Colombo&C.
manifattura guarnizioni
100 YEARS
1911-2011

Gaskets & seals solutions

Rubber fabric products TENAX®

Vee packings • Chevron sets • Collars for rods & pistons

Colombo&C.
manifattura guarnizioni
GASKETS & SEALS SOLUTIONS

Colombo&C.
manifattura guarnizioni
GASKETS & SEALS SOLUTIONS
100 YEARS • 1911 - 2011

Gaskets and Seals in Tenax® rubber fabric

Our gaskets in cotton-fabric **TENAX®** do consist of fabric impregnated with elastomeric compounds through special manufacturing processes.

Our pre-shaped rings with a rolled and wound structure are prepared, moulded and vulcanised in order to obtain the definitive profile.

This special structure, combined with the design of profiles used for years in hydraulic systems, allows to produce gaskets with:

- High elasticity;
- Good mechanical resistance;
- Good resistance to wear;
- High resistance to pressure;
- Resistance to mineral and synthetic oils;
- Resistance to high temperatures.

Our gaskets in **TENAX®**, regardless of the profile, exert their function on the base of the elastic deformation they undergo during assembly in a housing having a radial section inferior to the actual width of the gasket.
With this method, even in applications with no pressure, the sealing performance is ensured by the elastic deformation effect.

When the pressure of the fluid on the gasket increases, the perfect balance among the forces acting on the gasket is created. Therefore a good sealing performance is ensured even at the highest operating temperatures.

Our gaskets in **TENAX®**, if compared with other gaskets in compact rubber, offer many advantages in terms of resistance to wear and low friction coefficient. This is due to the structure of the fabric, which is able to retain particles of the retained fluid in its stitch structure. This allows to improve the lubrication and the resistance of the gasket.

Our gaskets in **TENAX®** are also able to prevent sticking phenomena of metal parts, even after long standstill periods.

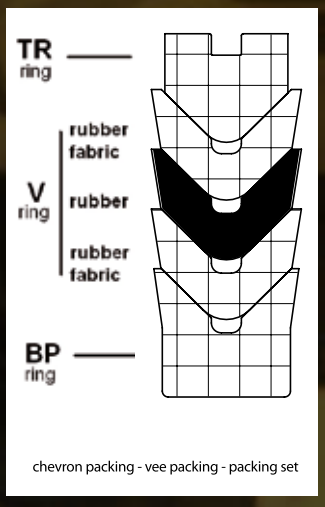
Vee packings or Chevron "Automatic" sets

Our vee-packing sets, also known as "automatic", do consist of different elements, such as:

- Head ring section TR
Also named thrust ring; it has no sealing function, but it is aimed at protecting the upper V-ring from possible collision against the sharp edges of the metal housing. It is normally produced in hard material; according to the specific construction requirements, it is produced in cotton-fabric NBR, in high hardness rubber or in plastic material. From the geometric point of view, it has a groove and some axial notches aiming at improving the sealing performance even in case of pressure peaks. The head ring is available in split form and/or glued.

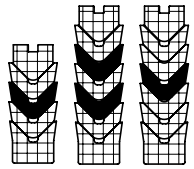
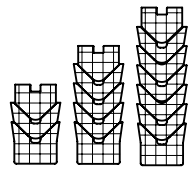
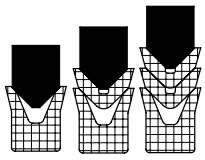
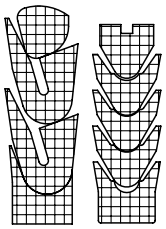
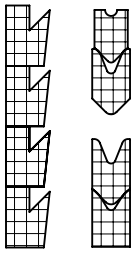
- Intermediate rings section V
They are the basic elements in all chevron sets; their particular "V"-shape has been designed for enhancing the sealing performance in high pressure applications. This is the reason why they are also called "automatic". This profile, available in many different materials, allows a good resistance to pressure with low friction. In specific cases one or more "V" rings composing the Chevron set are produced in nitrile rubber; the performance of the set at low pressures is therefore highly improved.

- Base ring section BP
Also named "U"-ring. This ring is assembled opposite to the pressure flow and therefore, besides supporting the "V"-rings, it has to be highly resistant to extrusion. As the BP ring is particularly subject to wear, it is supplied with an anti-extrusion ring in special heavy-duty applications.

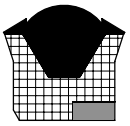
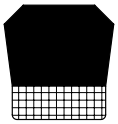
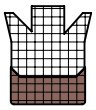
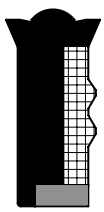


chevron packing - vee packing - packing set

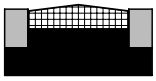
VEE PACKINGS & CHEVRON "AUTOMATIC" SETS

Profile	Dimensional range [mm]	Materials	P [bar]	T [°C]	S [m/s]	Applications
 T05 T07 T07/1 TO series	15÷300	NBR + fabric FKM + fabric HNBR + fabric V-rings NBR 70 Shore A V-rings FKM 70 Shore A V-rings HNBR 70 Shore A	400	-30 ÷ 120 -10 ÷ 200 -30 ÷ 150 -30 ÷ 120 -10 ÷ 200 -30 ÷ 150	0,5	- Hydraulic cylinders - Injection moulding presses - Forging presses - Extruding presses
 TG3 TG5 TG7 TG series	8÷2000 ENDLESS OR SPLIT	NBR + fabric FKM + fabric HNBR + fabric	400	-30 ÷ 120 -10 ÷ 200 -30 ÷ 150	0,5	- Hydraulic cylinders - Injection moulding presses - Forging presses - Extruding presses
 JW JW1 JW2 JW series	8÷1200	NBR + fabric FKM + fabric V-rings in NBR 70 Shore A V-rings in FKM 70 Shore A	600	-30 ÷ 120 -10 ÷ 200 -30 ÷ 120 -10 ÷ 200	0,5	- Hydraulic cylinders - Hydraulic presses - Hydraulic valves - Reciprocating pumps - Machine tools
 TG40 TG60	8÷1200 10÷300	NBR + fabric FKM + fabric	300 500	-30 ÷ 120 -10 ÷ 200	0,5	- Hydraulic cylinders presses - Machine tools - Heavy duty applications
 BL series W series	100÷2000 ENDLESS or SPLIT	NBR + fabric	600	-30 ÷ 120	0,5	- Hydraulic cylinders presses - Machine tools - Heavy duty applications

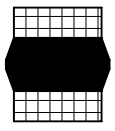
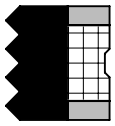
COLLARS FOR RODS AND PISTONS

Profile	Dimensional range [mm]	Materials	P [bar]	T [°C]	S [m/s]	Applications
 TEOL/1  TEOL/1A  TEOL/1/B  TEOL/1/R	20÷600	Vulcanised Head ring • NBR + fabric • FKM + fabric Supporting ring • NBR 70 Shore A • FKM 70 Shore A Anti-extrusion ring • PA6 Nylon • PTFE	200 250 200 300	-30 ÷ 120 -10 ÷ 200	0,5	- Hydraulic cylinders - presses - Machine tools
 TEOL/2	200÷300	Seal ring: NBR + fabric, FKM + fabric Energising ring: NBR 70 Shore A, FKM 70 Shore A	250	-30 ÷ 120 -10 ÷ 200	0,5	- Hydraulic cylinders - presses - Machine tools
 TEOL/8	200÷300	NBR + fabric NBR HD + fabric	400	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Heavy-duty applications
 TEOL/5	10÷200	NBR + fabric	250	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Machine tools
 UBP	10÷200	NBR + fabric	200	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Machine tools

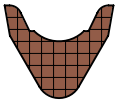
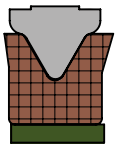
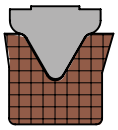
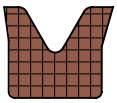
COLLARS FOR PISTONS IN DOUBLE-ACTING CYLINDERS

Profile	Dimensional range [mm]	Materials		P [bar]	T [°C]	S [m/s]	Applications
 SM	20÷350	Seal ring Supporting ring Back-up ring	NBR NBR + fabric POM	500	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Heavy-duty applications
 DSM	20÷350	Seal ring Supporting ring Back-up ring	NBR NBR + fabric POM	700	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Heavy-duty applications
 G26	20÷350	Seal ring Supporting ring Back-up ring	NBR + fabric NBR POM	700	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Heavy-duty applications
 TEOL1/E	20÷350	Seal ring Supporting ring Back-up ring	NBR + fabric NBR POM	400	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Heavy-duty applications
 D11	20÷350	Seal ring Supporting ring Back-up ring	NBR NBR + fabric POM	400	-30 ÷ 120	0,5	- Hydraulic cylinders - presses - Heavy-duty applications

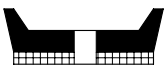
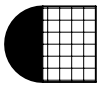
COLLARS FOR ROTATING MOVEMENTS

Profile	Dimensional range [mm]	Materials		P [bar]	T [°C]	S [m/s]	Applications
 G17	10÷300	Seal ring Supporting ring	NBR NBR + fabric	200	-30 ÷ 120	0,2	- Hydraulic systems - Machine tools
 G19	50÷300	Seal ring Supporting ring Back-up ring	NBR + fabric NBR POM	400	-30 ÷ 120	0,2	- Hydraulic systems - Machine tools

COLLARS FOR HIGH PRESSURE PUMPS

Profile	Dimensional range [mm]	Materials		P [bar]	T [°C]	S [m/s]	Applications
 VM	10÷100	NBR + fabric NBR + Hard fabric FKM + fabric HNBR + fabric		400	-30 ÷ 120 -30 ÷ 120 -10 ÷ 200 -30 ÷ 150	2,0	- Plunger pumps - Piston pumps - Metering pumps - Pumps for high pressure cleaners - Pumps for homogenisers
 PW1	20÷50	Back-up ring U - ring Head ring	PTFE + bronze NBR + hard fabric Polyacetal or NBR	250	Max 80	2,0	- Plunger pumps - Piston pumps - Metering pumps - Pumps for high pressure cleaners - Pumps for homogenisers
 PW2	20÷35	U-ring Head ring	NBR + hard fabric Polyacetal or NBR 90 Shore A	80	Max 80	2,0	- Plunger pumps - Piston pumps - Metering pumps - Pumps for high pressure cleaners - Pumps for homogenisers
 PW	20÷50	NBR + hard fabric		80	Max 80	2,0	- Plunger pumps - Piston pumps - Metering pumps - Pumps for high pressure cleaners - Pumps for homogenisers

COLLARS FOR SPECIAL APPLICATIONS

Profile	Dimensional range [mm]	Materials		P [bar]	T [°C]	S [m/s]	Applications
 JWG	100÷1500	NBR + fabric		400	-30 ÷ 120	0,5	- Hydraulic cylinders presses - Machine tools
 GYA	10÷350	NBR + fabric FKM + fabric		20	-30 ÷ 120	0,5	- Hydraulic cylinders presses - Machine tools
 D-SEAL	100÷1800	Seal ring Supporting ring	NBR NBR + fabric	200	-30 ÷ 120	0,5	- Hydraulic cylinders presses - Machine tools

MATERIALS

RUBBER

Material	Properties	Application
OLEOLITE® NBR Acrylonitrile butadiene rubber	- optimal mechanical resistance - resistance to wear - bad performance with heat - low resistance to fuels - low resistance to ageing	Resistance to temp. -30 + 120 C° - Hydraulic oil, grease, emulsions, water - Mineral base fluids HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC
FKM Fluorinated rubber	- optimal resistance to high and low temperatures - good chemical resistance - bad performance with steam	Resistance to temp. -10 + 200 C° - Hydraulic oil, grease, emulsions, water - Mineral base fluids HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC ,HFD

PTFE

Material	Properties	Application
Virgin PTFE polytetrafluoroethylene	- low friction coefficient - optimal resistance to chemical agents and solvents - optimal dielectric properties - optimal resistance to temperature - FDA approval - low wear resistance - low recovery	- Hydraulic oil, emulsions, water. - Mineral base fluids: HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC, HFD.
SPECIAL PTFE MATERIALS		
PTFE filled with glass	- optimal resistance to wear and optimal anti-extrusion properties - FDA approval	- Hydraulic oil, grease, emulsions, water. - Mineral base fluids: HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC, HFD.
PTFE filled with carbon	- optimal resistance to wear and distortion - bad dielectric properties	- hydraulic oil, grease, emulsions, water. - Mineral base fluids: HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC, HFD.
PTFE filled with graphite	- low friction coefficient - optimal heat dispersion properties - good performances in applications with steam	- hydraulic oil, grease, emulsions, water. - Mineral base fluids: HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC, HFD.
PTFE filled with bronze	- optimal resistance to wear and distortion - good thermal conductivity - bad dielectric properties - good resistance to chemical agents	- hydraulic oil, grease, emulsions, water. - Mineral base fluids: HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC, HFD.
PTFE filled with bronze/MoS2	- optimal resistance to wear and optimal anti-extrusion properties - resistance to high pressure	- hydraulic oil, grease, emulsions, water. - Mineral base fluids: HH,HL, HM,HV - Fire-resistant fluids HFA,HFB,HFC, HFD.

RUBBER FABRIC

Material	Base Composition	Applications
TENAX	Cotton fabric / NBR sh 75 colour black	**Max Temperature 120 °C** For hydraulic oil , water emulsions fluids HFA ,HFB, HFC
TENAX - HD	Cotton fabric / NBR shore 90 - Colour black, brown , blue - FDA approval available - Special version for heavy-duty applications	**Max Temperature 120 °C** For hydraulic oil , water emulsions fluids HFA ,HFB, HFC
TENAX FKM	Cotton fabric / FKM shore 75 Colour black	**Max Temperature 180 °C** Hot oil , low pressure steam , acids , alkali, solvents , phosphoric esters , fluids HFA ,HFB, HFC,HFD
TENAX FKM/Kevlar®	Kevlar ® Aramidic fabric/ FKM shore 75 Colour black	**Max Temperature 200 °C** Special version for heavy-duty applications
TENAX HNBR	Cotton fabric / HNBR sh 75 Colour black	**Max Temperature 150 °C** Special version for heavy-duty applications
TENAX VMQ	Cotton fabric / silicone VMQ shore 75 Colour red	**Temperature max 180 °C**
TENAX PTFE	Cotton fabric / NBR sh 75 Colour white (NBR with PTFE content)	**Temperature max 120 °C**

Colombo&C.
manifattura guarnizioni
GASKETS & SEALS SOLUTIONS

HEADQUARTERS:
MANIFATTURA GUARNIZIONI COLOMBO & C. S.P.A.
24067 SARNICO (BG) VIA VITTORIO VENETO, 48
TEL. +39035910052 FAX +39035910957
P.IVA 02385600164
E-MAIL OFFERTE@COLOMBOSPA.COM • INQUIRIES@COLOMBOSPA.COM
WEB SITE: WWW.COLOMBOSPA.COM