



PRECISION • PERFORMANCE • SOLUTIONS

INDUSTRIAL ELECTROMAGNETIC SPRING SET BRAKE SOLUTIONS

**Precision
manufactured
with field-proven
performance**



Spring-Set Safety Brakes

'Normally On' brakes ensure SAFETY for all applications where rotating machines must be stopped quickly – when switched off or during a power failure.



Spring-Set Caliper Brakes

Provide flexible application design and simple mounting configuration. 'Normally On' brakes ensure a safe, reliable stop.

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Industrial Electromagnetic Spring-Set Safety Brakes & Caliper Brakes

Type 41.458 'Red' Spring-Set Safety Brakes include:

- 'Normally On' brakes provide safe, quick stopping power, manually or during continuous power failure
- Safe 'Deadman Type' manual release
- Low rotor inertia
- Coil with "F" class insulation[#]
- Non-asbestos friction lining standard
- Adjustable torque
- Simple wear adjustment
- Compact size – easy installation
- Encoder mounting provision possible
- Dust protecting seal
- Rust protection to all metal parts

Type 41.448 'Green' Spring-Set Safety Brakes also feature:

- Reduced power consumption—up to 50%
- Fast engagement and dis-engagement
- Lower heating of the brake – enhanced friction lining life

[#]Higher coil insulation available.



Spring-Set Caliper Brakes feature:

- Fail-safe design provides true 'power-off' braking
- Direct acting – fast reaction time
- Few working parts – low maintenance
- Easy assembly and mounting
- Non-asbestos lining



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A DIVISION OF TORQUE TECHNOLOGIES
Spring Set Brakes • Industrial Electromagnetic Clutches
Brakes • Clutch-Brake Combinations

www.emtorq.com



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Industrial Electromagnetic Spring-Set Safety and Caliper Brakes are designed to meet a variety of demanding applications, including:

Brake Motors

Industrial Cranes & Hoists

Conveyors

Packaging Systems

Machine Tools

Material Handling

Wind Turbines

Elevators

Converting Machinery

Printing Machinery



SPRING-SET SAFETY BRAKE SELECTION

1. Select basic brake according to the torque.

$$\text{Torque (Nm)} = 9550 \times (\text{Motor kW} / \text{RPM}) \times \text{Safety Factor (K)}$$

Load Condition	Safety Factor (K)
Low masses, equal loading & non-intermittent operation	2.0
Low masses, light shock load & intermittent operation	2.5
Medium masses, Light shock load & intermittent operation	3.0
Large masses, light shock load & intermittent operation	3.0
Diesel engine drive	4-5
Compressor drive	5-6
Non-overhauling loads	2-3
Overhauling loads	3-4

2. Describe the brake with the ordering parameters: type, size, operating voltage and hub bore.
3. Choose optional extras as needed: G pcd, encoder mounting provision, friction plate (instead of mounting flange), with micro switch
4. Choose appropriate safety factor for the hoist, lift, inclined conveyors or equipment where holding against gravity is required.
5. Select the Proper Power Supply (Rectifier)

Type 41.458 Select the proper rectifier considering rated voltage of the brake. If your coil operating voltage is 96 or 205 VDC, we offer a high-quality line using built-in DC switching protection. Call for product details.

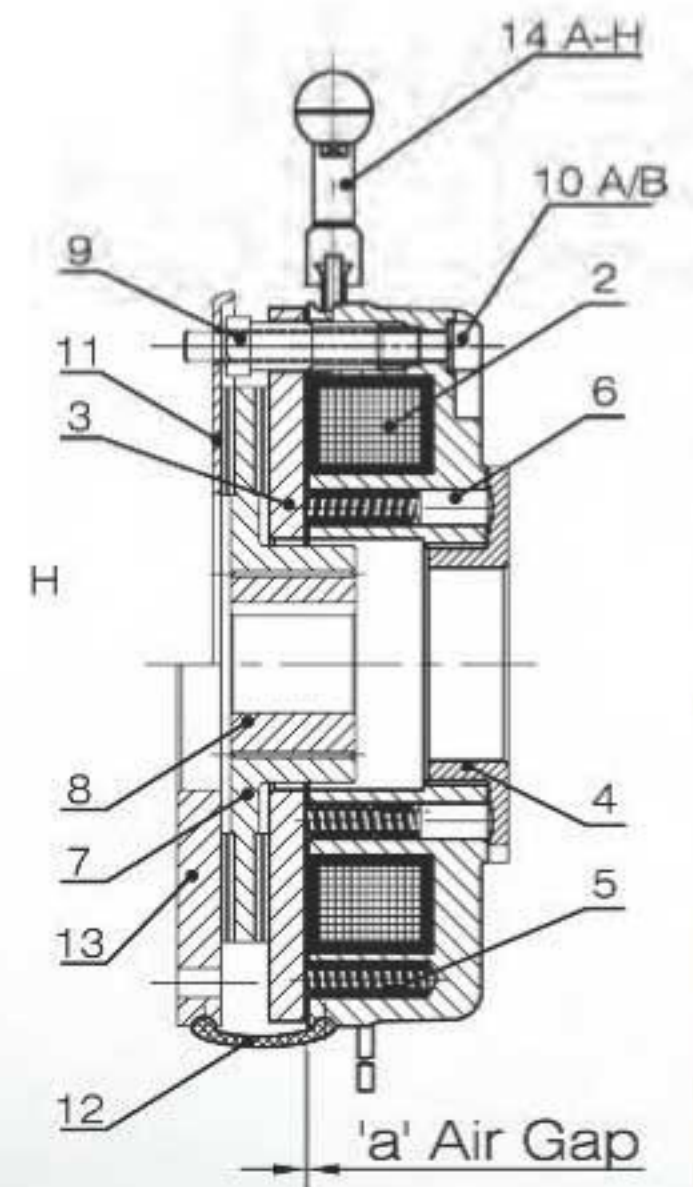
Type 41.488 ONLY use rectifier model UM-201.
6. Choose correct input AC voltage for rectifier — 115, 230, 460 VAC.

Components

Exploded View

1. Stator - Armature Assembly
2. Stator
3. Armature Plate
4. Torque Adjustment Ring
5. Compression Spring
6. Compression Parts
7. Rotor
8. Hub
9. Adjustment Tube
10. A/B, Mounting Bolt & Washer

11. Friction Plate (Optional)
12. Rubber Seal
14. A-H Hand Release Assembly



INDUSTRIAL ELECTROMAGNETIC SPRING-SET SAFETY BRAKE OPERATION

In the "power off" state the compression springs (5) press the armature disc (3) and rotor (7) against attachment surface. Hub (8) is firmly locked on the shaft and rotor slides over the hub.

On applying rated direct current voltage to the stator (2) the magnetic field produced will pull the armature disc (3) over air-gap 'a' towards stator against spring force. This releases the rotor, allowing shaft to rotate.

In the event of continuous power failure, rotor (7) can be freed by pulling the 'deadman type' manual release (14). The hand release goes back automatically to its original position and brake will immediately revert to its safe action.

SWITCHING

Choose DC Switching or AC/DC Switching to meet your application

Brake 41.458 brake DC coils are reliable and safe.

For vertical loads such as hoists, lifts and cranes and high inertia loads, a brake motor will usually regenerate the power supply and hold off the brake. For these applications, it is essential to choose DC switching.

When braking time is not as critical, AC/DC switching can be used. This method is often used with brake motors, where the brake is switched with motor contacts. We offer a wide range of rectifiers to meet your application.



Energy Saver Brake 41.488 DC double coil design provides greatly reduced power consumption—up to 50%.

Our type 41.488 brake requires the specially designed model #UM-201 rectifier. When AC power is initially applied to the rectifier, the 'booster' coil is switched 'ON' and the brake is released very quickly.

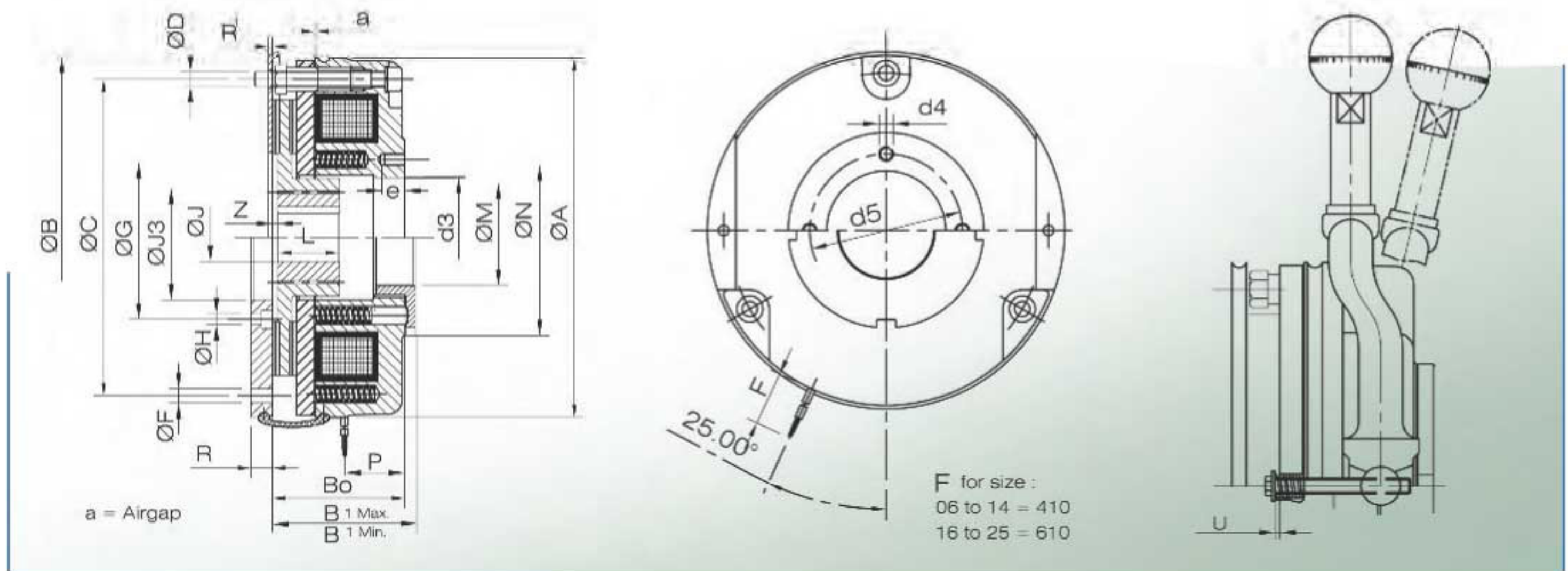
The booster coil is electronically disconnected and the holding coil takes over. The holding coil is designed to keep the brake released with very little power usage.

This type of brake can be operated with either AC switching or AC/DC switching. With pure AC switching the brake is released very fast but the engagement is slower.

This delay in engagement is improved by doing the AC switching through the auxiliary contact of the motor starter. With AC and DC combined switching, brake release AND brake engagement is very fast.

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Industrial Electromagnetic Spring-Set Safety Brakes



Abbreviated Selection Parameters

Size	06	08	10	12	14	16	18	20	25
Torque M RAT. (Nm)	4	8	16	32	60	80	150	260	400
Max. Speed* RPM (min-1)	3000	3000	3000	3000	3000	3000	1500	1500	1500
Input Power† P20 [w]	8	10	12	16	20	22	34	40	44
Inertia J (kg cm2)	0.15	0.61	2.0	4.5	6.3	15	29	73	200

Detailed Selection Parameters are available. Larger sizes available.

IMPORTANT :

M rat.: Dynamic Torque at 100 min-1, 1 Nm = 0.102 kgm = 0.737 lb. ft.

Standard voltages: Type 41.458 (red)

24 V.D.C.; 96 V.D.C.; 205 V.D.C.
(Other voltages on request.)

*Maximum Braking Speed †Values shown for type 458

Standard voltages: Type 41.488 (green)

96 V.D.C.; 205 V.D.C.: Coil Power at 20° C
Permissible voltage change +5% to -10%

Industrial Electromagnetic Spring-Set Safety Brake Operating Times

Engagement Time: time taken by armature to get released from stator.

Disengagement Time: time taken by armature to get attracted toward the stator, i.e. release of brake.

Brake Size	Type 41.458		Type 41.488	
	Engagement Time	Disengagement Time	Engagement Time	Disengagement Time
06	17	35	4	12
08	35	60	6	18
10	40	90	8	30
12	50	120	10	45
14	65	150	11	55
16	90	180	12	75
18	110	300	15	105
20	200	400	22	130
25	270	500	28	170

Average times in milliseconds, measured with rated brake air gap.

Type 41.458 engagement times are valid for switching on DC side.

Type 41.458 disengagement times are not influenced by DC or AC side switching.

Type 41.488 engagement times are valid for DC switching through auxiliary contact or relay.

Type 41.488 disengagement times are valid for AC side switching.

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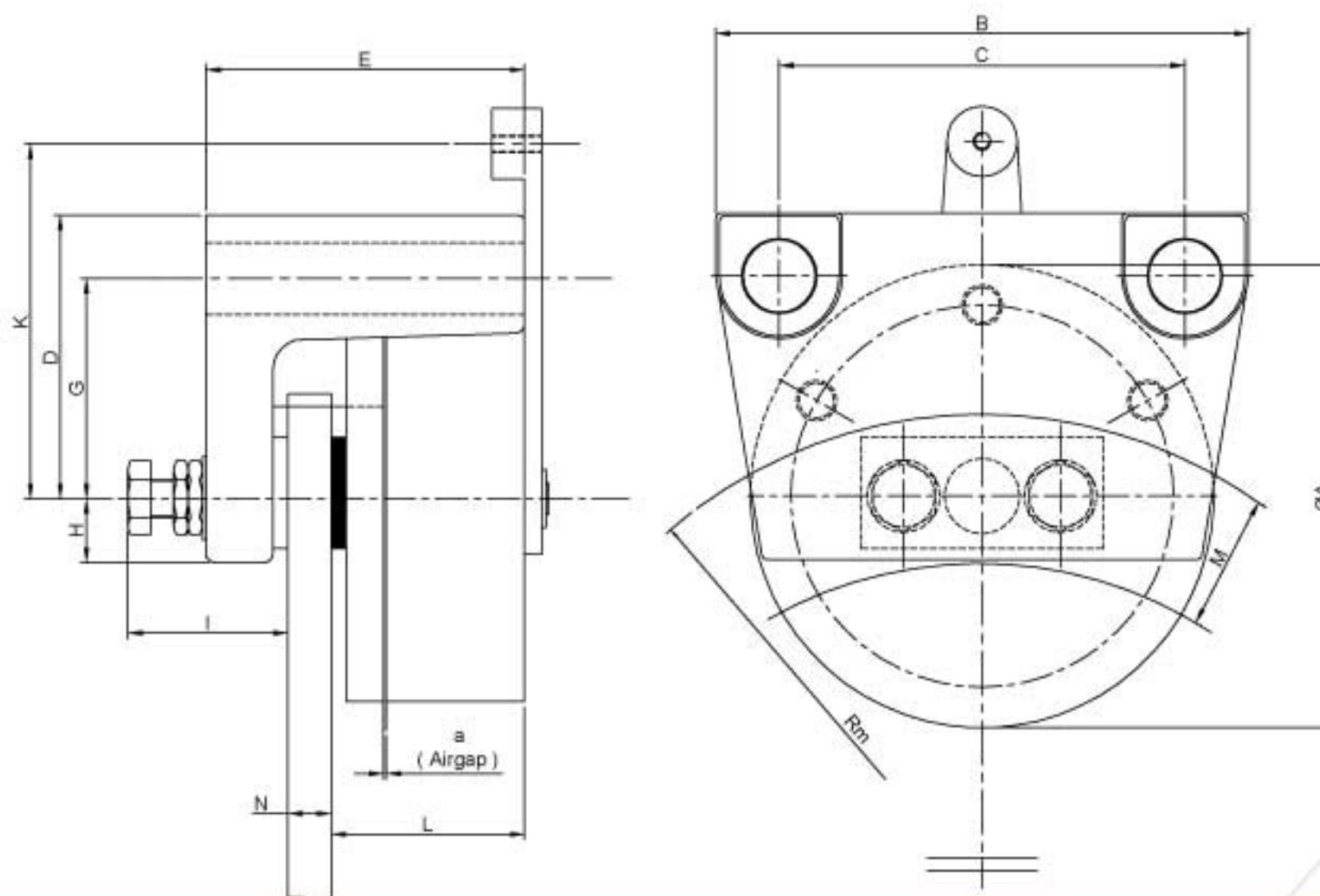


Industrial Electromagnetic Spring-Set Caliper Brakes available in multiple configurations

Design	Friction Force Fr	Rm Min.	Rm Max.	Hold Power
EMCA-14	3300 N	165 mm	450 mm	80 w
EMCA-18	5500 N	165 mm	450 mm	110 w

FLEXIBLE DESIGN:

use multiple brakes/small disc or one brake/large disc.



Specialty NEMA / FLAME PROOF/EXPLOSION PROOF / MARINE applications

EMTorq's direct-acting, spring-set safety brake design ensures reliable, safe stopping power and are available to suit a wide variety of special applications, including:

- Robust and reliable brakes available in **Metric/IEC** and **NEMA** mounting
 - Brake designed for tough, repetitive cycling
 - Mounts easily to a prepared motor endbell
- **Flame Proof/ Explosion Proof** units designed for hostile environments
- IP66 '**Marine Duty**' enclosures available



NEMA



FLAME PROOF
EXPLOSION PROOF



'MARINE DUTY'