
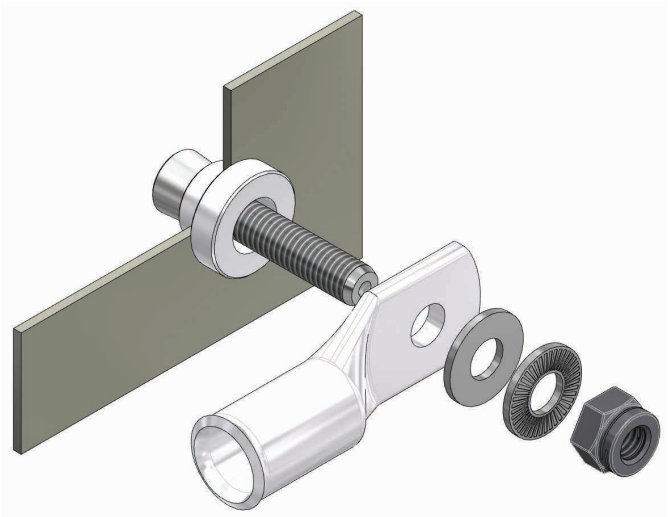




# EARTH BONDING SYSTEM

English version 



**COST REDUCTION**  
**EASY TO USE**  
**RELIABILITY**  
**PERFORMANCE**

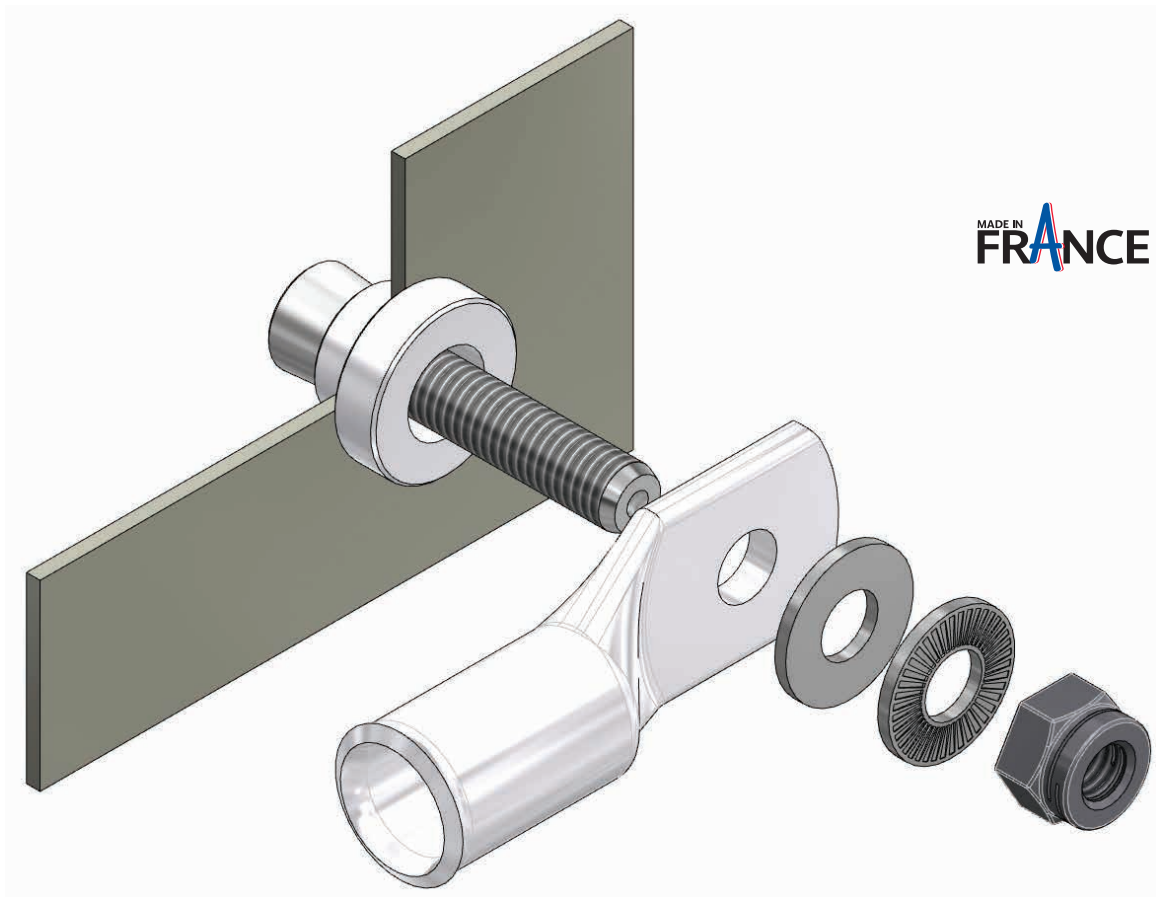


# THE EARTH BOND

## ► SUMMARY



APPLICATIONS & BENEFITS	2 - 3
PRINCIPLE & PROCESS OF THE DUBUIS EARTH BOND	4
10 REASONS TO GIVE UP WELDING FOR EARTH BOND	5
INSTALLATION STEPS	6
TOOLING FOR SETTING EARTH BOND	7
SPECIAL DRILLS & DRILLING LUBRICATION	8
TORQUE WRENCHES	9
HOW TO DEFINE YOUR EARTH BOND AND TOOLING ?	10 - 11
TESTS, PERFORMANCES, STANDARDS & DIMENSIONS OF THREADED EARTH BOND	
USE WITH STEEL & STAINLESS STEEL PLATE	12 - 13
USE WITH ALUMINIUM PLATE	14 - 15
TESTS, PERFORMANCES, STANDARDS & DIMENSIONS OF EARTH GROUNDING BOSS	
USE WITH STEEL & STAINLESS STEEL PLATE	16
USE WITH ALUMINIUM PLATE	17
NEW DEVELOPMENTS	18
IMPERIAL EARTH BOND	19
REMOVAL HEAD TOOLS RANGE	20
<b>DUBUIS</b> IT'S ALSO	21



***COST REDUCTION***  
***EASY TO USE***  
***RELIABILITY***  
***PERFORMANCE***

The Dubuis Earth Bonding system is an innovative method for setting a secure fixing with a reliable electrical connection. The earth bond offers an equipotential link between a structure and equipment, and allows the passage of high intensity current in case of short-circuit.

### ► APPLICATIONS

ROLLING STOCK

ELECTRICAL CONNECTION TO THE RAIL

AUTOMOTIVE

OFF SHORE (CATHODIC PROTECTION)

MILITARY VEHICLES

SHIPBUILDING



### ► BENEFITS

#### **COST REDUCTION**

Quick and easy to use, time saving & limited tooling investment.

#### **FAST**

Drill, Expend & Connect, 3 minutes only to connect.

#### **UNIVERSAL APPLICATIONS**

Irregular, curves surfaces, install into a blind hole, or restricted aeras, partitions, electrical cupboard, air-conditioning, brakes system, various components of the chassis and frame.

#### **EASY TO USE**

Quick & easy process for repeatable and automatable connections.

#### **TOOLS**

Manual, light, only one person operation.

#### **SECURITY**

Safe connection, no heat, no sparks or fire.

#### **NO PLATE PREPARATION OR CLEANING**

Requires no welding, impacting, cleaning or surface preparation.

#### **RELIABILITY & PERFORMANCE**

Constant & long-lasting connection providing low electrical resistance.

#### **TRACEABILITY**

Each earth bond is marked with a batch number.

#### **INTENSIVE TESTS**

Mechanical, vibration, electrical, short circuit, destruction, corrosion, rotation tests.

#### **APPROVED & CUSTOMERS REFERENCES**

Main rolling stock players, car manufacturers and other end users in wind power markets.

#### **ENGINEERING**

Development for specific applications in partnership.

## ► PRINCIPLE

Dubuis earth bond consists in two pre-assembled components:

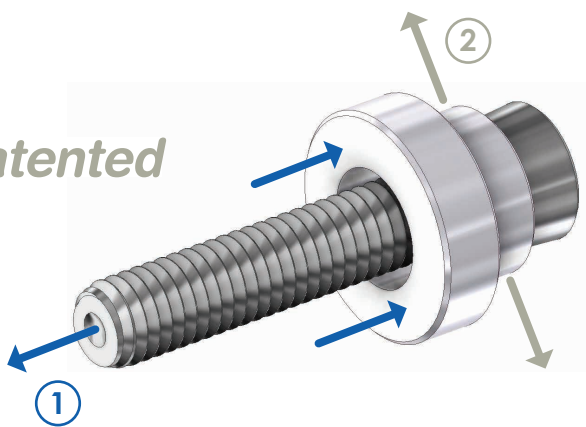
**A conical dowel having a thread**



**A flanged bush with an outside cylindrical diameter**



*Patented*



A tensile load applied by calibrated PMT pulling tool allows the dowel to be pulled through the shouldered bushing, while remaining fixed in the pre-drilled hole of the structure.

As the conical dowel passes through the bushing, the bushing expands within the cavity making electrical contact within the metal structure and establishing a permanent electrical connection. Once the bond is set up, it offers a conductive platform to make contact with the lug and threaded stud to secure its connection.

Recommendation of the locking nut assembly stainless steel 316L, used by the Railway industry for all applications composed of:

**Stanal self locking nut**  
**Ridged contact washer**  
**Flat washer**

## ► PROCESS: 3 STEPS

### ① DRILLING



### ② SETTING



### ③ CONNECTION



10 REASONS TO GIVE UP WELDING FOR EARTH BOND



**DUBUIS EARTH BOND**

**WELDING**

**SECURITY**

✓ No danger

Dangerous, gas handling, fire, spark

**TIME FOR PROCESS**

✓ Fast, simple, Earth bond installed on 3 minutes only (drilling included)

Average of 15 minutes per welding

**SURFACE PREPARATION**

✓ No preparation required

Important preparation, average of 8 minutes. Tooling setting, sanding, cleaning and welding.

**COST REDUCTION & TIME SAVING**

✓ Quick and easy to use, intensive setting, very low investment on tooling

Long process, hazardous depending on the operator

**RELIABILITY & LIFE EXPECTANCY**

✓ Life connection offering very low electrical resistance

Limited reliability depending on the operator

**TOOLING**

✓ Light handling tool

Heavy, large and dangerous

**OPERATOR SKILL**

✓ No training

Welder training: M1 - M2 - M3 - M4 - M5 - M6 - M7

**TRACEABILITY AND QUALITY**

✓ Each earth bond has a batch number marked on conical bush

-

**TESTING**

✓ Mechanical, vibration, electrical, short circuit destruction, shock sealing, corrosion...

-

**APPROVALS**

✓ Main rolling stock players, car manufacturers and other end users in wind power markets.

-



# THE EARTH BOND

## INSTALLATION STEPS



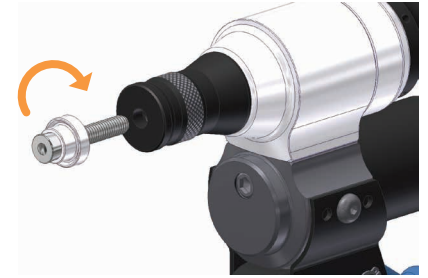
①

Drill a hole in the structure to the determined diameter of the earth bond



②

Push the trigger to fully discharge hydraulic pressure & retract the piston.



③

Screw the bond into the nose of the hydraulic setting tool.



④

Insert the bond into the hole so that the flange is flush to the plate.  
**MAKE SURE THE TOOL IS PERPENDICULAR TO THE STRUCTURE.**



⑤

Pump the handle of the tool until an audible click is heard (calibrated pressure force).



⑥

After the click, push the trigger to discharge hydraulic pressure.



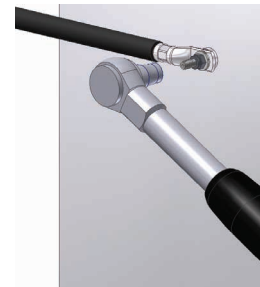
⑦

Release the tool from the stud, turn off the button at the back of the tool.



⑧

Attach the connection and the fastening and screw the nut.



⑨

Tighten to the required torque value



# THE EARTH BOND

## TOOLING FOR SETTING EARTH BOND



**PMT C6**

<b>THREAD</b>	<b>M6</b>
<b>PULLING FORCE</b>	10 kN
<b>STROKE</b>	8 mm
<b>WEIGHT</b>	1,280 kg
<b>DIMENSIONS</b> (L x l x H in mm)	185 x 205 x 45
<b>ENERGY</b>	Hydraulic manual
<b>PART NUMBER</b>	MTPM060A1000



**PMT 8**

<b>THREAD</b>	<b>M8</b>
<b>PULLING FORCE</b>	18 kN
<b>STROKE</b>	8 mm
<b>WEIGHT</b>	1,280 kg
<b>DIMENSIONS</b> (L x l x H in mm)	185 x 205 x 45
<b>ENERGY</b>	Hydraulic manual
<b>PART NUMBER</b>	MTPM080A1000



**PMT 10**

<b>THREAD</b>	<b>M10</b>
<b>PULLING FORCE</b>	25 kN
<b>STROKE</b>	8 mm
<b>WEIGHT</b>	1,280 kg
<b>DIMENSIONS</b> (L x l x H in mm)	185 x 205 x 45
<b>ENERGY</b>	Hydraulic manual
<b>PART NUMBER</b>	MTPM100A1000



**PMTXX - UNIVERSAL TOOL**

<b>THREAD</b>	<b>M6 - M8 - M10 *</b>
<b>PULLING FORCE</b>	Adjustable 10 to 25 kN
<b>STROKE</b>	12 mm
<b>WEIGHT</b>	1,440 kg
<b>DIMENSIONS</b> (L x l x H in mm)	192 x 52 x 207
<b>ENERGY</b>	Hydraulic manual
<b>PART NUMBER</b>	MTPMXX0A1000
<b>CARTRIDGE AND NOSES</b>	Interchangeable

\* M5 - 10/32UNF - 1/4" - 5/16" - 3/8" Consult us



**BTEMXX - UNIVERSAL TOOL**

<b>THREAD</b>	<b>M6 - M8 - M10 *</b>
<b>PULLING FORCE</b>	Adjustable 10 to 25 kN
<b>STROKE</b>	11 mm
<b>WEIGHT</b> (with battery)	3,440 kg
<b>DIMENSIONS</b> (L x l x H in mm)	373 x 60 x 260
<b>ENERGY</b>	Hydraulic on battery
<b>PART NUMBER</b>	BTEMXX0A1120
<b>CARTRIDGE AND NOSES</b>	Interchangeable

\* M5 - 10/32UNF - 1/4" - 5/16" - 3/8" Consult us



**PMA 10**

<b>THREAD</b>	<b>M6 - M8 - M10</b>
<b>PULLING FORCE</b>	Adjustable 10 to 25 kN
<b>STROKE</b>	8 mm
<b>WEIGHT</b>	3,700 kg
<b>DIMENSIONS</b> (L x l x H in mm)	270 x 140 x 320
<b>ENERGY</b>	pneumatic
<b>PART NUMBER</b>	65909



**CONTROL GAUGE**

<b>PART NUMBER</b>	80928 (in its case)
<b>WEIGHT</b>	4,700 kg
<b>DIMENSIONS</b> (L x l x H in mm)	380 x 300 x 80
<b>TOOL CONTROL</b>	PMT C6 - PMT 8 - PMT 10 PMA 10 - PMTXX

► Delivered in its plastic case.







► **SPECIAL REAMER DRILLS HSS 5 % COBALT**







The quality of boring is very important to ensure the electrical connection. The drilling tolerances have to be respected (-0/+0,2). DUBUIS offers a range of reamer drills, adapted to the diameter of each earth bond, to use with handle drilling machines.

Two methods of drilling:

1. Boring in the middle of the material just before the setting of earth bond with the **long step drill**
2. Drilling of a core removing hole with a diameter 1 mm under the nominal diameter, boring of the hole by the operator at the nominal diameter just before the setting of earth bond with the **short step drill**



SHORT DRILLS			
	PART NUMBER	DRILLING Ø	DRILLING LENGHT
	OFE0850016	8,5 mm	16 mm
	OFE1050020	10,5 mm	20 mm
	OFE1150018	11,5 mm	18 mm
	OFE1350019	13,5 mm	19 mm
	OFE1500018	15 mm	18 mm
	OFE1900022	19 mm	22 mm

LONG DRILLS			
	PART NUMBER	DRILLING Ø	DRILLING LENGHT
	OFE0850032	8,5 mm	32 mm
	OFE1050041	10,5 mm	41 mm
	OFE1150044	11,5 mm	44 mm
	OFE1350037	13,5 mm	37 mm
	OFE1500042	15 mm	42 mm
	OFE1900051	19 mm	51 mm

► **DRILLING LUBRICATION:**

We recommend the use of a drilling lubrication for electrical neutrality. The use of these oils does not disturb the connection, also in case of oil residue around the hole.



Drilling in steel or stainless steel use **Ferrofluid** lubrication

P.N.: 80300



Drilling in aluminum use **Alufluid** lubrication

P.N.: 80298

- Reduces the wear of the drill
- Increases the lifetime of the drill
- Avoids the sticking of cuttings on the drill
- Electrical neutrality

Having installed the earth bond, it is essential to ensure that the locking nut securing the connection is tightened to the correct torque value and the required fastening.

- Adjustable torque value
- Equipped with a vernier to improve accuracy of setting: readable and precise to eliminate risk of error
- The vernier remains locked in the set position, to prevent accidental misadjustment
- A touch sensitive and audible release
- Reset automatically as soon as the force is released and immediately ready for next operation
- Fitted with a reversible ratchet to unscrew the nut
- Torque wrench are numbered and delivered with a test certificate
- Delivered in a plastic protection storage tube



### TECHNICAL SPECIFICATION

<b>STANDARD</b>	ISO 6789
<b>ACCURACY</b>	+/- 4% of the displayed value
<b>OPERATION RANGE</b>	From 20% to 100% of the maximum capacity of the tool

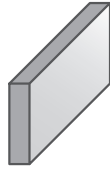
### TORQUE WRENCHES

		
<b>PART NUMBER</b>	80997	80967
<b>CAPACITIES (Nm)</b>	5 - 25	20 - 100
<b>Ø</b>	1/4"	1/2"
<b>EARTH BOND THREAD</b>	M6 - M8	M10
<b>SOCKETS PN.</b>	(M6) OFACR10  (M8) OFACR13 	OFACS16H 

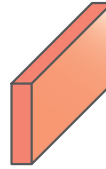


① **DEFINE THE PLATE RAW MATERIAL WHERE WILL BE SET THE EARTH BOND**

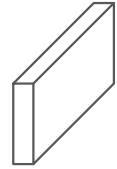
Steel & Stainless steel



Aluminium

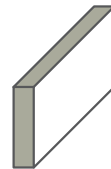


Others



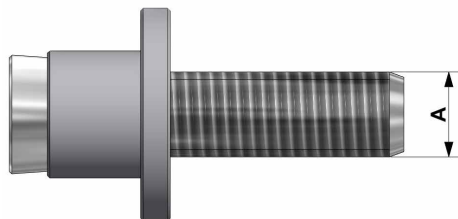
② **IDENTIFY PLATE THICKNESS:**

- 1,5 – 4 mm
- 2 – 4 mm
- > 4 mm
- OTHERS



③ **DETERMINE THE CABLE SECTION TO CONNECT**

④ **IDENTIFY THE THREAD TYPE:  
M6 – M8 – M10 OR OTHERS**



HOW TO DEFINE YOUR EARTH BOND & TOOLING ?

- 5 CHOOSE BETWEEN MALE THREADED EARTH BOND RANGE & FEMALE EARTH GROUNDING BOSS RANGE, RESPECTING PLATE RAW MATERIAL:

**EARTH BOND** ▶

Universal application  
Choose the length of threaded conical dowel.



**GROUNDING BOSS** ▶

Universal application  
Dedicated to narrow spaces.



- 6 RESPECT DRILLING TOLERANCES USING SPECIAL DRILLS AND DRILLING LUBRICATION

- 7 CHOOSE A SETTING TOOL CALIBRATED AND ADAPTED FOR EACH EARTH BOND THREAD

**M6**  
▶ PMTC6 TOOL



**M8**  
▶ PMT8 TOOL

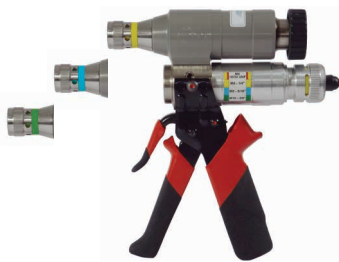


**M10**  
▶ PMT10 TOOL



**MANUAL TOOL** Small series

**M6 - M8 - M10**  
▶ PMTXX TOOL



**M6 - M8 - M10**  
▶ BTEMXX TOOL







**MANUAL TOOL** Small and medium series

**M6 - M8 - M10**  
▶ PMA10 TOOL



**INTENSIVE USE** For medium and high volume series

## ► USE WITH STEEL &amp; STAINLESS STEEL PLATE









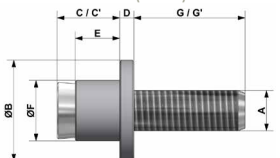
THREAD	M6	M6	M6	M6	M6	M6				
PLATE THICKNESS	1,5 - 4 mm	1,5 - 4 mm	1,5 - 4 mm	1,5 - 4 mm	> 4	> 4				
DRILLING DIAMETER (mm)	11,5 / 11,7	11,5 / 11,7	11,5 / 11,7	11,5 / 11,7	8,5 / 8,7	8,5 / 8,7				
PACKAGING (20 PCS/BOX)										
DUBUIS P.N.	80974	80923	77907	77905	80975	80925				
ALSTOM P.N.	DTR0000133407	DTR0000001260	DTR0000133407	DTR0000001260	DTR0000133656	DTR0000001261				
FORMER BOMBARDIER P.N.	NA	3EER100005-781	NA	NA	3EER400005-6424	NA				
LONG DRILL	OFE1150044	OFE1150044	OFE1150044	OFE1150044	OFE0850032	OFE0850032				
SHORT DRILL	OFE1150018	OFE1150018	OFE1150018	OFE1150018	OFE0850016	OFE0850016				
SETTING TOOL	PMTc6 / PMA10									
A4-80 SS FASTENING	81920 									
ADVISED TORQUE VALUE	6 N.m									
MAXIMUM TORQUE VALUE	10 N.m									
DIMENSIONS (mm)		A	B	C	C'	D	E	F	G	G'
		M6	M6	M6	M6	M6	M6	M6	M6	M6
		16	16	16	16	16	16	16	16	16
		10,5 (6,5±2)*	10,5 (6,5±2)*	10,5 (6,5±2)*	10,5 (6,5±2)*	14 (12±1)*	14 (12±1)*	14 (12±1)*	14 (12±1)*	14 (12±1)*
		4,5	4,5	4,5	4,5	3,5	3,5	3,5	3,5	3,5
		4,5	4,5	4,5	4,5	11	11	11	11	11
		11,5	11,5	11,5	11,5	8,5	8,5	8,5	8,5	8,5
		13 (17±2)*	21 (25±2)*	13 (17±2)*	21 (25±2)*	17 (19±1)*	17 (19±1)*	17 (19±1)*	17 (19±1)*	24 (27±1)*
WEIGHT		14,5 gr	16,5 g	14,5 g	16,5 g	15 g	15 g	15 g	15 g	16 g
BUSH RAW MATERIAL	Tined copper									
ELECTRICAL PERFORMANCE:										
ELECTRICAL RESISTANCE LUG / PLATE - NF F00-363	Steel	25 µΩ	25 µΩ	25 µΩ	25 µΩ	25 µΩ	25 µΩ	25 µΩ	25 µΩ	25 µΩ
	SS	120 µΩ	120 µΩ	120 µΩ	120 µΩ	120 µΩ	120 µΩ	75 µΩ	75 µΩ	75 µΩ
SHORT CIRCUIT RESISTANCE <small>Please, contact us to validate your specifications</small>	Steel	3 × 15 kA	3 × 15 kA	3 × 15 kA	3 × 15 kA	3 × 15 kA	3 × 15 kA	3 × 15 kA	3 × 15 kA	3 × 15 kA
	SS	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA
ELECTRICAL CONTACT SURFACE EARTH BOND / NF F00-363		160 sqmm	160 sqmm	160 sqmm	160 sqmm	160 sqmm	160 sqmm	290 sqmm	290 sqmm	290 sqmm
CORROSION RESISTANCE 500 H IN SALT MIST NF EN 3373	Steel	30 µΩ	30 µΩ	30 µΩ	30 µΩ	30 µΩ	30 µΩ	-	-	-
	SS	150 µΩ	150 µΩ	150 µΩ	150 µΩ	150 µΩ	150 µΩ	-	-	-
MECHANICAL PERFORMANCE:										
TENSILE LOAD TEST NF F00-363		2 mm	400 daN	400 daN	400 daN	400 daN	400 daN	-	-	-
		4 mm	-	-	-	-	-	500 daN	500 daN	500 daN
SHEARING	Steel	1,5 mm	100 daN	100 daN	100 daN	100 daN	100 daN	200 daN	200 daN	200 daN
		4 mm	180 daN	180 daN	180 daN	180 daN	180 daN	200 daN	200 daN	200 daN
	SS	1,5 mm	130 daN	130 daN	130 daN	130 daN	130 daN	200 daN	200 daN	200 daN
		4 mm	180 daN	180 daN	180 daN	180 daN	180 daN	200 daN	200 daN	200 daN
VIBRATION BS EN 61373			1g - 5 à 150 Hz 5H/axis	1g - 5 à 150 Hz 5H/axis	1g - 5 à 150 Hz 5H/axis	1g - 5 à 150 Hz 5H/axis	1g - 5 à 150 Hz 5H/axis	4g - 10 à 500 Hz 90 min/axis	-	-
SHOCKS BS EN 61373			5g - 30 ms 3 shocks/axis	5g - 30 ms 3 shocks/axis	5g - 30 ms 3 shocks/axis	5g - 30 ms 3 shocks/axis	5g - 30 ms 3 shocks/axis	300g - 3 ms 3 shocks/axis	-	-
SEALING	6 bar pressure resistance with no air leak									
SCALE TEMPERATURE USAGE	-50°C / +80°C									

\* Dimension after crimping

www.dubuis.com

## TESTS, PERFORMANCES, STANDARDS & DIMENSIONS

### ► USE WITH STEEL & STAINLESS STEEL PLATE








THREAD	M8	M8	M10	M10	M10	M10	
<b>PLATE THICKNESS</b>	1,5 - 4 mm	> 4	2 - 4 mm	> 4	> 4	> 4	
<b>DRILLING DIAMETER</b> (mm)	15 / 15,2	11,5 / 11,7	19 / 19,2	13,5 / 13,7	13,5 / 13,7	13,5 / 13,7	
<b>PACKAGING</b> (20 PCS/BOX)							
<b>DUBUIS P.N.</b>	81929	81928	80924	80926	81952	80945	
<b>ALSTOM P.N.</b>	DTR0000247260	DTR0000038412	DTR0000000083	DTR0000000084	DTR0000061617	DTR00211632A	
<b>FORMER BOMBARDIER P.N.</b>	NA	NA	3EER100005-783	3EER100005-784	NA	NA	
<b>LONG DRILL</b>	OFE1500042	OFE1150044	OFE1900051	OFE1350037	OFE1350037	OFE1350037	
<b>SHORT DRILL</b>	OFE1500018	OFE1150018	OFE1900022	OFE1350019	OFE1350019	OFE1350019	
<b>SETTING TOOL</b>	PMT8 / PMA10			PMT10 / PMA10			
<b>A4-80 SS FASTENING</b>	81922 			81921 			
<b>ADVISED TORQUE VALUE</b>	15 N.m			30 N.m			
<b>MAXIMUM TORQUE VALUE</b>	25 N.m			50 N.m			
<b>DIMENSIONS</b> (mm)	<b>A</b>	M8	M8	M10	M10	M10	M10
	<b>B</b>	20	20	25	25	25	25
	<b>C C'</b>	12,5 (7±2)*	15 (12±1)*	12 (6,5±2)*	14 (12±1)*	16 (14±1)*	21,5 (19±1)*
	<b>D</b>	5,5	3,5	5,5	3,5	3,5	3,5
	<b>E</b>	4,5	11	4,5	11	13	17
	<b>F</b>	15	11,5	19	13,5	13,5	13,5
	<b>G G'</b>	16 (21,5±2)*	19 (22±1)*	25 (30,5±2)*	28 (30±1)*	28 (30±1)*	21 (23,5±1)*
<b>WEIGHT</b>		29 g	26 g	51 g	42 g	45 g	46 g
<b>BUSH RAW MATERIAL</b>	Tined copper						Stainless steel
<b>ELECTRICAL PERFORMANCE:</b>							
<b>ELECTRICAL RESISTANCE LUG / PLATE - NF F00-363</b>	Steel	20 µΩ	20 µΩ	20 µΩ	20 µΩ	20 µΩ	90 µΩ
	SS	70 µΩ	70 µΩ	70 µΩ	60 µΩ	60 µΩ	-
<b>SHORT CIRCUIT RESISTANCE</b> <small>Please, contact us to validate your specifications</small>	Steel	3 × 15 kA	3 × 20 kA	-	-	-	-
	SS	3 × 10 kA	3 × 15 kA	3 × 15 kA	3 × 20 kA	3 × 20 kA	-
<b>ELECTRICAL CONTACT SURFACE EARTH BOND / NF F00-363</b>		210 sqmm	400 sqmm	270 sqmm	465 sqmm	550 sqmm	720 sqmm
<b>CORROSION RESISTANCE 500 H IN SALT MIST NF EN 3373</b>	Steel	-	-	25 µΩ	-	-	-
	SS	-	-	90 µΩ	-	-	-
<b>MECHANICAL PERFORMANCE:</b>							
<b>TENSILE LOAD TEST NF F00-363</b>	2 mm	300 daN	-	500 daN	-	-	-
	4 mm	-	600 daN	-	800 daN	-	-
<b>SHEARING</b>	Steel	2 mm	-	190 daN	-	-	-
		4 mm	-	340 daN	600 daN	-	-
	SS	2 mm	-	250 daN	-	-	-
		4 mm	-	340 daN	600 daN	-	-
<b>VIBRATION BS EN 61373</b>		-	-	4g - 10 à 500 Hz 90 min/axis	4g - 10 à 500 Hz 90 min/axis	-	-
<b>SHOCKS BS EN 61373</b>		-	-	300g - 3 ms 3 shocks/axis	300g - 3 ms 3 shocks/axis	-	-
<b>SEALING</b>	6 bar pressure resistance with no air leak						
<b>SCALE TEMPERATURE USAGE</b>	-50°C / +80°C						

\* Dimension after crimping

www.dubuis.com







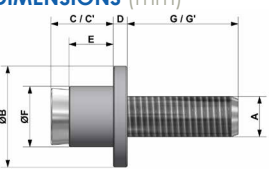


## ► USE WITH ALUMINIUM PLATE

THREAD	M6	M6	M6	M6	M6	M6	
PLATE THICKNESS	1,5 - 4 mm	1,5 - 4 mm	1,5 - 4 mm	1,5 - 4 mm	> 4	> 4	
DRILLING DIAMETER (mm)	11,5 / 11,7	11,5 / 11,7	11,5 / 11,7	11,5 / 11,7	10,5 / 10,7	10,5 / 10,7	
PACKAGING (20 PCS/BOX)							
DUBUIS P.N.	80976	80958	77906	77904	80977	80960	
ALSTOM P.N.	DTR0000127255	DTR0000000074	DTR0000127255	DTR0000000074	DTR0000133695	DTR0000001263	
FORMER BOMBARDIER P.N.	3EER4000057272	3EER300001-0318	NA	NA	3EER400005-4645	3EGK202252	
LONG DRILL	OFE1150044	OFE1150044	OFE1150044	OFE1150044	OFE1050041	OFE1050041	
SHORT DRILL	OFE1150018	OFE1150018	OFE1150018	OFE1150018	OFE1050020	OFE1050020	
SETTING TOOL	PMT C6 / PMA10						
A4-80 SS FASTENING	81920 						
ADVISED TORQUE VALUE	6 N.m						
MAXIMUM TORQUE VALUE	10 N.m						
DIMENSIONS (mm)	A	M6	M6	M6	M6	M6	M6
	B	16	16	16	16	16	16
	C C'	10,5 (6,5±2)*	10,5 (6,5±2)*	10,5 (6,5±2)*	10,5 (6,5±2)*	14,5 (12±1)*	14,5 (12±1)*
	D	4,5	4,5	4,5	4,5	3,5	3,5
	E	4,5	4,5	4,5	4,5	11	11
	F	11,5	11,5	11,5	11,5	10,5	10,5
	G G'	13 (17±2)*	21 (25±2)*	13 (17±2)*	21 (25±2)*	16 (18,5±1)*	24 (26,5±1)*
WEIGHT		10 g	12 g	10 g	12 g	13 g	15 g
BUSH RAW MATERIAL	Nickel plated aluminium						
<b>ELECTRICAL PERFORMANCE:</b>							
ELECTRICAL RESISTANCE LUG / PLATE - NF F00-363		60 µΩ	60 µΩ	60 µΩ	60 µΩ	60 µΩ	60 µΩ
SHORT CIRCUIT RESISTANCE <small>Please, contact us to validate your specifications</small>		3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA	3 × 10 kA
ELECTRICAL CONTACT SURFACE EARTH BOND / SURFACE NF F00-363		160 sqmm	160 sqmm	160 sqmm	160 sqmm	360 sqmm	360 sqmm
CORROSION RESISTANCE 500 H IN SALT MIST NF EN 3373		90 µΩ	90 µΩ	90 µΩ	90 µΩ	-	-
<b>MECHANICAL PERFORMANCE:</b>							
TENSILE LOAD TEST NF F00-363	2 mm 4 mm	250 daN -	250 daN -	250 daN -	250 daN -	- 300 daN	300 daN
SHEARING	1,5 mm 2 mm 4 mm	35 daN - 200 daN	35 daN - 200 daN	35 daN - 200 daN	35 daN - 200 daN	- - 210 daN	- - 210 daN
VIBRATION BS EN 61373		1 g - 5 à 150 Hz 5 H/axis	1 g - 5 à 150 Hz 5 H/axis	1 g - 5 à 150 Hz 5 H/axis	1 g - 5 à 150 Hz 5 H/axis	-	4 g - 10 à 500 Hz 90 min/axis
SHOCKS BS EN 61373		5 g - 30 ms 3 shocks/axis	5 g - 30 ms 3 shocks/axis	5 g - 30 ms 3 shocks/axis	5 g - 30 ms 3 shocks/axis	-	300 g - 3 ms 3 shocks/axis
SEALING	6 bar pressure resistance with no air leak						
SCALE TEMPERATURE USAGE	-50°C / +80°C						






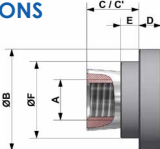
\* Dimension after crimping

### ► USE WITH ALUMINIUM PLATE

THREAD	M8	M8	M10	M10	
<b>PLATE THICKNESS</b>	1,5 - 4 mm	> 4	2 - 4	> 4	
<b>DRILLING DIAMETER (mm)</b>	15 / 15,2	13,5 / 13,7	19 / 19,2	15 / 15,2	
<b>PACKAGING</b> (20 PCS/BOX)					
<b>DUBUIS P.N.</b>	81931	81930	80959	80961	
<b>ALSTOM P.N.</b>	DTR0000190302	DTR0000314231	DTR0000001262	DTR0000000079	
<b>FORMER BOMBARDIER P.N.</b>	33GH000025-3623	NA	3EGH000038-6908 3EER400005-4647	3EER300001-0322	
<b>LONG DRILL</b>	OFE1500042	OFE1350037	OFE1900051	OFE1500042	
<b>SHORT DRILL</b>	OFE1500018	OFE1350019	OFE1900022	OFE1500018	
<b>SETTING TOOL</b>	PMT8 / PMA10		PMT10 / PMA10		
<b>A4-80 SS FASTENING</b>	81922 		81921 		
<b>ADVISED TORQUE VALUE</b>	15 N.m		30 N.m		
<b>MAXIMUM TORQUE VALUE</b>	25 N.m		50 N.m		
<b>DIMENSIONS (mm)</b>	<b>A</b>	M8	M8	M10	M10
	<b>B</b>	20	20	25	25
	<b>C C'</b>	12,5 (7±2)*	15 (12±1)*	12 (6,5±2)*	15,5 (12±1)*
	<b>D</b>	4,5	3,5	5,5	3,5
	<b>E</b>	4,5	11	4,5	11
	<b>F</b>	15	13,5	19	15
	<b>G G'</b>	16 (21,5±2)*	19 (22±1)*	24,5 (30±2)*	27,5 (31±1)*
<b>WEIGHT</b>	19 g	22 g	34 g	36 g	
<b>BUSH RAW MATERIAL</b>	Nickel plated aluminium				
<b>ELECTRICAL PERFORMANCE:</b>					
<b>ELECTRICAL RESISTANCE</b> <b>LUG / PLATE - NF F00-363</b>	20 µΩ	20 µΩ	20 µΩ	20 µΩ	
<b>SHORT CIRCUIT RESISTANCE</b> <small>Please, contact us to validate your specifications</small>	3 × 15 kA	3 × 20 kA	3 × 20 kA	3 × 20 kA	
<b>ELECTRICAL CONTACT SURFACE</b> <b>EARTH BOND / SURFACE NF F00-363</b>	210 sqmm	465 sqmm	270 sqmm	520 sqmm	
<b>CORROSION RESISTANCE</b> <b>500 H IN SALT MIST</b> <b>NF EN 3373</b>	-	-	50 µΩ	-	
<b>MECHANICAL PERFORMANCE:</b>					
<b>TENSILE LOAD TEST</b> <b>NF F00-363</b>	2 mm 4 mm	100 daN -	- 400 daN	200 daN -	- 500 daN
<b>SHEARING</b>	1,5 mm 2 mm 4 mm	- - -	- - -	- 105 daN 310 daN	- - 490 daN
<b>VIBRATION</b> <b>BS EN 61373</b>	-	-	-	4 g - 10 à 500 Hz 90 min/axis	4 g - 10 à 500 Hz 90 min/axis
<b>SHOCKS</b> <b>BS EN 61373</b>	-	-	-	300 g - 30 ms 3 shocks/axis	300 g - 3 ms 3 shocks/axis
<b>SEALING</b>	6 bar pressure resistance with no air leak				
<b>SCALE TEMPERATURE USAGE</b>	-50°C / +80°C				





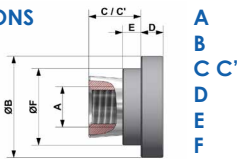
\* Dimension after crimping

## ► USE WITH STEEL &amp; STAINLESS STEEL PLATE

THREAD	M6	M6	M8	M8	M10		
PLATE THICKNESS	> 4	1,5 - 4 mm	> 4	1,5 - 4 mm	2 - 4		
DRILLING DIAMETER (mm)	11,5 / 11,7	11,5 / 11,7	13,5 / 13,7	15 / 15,2	19 / 19,2		
PICTURE (20 PCS/BOX)							
DUBUIS P.N.	77902	81963	77945	81965	81967		
ALSTOM P.N.	NA	DTR0000209903	NA	NA	DTR0000361647		
LONG DRILL	OFE1150044	OFE1150044	OFE1350037	OFE1500042	OFE1900051		
SHORT DRILL	OFE1150018	OFE1150018	OFE1350019	OFE1500018	OFE1900022		
SETTING TOOL	PMTc6 / PMA10		PMT8 / PMA10		PMT10 / PMA10		
A4-80 SS FASTENING	78913		78914		78915		
ADVISED TORQUE VALUE	4 N.m		15 N.m	10 N.m	20 N.m		
MAXIMUM TORQUE VALUE	8 N.m		20 N.m	16 N.m	25 N.m		
DIMENSIONS (mm)		A B C C' D E F	M6 16 16 (12,5±1)* 4,5 4,5 11 11,5	M6 16 10,5 (6,5±2)* 4,5 4,5 11,5	M8 25 14,5 (10,5±1)* 3,5 7 13,5	M8 20 12,5 (6,5±2)* 5,5 4,5 15	M10 25 13 (6,5±2)* 5,5 4,5 19
WEIGHT	15 g	10 g	20 g	17 g	28 g		
BUSH RAW MATERIAL	Tined copper						
<b>ELECTRICAL PERFORMANCE:</b>							
ELECTRICAL RESISTANCE LUG / PLATE - NF F00-363	Steel SS	25 μΩ 120 μΩ	25 μΩ 120 μΩ	20 μΩ 70 μΩ	20 μΩ 70 μΩ	20 μΩ 70 μΩ	
SHORT CIRCUIT RESISTANCE Please, contact us to validate your specifications	Steel SS	- -	3 × 15 kA 3 × 10 kA	- -	3 × 15 kA 3 × 10 kA	3 × 15 kA	
ELECTRICAL CONTACT SURFACE EARTH BOND / SURFACE NF F00-363		400 sqmm	160 sqmm	300 sqmm	210 sqmm	270 sqmm	
CORROSION RESISTANCE 500 H IN SALT MIST NF EN 3373	Steel SS	- -	30 μΩ 150 μΩ	- -	- -	25 μΩ 900 μΩ	
<b>MECHANICAL PERFORMANCE:</b>							
TENSILE LOAD TEST NF F00-363	2 mm 4 mm	- -	400 daN 600 daN	- -	300 daN 700 daN	500 daN 800 daN	
SCALE TEMPERATURE USAGE	-50°C / +80°C						

\* Dimension after crimping

### ► USE WITH ALUMINIUM PLATE

THREAD	M6	M8	M8	M10	
PLATE THICKNESS	1,5 - 4 mm	1,5 - 4 mm	> 4	2 - 4	
DRILLING DIAMETER (mm)	11,5 / 11,7	15 / 15,2	13,5 / 13,7	19 / 19,2	
PICTURE (20 PCS/BOX)					
DUBUIS P.N.	81964	81966	77946	81968	
ALSTOM P.N.	DTR0000125537	DTR0000275700	NA	DTR0000125310	
BOMBARDIER P.N.	NA	NA	NA	3EER4000010-4201	
LONG DRILL	OFE1150044	OFE1500042	OFE1350037	OFE1900051	
SHORT DRILL	OFE1150018	OFE1500018	OFE1350019	OFE1900022	
SETTING TOOL	PMTc6 / PMA10	PMT8 / PMA10		PMT10 / PMA10	
A4-80 SS FASTENING	78913	78914		78915	
ADVISED TORQUE VALUE	4 N.m	10 N.m	10 N.m	20 N.m	
MAXIMUM TORQUE VALUE	10 N.m	20 N.m	25 N.m	30 N.m	
DIMENSIONS (mm)		M6 16 10,5 (6,5±2)* 4,5 4,5 11,5	M8 20 12,5 (6,5±2)* 5,5 4,5 15	M8 20 11 (8±1)* 3,5 7 13,5	M10 25 13 (6,5±2)* 5,5 4,5 19
WEIGHT	6 g	9 g	8 g	14 g	
BUSH RAW MATERIAL	Nickel plated aluminium				
<b>ELECTRICAL PERFORMANCE:</b>					
ELECTRICAL RESISTANCE LUG / PLATE - NF F00-363	60 µΩ	20 µΩ	40 µΩ	20 µΩ	
SHORT CIRCUIT RESISTANCE Please, contact us to validate your specifications	3 × 10 kA	3 × 15 kA	-	3 × 20 kA	
ELECTRICAL CONTACT SURFACE EARTH BOND / SURFACE NF F00-363	160 sqmm	210 sqmm	300 sqmm	270 sqmm	
CORROSION RESISTANCE 500 H IN SALT MIST NF EN 3373	90 µΩ	-	-	-	
<b>MECHANICAL PERFORMANCE:</b>					
TENSILE LOAD TEST NF F00-363	250 daN 450 daN	200 daN 550 daN	- -	300 daN 650 daN	
SCALE TEMPERATURE USAGE	-50°C / +80°C				

\* Dimension after crimping

# DUBUIS NEW DEVELOPMENTS



TRANSMISSION & DISTRIBUTION



ROLLING STOCK



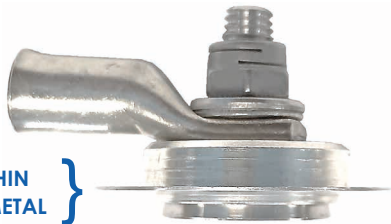
AERONAUTICS

## EARTH BOND THIN METAL SHEET (0.5 to 1mm)

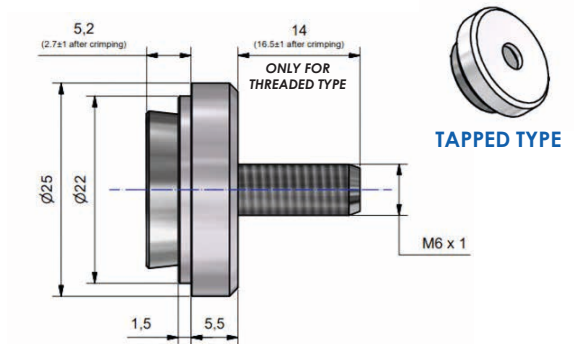
M6 - Ø22mm

SIMPLE ELECTRICAL CONNECTION

FOR THIN SHEET METAL



- THREADED (MALE)** # 95855 - STEEL & ST. STEEL  
# 95875 - ALUMINIUM
- TAPPED (FEMALE)** # 96815 - STEEL & ST. STEEL  
# 95897 - ALUMINIUM



DUBUIS EARTH BOND - Ø22 M6 is composed of an expansible tin-plated copper bush (#95855/96815) or an aluminium bush (#95875/95897) and a stainless-steel dowel except #95897 which is in anodized aluminium. Not including self-locking nut, washer and lug.

### CONNECTION PERFORMANCE

- Max. Electrical resistance Lug/ St Plate - **60µΩ**
- Max. Electrical resistance Lug/ Al. Plate - **80µΩ**
- Max. Electrical resistance Lug/ St.St. Plate - **180µΩ**
- Max tensile load @ THK 0.5mm - **65daN**
- Max shearing load@ THK 0.5mm - **40daN**

### APPLICATION

- Simple connection on the useful side
- Plate thickness **0.5 to 1mm**
- Drilling @ **Ø22<sup>+0.2</sup> mm**
- M6** Stainless steel dowel
- Advise torque value @ **6Nm**
- #95855 **32g** - #95875 **20g**
- #96815 **27g** - #95897 **9g**

### Additional products

OFE2222062  
Reamer drill Ø22

78995  
Stamp Ø22 for setting tool



### COMPATIBLE TOOLS



PMTC6



PMTXX



BTEMXX



TRANSMISSION & DISTRIBUTION

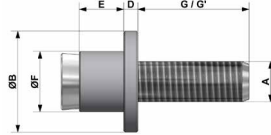


ROLLING STOCK



AERONAUTICS

# IMPERIAL EARTH BOND



## For use with steel plate

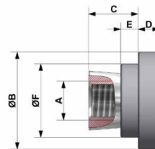
Part Number	A	ØB	G (G')	D	E	ØF	Hole size		Plate thickness		Torque value	Setting tools		Long stepped drill
							min	max	min	max		Designation	Part Number	
81983	1/4 UNC	0,63 in	0.51 (0.70) in	0,177 in	0,177 in	7/16	0,437 in	0,445 in	0,059 in	0,157 in	6 ft.lbs	PMT3/4UNC	MTPC140A1000	OFE07/16043
81987	1/4 UNC	0,63 in	0.63 (0.748) in	0,138 in	0,433 in	3/8	0,375 in	0,383 in	> 0.157 in		6 ft.lbs	PMT3/4UNC	MTPC140A1000	OFE03/08037
81989	3/8 UNC	0,984 in	0.944 (1.22) in	0,216 in	0,177 in	3/4	0,75 in	0,758 in	0,078 in	0,157 in	25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE03/04051
81993	3/8 UNC	0,984 in	1.102 (1.22) in	0,137 in	0,433 in	17/32	0,531 in	0,539 in	> 0.157 in		25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE17/32037
81911	3/8 UNC	0,984 in	1.102 (1.22) in	0,137 in	0,433 in	17/32	0,531 in	0,539 in	> 0.157 in		25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE17/32037
81910	3/8 UNC	0,984 in	0.944 (1.22) in	0,216 in	0,177 in	3/4	0,75 in	0,758 in	0,078 in	0,157 in	25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE03/04051

## For use with aluminium plate

Part Number	A	ØB	G (G')	D	E	ØF	Hole size		Plate thickness		Torque value	Setting tools		Long stepped drill
							min	max	min	max		Designation	Part Number	
81984	1/4 UNC	0,63 in	0.51 (0.70) in	0,177 in	0,177 in	7/16	0,437 in	0,445 in	0,059 in	0,157 in	6 ft.lbs	PMT3/4UNC	MTPC140A1000	OFE07/16043
81988	1/4 UNC	0,63 in	0.63 (0.748) in	0,138 in	0,433 in	7/16	0,437 in	0,445 in	> 0.157 in		6 ft.lbs	PMT3/4UNC	MTPC140A1000	OFE07/16043
81990	3/8 UNC	0,984 in	0.944 (1.22) in	0,216 in	0,177 in	3/4	0,75 in	0,758 in	0,078 in	0,157 in	25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE03/04051
81994	3/8 UNC	0,984 in	1.102 (1.22) in	0,137 in	0,433 in	19/32	0,594 in	0,602 in	> 0.157 in		25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE19/32042

\* G' is when bond is crimped

# IMPERIAL EARTH BOSS



## For use with steel plate

Part Number	A	ØB	C	D	E	ØF	Hole size		Plate thickness		Torque value	Setting tools		Long stepped drill
							min	max	min	max		Designation	Part Number	
81985	1/4UNC	0,63	0,429	0,177	0,177	7/16	0,437	0,445	0,059	0,157	6 ft.lbs	PMT3/4UNC	MTPC140A1000	OFE07/16043
81991	3/8UNC	0,984	0,496	0,216	0,177	3/4	0,75	0,758	0,078	0,157	25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE03/04051

## For use with aluminium plate

Part Number	A	ØB	C	D	E	ØF	Hole size		Plate thickness		Torque value	Setting tools		Long stepped drill
							min	max	min	max		Designation	Part Number	
81986	1/4UNC	0,63	0,429	0,177	0,177	7/16	0,437	0,445	0,059	0,157	6 ft.lbs	PMT3/4UNC	MTPC140A1000	OFE07/16043
81992	3/8UNC	0,984	0,496	0,216	0,177	3/4	0,75	0,758	0,078	0,157	25 ft.lbs	PMT3/8UNC	MTPC380A1000	OFE03/04051



TRANSMISSION  
& DISTRIBUTION



ROLLING  
STOCK



AERONAUTICS

## REMOVAL HEAD TOOLS RANGE



MTPX06 - MTPX08 - MTPX10

<b>THREAD</b>	<b>M6 - M8 - M10</b>
<b>PULLING FORCE</b>	10 kN - 18 kN - 25 kN
<b>STROKE</b>	8 mm
<b>TOOL WEIGHT</b>	1,200 kg
<b>HEAD WEIGHT</b>	0,400 kg
<b>DIMENSIONS TOOL</b> (L x l x H in mm)	169 x 125 x 47
<b>DIMENSIONS HEAD</b> (L x l x H in mm)	48 x 44 x 40
<b>PART NUMBER</b>	MTPX060A1000 MTPX080A1000 MTPX100A1000

\* 10/32UNF - 1/4" - 5/16" - 3/8" Consult us



BTPX06 - BTPX08 - BTPX10

<b>THREAD</b>	<b>M6 - M8 - M10</b>
<b>PULLING FORCE</b>	10 kN - 18 kN - 25 kN
<b>STROKE</b>	8 mm
<b>TOOL WEIGHT</b> (with battery)	2,700 kg
<b>HEAD WEIGHT</b>	0,400 kg
<b>DIMENSIONS TOOL</b> (L x l x H in mm)	200 x 265 x 60
<b>DIMENSIONS HEAD</b> (L x l x H in mm)	48 x 44 x 40
<b>PART NUMBER</b>	BTPX060A1120 BTPX080A1120 BTPX100A1120

\* 10/32UNF - 1/4" - 5/16" - 3/8" Consult us



RAIL BONDS



XPH3INE - XPH4INE - XPH6INE

<b>THREAD</b>	<b>M10 - M12 - M16</b>
<b>PULLING FORCE</b>	27 kN - 37 kN - 60 kN
<b>STROKE</b>	8 mm
<b>TOOL WEIGHT</b> (with battery)	2,800 kg
<b>HEAD WEIGHT</b>	1,300 kg
<b>DIMENSIONS TOOL</b> (L x l x H in mm)	200 x 265 x 60
<b>DIMENSIONS HEAD</b> (L x l x H in mm)	48 x 44 x 40
<b>PART NUMBER</b>	XPH3INEA1120 XPH4INEA1120 XPH6INEA1120



# DUBUIS, IT'S ALSO:



## BATTERY OPERATED HYDRAULIC MULTITOOLS

The BPP063 is a battery powered 62kN tool with interchangeable heads. The BPP063 accepts crimping, cutting, and punching heads of the MULTITOOLS range. Exists in BPE063 and BPL063 version.

## CATENARY MAINTENANCE TOOLS

Dubuis offers a full range of tooling for catenary wire maintenance, during various operations.



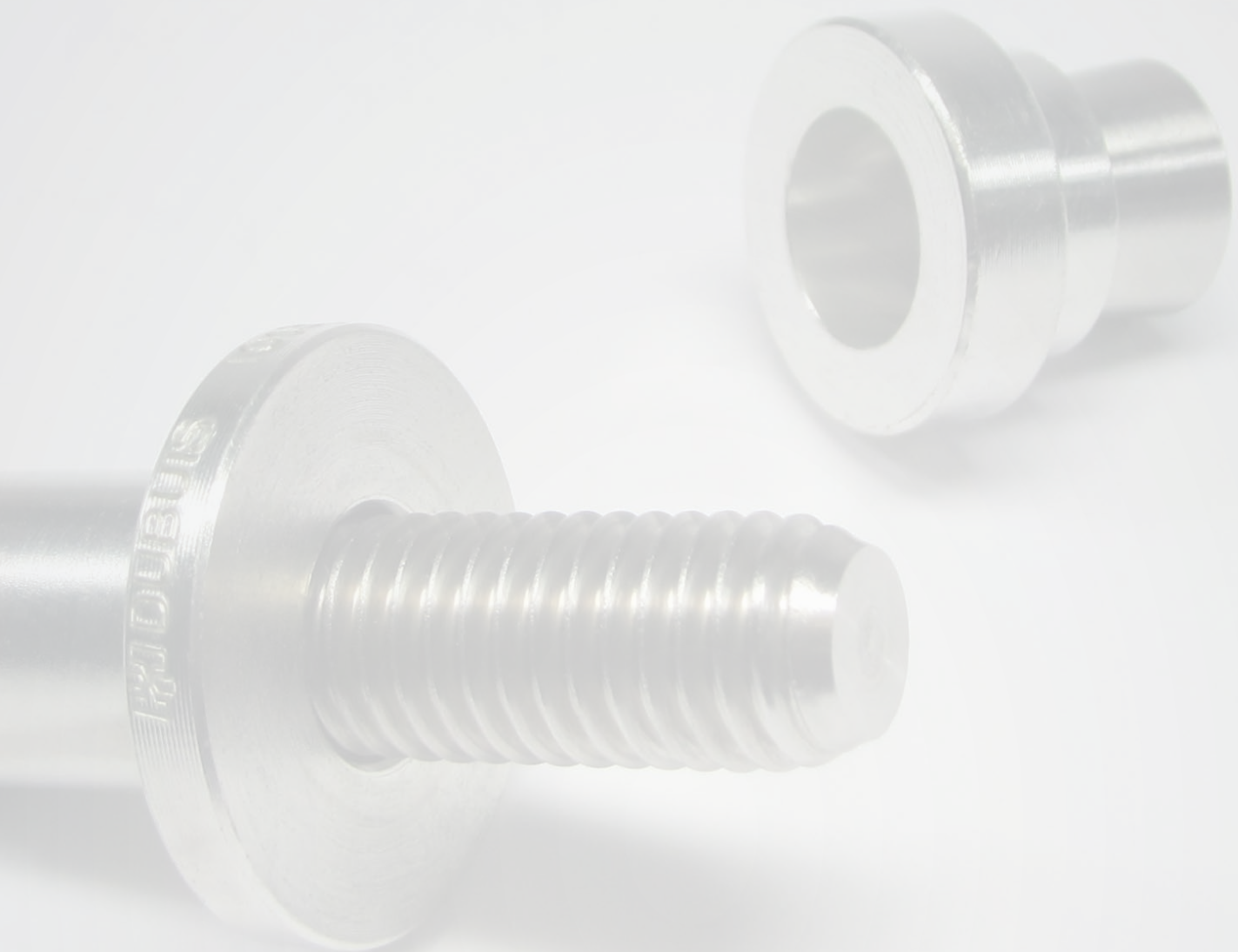
## SIGNALLING, RETURN OF TRACTION CURRENT

Thanks to the rail bond advantages, Dubuis has provided solutions for the reliability of connections. The regularity of traffic on all rail networks equipped with this concept is considerably improved.

- Keys products:**
- Electrical connection to the rail with bond: Ø 8 mm M6 to Ø 22 mm M16 & setting tools PHxIN
  - Rail drilling Machines & accessories



Find our full range of products on the rail catalog available on [www.dubuis.com](http://www.dubuis.com).



EN 9100  
ISO 9001  
ISO 14001  
ISO 45001  
BUREAU VERITAS  
Certification



17 - 19 Rue Jules Berthonneau  
C.S. 73406 - ZI de Villebarou  
**41034 BLOIS CEDEX**  
**FRANCE**

Tel.: +33 (0)2 54 52 40 38  
Email: [commercial@dubuis.com](mailto:commercial@dubuis.com)  
[www.dubuis.com](http://www.dubuis.com)



**GPS: LAT.: N 47°36'30"**  
**LONG.: E 01°18'15"**

