



Patented

KLEERBAND®

FLANGE PROTECTORS & RADOLID® PROTECTION CAPS

Radolid® Bolt Protection Caps • Now with VCI - patent pending*



ADVANCE

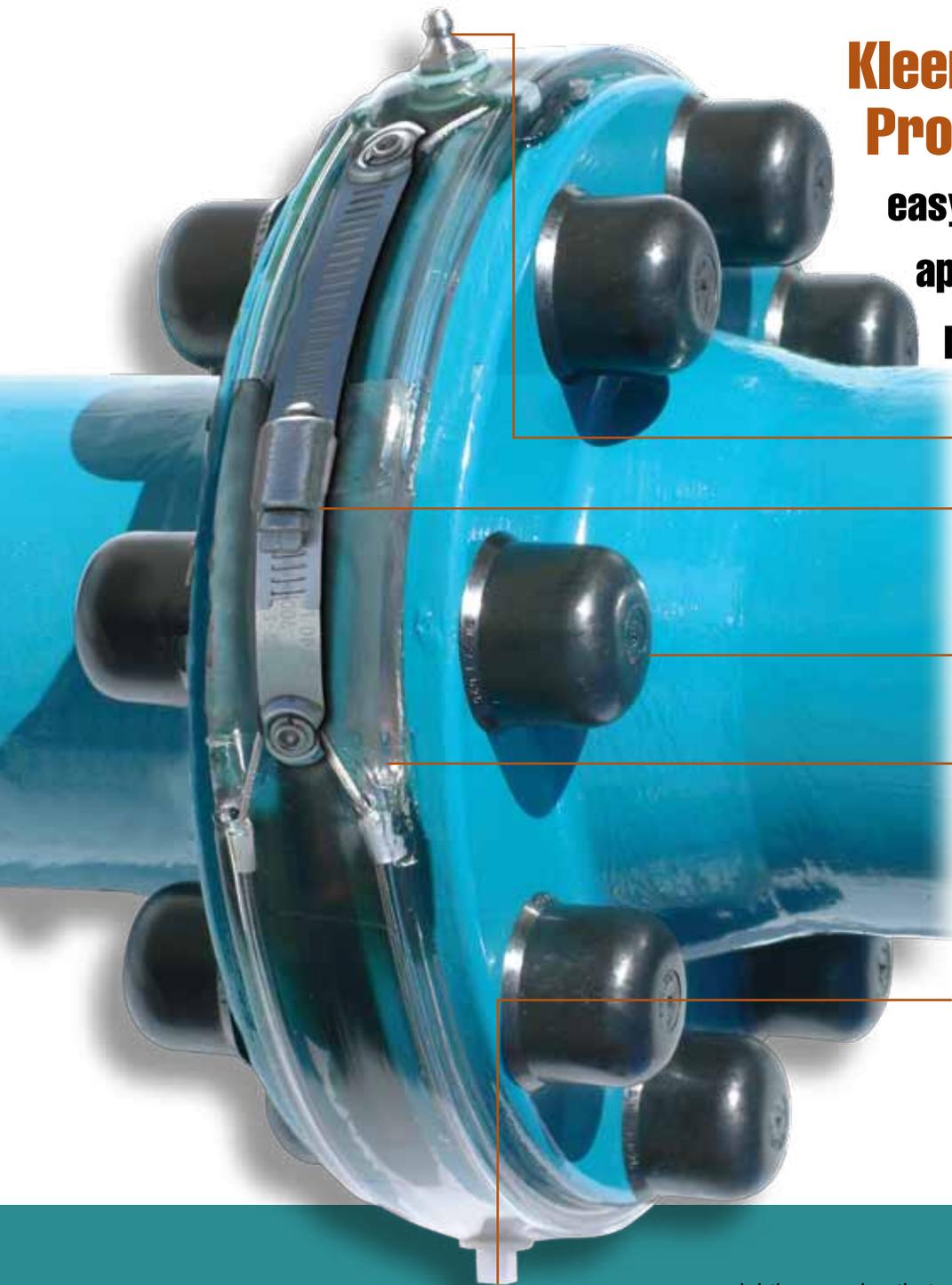
PRODUCTS & SYSTEMS, INC.

ISO-9001 CERTIFIED COMPANY - FM537405



*Patent Pending only applies to Radolid Caps with VCI

Kleerband® Flange Protectors: The quick, easy and effective way to apply protection and prevent corrosion



Grease Injection Fitting

All metal wormgear screw connection for ease of installation (No special tools needed for installation)

Radolid® Protection Caps

Transparent Polyband Allows 360 Degree Continuous Inspection

Positive Loading Relief Vent Plug

Kleerband® Flange Protectors are designed to protect the flange face, studs and gaskets on raised face, full face, and ring-joint flanges. Kleerband® protects from atmospheric corrosion encountered in chemical plants, refineries, gas plants, offshore platforms, onshore oil fields, metering stations, water and wastewater plants, pump stations, and underground pipelines.

Controlling corrosion and being aware of its damaging effects is paramount in pipeline maintenance. With the use of Kleerband® Flange Protectors and Kleerge® Corrosion Inhibitor Grease, flanges remain safe from hazardous and

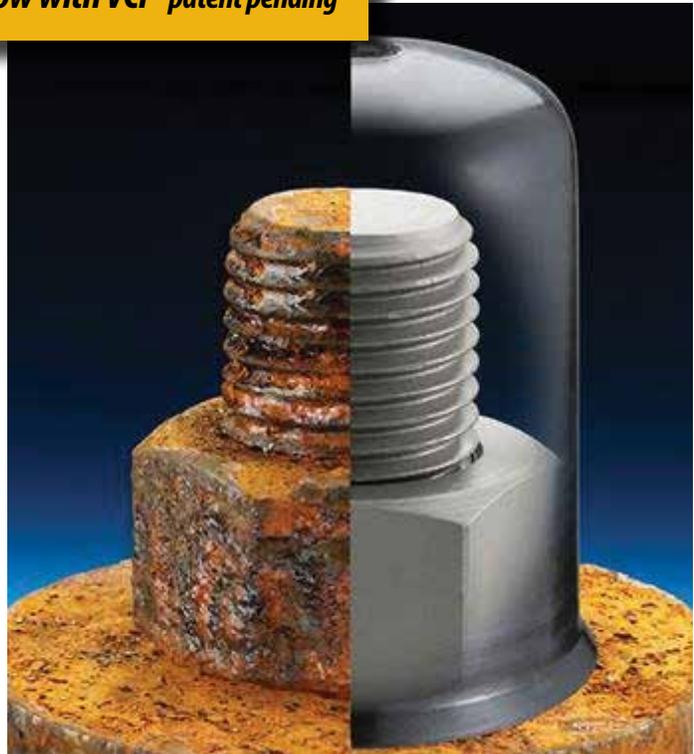
unsightly corrosion that can cause leakage, failure, or even shutdown of equipment. The downtime combined with the cost of cutting and welding a new flange and replacing flange bolts, nuts and seals can become very expensive.

Kleerband® Flange Protectors are also designed for use on cathodically isolated flanges to prevent foreign matter from shorting out or bridging over an isolating gasket. All Kleerband® Flange Protectors are equipped with an exclusive positive loading relief vent and plug that assures complete loading of flange cavities. The extruded, clear, flexible polyband allows visual inspection without removal of the protector and ensures complete filling of the flange cavity. In addition, it is non-corroding providing many years of service life and is completely reusable.

APS' Radolid® Protection Caps:

The quick, easy and cost effective way to apply nut and bolt protection

Radolid® Bolt Protection Caps
Now with VCI - patent pending



Practical, efficient and reusable



Unprotected

Protected

Radolid® Protection Caps are used to eliminate corrosion of nuts and bolts thus allowing quick removal when necessary. These caps are easily installed by being pressed onto the bolted joint by hand. The barbed edge snaps in place preventing the caps from accidentally being removed. Manufactured of high density black or white UV-resistant polyethylene, these caps are reusable and will keep nuts and bolts corrosion free for years. *(APS recommends coating the nuts, studs and bolt heads with APS Kleergel® High Melt Corrosion Inhibitor Grease for added protection.)*

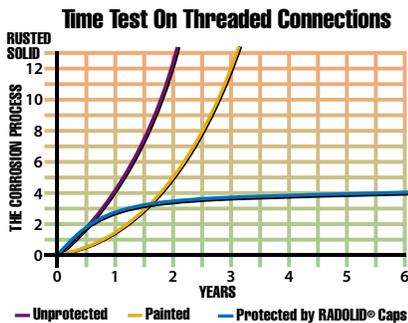
Size Range: 1/4" to 3 1/2" diameter bolt or stud
Standard Operating Temperature(°F).....Min -84
Standard Operating Temperature(°F)...Max +210
Other high temp material available to 430 °F Max

What is VCI?

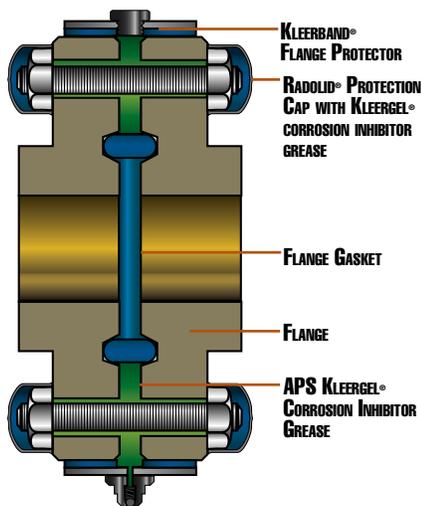
Volatile Corrosion Inhibitors (VCIs) are a class of corrosion inhibiting compounds some or all of whose ingredients have sufficient energy (vapor pressure) to release molecules from the resin compound into the air and block the corrosive effects of electrolytes. VCI molecules condense in a microscopic layer on all surfaces they can reach. For VCI to work properly, caps must be secured onto the head of a bolt or nut fitting flush with the surface of the flange or substrate. This is to maintain the VCI's integrity under the cap. Radolid® bolt protection caps with VCI additive are the only nut and bolt cap available in the market. Radolid® caps with VCI can be reused 2 to 3 times before requiring grease to be added to the caps.

Independent Laboratory Corrosion Test Results Show the Importance of Good Flange and Nut & Bolt Protection

Radolid® Nut Cap Exposure Test



Protects The Entire Flange



Certified copy of test results available on request.

Flange Protection Corrosion Test

Flange assembly #1 was plain and unprotected. Flange #2 was protected with a Kleerband® Flange Protector and Radolid® Nut Caps. Testing consisted of 500 hours ASTM B 117 salt fog exposure.

(Actual test result documents available upon request. Salt spray test for VCI enhanced Radolid® caps available upon request.)

	#1 Unprotected Flange	#2 Protected Flange
0-Hours		
500-Hours		
500-Hours Disassembled		
	End result: Flange, nuts and bolts badly corroded making flange seal failure possible and maintenance difficult at best.	End result: Flange, nuts and bolts in good repair with seal integrity safe for years and maintenance able to be achieved with efficiency.

Kleerband® Flange Protectors prevent this type of damage from occurring.

Typical cost to replace and repair this 12" ANSI 600# flange full face or RTJ gasket with nuts and bolts can be in excess of \$20,000 for offshore applications.



ORDERING INFORMATION:

KLEERBAND® FLANGE PROTECTORS

- Flange size
- ANSI or API

RADOLID® PROTECTION CAPS

- Bolt diameter
- Width across flat of nuts
- Special length caps, if required
- Colors other than black

KLEERGEL® CORROSION INHIBITOR GREASE

- 14 oz cartridge
- 35 lb pail
- 120 lb drum

KLEERGEL® SPECIFICATIONS:

Proprietary synthetic lubricant that will not breakdown under high temperatures. Kleergel® is opaque in color (almost clear), which allows for easy inspection. FDA approved for use on potable water systems.

Dielectric Strength	(Volts / mil) ASTM-D149	500
Flash Point	ASTM D92	180 °C
Continuous Use Temp.	Grease remains flexible & stable	-41 °C to 204 °C
Salt Spray Test	ASTM B117	Pass
Rust Preventative Test	ASTM D1743	Pass



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