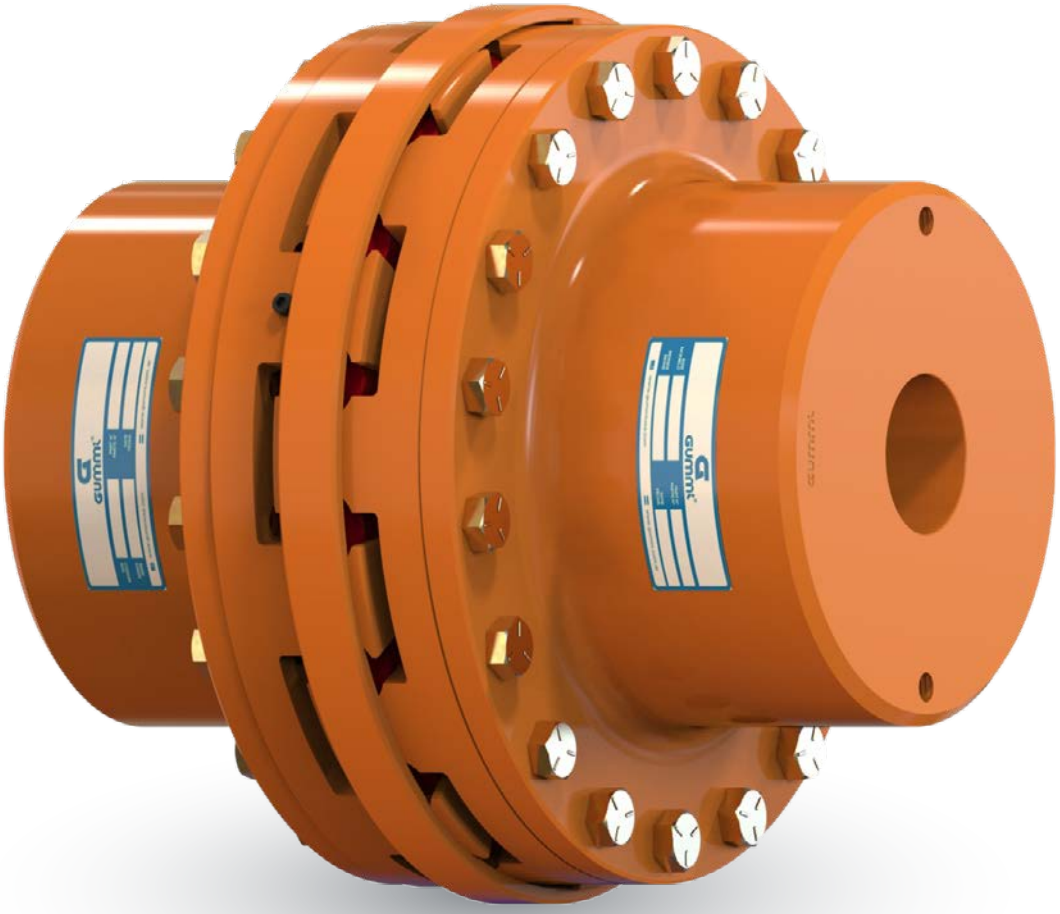
# Type VNDD

## Semi Elastic Couplings



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**Gummi** has more than 50 years' experience in the field of industrial mechanical transmission, and plays an active role in different and important local and international industrial markets. It offers a wide range of elastic, pneumatic and hydraulic couplings, as well as clutches and industrial pneumatic brakes, both standardized and special.

**Gummi** is synonymous with Quality and Service, these two features being our most precious paradigm. All products are manufactured according to ISO 9001 International Standards, certified since 1999.

Our continuous and innovative development in our product line -added to the technical advice provided by our engineering department, which always aims at practical use - has allowed us to set the cornerstone of our achievements in unparalleled technical assistance.

Our long experience and modern design systems with advanced production equipment turn our **Gummi** products into key high-tech parts, necessary in any first-class transmission system

Our **Gummi** products' use versatility has allowed them to be satisfactorily assembled, with various types of uses within the metallurgical, iron and steel, mining, oil and naval industries, among others. They have also been successfully mounted with a host of special and specific uses in power transmissions.

**Gummi is not just a GOOD PRODUCT: it is QUALITY, RELIABILITY, SAFETY AND PEACE OF MIND.**

CERTIFIED COMPANY SMC ISO 9001:2015

INTERNATIONAL ACCREDITATION FORUM IAF

SNAS Reg. No. 391/Q-058

Consorzio Europeo Certificazione

Ex

**When choosing a coupling, it is essential to consider the torque of the driving machine, the system's irregularity degree and the magnitude of the masses that must be accelerated. For initial determination of the coupling, it is necessary to consider the service factors described in Chart I, which, when multiplied to the Nominal Torque Moment of the conductive machine, will determine the equivalent Torque Moment Tn.**
**The chosen coupling Torque Moment must be greater than or equal to Tn.**

$$Tn: \frac{9550 \times Pow, \times SF}{SPEED.}$$

**Tn = NominalTorque (Nm)**

**Pow. = Power (Kw)**

**Speed = Spin speed (r.p.m.)**

**SF = Service Factor = F1 x F2 x F3 x F4**

**Tmax = Maximum Coupling Torque (Nm)**

Hp x 0.746 → Kw.
Cv x 0.736 → Kw.

## REQUIREMENTS FOR THE CHOICE OF A COUPLING: TMax ≥ Tn

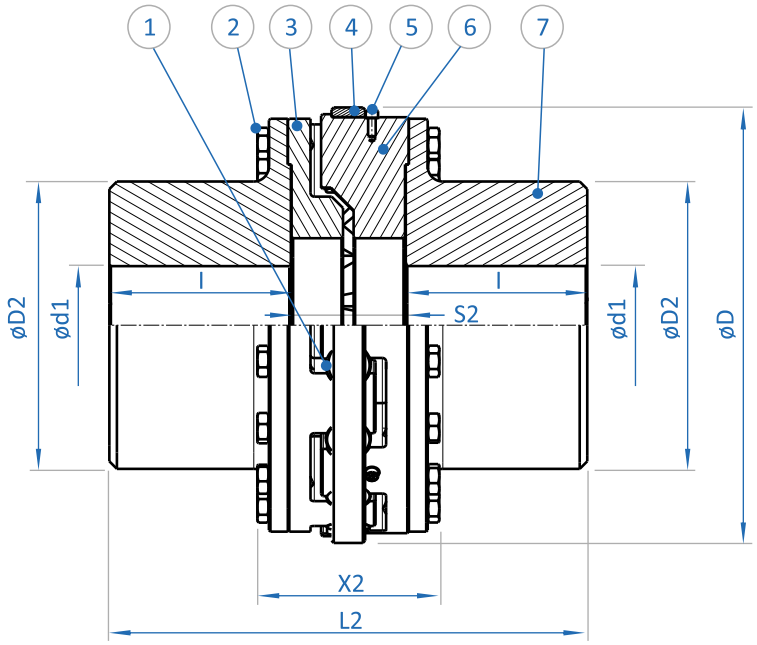
| CONDUCTING MACHINE | 3 Combustion engine with 1 to 3 cylinders<br>2 Combustion engine with 4 or more cylinders<br>1 Electric engenie or steam turbine | (I) |
|---|---|---|

| CONDUCTIONG MACHINES | Service factor F1 1 | 2 | 3 |
|---|---|---|---|
| a) With a regular service and reduced masses to accelerate: Centrifugal pump for liquids, electric generators, fans with P/rpm ≤ 0.1, etc. | 1,5 | 1,8 | 2,1 |
| b) With a regular service and small masses to accelerate: Small elevators, exhaust systems, conveyor belts for in-bulk material, liquid agitators, textile machines, rotary compressors, rolling ladders, fans with P/rpm = 0.05 to 0.1 etc | 1,6 | 2,0 | 2,3 |
| c) With an irregular service and average masses to accelerate: Rotating piston blowers, rotating furnaces, printers, conveyor belts for raw materials, hoists with rolling bridges, machines for wood, rotating pumps for semi-liquids, cargo lifts, semi-liquid agitators, fans with P/rpm ≥ 0.1, etc. | 1,7 | 2,2 | 2,5 |
| d) With an irregular service and average masses to accelerate, with slight shocks:<br>Pulp defibrillators, piston pumps and compressors with a degree of non-uniformity of 1:100 to 1:200, ball mills, pumps for thick substances, ship shafts, centrifugal mills, conveyor threads, sugar-cane mincer/ defibrillator / mill and feeding table, etc | 1,9 | 2,5 | 2,8 |
| e) With an irregular service and large masses to accelerate, with strong shocks:<br>Dredges, rolling mills, wire drawing machines, hammer mills, calenders, piston pumps and compressors with a small steering-wheel, presses, vibrating machines, rolling car and bridge translation, etc | 2,1 | 2,8 | 3,1 |
| f) With an irregular service and large masses to accelerate, with very strong shocks: Piston pumps and compressors without a steering-wheel, welding generators, alternative saws, metal rolling mill. | 2,4 | 3,0 | 3,5 |
| g) Other gears | Check | | |

| DAILY WORKING (hours) | More than to | - 8 | 8 16 | 16 24 |
|---|---|---|---|---|
| Factor - F2 | | 1,0 | 1,07 | 1,10 |
| ROOM TEMPERATURE (°C) | More than to | - 75 | 75 85 | 85 - |
| Factor - F3 | | 1,0 | 1,2 | Check |

| DEPARTURES / HOUR | 01 10 | 11 20 | 21 40 | 41 80 | 81 160 | MÁS DE 160 |
|---|---|---|---|---|---|---|
| According to F1 load type | Factor - F4 | | | | | |
| a) | 1 | 1,10 | 1,20 | 1,25 | 1,40 | 1,50 |
| b) | 1 | 1,10 | 1,15 | 1,20 | 1,35 | 1,40 |
| c) | 1 | 1,07 | 1,15 | 1,20 | 1,30 | 1,40 |
| d) | 1 | 1,07 | 1,12 | 1,15 | 1,20 | 1,30 |
| e) | 1 | 1,05 | 1,12 | 1,15 | 1,20 | 1,30 |
| f) | 1 | 1,05 | 1,10 | 1,12 | 1,12 | 1,12 |
| g) | Check | | | | | |

## VNDD MODEL

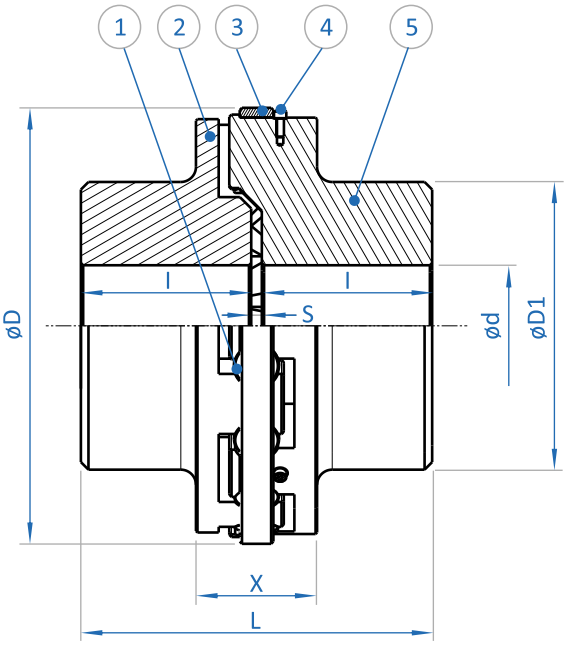



| | Max. Torque (Nm) | Max. RPM | d 1 | | D | D2 | L2 | l | X2 | S2 | Thread screw | J VNDD ($kgm^2$) | Weight VNDD (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min. | Max. | | | | | | | | | |
| 170 | 7200 | 7600 | 15 | 72 | 182 | 110 | 220 | 80 | 120 | 60 | M12 | 0.05 | 20 |
| 200 | 9000 | 6500 | 25 | 80 | 212 | 125 | 234 | 85 | 125 | 64 | M12 | 0.15 | 28 |
| 240 | 12480 | 2900 | 30 | 80 | 260 | 25 | 360 | 130 | 180 | 100 | M18 | 0.36 | 49 |
| 300 | 25920 | 2350 | 45 | 125 | 320 | 175 | 438 | 160 | 200 | 118 | M18 | 1.27 | 93 |
| 350 | 44160 | 2100 | 80 | 140 | 370 | 205 | 478 | 180 | 200 | 118 | M18 | 1.65 | 134 |
| 400 | 65280 | 1900 | 100 | 170 | 420 | 245 | 512 | 190 | 220 | 132 | M20 | 3.16 | 193 |
| 450 | 87936 | 1700 | 115 | 200 | 470 | 280 | 532 | 200 | 220 | 132 | M20 | 7.50 | 260 |
| 500 | 132480 | 1500 | 140 | 210 | 530 | 300 | 608 | 228 | 255 | 152 | M24 | 10.3 | 324 |
| 550 | 169920 | 1350 | 150 | 240 | 580 | 350 | 632 | 240 | 255 | 152 | M24 | 15.9 | 434 |
| 600 | 211968 | 1250 | 155 | 260 | 630 | 370 | 678 | 258 | 265 | 162 | M24 | 21.5 | 575 |
| 650 | 253440 | 1150 | 165 | 290 | 680 | 410 | 688 | 258 | 290 | 172 | M27 | 33.0 | 696 |
| 700 | 344448 | 1050 | 190 | 290 | 740 | 420 | 790 | 300 | 315 | 190 | M30 | 45.6 | 858 |
| 800 | 505728 | 950 | 205 | 360 | 840 | 505 | 866 | 338 | 320 | 190 | M30 | 105 | 1297 |
| 900 | 696960 | 850 | 225 | 420 | 940 | 590 | 878 | 338 | 340 | 202 | M30 | 153 | 1827 |
| 1000 | 840000 | 750 | 250 | 500 | 1040 | 655 | 944 | 375 | 340 | 194 | M30 | 324 | 2387 |
| 1200 | 1288800 | 650 | 300 | 600 | 1240 | 905 | 1038 | 400 | 400 | 238 | M30 | 637 | 4250 |

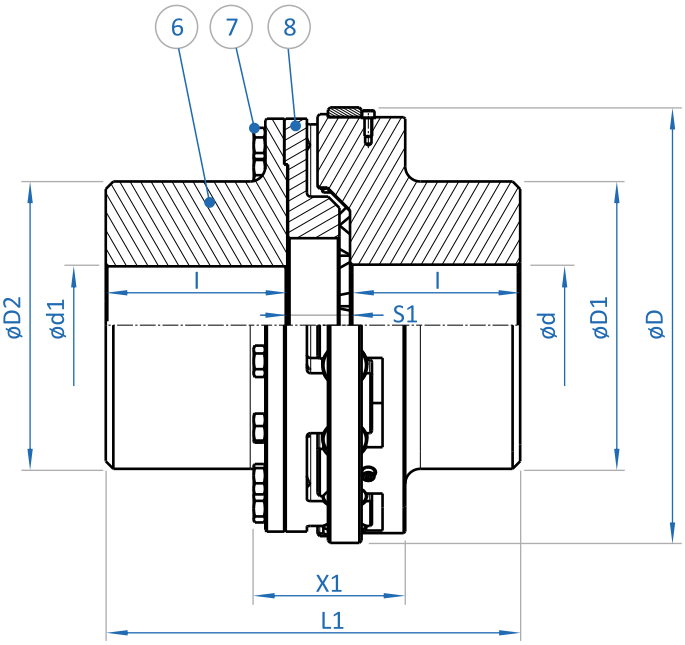
## MATERIAL

Item 1: Elastic component
Item 2: Claw screw
Item 3: Claws
Item 4: Steel ring
Item 5: Ring screw
Item 6: Ring-holder claw
Item 7: Additional hub

## VN MODEL




## VND MODEL



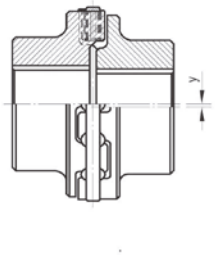

| | Max. Torque (Nm) | Max. RPM | d | | d1 | | D | D1 | D2 | L | L1 | l | X | X1 | S | S1 | Thread screw | J VN ($kgm^2$) | Weight VN (kg) | J VND ($kgm^2$) | Weight VND (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min. | Max. | Min. | Max. | | | | | | | | | | | | | | | |
| 170 | 7200 | 7600 | 15 | 72 | 15 | 72 | 182 | 110 | 110 | 188 | 216 | 80 | 65 | 95 | 8 | 36 | M12 | 0.06 | 17 | 0.05 | 20 |
| 200 | 9000 | 6500 | 25 | 90 | 25 | 80 | 212 | 130 | 125 | 208 | 236 | 85 | 68 | 95 | 8 | 36 | M12 | 0.12 | 25 | 0.15 | 28 |
| 240 | 12480 | 2900 | 30 | 95 | 30 | 80 | 260 | 135 | 25 | 270 | 315 | 130 | 106 | 150 | 10 | 55 | M18 | 0.39 | 46 | 0.36 | 49 |
| 300 | 25920 | 2350 | 45 | 125 | 45 | 125 | 320 | 175 | 175 | 330 | 384 | 160 | 124 | 165 | 10 | 64 | M18 | 1.09 | 88 | 1.27 | 93 |
| 350 | 44160 | 2100 | 90 | 150 | 80 | 140 | 370 | 210 | 205 | 370 | 424 | 180 | 124 | 165 | 10 | 64 | M18 | 1.66 | 117 | 1.65 | 134 |
| 400 | 65280 | 1900 | 110 | 180 | 100 | 170 | 420 | 252 | 245 | 390 | 451 | 190 | 138 | 185 | 10 | 71 | M20 | 3.02 | 171 | 3.16 | 193 |
| 450 | 87936 | 1700 | 130 | 210 | 115 | 200 | 470 | 300 | 280 | 410 | 471 | 200 | 138 | 185 | 10 | 71 | M20 | 5.43 | 257 | 7.50 | 260 |
| 500 | 132480 | 1500 | 150 | 210 | 140 | 210 | 530 | 305 | 300 | 470 | 539 | 228 | 160 | 210 | 14 | 83 | M24 | 8.28 | 289 | 10.3 | 324 |
| 550 | 169920 | 1350 | 160 | 270 | 150 | 240 | 580 | 380 | 350 | 470 | 539 | 240 | 160 | 210 | 14 | 83 | M24 | 15.1 | 414 | 15.9 | 434 |
| 600 | 211968 | 1250 | 180 | 290 | 155 | 260 | 630 | 410 | 370 | 530 | 604 | 258 | 170 | 230 | 14 | 88 | M24 | 22.4 | 534 | 21.5 | 575 |
| 650 | 253440 | 1150 | 200 | 320 | 165 | 290 | 680 | 450 | 410 | 530 | 609 | 258 | 182 | 230 | 14 | 93 | M27 | 38.3 | 646 | 33.0 | 696 |
| 700 | 344448 | 1050 | 200 | 320 | 190 | 290 | 740 | 450 | 420 | 610 | 698 | 300 | 200 | 260 | 14 | 102 | M30 | 45.6 | 808 | 45.6 | 858 |
| 800 | 505728 | 950 | 250 | 400 | 205 | 360 | 840 | 560 | 505 | 690 | 778 | 338 | 200 | 280 | 14 | 102 | M30 | 98.8 | 1249 | 105 | 1297 |
| 900 | 696960 | 850 | 260 | 470 | 225 | 420 | 940 | 660 | 590 | 690 | 784 | 338 | 214 | 295 | 14 | 108 | M30 | 174 | 1568 | 153 | 1827 |
| 1000 | 840000 | 750 | 290 | 525 | 250 | 500 | 1040 | 730 | 655 | 764 | 870 | 375 | 212 | 295 | 14 | 120 | M30 | 270 | 2336 | 324 | 2387 |
| 1200 | 1288800 | 650 | 300 | 600 | 300 | 600 | 1240 | 900 | 905 | 816 | 925 | 400 | 256 | 345 | 16 | 125 | M30 | 579 | 4010 | 637 | 4250 |

## MATERIAL

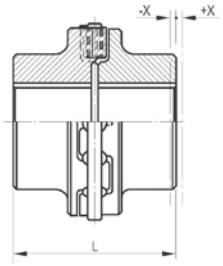
Item 1: Elastic component (VN / VND)
Item 2: Hub with claw (VN)
Item 3: Steel ring (VN / VND)
Item 4: Ring screw (VN / VND)
Item 5: Hub with ring-holder claw (VN)
Item 6: Additional cube (VND)
Item 7: Claw screw (VND)
Item 8: Component-holder claws (VND)

## ACCEPTABE MISALIGNMENTS

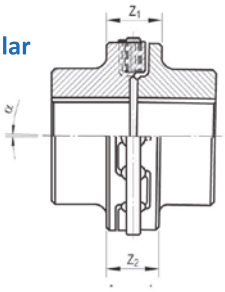
Radial



Axial




Angular



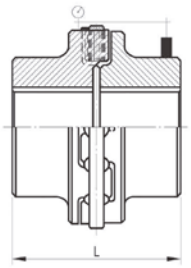

| | 170 | 200 | 240 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 800 | 900 | 1000 | 1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Axial ± X (mm)** | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| **Radial y (mm)** | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| **Angular** $\alpha$ (°) | 0,5 | 0,5 | 0,5 | 0,5 | 0,4 | 0,4 | 0,35 | 0,35 | 0,3 | 0,3 | 0,3 | 0,3 | 0,25 | 0,23 | 0,25 | 0,25 |
| $\Delta Z = \widehat{z_1} - z_2$ (mm) | 2,0 | 2,0 | 2,0 | 2,0 | 2,0 | 2,75 | 2,75 | 3,0 | 3,0 | 3,0 | 3,25 | 3,5 | 3,5 | 3,5 | 4,0 | 5,0 |

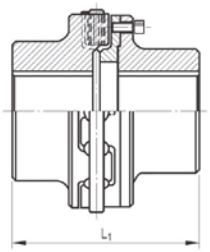
## TORSION ANGLE

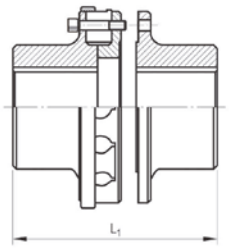
| | | 170 | 200 | 240 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 800 | 900 | 1000 | 1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $\varphi$ (°) | **1/3 Mmáx.** | 1,2 | 1,2 | 1,55 | 0,87 | 0,96 | 0,96 | 0,83 | 0,88 | 0,78 | 0,71 | 0,56 | 0,51 | 0,43 | 0,38 | 0,52 | 0,47 |
| | **Mmáx.** | 2,1 | 2,1 | 2,54 | 1,75 | 2,08 | 2,08 | 1,80 | 1,93 | 1,72 | 1,55 | 1,25 | 1,17 | 0,99 | 0,87 | 1,15 | 1,03 |

## INTALASTION

Mount the steel ring on the lock-in cube on the claws. Assemble both cubes on the machines' shafts attaching them axially and setting the machines closer, respecting 'S' level. With the aid of a comparator watch and/or laser aligner, line up the coupling as shown in the picture below.
The correct alignment of the couplings increases the elastic components' lifespan and prevents an effort on the coupled machines' anchors. Finally, assemble radially the elastic components and fasten the ring with the radial screws that are on the coupling hub.




## MAINTENANCE

In service, VN coupling does not require any maintenance. Therefore, it is advisable to replace the elastic component when general maintenance is carried out.

## REPLACEMENT OF THE ELASTIC COMPONENT

1)Remove the fixing bolts from the external ring
2) Move aside the steel ring and disassemble the elastic components with the aid of a hook.
3) Mount radially the new elastic components. Place the external steel ring and re-install the fixing bolts.

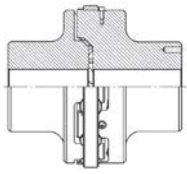
**Note:** elastic components are supplied in different colors, both polyurethane and rubber, as required.

## FITTING TORQUE (Nm)

| Type of resistance | M12 | M18 | M20 | M24 | M27 | M30 |
|---|---|---|---|---|---|---|
| 12,9 | 126 | 417 | 596 | 1028 | 1519 | 2056 |

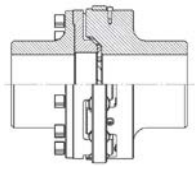
## BASIS CONCEPTS

VN Plus is a coupling that allows radial, axial and angular misalignments among the coupled shafts, absorbing shocks and vibrations coming from the parts that make up transmission. It has elastic polyurethane components that have greater resistance to dust, water, oil and other aggressive agents. Thanks to its simplified construction, VN Plus coupling enables a quick and safe installation, doing away with lubrication and minimizing maintenance. Especially recommended for heavy duty. Owing to its claws, this coupling is rolling-slip-proof. It is available in several sizes and shapes and it has a capacity of up to 1,288,800 Nm and shafts of up to 600 mm diameter.



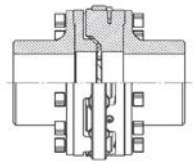
### VN

Basic coupling made up of two standard cubes with claws and several elastic components radially set among the claws. It is recommended in cases where there is a little clearance between the tips of the shafts. It does not allow the radial disassembling of one or both coupled machines, but it allows the replacement of elastic components without moving them.



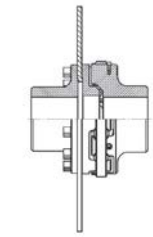
### VND

Coupling derived from VN shape, made up of a standard hub with claws, an additional hub, a clamp with claws and several components radially set among the claws. It is recommended in cases where there is a little clearance between the tips of the shafts. It allows the radial disassembling of one or both coupled machines. It enables the replacement of elastic components without moving them and the independent activation of the activated or activating machine.



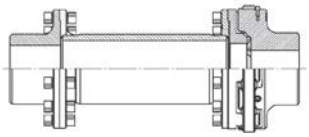
### VNDD

Coupling derived from VND shape, made up of two additional hubs, two clamps with claws and several components radially set among the claws. It is recommended in cases where there is a little clearance between the tips of the shafts, twice bigger than in VND shape. It allows the radial disassembling of one or both coupled machines, the replacement of elastic components without moving them and the independent activation of the activated or activating machine.



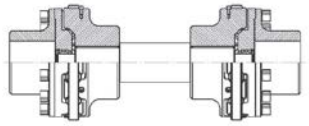
### VND-TB

Coupling derived from VND shape, to which a brake disc has been added. It allows the replacement of elastic components and/or brake disc without moving the coupled machines.



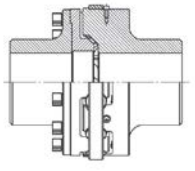
### VND-ET

Coupling derived from VND shape, to which a radially removable tubular spacer has been added. It is recommended for horizontal working, in cases where there is a medium-sized clearance between the tips of the shafts. As it has a hard and an elastic side, its axial, radial and angular misalignment is that of the VN/VND shape. It allows the replacement of elastic components without moving the coupled machines.



### VND-EC

It is made up of two VND couplings joined by a spacer placed on ball-and-socket joints, which give it “gimbal” features. It is recommended for horizontal working, in cases where there is a remarkable clearance between the shafts. It allows the replacement of elastic components without moving the coupled machines.



### VND-A

Coupling derived from VND shape, but it enables a greater axial movement. It is recommended for equipment that requires axial repositioning/regulation of the activated or activating shaft. It allows the replacement of elastic components without moving the coupled machines.

GUMMI

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TOTAL QUALITY

ECOLOGICAL TECHNOLOGY

ABS TYPE APPROVED PRODUCT

CERTIFIED COMPANY SMC ISO 9001:2015

SNAS Reg. No. 391/Q-058

Ex