



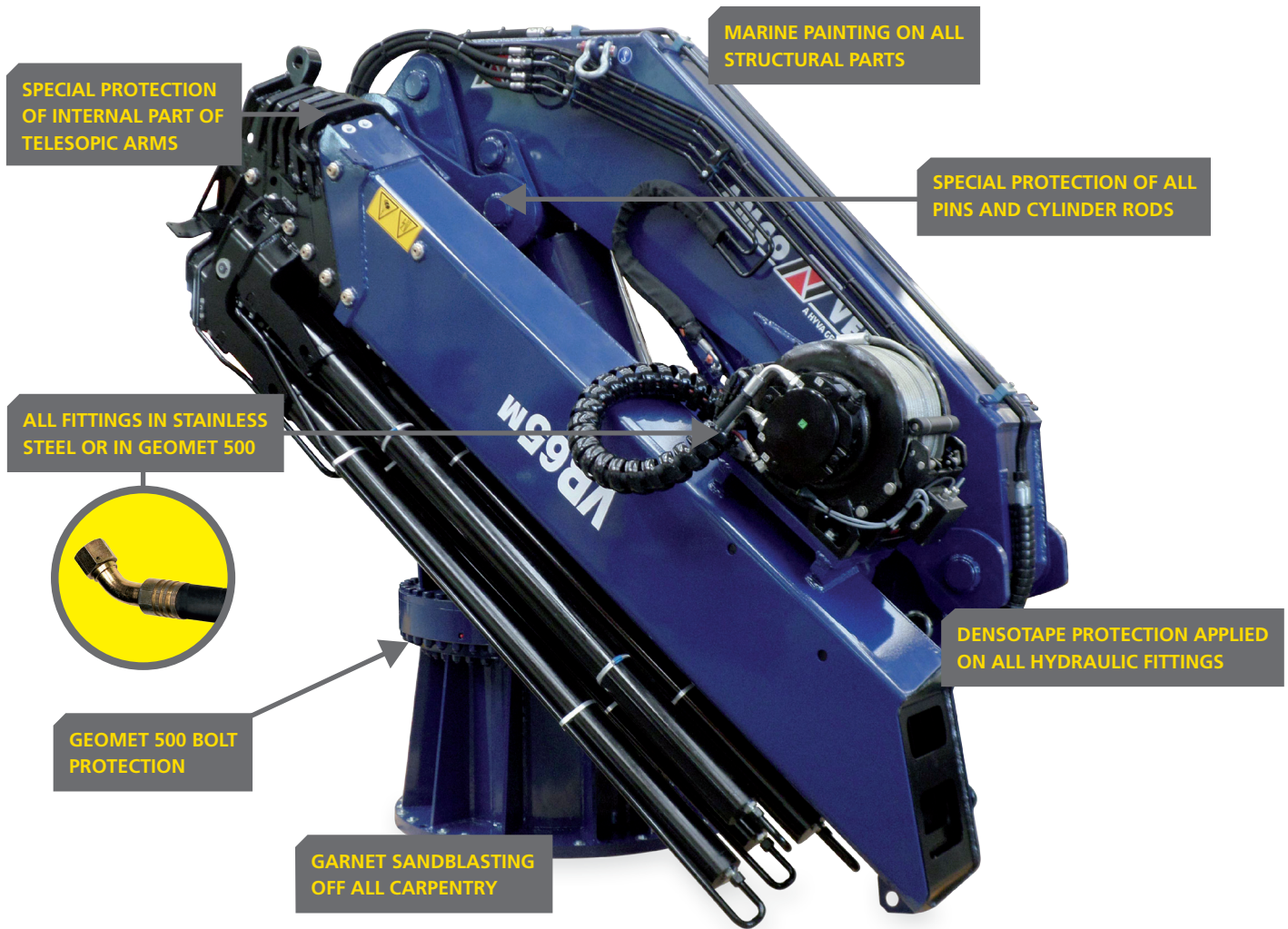
MARINE & OFFSHORE CRANES



**WE ALWAYS FOCUS
AGAINST CORROSION**

AMCO  **VEBA**
MARINE **HYVA** GROUP

THE MLP PROGRAM INCLUDES 4 DIFFERENT PROTECTION LEVELS



F L0

BASIC PROTECTION LEVEL

Mostly for Inland application. Perfect for INLAND WATERS installations or boats sailing solely on internal channels, rivers and lakes.



M L3

HEAVY DUTY MARINE PROTECTION LEVEL

Suitable for HEAVY DUTY MARINE APPLICATION with presence of high humidity and high salinity and very harsh marine conditions. To be adopted for the higher severe marine applications on offshore vessel, boats and offshore platform.



F L1

HEAVY DUTY BASIC PROTECTION LEVEL

Suitable for MORE SEVERE INLAND APPLICATIONS. Grants a longer lifetime and can be used in more severe applications but always in environment without high water salinity, mainly on river, lakes and inland waters.



THERMAL METAL SPRAY PROCESS

Additional protection process available on M L2 and M L3.

Thermal Metal spraying is a surface coating process where a liquid metal alloy (zinc/aluminum) is sprayed onto the surface of crane carpentry. It provide the higher level of corrosion protection to ferrous metals and improve wear resistance in respect of ISO 12944 CX level granting more of 15 years lifetime.



M L2

MARINE PROTECTION LEVEL

Suitable for MARINE APPLICATIONS with salt atmosphere and high salinity. The marine protection in respect of ISO12944 C5M is effective on all structural parts and all crane components granting 5 - 15 years corrosion resistance in fix port installation or installed on boat sailing on sea.



AMCO VEBA'S MLP Program ensures all electrical and structural components, including crane carpentry, hydraulic cylinder rods, fittings, hoses and piping, pins, hydraulic fittings, bolts, junction boxes are able to meet the rigorous demands of our customer's marine applications.

Because we understand the cost impact of service and downtime, all parts have been designed and selected for ease of maintenance long life.

AMCO VEBA'S MARINE MLP PROGRAM encourages our customers to work with our field representatives and engineers in selecting the most suitable crane protection level for the environment in which the crane will be operated.

From the softer ambient conditions till the most severe and harsh humid salt ambient.

We totally understand what maintenance downtime and service cost impacts means, but also how much the value of deep protection treatment has in some cases needless huge cost impacts.

	MPL LEVEL			
	INLAND		SEA	
	F L0	F L1	M L2	M L3
CRANE STRUCTURE SHOTBLASTING				
Crane structure shot blasted: Sa 2 ½ ISO 8501-1 (BS 4232)	•	•	•	•
1st and 2nd arm hydraulic cylinder shot blasted: Sa 2 ½ ISO 8501-1 (BS 4232)			•	•
Telescopic Hydraulic Cylinders shot blasted: Sa 2 ½ ISO 8501-1 (BS 4232)			•	•
Rack & Pinion Rotation Hydraulic cylinders shot blasted: Sa 2 ½ ISO 8501-1 (BS 4232)			•	•
CRANE STRUCTURE PAINTING PROCESS				
Standard Basic painting 1st layer: bicomponent polyurethane primer applied with parts assembled (average th. 60µm) 2nd layer: bicomponent polyurethane finishing coat (average th. 60µm)	•			
Heavy Duty Basic painting 1st layer: epoxy zinc primer applied with parts disassembled (average th. 75µm) 2nd layer: bicomponent epoxy primer applied with parts disassembled (average th. 180µm) 3rd layer: bicomponent polyurethane finishing coat (average th. 80µm)		•		
Heavy Duty Marine painting in respect of ISO 12944 C5M level for offshore installation (5-15 years lifetime) Rack & Pinion Rotation Hydraulic cylinders <u>Flame metalized</u> 1st layer: epoxy zinc primer applied with parts disassembled (average th. 75µm) 2nd layer: bicomponent epoxy primer applied with parts disassembled (average th. 180µm) 3rd layer: bicomponent polyurethane finishing coat (average th. 80µm) Telescopic arms with special black RAL 7005 <u>Hard Cathaphoresis treatment (high resistance and hardness for soft low friction sliding of boom arms)</u> Telescopic arms treated <u>INTERNALLY with Cathaphoresis (unique solution on the market)</u> , and sprayed with DINITROL 777 (high corrosion protection)			•	•
LUFFING HYDRAULIC CYLINDER (1st and 2nd BOOM) ROD PLATING - PINS TREATMENT				
Standard plating single layer chrome plating on cylinder rods and on Internal part of slewing cylinders (average th. 25µm) carbonitriding on articulation pins (Tenifer-QPQ, average th. 15µm + 0.4mm nitriding depth) Chrome plating on internal part of slewing cylinders (average th. 50µm)	•	•		
Marine chrome plating <u>Nikrom 500 Nickel + chrome double crossed plating on cylinder rods (average th. 50µm)</u> Chrome plating on internal part of slewing cylinders (average th. 50µm) carbonitriding on articulation pins (Tenifer-QPQ, average th. 15µm + 0.4mm nitriding depth) <u>Special treatment with DINITROL 777 on all internal diameter of pins and all exteran pin surfaces</u>	•	•	•	•
HYDRAULIC CYLINDER TELESCOPIC EXTENSIONS ROD PLATING - PINS TREATMENT				
Standard plating single layer chrome plating on cylinder rods carbonitriding on articulation pins (Tenifer-QPQ, average th. 15µm + 0.4mm nitriding depth)	•	•		
Marine chrome plating <u>Nikrom 500 Nickel + chrome double crossed plating on cylinder rods (average th. 50µm)</u> <u>Hard chrome double crossed plating on cylinder rods (when tubolar shape) (average th. 50µm)</u> carbonitriding on articulation pins (Tenifer-QPQ, average th. 15µm + 0.4mm nitriding depth) Special treatment with DINITROL 777 on all internal diameter of pins and all exteran pin surfaces			•	•
ANTICORROSION TREATMENT ON FITTINGS, BOLTS, NUTS, OTHER PARTS				
Standard fittings zinc plated treatment for all flexible hoses fittings Fe/Zn 12 IV S (average th. 12µm) zinc plated treatment for all hydraulic fittings zinc plated treatment on all bolts , nuts ,lock nuts <u>Zinc plated treatment on telescopic arm register (sliding pads register screws are in bronze and zinc treated steel avoid the galvanic effect and avoid corrosion)</u>	•	•		
Special fittings with Extra protection and covered with DENSO tape zinc plated treatment for all flexible hoses fittings Fe/Zn 12 IV S (average th. 12µm) <u>Geomet treatment on all hydraulic fittings</u> <u>Denso tape</u> applied on all the hydraulic connections to protect all hydraulic connectioncis <u>Stainless steel nuts on telescopic arm register (sliding pads register screws are in bronze and stainless steel avoid the galvanic effect and avoid corrosion)</u> <u>Geomet treatment on all bolts , nuts ,lock nuts</u>			•	•
Stainless steel fittings and nuts telescopic arms register stainless steel fittings AISI 316 for rubber flexible hoses				•
METALLIZATION FLAME SPRAY PROCESS				
Flame metallization on crane basement, FULL crane structure and booms			OPT	OPT



MARINE & OFFSHORE CRANES



WE DON'T WAIT CALM WATERS, WE LIFT IN ALL CONDITIONS



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Quality and environmental certified