pin-type joint, the heart of the Diamond series pumps. Combines compactness and simple maintenance, reliable performance and duration without compromise.

Various seal types available, including: Gland packing with or without flushing, single mechanical seal with and without quench, double acting mechanical seals back to back and tandem. The quench and double seals should be driven by seal supply systems suitable for the process, also API compliant upon request. It is also possible to install a vast range of seals according to standard ISO EN 12756 to meet every application need.

Rotors and stators resistant to abrasion. Enables pumping of highly viscous fluids and with suspended solid particles. The rotor can be provided in various basic materials. Surface hardened or coated to increase duration. The stators can be configured with various types of elastomers

Connection via the pin to the drive or the bearing unit. The simplest solution for maintenance and enables inverse rotation of the pump. The splash ring protects the drive shaft against corrosion, further easing maintenance

**JN Series**  
Modular bearing unit  
Very high performance bearings to obtain maximum reliability

## VERSION AND OPTION

### Casing material

#### Base materials:

GG25, CF8 (AISI 304), CF8M (AISI 316), F55 (Super duplex)

#### Coating:

fluoropolymer ECTFE (Halar®)

### Materials of the sealing shaft

#### Base materials:

AISI 420, AISI 304, AISI 316, F51(Duplex), F55 (Super Duplex)

Titanium, Hastelloy C276

#### Coatings:

Hardened Chrome plated HCP

Chrome oxide plasma (ceramic coating)

### Rotor material

#### Base materials:

AISI 420, AISI 304, AISI 316, F51(Duplex), F55 (Super Duplex)

Titanium, Hastelloy C276

#### Heat treatments:

Hardening induction (only on AISI 420)

#### Coatings:

Hardened Chrome plated HCP

Chrome oxide plasma (ceramic coating)

Tungsten carbide HVOF

### Stator material

#### Base materials:

NBR, food grade NBR, white NBR food grade

EPDM, EPDM food grade, white EPDM food grade

FPM, FPM food grade

HNBR, HNBR food grade

SYLICON

Buna-N (available on select models on request)

HYPALON (available on select models on request)

PTFE (available on select models on request)

### Base plates

standard Base

API 676 Base

Base with anti-vibration housing (feet spacer)

Base with risers

Skid with lifting devices

Cart for industrial sector (trolley)

Cart for food grade and winery sector

(For details, see the brochure constructive options, equipment and installations)

### Connections

Flange UNI 2278 PN16 for pumps at 1 and 2 stage

Flange UNI 2284 or 6084 PN40 for outlet unions for pumps at 4 stage

Flange UNI 2285 PN64 for outlet unions for pumps at 8 stage

Flange ASME B16.5 #150 for pumps at 1 and 2 stage

Flange ASME B16.5 #300 for outlet unions for pumps at 4 and 8 stage

Threaded connection GAS BSP

### Sealing system

Gland packing seal B01

Gland seal with flushing B02 (flush required)

Single mechanical seal G0K9

Single mechanical seal with Quench Q0K9 (buffer-Quench-pot required)

Back-to-back double mechanical seal D0K9 (pressurized flushing required)

Tandem double mechanical seal K0K9 (buffer / flush required)

Single or double cartridge seals also in API 682 version category 1 and 2

Seal supply systems are available also in accordance with API Plan

(For construction details, see the brochure sealing systems and seals)

### Optional for coupling rod

Joint protection

Coupling rod with feed screw

Anti-settling impeller

Balanced hydraulic joint

Cardan Joint

(For details, see the brochure constructive options, equipment and installations)

### Protection devices

Temperature probe for dry running protection (standard in the ATEX version)

Flow switch

Pressure switch

Flanged overpressure valve

Hygienic overpressure valve

(For details, see the brochure constructive options, equipment and installations)

### Control devices

Control panel

Control panel with inverter

Drive with integrated inverter

(For details, see the brochure constructive options, equipment and installations)

### Equipment and optional

Stator heating jacket

Heating jacket for body pump

Stainless steel stator cover

Industrial flanged Bypass (or with threaded connection)

Quench Pot flushing

Stainless Steel Lantern

Hermetic lantern

Carter to protect the motorization

(For details, see the brochure constructive options, equipment and installations)

### Certifications

CE

ATEX

API

**FEATURES OF USE**
**Operating range**
**Flow**

 Up to 680 m<sup>3</sup>/h

**Pressure**

Up to 24 bar for the standard series (48bar for the series K8)

**Temperature**

from -40°C until to 150°C

**Typical applications**

Sewage sludge

Water Treatment

Industrial sludge

Detergents and product for chemical industry

Product of papermaking industry

Agriculture

Product derived from petro-chemical

Marine Industry

**TABLE OF MODELS**
**Flow and pressure**

Size	Model	Qmax 2 bar [m <sup>3</sup> /h]	rpm max	P max [bar]
D020	1L1	4,9	1400	6
	05K2	2,5	1400	12
	025K4	0,7	800	24
D025	2L1	6,9	1000	6
	1K2	9,4	1000	12
	05K4	1,5	800	24
	025K8	0,5	600	48
D030	4L1	11	800	6
	2K2	5,6	800	12
	1K4	2,2	600	24
	05K8	1	500	48
D040	10L1	16,5	600	6
	4K2	8,5	600	12
	2K4	3,7	500	24
	1K8	1,5	400	48
	16L1	23,5	600	6
	8K2	12	600	12
	4K2EL	8,8	600	18
D060	20L1	28	500	6
	10K2	14	500	12
	4K4	5,7	400	24
	2K8	2,6	350	48
	30L1	33	500	6
	16K2	16,5	500	12
D120	10K2EL	14,8	500	18
	40L1	43	400	6
	20K2	20	400	12
	10K4	10	350	24
	4K8	5	350	48
	60L1	63,5	400	6
	30K2	32	400	12
D300	20K2EL	21	400	18
	80L1	76	350	6
	40K2	38	350	12
	20K4	15,4	300	24
	10K8	8,5	300	48
	120L1	110	350	6
	60K2	55	350	12
D400	40K2EL	40	350	18
	160L1	140	350	6
	80K2	78	350	12
	40K4	33	300	24
	20K8	16	300	48
	240L1	230	350	6
	120K2	115	350	12
D500	80K2EL	68	350	18
	320L1	220	300	6
	160K2	120	300	12
	80K4	66	250	24
	40K8	33	250	48
	480L1	315	300	6
D600	240K2	155	300	12
	160K2EL	118	300	18
	640L1	460	300	6
	320K2	235	300	12
	160K4	100	250	24
	80K8	50	250	48
D600	960L1	680	300	6
	480K2	340	300	12
	320K2EL	245	300	18



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