RADIO-ENERGIE

The best signal since 1928

PRODUCTS DESCRIPTION

- *1. AC and DC Tachometers: Alternateurs et Génératrice Tachymétriques.*

- *2. Incremental encoders: Codeurs Incrémentaux.*

- *3. DC and DC ATEX Motors: Moteurs à Courant Continu avec ou sans ATEX.*

- *4. Permanent Magnet Generators: Alternateurs PMG.*

1. AC TACHOMETERS: ALTERNATEURS TACHYMETRIQUES.

1. DC TACHOMETERS: DYNAMOS TACHYMETRIQUES.

RE.0 RANGE.

RE.0 RANGE: 444 SERIE

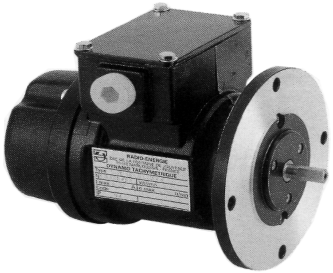
L

N

NV

R

US



ATEX

RE.0444 L
(L = LIGHT)

CE

- Flange (B5), no Foot
- Commutator : 1 only
- Keyed shaft
- Voltage @ 1,000 rpm : 60 V
- Brushes : CA
- IP44 (std) & IP55 (seal. ring)
- Shaft : 7x30 (std) - 11x30

- 2nd shaft end : No
- Connection : Terminal box
- Operating temperature : -20°C + 80 °C
- T° compensation : No
- Nb armature slots : 33
- Nb commutator blades : 33

Approval : UL CSA

Most common model : 444L B 1x60 CA IP44 7x30

Competitors : Hübner TDP 0,2 LS, Weg 1R/60, Sanyo GTY 104-9011,…

Applications : Lift industry, industrial motors…

RE.0444 N
(N = NORMAL)

- Flange (B5) or Foot
- Commutator : 1 or 2
- Keyed shaft
- Volt @ 1,000 rpm : 6 to 200 V
- Std : 50-60 V // 100-120 V
- Brushes : EG or CA
- IP44 (std) & IP55 (seal. ring)
- Shaft : 7x30 (std) - 11x30

- 2nd shaft end : Yes
- 2nd flange : No
- Connection : Radial Cable
- Operating temperature : -30°C + 130 °C
- T° compensation : Yes
- Nb armature slots : 19
- Nb commutator blades : 57

Approval :

Most common model : 444N B 1x60 EG IP44 7x30

Competitors : Hübner TDP 0,2 LS, Weg 1R/60, Sanyo GTY 104-9011,…

Applications : Industrial applications – Control & Regulation

RE.0444 NV
(NV = NEW VERSION)

Flange (B5) only
Commutator : 1 only
Keyed shaft
Volt @ 1,000 rpm : 20 to 100 V
Std : 60 V
Brushes : EG or CA
IP44 (std)
Shaft : 11x30 (std) - 7x30

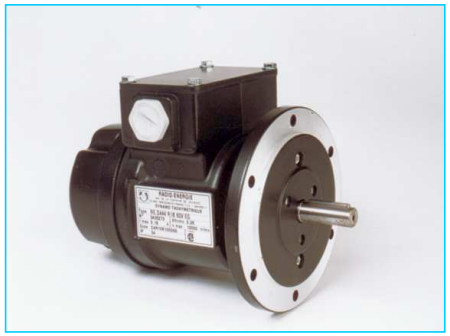
- **2nd shaft end : Yes**
- **2nd flange : No**
- **Connection : Terminal Box**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation : Yes**
- **Nb armature slots : 19**
- **Nb commutator blades : 57**

Most common model : 444NV B 1x60 EG IP44 11x30

Approval :

Competitors : Hübner TDP 0,2 LS, Weg 1R/60, Sanyo GTY 104-9011,…

Applications : Industrial applications – Control & Regulation



RE.0444 R
(R = ROBUST)

CE

Flange (B5) or Foot

Commutator : 1 or 2

Keyed shaft

Volt @ 1,000 rpm : 6 to 200 V
Std : 50-60 V // 100-120 V

Brushes : EG or CA

IP54 (std) to IP56

Shaft : 11x30 (std) - 7x30

- **2nd shaft end : Yes**
- **2nd flange : Yes**
- **Connection : Junction Box**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation : Yes**
- **Nb armature slots : 19**
- **Nb commutator blades : 57**

Most common model : 444R B 1x60 EG IP54 11x30

Approval : UL CSA

Competitors : Hübner TDP 0,2 LS, Weg 1R/60, Sanyo GTY 104-9011,…

Applications : Industrial applications – Control & Regulation

RE.0444 US (US = USA)

derived from RE.0444 R for USA market

Flange or Foot

Commutator : 1 or 2

Flat (std) or Key shaft

Shaft DX19 : .3125"x.77“ :7,93x 19,56mm

Shaft EX19 : .5’’x.77” : 12,7x19,56mm for Dover

Volt @ 1,000 rpm : 6 to 200 V
Std : 50 V // 100 V

Brushes : CA (std) or EG

IP54 (std) to IP56

- **2nd shaft end : Yes**
- **2nd flange : No**
- **Connection : Junction Box**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation as a standard**
- **Nb armature slots : 19**
- **Nb commutator blades : 57**

Most common model : 444US B C1x100 CA IP54 DX19

Approval :

Competitors : Hübner TDP 0,2 LS, Weg 1R/60, Sanyo GTY 104-9011,…

Applications : Industrial applications – Control & Regulation

RE.0444 R

- 6 holes flange
- 115 mm (4.53“) outer flange Ø
- 85 mm (3.34“) centering Ø
- Shaft: 11 x 30 mm (0.43“ x 1.18“)
- Keyed shaft, no flat shaft
- T° compensation on request
- EG brushes
- Standard voltage : 60 V
- UL and CSA certified

VERSUS

RE.0444 US

- 4 holes flange
- 4.53“ (115 mm) outer flange Ø
- 2.5“ (63,5 mm) centering Ø
- Shaft: .3125"x .77“ (7,93x 19,56mm)
- Keyed or flat shaft
- T° compensation as a standard
- CA brushes
- Standard voltage : 50 V & 100 V
- UL and CSA certified

Competitors : GE (5PY), BALDOR (XPY), POWERTRON, AMICON (APY)

RE.0444 ATEX
(ATEX = FLAMEPROOF)

- Flange (444, US, ADF) or Foot (B3)
- Commutator : 1 or 2
- Keyed shaft
- Volt @ 1,000 rpm : 60V (std), 20 - 200V
- Brushes : EG or CA
- IP66
- Shaft : 11x 30 (std) - 7x30
- ATEX (EEx d II C-T5) certified

Most common model : 444 ATEX B 1X60 CA IP66 11X30 (PN /0026606)

Most common model : 444 ATEX B 1X60 CA IP66 11X30 (PN /0026606)

Competitor : Hübner

Applications : Explosive atmospheres (Mining, Chemicals, Oil&Gas…)

Approval :

RE.0 RANGE: 588 SERIE

GB

588

US

MFC

SR

RE.0588

with a low ripple

Flange : Normalized or Standard
or Foot
Commutator : 1 or 2
Flat or Key shaft
Shaft : 14x30
Volt @ 1,000 rpm : 6 to 200 V
Std : 50 V // 100 V
Brushes : CA as standard
IP54 (std) to IP56

- **2nd shaft end : Yes**
- **2nd flange : Yes**
- **Connection : Terminal Box only**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation as a standard**
- **Nb armature slots : 29**
- **Nb commutator blades : 87**

Approval :

Most common model : 588 BS C1x60 CA IP54 14x30

Applications : Industrial applications – For Low Speed

RE.0588 GB

derived from RE.0588 for UK market

GB industrial standards : Flange, Foot, Flange & Foot

Commutator : 1 or 2

Flat or Key shaft

Shaft : 15,87x31

Volt @ 1,000 rpm : 6 to 200 V
Std : 50 V // 100 V

Brushes : CA as standard

IP54 (std) to IP56

- **2nd shaft end : Yes**
- **2nd flange : Yes**
- **Connection : Terminal Box only**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation as a standard**
- **Nb armature slots : 29**
- **Nb commutator blades : 87**

Most common model : 588GB B+S C1X200 CA IP54 CX31

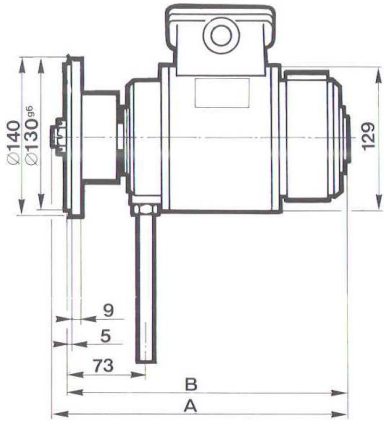
Approval :

Competitors : Hübner

Applications : Industrial applications – For Low Speed

RE.0588 MF

Mechanically reinforced
Direct mounting on shaft end



Flange, Foot

Commutator : 1 or 2

Flat or Key shaft

Shaft : 14x30

Volt @ 1,000 rpm : 6 to 200 V
Std : 50 V // 100 V

Brushes : CA as standard

IP54 (std) to IP56

- **2nd shaft end : Yes**
- **2nd flange : Yes**
- **Connection : Terminal Box only**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation as a standard**
- **Nb armature slots : 29**
- **Nb commutator blades : 87**

Most common model : 588 BS C1x60 CA IP54 14x30

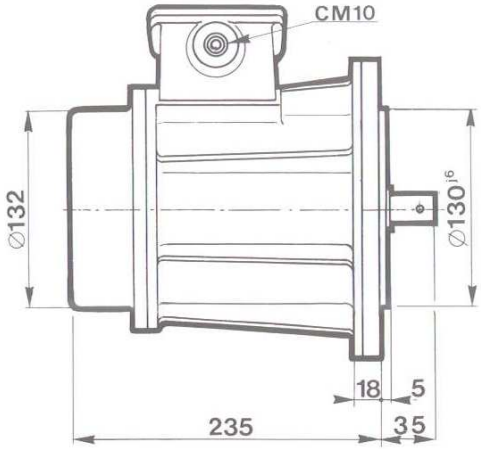
Approval :

Competitors : Hübner

Applications : Industrial applications – For Low Speed

RE.0588 SR

echanically reinforced tight and rugged model



GB industrial standards : Flange, Foot, Flange & Foot

Commutator : 1 only

Flat or Key shaft

Shaft : 16x30

Volt @ 1,000 rpm : 6 to 200 V
Std : 50 V // 100 V

Brushes : CA as standard

IP54 (std) to IP56

- **2nd shaft end : Yes**
- **2nd flange : Yes**
- **Connection : Terminal Box only**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation as a standard**
- **Nb armature slots : 29**
- **Nb commutator blades : 87**

Most common model : 588 BS C1x60 CA IP54 14x30

Approval :

Competitors : Hübner

Applications : Industrial applications – For Low Speed

RE.0588 US

derived from RE.0588 for US market

US industrial standards : Flange, Foot, Flange & Foot

Commutator : 1 only

Keyed shaft (std) or Flat

Shaft : .625''x1.87'' : 15,87x47,6mm

Volt @ 1,000 rpm : 30 to 1.000 V
Std : 50 V // 100 V

Brushes : CA as standard

IP54 (std) to IP56

- **2nd shaft end : Yes**
- **2nd flange : Yes**
- **Connection : Terminal Box only**
- **Operating temperature : -30°C + 130 °C**
- **T° compensation as a standard**
- **Nb armature slots : 29**
- **Nb commutator blades : 87**

Most common model : 588 US BC1x100 CA IP54 CX47,6

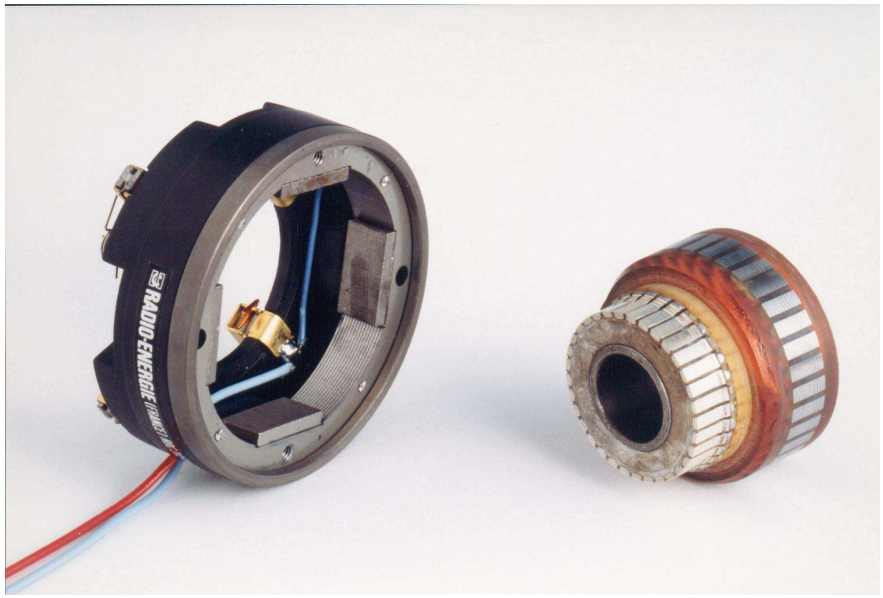
Approval :

Competitors : Hübner

Applications : Industrial applications – For Low Speed

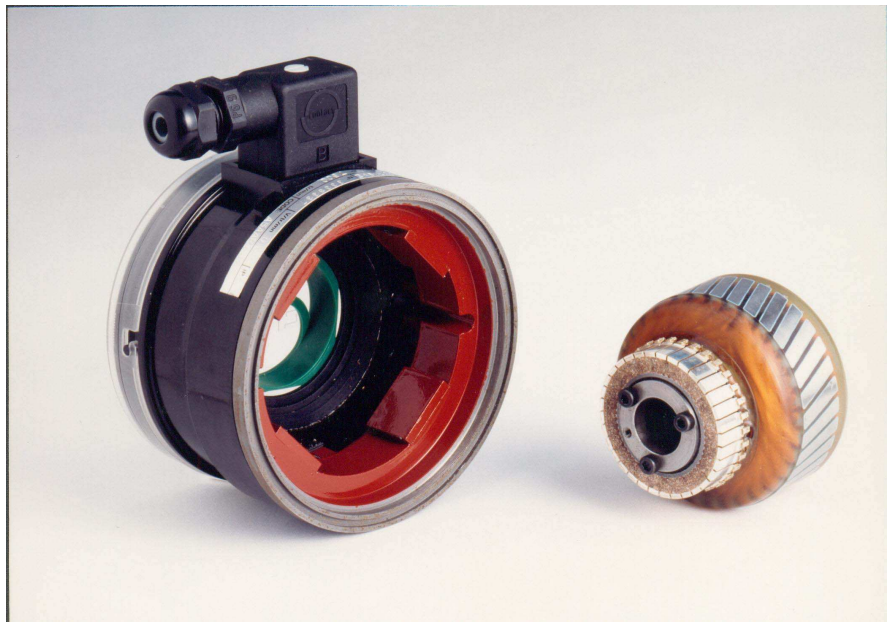
RDC RANGE: HOLLOW SHAFT TACHO

RDC 205

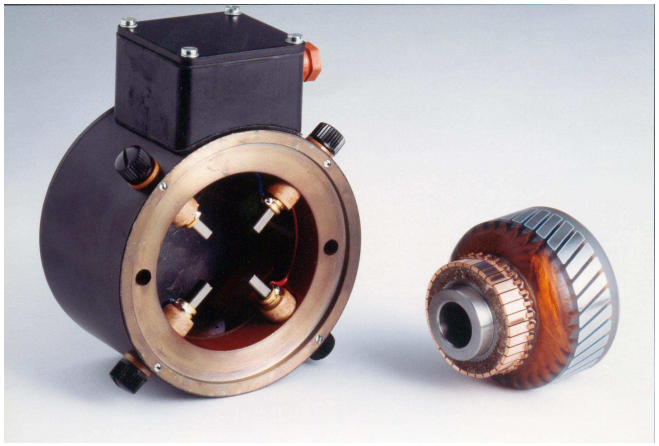


RDC 210

RDC 215

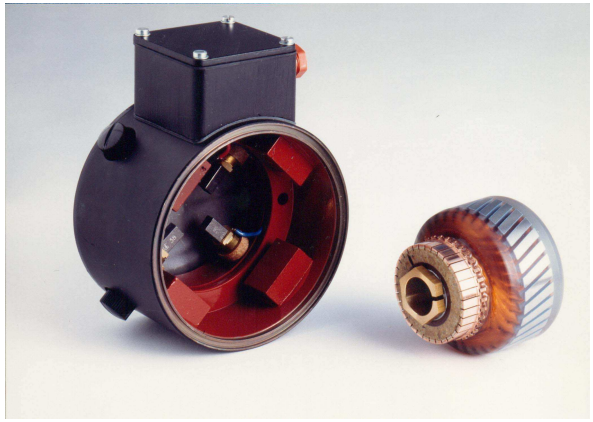


RDC 14

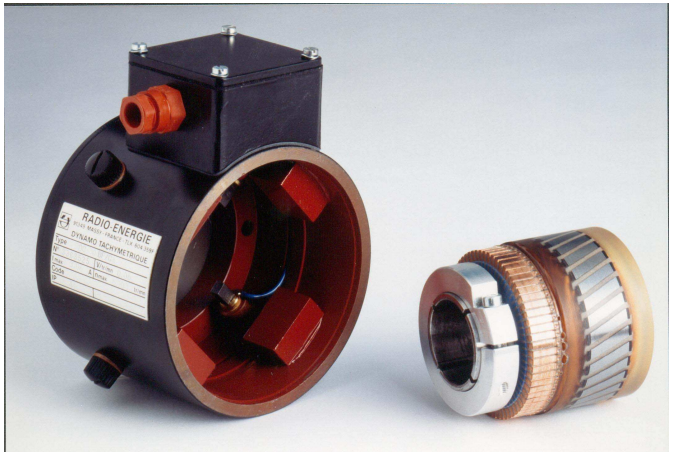


RDC 16 MF

CE



RDC 30 BF



2. ENCODERS RCI 40A B/H/F Shaft

Housing diameter 40 mm

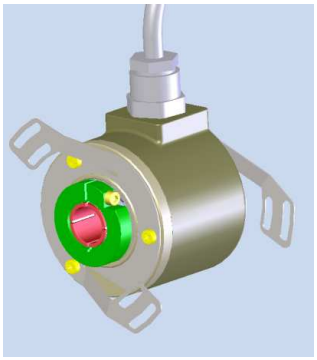
Blind & Hollow

Flange

Shaft type	**Blind & Hollow : 4, 6mm & ¼ inch stainless steel hollow shaft**
	Flange : 6mm & ¼ inch stainless steel shaft
Fixation	**Blind & Hollow : Spring plate**
	Full : Clamping, synchro, square flange
Body	**Aluminium**
Pulses per turn	**Standard 1024, 2048 Others : from 1 to 2500, on request.**
Termination	**Radial cable**
Output signals	**A and B with gated Z**
Output waveforms	**A leads B for clockwise rotation from front size**
Operating temperature range	**(encoder body) - 25° + 85° C**
Supply voltage	**4,5 to 30V DC with reverse polarity protection**
Output signals	**Universal complementary push pull (7272) RS422**
Protection	**IP64 at shaft inlet, IP 65 at housing (IEC 60529)**
Max speed	**6.000rpm**

ENCODERS RCI 58 B

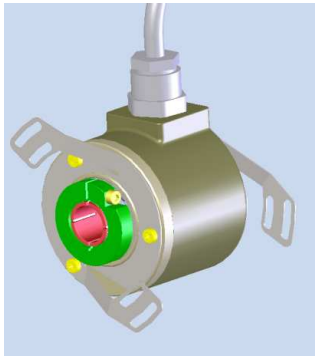
Housing diameter 58 mm



Blind & Hollow

Flange

Shaft type	**Blind & Hollow : 10, 12, 14, 15mm & ½ inch stainless steel hollow shaft**
	Flange : 6, 10mm & ¼, ⅜ inch stainless steel shaft
Fixation	**Blind & Hollow : Spring plate with front and rear mounting**
	Full : Clamping, synchro, square flange
Body	**Zamac body with cable gland**
Locking B/H shaft	**Clamping ring**
Pulses per turn	**Standard 1024, 2048 Others : from 1 to 5400, on request.**
Termination	**Radial cable, M23 and MS310 receptacle**
Output signals	**A and B with gated Z**
Output waveforms	**A leads B for clockwise rotation from front size**
Operating temperature range	**(encoder body) - 25° + 85° C**
Supply voltage	**4,5 to 30V DC with reverse polarity protection**
Output signals	**Universal complementary push pull (7272) RS422**
Protection B/H shaft	**IP64 at shaft inlet, IP 65 at housing (IEC 60529)**
Protection F shaft	**IP65 at shaft inlet, IP 65 at housing (IEC 60529)**
Max speed	**6.000rpm**



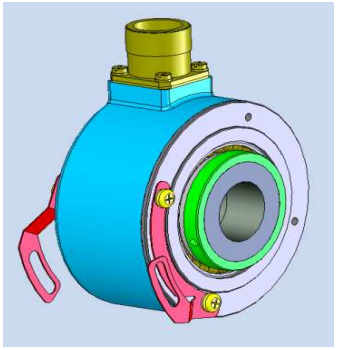
RCI58B HS14 2 1024 CA01

ORDERING CODE RCI 58B - HSxx - x - xxxx - x

RCI 58B - **HS14 - 2 - 1024 - CA01**

RCI	**Radio-énergie Codeur Incrémental**
58	**Housing diameter = 58 mm**
B	**Internal code -** ***depending to the serie***
HS	**Hollow through Shaft (BS = Blind Hollow Shaft // FS = Full Shaft)**
14	**14 for Hollow Shaft Ø14 mm or 06, 10, 12, 14 depending Ø mm,**
2	**2 = 2 fixation arms. One more spring plate can be fitted in the rear**
1024	**1024 = pulses per turn = resolution**
23C0	**CA01 = cable 1m, 23C0 = M23 connector, 12 pins clockwise (CW), MILP = MS310 connector, 10 pins.**

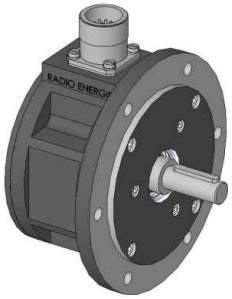
Supply Voltage ? No codification ! we cover from 4,5 to 30V DC…



ENCODERS RCI 90 B H Shaft

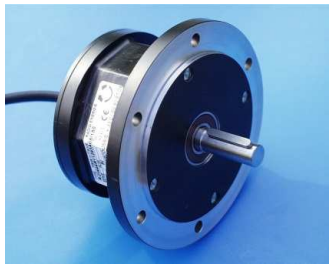
Housing diameter 90 mm

Shaft type	**12, 20, 25, 30, 42mm & 1inch stainless steel Hollow through Shaft**
Fixation	**Spring plate with front and rear mounting**
Body	**Zamac body with cable gland**
Pulses per turn	**Standard 1024 Others : on request.**
Termination	**Radial cable, M23 and MS310 receptacle**
Output signals	**A and B with gated Z**
Output waveforms	**A leads B for clockwise rotation from front size**
Operating temperature range	**(encoder body) - 25° + 85° C**
Supply voltage	**4,5 to 30V DC with reverse polarity protection**
Output signals	**Universal complementary push pull (7272) RS422**
Protection	**IP64 at shaft inlet, IP 65 at housing (IEC 60529)**
Max speed	**3.000rpm**



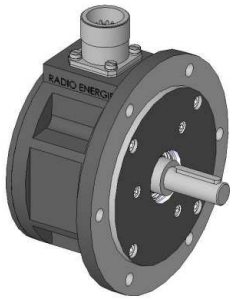
ENCODERS RCI 444R FS

Encoder with REO 444 tacho flange



Shaft type	**7 and 11mm stainless steel Full Shaft**
Housing diameter	**115mm**
Fixation	**Standard REO 444 flange**
Body	**Aluminium**
Pulses per turn	**Standard 1024, 2048 Others : from 1 to 5400, on request.**
Termination	**Radial cable, M23 and MS310 receptacle**
Output signals	**A and B with gated Z**
Output waveforms	**A leads B for clockwise rotation from front size**
Operating temperature range	**(encoder body) - 25° + 85° C**
Supply voltage	**4,5 to 30V DC with reverse polarity protection**
Output signals	**Universal complementary push pull (7272) RS422**
Protection	**IP64 at shaft inlet, IP 65 at housing (IEC 60529)**
Max speed	**10.000rpm**

ORDERING CODE RCI 444R - FSxx - x - xxxx - x



RCI 444R - FS11 - 4 - 1024 - JBX1

RCI	**Radio-énergie Codeur Incrémental**
444	**Housing diameter = 115 mm (refer to RE.0444 flange)**
R	**Robust serie**
FS	**Full Shaft**
11	**Shaft Ø11 mm or can be Ø7 mm too**
4	**4 (Push-Pull), or 3 (RS422)**
01024	**1024 = pulses per turn = resolution**
JBX1	**JBX1 = Junction Box, channel A before B - standard**
	23C1 = M23 connector, 12 pins clockwise (CW), channel A before B - std
	CA01 = cable one meter - standard
	MILP = MS310 connector, 10 pins

And for Supply Voltage ?? No codification ! we cover from 4,5 to 30V DC…

ENCODERS RCI ATEX ADF Shaft

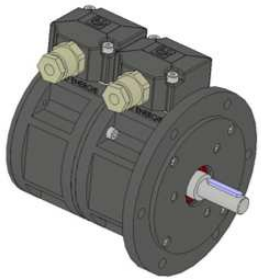
Encoder in ATEX enclosure

ATEX certified II 2 Gas & Dust, EEx d IIC – T5.

One or two optical encoders or a combination of a tachogenerator

Shaft type	**7 and 11mm stainless steel Full Shaft**
Housing diameter	**115mm**
Fixation	**Standard REO 444 flange or base**
Body	**Aluminium**
Pulses per turn	**Standard 1024, 2048** **Others : from 1 to 5400, on request.**
Termination	**Junction box**
Output signals	**A and B with gated Z**
Output waveforms	**A leads B for clockwise rotation from front size**
Operating temperature range	**(encoder body) - 25° + 85° C**
Supply voltage	**4,5 to 30V DC with reverse polarity protection**
Output signals	**Universal complementary push pull (7272) RS422**
Protection	**IP66 (IEC 60529)**
Max speed	**10.000rpm**

ENCODER WITH CENTRIFUGAL SWITCH



Incremental Optical Encoder and centrifugal switch with RE0 444 Tacho Flange

PRECILEC designed these combinations to supply incremental speed signals and carry out a switching operation at a preset speed limit.
These combinations consist of an incremental encoder associated with a mechanical centrifugal switch.
The centrifugal switch is directly mounted on the rear shaft of the encoder.
Particularly well protect against weathers effects and very compact our RCI/RCC 444R FS can be use in many applications (rail mounted gantry crane, floating crane .....)

Main features

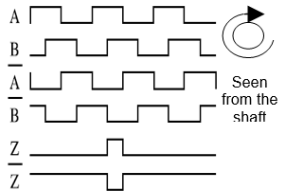
- Shaft type: Full shaft Ø11 mm (made in stainless steel)
- Housing diameter: 90 mm
- Fixation: Standard RE0 444 flange
- Body: Aluminium
- Protection: IP 65 (IEC 60529)
- Max shock: 30 g, 11 ms (IEC 68-2-27) (encoder limitation)
- Max continuous speed: 3 000 min^{-1} (switching speed limitation)
- Operating T° range: - 25°C / + 85°C (encoder limitation)
- Moment of inertia: 330g cm^2

Encoder Electrical characteristics

- Supply voltage: 4,5 to 30 Vdc
- Pulses per turn: 1024 or 2048 only
- Output signals: Universal complementary push-pull (short circuit protected, 7272) RS422 compatible with 5 V supply voltage
- Max output frequency: 300 kHz
- Max load current: 20 mA max per channel
- EMC: According to EN 61000-6-2 and EN 61000-6-4

Encoder Connections

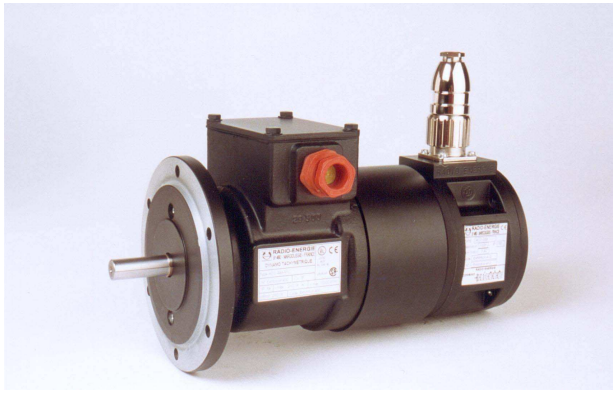
	Junction box	Output waveforms
A	3	
A /	6	
B	4	
B /	7	
Z	5	
Z /	8	
Vcc (+)	2	
Gnd (-)	1	
Ground case		



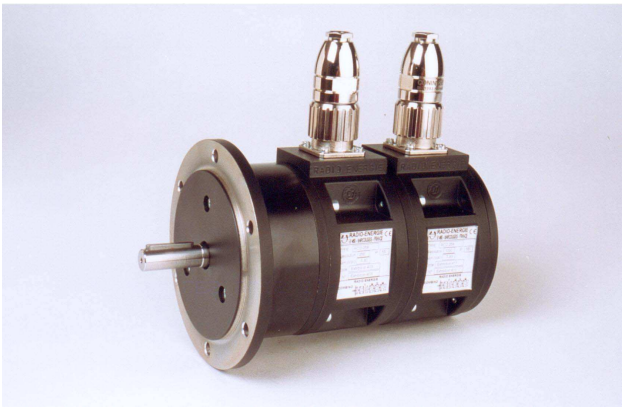
Centrifugal switch characteristics

- Principle: Centrifugal force
- Type of contact: Opened or closed
- Rate breaking capacity: 5A / 220V ~
- Maximum breaking capacity: 15A / 220V ~
- Maximum breaking sequence: 4/min
- Breaking accuracy: min^{-1} ±5%

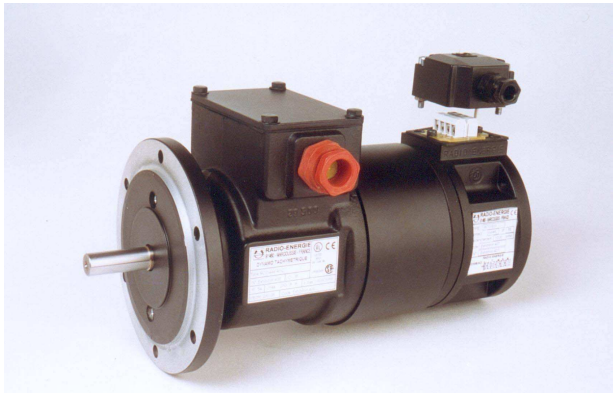
ENCODERS : COMBINOS



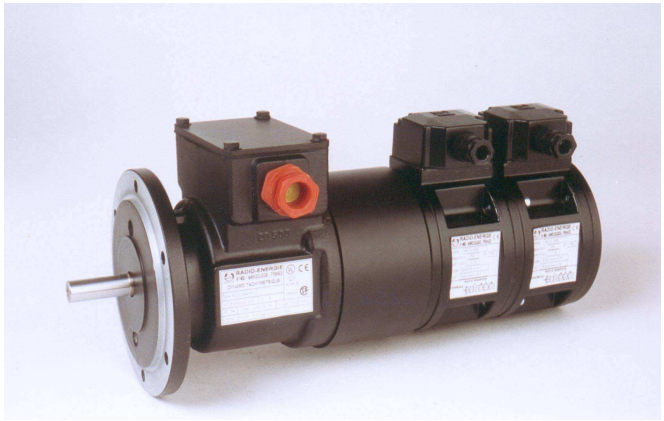
RCO 444 R + RCO 058 R



RCOxxx + RCO 058 R



RCO 444 R + 1 Terminal Box



RCO 444 R + 2 Terminals Box

ENCODERS RCO 058R

RCO 444 R + RCO 058 R

Shaft type	**7 and 11mm stainless steel shaft**
Housing diameter	**115mm**
Fixation	**Standard REO 444 flange**
Body	**Aluminium**
Pulses per turn	**Standard 1 to 2500 Others > 2500**
Termination	**Junction box, Connector 10 or 12 pins**
Output signals	**A and B with gated Z**
Output waveforms	**A leads B for clockwise rotation from front size**
Operating temperature range	**(encoder body) - 25° + 85° C**
Supply voltage	**5V TTL, 11-30V HTL, Driver RS422 in 11-30V out 5V**
Protection	**IP55 (IEC 34-5)**
Max speed	**6.000rpm**

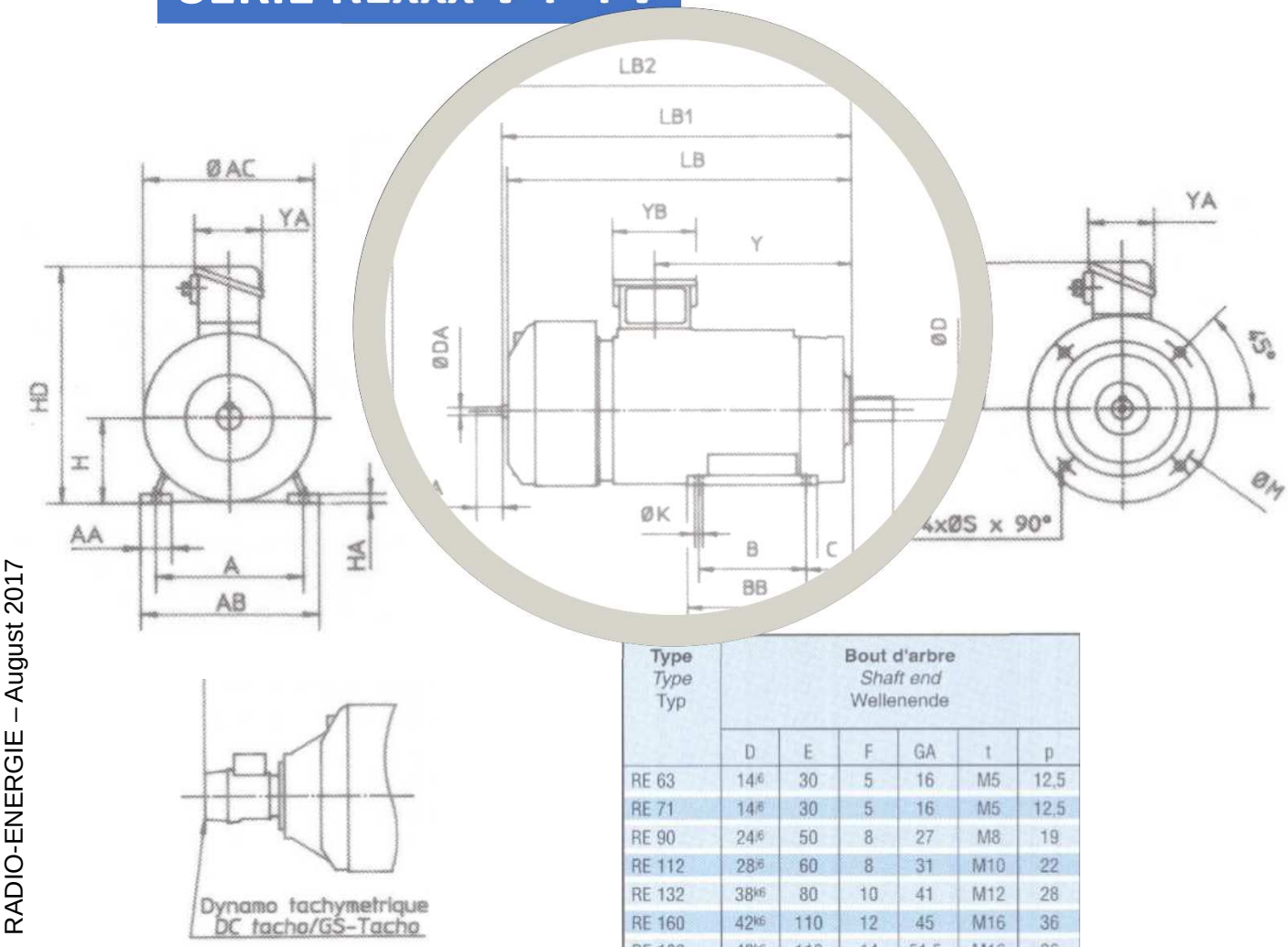
RCO 058 R Connector

RCO 058R

RCO 058R Module

RCO x2 Connector

3. DC MOTORS
SERIE RExxx V-F FV



Type *Type* Typ	Bout d'arbre *Shaft end* Wellenende					
	D	E	F	GA	t	p
RE 63	14^{k6}	30	5	16	M5	12,5
RE 71	14^{k6}	30	5	16	M5	12,5
RE 90	24^{k6}	50	8	27	M8	19
RE 112	28^{k6}	60	8	31	M10	22
RE 132	38^{k6}	80	10	41	M12	28
RE 160	42^{k6}	110	12	45	M16	36
RE 180	48^{k6}	110	14	51,5	M16	36
RE 200	55^{m6}	110	16	59	M20	42

Type *Type* Typ	Longueur : Pour information *Length : For information* Länge : Ungefähre Angaben						Boîte à bornes *Terminal box* Klemmenkasten		
SERIE	FV			V-F					
	LB	LB1	LB2	LB	LB1	LB2	Y	yA	yB
RE 63 C	-	-	-	234	235	447	125	100	110
RE 63 M	-	-	-	234	235	447	125		
RE 63 L	-	-	-	249	250	462	140		
RE63 P	-	-	-	269	270	482	160		
RE 71 C	-	-	-	295	300	518	159	100	110
RE 71 M	-	-	-	315	320	538	179		
RE 71 L	-	-	-	335	340	558	199		
RE 71 P	-	-	-	355	360	578	219		
RE 90 C	362	365	558	327	332	527	202	100	110
RE 90 M	392	395	588	357	362	557	232		
RE 90 L	422	425	618	387	392	587	272		
RE 90 P	452	455	648	417	422	617	292		
RE 112 C	497	505	695	450	455	644	269	125	140
RE 112 M	527	535	725	480	485	674	299		
RE 112 L	557	565	755	510	515	704	329		
RE 112 P	587	595	785	540	545	734	359		
RE 132 C	600	605	785	530	535	722	333	125	140
RE 132 M	640	645	825	570	575	762	373		
RE 132 L	680	685	865	610	615	802	413		
RE 132 P	720	725	905	650	655	842	453		
RE 160 C	685	690	878	600	606	795	363	170	195
RE 160 M	725	730	918	640	646	835	403		
RE 160 L	765	770	958	680	686	875	443		
RE 160 P	805	810	998	720	726	915	483		
RE 180 C	760	765	960	690	695	890	439	170	195
RE 180 M	800	805	1000	730	735	930	479		
RE 180 L	840	845	1040	770	775	970	519		
RE 200 C	800	805	1009	725	730	939	434	170	195
RE 200 M	860	865	1069	785	790	999	494		
RE 200 L	900	905	1109	825	830	1039	534		
RE 200 P	960	965	1169	885	890	1099	594		

MOTEURS A COURANT CONTINU ANTIDEFLAGRANTS

CERTIFIED ATEX SELON LA DIRECTIVE 94/9/CE

GAMME DE PRODUITS SERAMEL S71 à S90

EXPLOSION PROOF DC MOTORS

ATEX CERTIFIED IN CONFORMANCE WITH DIRECTIVE 94/9/CE

SERAMEL PRODUCT RANGE S71 TO S90

- SERAMEL -

Nos moteurs courant continu antidéflagrants série "S" ont été conçus selon les normes européennes CENELEC et sont fabriqués afin d'offrir le maximum de sécurité et de fiabilité dans toutes les utilisations en atmosphères explosibles.

Normes et certifications

Nos moteurs sont réalisés en conformité avec :

- la directive européenne ATEX 94/9/CE,
- les normes européennes harmonisées :
  EN 50014 : matériel électrique pour atmosphères explosibles: règles générales,
  EN 50018 : matériel électrique pour atmosphèr es explosibles : enveloppe antidéflagrante "d",
- au type ayant fait l'objet de l'attestation d'examen : **INERIS03ATEX0051X**

L'organisme notifié : **INERIS CE0080**

Environnements et marquage

Nos moteurs ont été certifiés pour les atmosphères explosibles gazeuses suivantes :

- Gamme S71 : Groupe IIB+H2 (T4 ou T5) – Catégorie 2G – Zone 1
- Gamme S80 à S90 : Groupe IIB (T4 ou T5) – Catégorie 2G – Zone 1

Classes de température

Nos moteurs sont certifiés pour les classes de température de surface :

- T4 (135°C)
- T5 (100°C)

Température ambiante

Nos moteurs sont certifiés pour des températures ambiantes : - 20 °C à +80°C

Normes de construction

Nos moteurs sont fabriqués selon les normes internationales :

- Caractéristiques Electriques : IEC 34-1 et IEC34-2
- Forme de construction : IEC 34-7
- Protection Mécanique : IEC 34-5
- Mode de Refroidissement : IEC 34-6
- Classe d'isolation et échauffement : IEC 85

Détails de construction

Nos moteurs type **"S"** sont conçus avec des pôles compensés : 2 ou 4 (sauf type S 71 : 2 pôles saillants)

- Hauteurs d'axes disponibles : 71, 80, 90
- Protection : jusqu'à IP 55 (sauf gamme S 71 : IP 44)
- Refroidissement : IC 0141
- Carcasse et paliers en fonte (sauf gamme S 71 : Aluminium)
- Ventilateur en aluminium
- Capot du ventilateur en fonte (sauf gamme S 71 : Aluminium)

Our explosion-proof D.C. motors, serie "S", were designed according to European standards' CENELEC and are manufactured in order to offer the maximum of safety and reliability for all services in explosive atmospheres.

Standards and certifications

Our motors are in conformity with:

- European directive ATEX 94/9/CE,
- harmonized European standards:
  EN 50014 : electric material for explosive atmospheres: general rules,
  EN 50018: electric material for explosive atmospheres: explosion-proof envelope "d ",
- with the type having been the subject of the certificate of examination:
  INERIS03ATEX0051X

the notified organization: INERIS CE0080

Environments and marking

Our motors were certified for the following gas explosive atmospheres:

- S71 range: Group IIB+H2 (T4 or T5) - 2G Category - Zone 1
- S80 to S90 range: Group IIB (T4 or T5) - 2G Category - Zone 1

Classes of temperature

Our motors are certified for the classes of temperature of surface:
T4 (135°C)
T5 (100°C)

Ambient temperature

Our motors are certified for ambient temperatures:
-20°C with +80°C

Manufacturing standards

Our motors are manufactured according to international standards':

- Electrical Characteristics: IEC 34-1 and IEC 34-2
- Form of construction: IEC 34-7
- Mechanical protection: IEC 34-5
- Cooling mode: IEC 34-6
- Class of insulation and heating: IEC 85

Construction details

Our "S" type motors are conceived with compensated poles: 2 or 4 (except S 71 type: 2 salient poles)

- Available shaft heights are as follow: 71, 80, 90
- Protection: up to IP 55 (except S 71 range: IP 44)
- Cooling: IC 0141
- Frame and flanges in cast iron (except S 71 range: Aluminium)
- ventilator in aluminium
- ventilator cap in cast iron (except S 71 range: Aluminium)

- Boite à bornes en fonte (sauf gamme S 71 : Aluminium)
- Roulements graissés à vie : Durée de vie fonction de la charge sur l'arbre et de la vitesse
- Arbre en acier "XC 48"
- Isolants et composants : Classe F minimum

Pour moteur forme IM 3011 (V1) : Dôme de protection

Formes de construction standards

- B 3 IM 1001
- B 14 IM 3601 (≤ type S112)
- B 5 IM 3001
- B 35 IM 2001
- V 1 IM 3011

Variantes de construction

Adaptation de :

- Résistance de réchauffage ou rubans chauffants
- Sondes PT 100 dans les bobinages
- Frein dynamique ou d'immobilisation
- Dynamo-tachymétrique à 1 ou 2 collecteurs, antidéflagrante certifié ATEX
- Codeur incrémental, antidéflagrant certifié ATEX
- Groupe moto-ventilateur antidéflagrant certifié ATEX pour ventilation forcée

Pour entraînement par courroies : roulements à rouleaux côté bout d'arbre

Tensions standards

- Alimentation batterie : 24V, 48V, 110V, 220V Facteur de forme (Ff)=1
- Alimentation par variateur (tension industrielle)

- Terminal box in cast iron (except S 71range: Aluminium)
- Life lubricated bearings: life expectancy is a function of the shaft load and the speed
- Shaft in "XC 48" steel
- Insulation and components: F Class minimum

For motor form IM 3011 (V1): Dome of protection

Forms of construction standards

- B 3 IM 1001
- B 14 IM 3601 (≤ S112 type)
- B 5 IM 3001
- B 35 IM 2001
- V 1 IM 3011

Other possibilities

Adaptation of:

- heating Resistors of or heating ribbons
- heat sensors Pt 100 in windings
- Dynamic or immobilization brake
- Explosion-proof tachogenerator with 1 or 2 commutators, ATEX certified
- Explosion-proof incremental encoder, ATEX certified
- ATEX certified explosion-proof motor fan for forced ventilation

For drive belts: rollers bearings on shaft end side

Standard voltages

- Battery supply: 24V, 48V, 110V, 220V Form factor (Ff)=1
- Inverter supply (industrial voltage)

Réseau - Main	Variateur - Inverter	Facteur de forme Form factor	Tension d'induit Armature voltage	Tension d'excitation Field voltage
230 V – 50 Hz	4 quadrants Pont monophasé single-phase bridge	1,5	150 V	200 V
230 V – 50 Hz	1 quadrant Pont monophasé single-phase bridge	1,5	170 V	200 V
400 V – 50 Hz	4 quadrants Pont monophasé single-phase bridge	1,5	260 V	350 V
400 V – 50 Hz	1 quadrant Pont monophasé single-phase bridge	1,5	300 V	350 V
400 V – 50 Hz	4 quadrants Pont triphasé three-phase bridge	1,05	400 V	350 V
400 V – 50 Hz	1 quadrant Pont triphasé three-phase bridge	1,05	440 V	200 V ou 350 V

Type d'excitation

- Alimentation batterie : excitation compound
- Alimentation variateur industriel :
  Excitation séparée ou Excitation shunt
  Excitation série
  Excitation compound

Sur demande, les moteurs gamme "S 71" peuvent être réalisés avec une excitation à aimants permanents

Type of excitation

- battery supply: excitation compound
- inverter supply
  separated excitation or shunt excitation
  serie excitation
  compound excitation

On request, the "S 71" type motors can be manufactured with a permanent magnets excitation

Modes de fonctionnement

- A vitesse fixe
- A couple constant par variation de la tension induit
- A puissance constante par désexcitation
- 1 ou 2 sens de rotation (à préciser)

Nota : suivant la plage de variation de vitesse, une ventilation forcée devra être prévue : refroidissement IC 06 41

Operating modes

- at fixed speed
- at constant torque by variation of the armature voltage
- at constant power by de-energizing the excitation
- 1 or 2 directions of rotation (to be specified)

Note: according to the speed range, a forced ventilation may be needed: cooling IC 06 41

Tableaux de puissances

Les tableaux de puissances, ci-joint, s'entendent pour les données suivantes :

- Service continu : S1
- Facteur de forme : Ff = 1
- Isolation : classe F
- Echauffement : classe F (100 K)
- Température ambiante : 40°C
- Altitude : inférieure à 1000 mètres

Nota : pour d'autres tensions ou vitesses veuillez nous consulter.

Power tables

These power tables are set along for the following data:

- continuous service: S1
- form factor: Ff = 1
- Insulation class: F
- Heating: F class (100 K)
- Ambient temperature: 40°C
- Altitude: lower than 1000 meters

Note: for other voltages or speeds please consult us.

Tension : 24V batterie — Battery supply 24V

Type	Lf	Pôles poles	Puissance - Power (kW)			Couple nominal à Nominal torque at 1500 tr/min- rpm (N.m)
			1000 tr/min-rpm	1500 tr/min-rpm	3000 tr/min-rpm	
S 71		2S	0,13	0,2	0,3	1,27
		4A	0,3	0,45	0,9	2,86
S 80	S	2C	0,28	0,43	0,6	2,74
	L	2C	0,4	0,6	--	3,82
	S	4C	0,5	0,7	1,2	4,46
	L	4C	0,6	--	--	--
S 90	S	4C	0,6	1	1,2	6,37
	L	4C	0,86	1,2	--	7,64

Tension : 48V batterie — Battery supply 48V

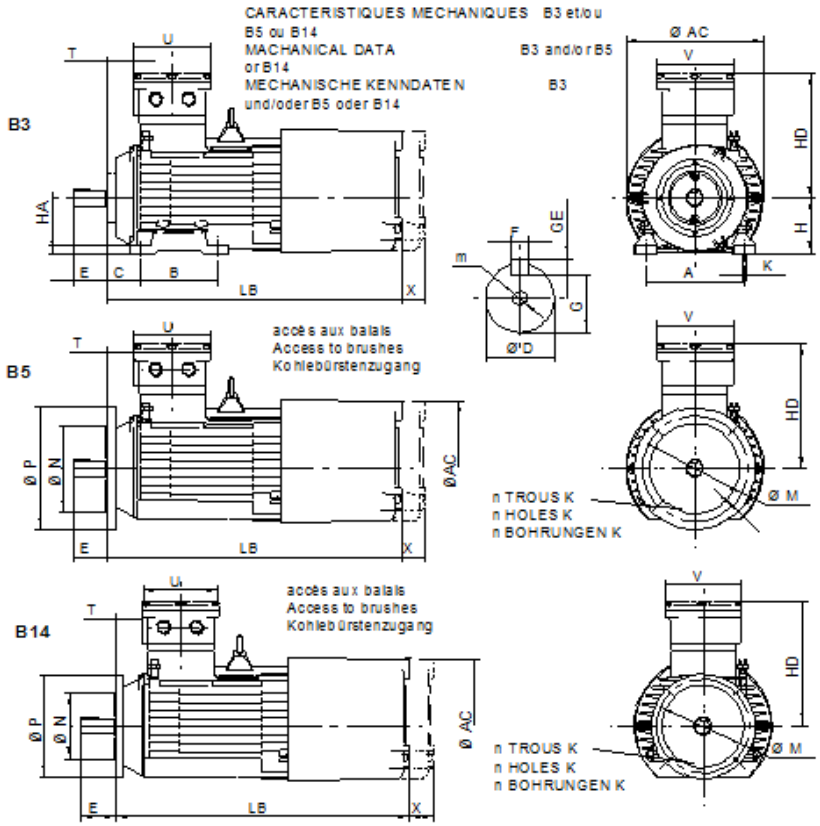
Type	Lf	Pôles	Puissance - Power (kW)			Couple nominal à Nominal torque at 1500 tr/min- rpm (N.m)
			1000 tr/min-rpm	1500 tr/min-rpm	3000 tr/min-rpm	
S 71		2S	0,13	0,2	0,4	1,27
		4A	0,3	0,45	0,9	2,86
S 80	S	2C	0,28	0,43	0,86	2,74
	L	2C	0,4	0,6	1,2	3,82
	S	4C	0,5	0,7	1,4	4,46
	L	4C	0,6	1	--	6,37
S 90	S	4C	0,6	1	2	6,37
	L	4C	0,86	1,3	2,5	8,28

Tension : 110V/220V batterie ou alimentation par variateur (tension industrielle) — Supply voltages : 110V/220V battery or inverter (industrial voltages)

Type	Lf	Pôles	Puissance - Power (kW)			Couple nominal à Nominal torque at 1500 tr/min - rpm (N.m)
			1000 tr/min-rpm	1000 tr/min-rpm	1000 tr/min-rpm	
S 71		2S	0,13	0,2	0,4	1,27
		2A	0,3	0,45	0,9	2,86
S 80	S	2C	0,28	0,43	0,86	2,74
	L	2C	0,4	0,6	1,2	3,82
	S	4C	0,5	0,7	1,4	4,45
	L	4C	0,6	1	2	6,37
S 90	S	4C	0,6	1	2	6,37
	L	4C	0,86	1,3	2,6	8,28

Plans d'encombrement

Overall dimensions



TYPE Type	Lf	SOCLE Foot-mounted						BRIDE Flange-mounted						AUTRES COTES Others sizes						BOUT D'ARBRE Shaft end					
		H	A	B	C	K	HA		M	N	P	n	S	LB	AC	HD	T	U	V	D	E	F	GE	G	m
S 71 2S/4A	S	71	112	90	45	7	6	B14	85	70	105	4	M6	304	158	115	50	78	78	14	30	5	5	11	M5
	L							B5	130	110	160	4	Ø9												
S 80 2C/4C	S	80	125	100	50	9	10	B14	100	80	120	4	M6	394	202	172	-20	Ø160	Ø160	19	40	6	6	15.5	M6
	L							B5	165	130	200	4	Ø11												
S 90 4C	S	90	140	125	56	9	14	B14	115	95	140	4	M8	435	214	195	-15	Ø160	Ø160	24	50	8	7	20	M8
	L							B5	165	130	200	4	Ø11												

4. PERMANENT MAGNET GENERATORS

CONCEPTION ET AVANTAGES DU PMG

Les systèmes d'excitation des alternateurs intégrant un PMG ont une fiabilité accrue. Ils sont de conception plus simple et plus rationnelle que les systèmes d'excitation du type compound.

- Conception fiable, simple et compact,
- Aimants: Samarium Cobalt - très stable et à haut champ coercitif,
- Stabilité de la tension dans le temps,
- Pas de perte de tension même après court circuit,
- Démontage possible sans perte de tension : pas de démagnétisation irréversible,
- Grande modularité des solutions en nombre de pôles et en taille des machines,
- Fourniture de la puissance nécessaire au régulateur quelques soient les conditions de fonctionnement de l'alternateur principal.

CARACTERISTIQUES MECANIQUES

- Carcasse - paliers: en aluminium, en fonte ou en acier, suivant solutions retenues.
- Refroidissement : IC 00, IC 01, IC 410 ou IC 411
- Protection : IP 00, IP 23, IP 44 ou IP 55
- Isolation classe F
- Echauffement classe F ou B : 100 K ou 80 K
- Température ambiante : 40°C ou autre
- En fonction des vitesses requises et du mode de montage (Rotor/Stator) : Frettage des rotors (aimants) soit métallique soit en fibre de carbone

Nota: Toutes autres solutions mécaniques peuvent être envisagées sur demande.

DESIGN AND ADVANTAGES OF THE PMG

Excitation systems of generators including a PMG have a more simple and more rational design than the compound excitation systems and provide to the set a larger reliability:

- Reliable, simple and compact design,
- Magnets: Samarium Cobalt - very stable - high coercive magnetic field,
- Stability of the voltage in process of time,
- No voltage loss even after a short-circuit,
- Dismantling without voltage loss : no irreversible demagnetisation,
- Large number of solutions : pole number, size for the machines,
- Supplying of the required power to the regulator under any condition of the running of the main generator.

MECHANICAL CHARACTERISTICS

- Frame - endshields: aluminium, cast iron or steel, under agreement.
- Cooling : IC 00, IC 01, IC 410 or IC 411
- Protection : IP 00, IP 23, IP 44 or IP 55
- Insulation class F
- Temperature rise class F or B : 100 K or 80 K
- Ambient temperature : 40°C or others
- According to the required speeds and mounting modes (Rotor/Stator) : binding of the rotors (magnets) : either metallic or carbon fibre

Note: All mechanical solutions can be considered on request.

SOLUTIONS MECANIQUES

- Machines à paliers :
  - ✓ Montage à pattes ou à bride
  - ✓ Montage Flottant
- Machines sans paliers :
  - ✓ Rotor / Stator.

MECHANICAL SOLUTIONS

- Machine with bearings:
  - ✓ Foot or Flange mounting
  - ✓ Floating mounting
- Machine without bearings:
  - ✓ Rotor / Stator fitted

PERMANENT MAGNET GENERATORS

CARACTERISTIQUES ELECTRIQUES

Limites économiques de faisabilité
Triphasé ou Monophasé

- Tension Ueff. ≤ 500 V
- Puissance S eff. ≤ 60 kVA
- Fréquence F ≤ 400 Hz
- Cosinus : cos ϕ $0 < \cos \phi < 1$
- Distorsion ≤ 5% (à vide et en charge)

Nota : un même PMG peut être défini pour un alternateur principal prévu pour fonctionner sous 50 Hz ou 60 Hz.

ELECTRICAL CHARACTERISTICS

Maximum economical values
Three phase or Single phase

- Voltage U eff. ≤ 500 V
- Power S eff. ≤ 60 kVA
- Frequency F ≤ 400 Hz
- Power Factor: cos ϕ $0 < \cos \phi < 1$
- Distortion ≤ 5% (No-load and Full load)

Note: It is possible to design one PMG for both 50 Hz and 60 Hz main generator.

AUTRES APPLICATIONS

Ce type d'alternateur peut être envisagé pour l'alimentation en secours d'auxiliaires de centrale tel qu'un groupe de graissage ou un groupe de ventilation.

OTHER APPLICATIONS

This type of generators can be designed for the emergency supply of the power plants auxiliary systems as for example a lubrication set or a ventilation set.

AIMANTS UTILISES

Pour notre fabrication standard de PMG nous utilisons uniquement des aimants terres rares type Samarium Cobalt depuis 1989.
A titre exceptionnel, pour la maintenance d'anciens alternateurs, nous utilisons des aimants de type Alnico.

TYPE OF PERMANENT MAGNETS

For our standard manufacture of the PMG alternators we have only been used rare earths magnets type Samarium Cobalt, since 1989.
On our previous series, we used Alnico permanent magnets.

NOUS CONTACTER

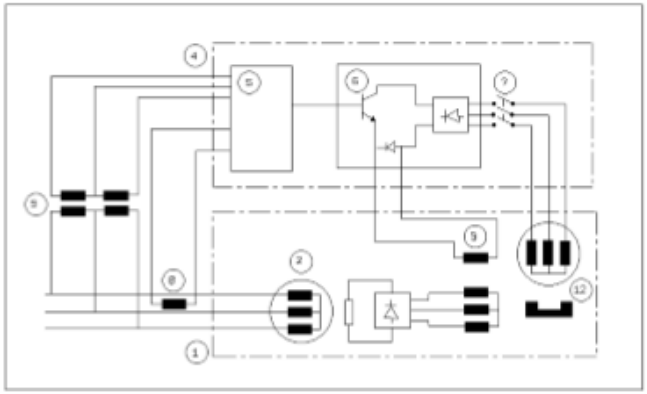
Les caractéristiques du PMG: puissance nominale, puissance plafond, tension à vide, tension nominale, tension plafond sont fonction des performances d'excitation requises par l'alternateur principal : chute de tension maximum admissible, rapidité de réponse, tenue en court circuit.

FOR MORE INFORMATION

The characteristics of the PMG: rated power, overload power, no-load voltage, rated voltage, overload voltage, are a function of the excitation performances required by the main generator : maximum admissible drop voltage - response time - short-circuit holding.

PMG : DIAGRAM & MODE OF RUNNING

The skeleton diagram, as mentioned below, shows the conventional application of the PMG.



1: Main generator
2: Stator of main generator
3: Exciter field winding
4: Voltage regulator
5: Control unit
6: Power unit
7: Circuit breaker
8: Current transformer for parallel operation
9: Voltage actual value measurement
12: Permanent Magnet Generator (PMG)

The PMG ensures the supply of the voltage regulator.

This voltage regulator compares the network voltage with the reference voltage. It delivers to the field system of the exciter, the current required in order to maintain the main generator voltage at its rated value.

When the load changes, the voltage of the main generator terminals changes as well.

The voltage regulator reacts in order to oppose the voltage change: the required power is supplied by the PMG.

When load changes suddenly, it is necessary to quickly supply a large current to the field system, so the PMG supplies its overload power during a few seconds.

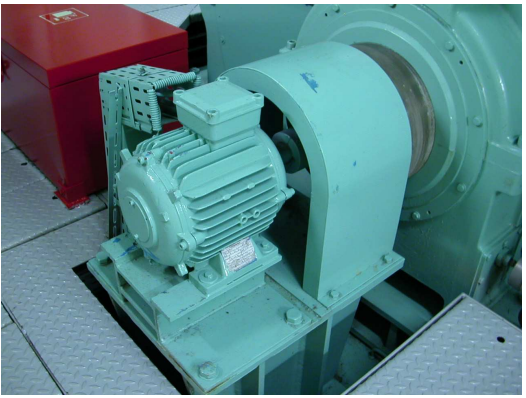
Then the regulator will deliver the over-excitation current required for the field system of the exciter to reset the voltage of the main generator to its rated value.

OUR PMG ADVANTAGES

Excitation systems of generators including a PMG have a more simple and rational design than the compound excitation systems and provide to the set a larger reliability.

- Our design is reliable, simple and compact
- Our know-how is the integration of rare earths magnets. They are very stable, with high coercive magnetic field and high specific energy
- Stability of the voltage in process of time
- No voltage loss even after a short-circuit
- Dismantling without voltage loss: no irreversible demagnetisation
- Large number of solutions: pole number, size for the machines which allow to consider all your demanding space requirements
- Supplying of the required power to the regulator under any condition of the running of the main generator

PMG : CHARACTERISTICS



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MECHANICAL CHARACTERISTICS

- Frame, end shields : aluminium, cast iron or steel according the solutions
- Cooling : IC 00, IC 01, IC 410 or IC 411
- Protection : IP 00, IP 23, IP 44 or IP 55
- Insulation class F
- Temperature rise class F or B : 100 K or 80 K
- Ambient temperature : 40°C or others
- According to the required speeds and mounting modes (Rotor/Stator) : binding of the rotors (magnets) : either metallic or carbon fibre

ELECTRICAL CHARACTERISTICS

Maximal economical values :

• Phases	Single or Three phases	
• Voltage	U eff.	$\leq$ 500 V
• Power	P mech.	$\leq$ 60 kVA
• Frequency	F	$\leq$ 400 Hz
• Power Factor	Cosinus : cos ϕ	$0 < \cos \varphi < 1$
• Distortion	$\leq$ 5 % (no-load and full load)	
• Rotation speed	$\leq$ 5000 Rpm	

Note : It is possible to design one PMG for both 50 Hz and 60 Hz main generator.

MECHANICAL SOLUTIONS

- Machine with bearings and housing :
  - Foot or Flange mounting
  - Floating mounting
- Machine without bearings :
  - Rotor + Stator fitted

TYPE OF PERMANENT MAGNETS

For our standard manufacture of the PMG alternators we have only been used rare earths magnets type Samarium Cobalt, since 1989.
On our previous series, we used Alnico permanent magnets.