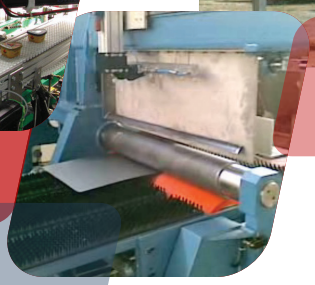
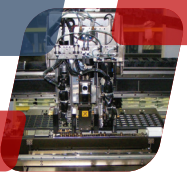
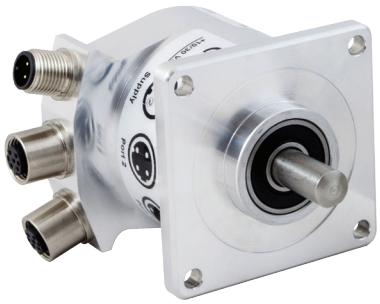






ABSOLUTE & INCREMENTAL ENCODERS

elap

▸THE COMPANY

Since 1968 **ELAP** has been growing in the field of industrial automation, soon becoming leader manufacturer of **position sensors and control equipments for industrial automation.**

ELAP product line offers a wide array of **position transducers and a choice of counting and control equipments**

Absolute & Incremental Encoders

Linear & Rotary Potentiometers, Industrial Joysticks

Wire Transducers

Linear & Magnetic Transducers

Vibration & Tilt Sensors

Electronic Counters & Readouts

PLC Controllers & HMI

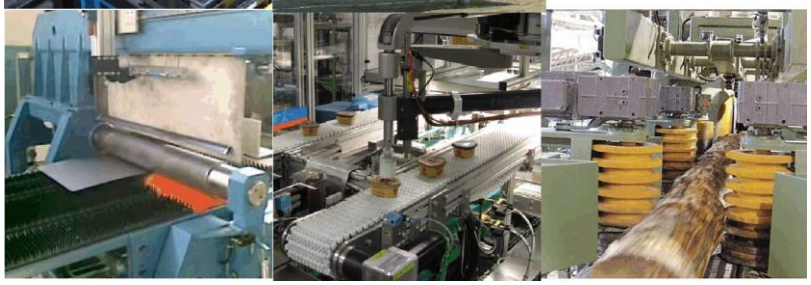
ELAP represents as sole distributor in Italy the companies:

ALTHEN SENSORS & CONTROLS
The Netherlands
Potentiometers & Joysticks

Wilcoxon SENSING TECHNOLOGIES
U.S.A.,
Vibration Sensors

Vigor Technology
China, Tilt Sensors

SHINKAWA
Japan, Condition Monitoring Systems



The accuracy and reliability featuring **ELAP** products result from advanced **technological research** joined to the long experience we achieved working stricly in touch with our customers. Proposing the best solution for each industrial reality is our goal; custom tailored solutions can be engineered if necessary.

Numberless **applications** have been developed on operating machines of all industrial fields: sheet working machinery, glass, wood-, paper-machinery, plastic- and textile machines, food-processing and further.

ELAP takes part to **international technology communities** promoting and supporting the development of industrial networks.

PI Italia PROFIBUS • PROFINET

EtherCAT® Technology Group

ODVA MEMBER

CiA®

EtherNet/IP™

CANopen®

►ROTARY ENCODERS

ELAP offers a wide range of encoder types, with different dimensions, mechanical and electronic features.

All series are designed to be used in **industrial environment,** granting high performances for **reading accuracy, repeatability, speed, shock and vibration resistance.**

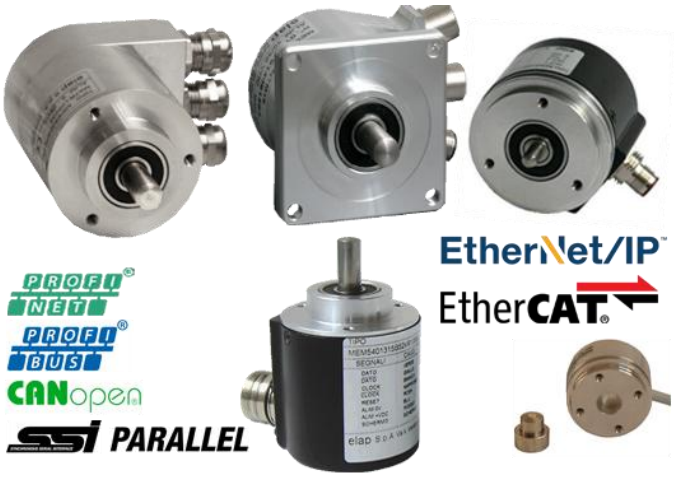
The **different output signals** allow to **interface to any counting and control system.**

Special versions can be engineered according to customers' specifications.

►ABSOLUTE ENCODERS

ELAP single and **multiturn encoders** provide**:**

- Reading resolution ranging from **4** to **13 bit,** and **2** to **16 bit steps/revoultion**
- **Binary or Gray** code
- **SSI, push-pull parallel, 0-10V analogue outputs**
- **Communication protocols**:
  EtherNet/IP™ - EtherCAT® - PROFINET® – PROFIBUS® - CANopen®



►INCREMENTAL ENCODERS

ELAP incremental encoders offer:

- Several different mechanical versions
- Number of ppr ranging from **2 to 50000**
- Push pull or line driver electronic output

▶ABSOLUTE

WITH FIELDBUS

SYNCHRO FLANGE *CLAMPING FLANGE*

MEM620-Bus MEM520-Bus MEM540-Bus MEM440-Bus MEM450-Bus

MEM-BUS PROFINET & EtherCAT

Multiturn

Fieldbus	PROFINET®	EtherCAT®	EtherNet/IP™		
Resolution	13 bit / 8192 info/revolution				
Steps no. (Multiturn type)	16 bit / 65536				
Supply voltage	10/30 Vdc				
Connections	3 connectors type M12				
Housing material	Aluminium				
Protection degree	IP67 – shaft side: IP65				
Dimensions	Ø 58 mm				
Flange	63.5x63.5 mm	Ø 58 mm		Blind hollow shaft	
Centering mask	Ø 31.75 mm	Ø 50 mm	Ø 36 mm		
Fixing	4 holes	Servo holes on Ø 42 mm	3 holes on Ø 48 mm	Anti-rotational support	Anti-rotational elastic support
Shaft Ø	6, 8, 10 mm			8, 10, 12, 14, 15 mm.	

ENCODER PROFILE

PROFINET® ***Encoder Profile V4.1 version 3.162***

- ***Application class 3 – 4***
- Standard Telegram 81, 82, 83, 84 **–User Telegram 860**

EtherCAT® Ref IEC61158-1-6 & IEC61784-2

- **Device Profile CANOpen over EtherCAT (CoE), CiA DS-406**

- **EtherNet/IP™** Ref IEC61784-1
- Device profile: **CIP™ Protocol, encoder profile 22H**
- CIP Sync protocol complying with standard IEEE-1588

Assembly object **1, 2, 3 – Proprietory object 110**

CERTIFICATE

PI CERTIFIED PROFIBUS • PROFINET

EtherCAT® Conformance tested

EtherNet/IP ODVA CONFORMANT

PROFINET®

EtherCAT®

EtherNet/IP™

ENCODERS

INTERFACE

SYNCHRO FLANGE *CLAMPING FLANGE*

MEM620-Bus MEM520-Bus MEM540-Bus MEM410-Bus MEM450-Bus

MEM-BUS PROFIBUS & CANopen

Single/Multiturn				
PROFIBUS CANopen				
13 bit / 8192 info/revolution				
16 bit / 65536				
5/28 Vdc				
3 / 2 cable glands			3 / 2 cable glands or 2 M12 connectors	
Aluminium				
IP64 - optional IP65 with sealing O-ring				
Ø 58 mm				
63.5x63.5 mm	Ø 58 mm		Blind hollow shaft	
Ø 31.75 mm	Ø 50 mm	Ø 36 mm		
4 holes	Servo 3 holes on Ø 42 mm	3 holes on Ø 48 mm	Anti-rotational support	Anti-rotational elastic support
6, 8, 10 mm			8, 10, 12, 14, 15 mm.	

BUS SPECIFICATIONS	SETTABLE PARAMETERS	DIAGNOSTIC FUNCTIONS	STATE INDICATORS
PROFIBUS® *Encoder Profile Profibus DP standard EN 501701 Vol. 2* • ***Application Class: 1– 2*** • Parameter entering and preset functions, scaling functions **CANopen®** *standards CiA DS 301 and DS 406 "Device Profile for Encoders"* • ***Class C2***	• Steps/revolution • Revolutions number • Preset • Rotation direction	• Position or parameter error • Battery alarm	• 3 signalling LEDs for: • Supply • Line • Error (CANopen)

PROFIBUS CANopen

CANopen encoders – version with M12 connectors

►ABSOLUTE ENCODERS

SINGLE & MULTITURN

elap

	MEM	*EMA*	*REC–VA*
	Single/Multiturn	**Single-turn**	
Resolution	5 ÷ 13 bit info/revolution		9 bit
Revolutions no. (Multiturn only)	15 bit	-	-
Code	Binary or Gray	Binary	
Supply voltage	5/28 Vdc	5 Vdc / 8÷24Vdc	18 ÷ 24 Vdc
Output signals	PARALLEL - SSI	SSI	Analogue 0÷10V on 360°
Connections	Axial or radial Cable or M23 connector	Axial or radial Cable or connector	Radial M12 connector or cable
Housing material	Aluminium	Aluminium or ABS	Aluminium
Protection degree	IP64 - optional IP65 with sealing O-ring		IP65
	AVAILABLE MECHANICAL VERSIONS		
Square flange 620	•	•	•
Square flange 650		•	
Round flange 520	•	•	•
Round flange 510		•	
Round flange 540	•	•	•
Hollow shaft 410	•	•	
Hollow shaft 430	•	•	
Hollow shaft 440			•
Hollow shaft 450			•

Series MEM-V Single-turn absolute encoder with 16 microseconds typical monoflop time

Encoder REC620-VA

Encoder MEM540

Encoder EMA520

►ABSOLUTE & INCREMENTAL ENCODERS

MAGNETIC PRINCIPLE

	RM22	*RM36*
Dimensions	Ø 22 mm	Ø 36 mm
Flange		Ø 36 mm
Fixing	2 holes	4 holes on Ø 26 mm
Connections	Radial cable L 1 m	
Shaft Ø	6 mm	
Housing material	Aluminium	
Protection degree	IP64 – *IP65 on request*	
Supply voltage	5 Vdc	
Output signals	Line driver TTL	

RM22 & RM36 are high-speed magnetic rotary encoders designed for use in harsh industrial environments. The non-contact two-part design removes the need for seals or bearings, ensuring long-term reliability and simple installation.

The encoder comprises a magnetic actuator and a separate encoder body. Rotation of the magnetic actuator is sensed by a custom encoder chip **within the body, and processed to the required output.**

RM22 & RM36 are available with different absolute and incremental versions.

RM22 – RM36		Magnetic encoder – Incremental or absolute version available
RM22-I		**Incremental encoder 128 ppr** – 5V line driver output
	RM36-I	**Incremental encoder 128, 512, 1024 ppr** – 5V line driver output
RM22-P	**RM36-P**	**Absolute encoder 9 bit binary code** – parallel output
RM22-S	**RM36-S**	**Absolute encoder 9 bit binary code** – SSI output
RM22-A	**RM36-A**	**Sin/cos encoder** – 1 Vpp ±0,1 mV analogue output
RM22-V		**Encoder with voltage analogue output 0/5 Vdc** on 360° with clockwise rotation
	RM36-V	**Encoder with voltage analogue output 0/10 Vdc** on 360°, 180°, 90°, 45° with clockwise or cc rotation

►INCREMENTAL

SMALL

	E30	*E40*	*E40A*
Dimensions	Ø 30 mm	Ø 40 mm	
Flange	Ø 30 mm	Ø 40 mm	
Fixing	2 holes on Ø 22 mm	6 holes on Ø 30 mm	4 holes on Ø 25.4 mm
Connections	Axial or radial cable L 1 m		
Shaft Ø	4 - 6 mm		
Housing material	ABS	ABS - Optional: Aluminium	
Protection degree	IP54	IP54 – *IP64 on request*	
PPR no.	2 ÷ 12500		
Zero reference	On request *(type E31/E41)*		
Supply voltage	5 Vdc – 8/24 Vdc		
Output signals	Push-pull – line driver TTL/HTL		

Series E30 & series E40:

Compact-sized and accurate these miniature encoders are ideal for a great number of applications.
The series **E40** includes different flange types: round, square, hollow shaft.
The optional aluminium-housed version X27 grants high protection against environmental agents.

Encoders E30

ENCODERS

SIZE




E40V	*E40M*	*E40S*	*E40Q*
Ø 40 mm			
Ø 40 mm	Hollow shaft	Hollow shaft	44x44 mm
M18x1 screw fixing	Anti-rotational support	Anti-rotational elastic support	4 holes di Fixing
Axial or radial cableL 1 m			
6 mm	Hole Ø 6 or 8 mm		6 mm
ABS - Optional: Aluminium			
IP54 –*IP64 on request, with aluminium housing*			
2 ÷ 12500			
On request *(type E41)*			
5 Vdc – 8/24 Vdc			
Push pull – line driver TTL/HTL			

Encoders series E40




Encoder E40VX27

Encoder E40AX27

Versions X27 with aluminium housing

►INCREMENTAL

COMPACT ENCODERS WITH M12 CONNECTOR OUTLET

SYNCHRO FLANGE *CLAMPING FLANGE*

	REC620	*REC520*	*REC540*	*REC440*	*REC450*
Dimensions	Ø 58 mm H 38 mm				
Flange	63.5x63.5 mm	Ø 58 mm		Hollow shaft	
Centering mask	Ø 31.75 mm	Ø 50 mm	Ø 36 mm		
Fixing	4 holes	Servo/ 3 holes on Ø 42 mm	3 holes on Ø 48 mm	Anti-rotational support	Anti-rotational elastic support
Connections	M12 connector or cable L 1 m in radial position				
Shaft Ø	6 – 8 – 9.52 – 10 mm	6 - 8 - 10 mm		Hole Ø 8-10-12-14 - 15 mm	
Materiale Housing	Aluminium				
Protection degree	IP65				
PPR no.	2 ÷ 12500				
Zero reference	On request *(type REC621/521/541/441/451)*				
Supply voltage	8/24 Vdc – 5 Vdc				
Output signals	Push pull – line driver TTL/HTL				

Series REC:

Compact sized encoder • Body high: 38 mm
Connections by M12 connector 5 or 8 pins (socket connector excluded)
Optional: 5 or 10 m cable ended with flying socket connector

Encoders series REC

ENCODERS

SQUARE-FLANGED *ROUND-FLANGED*




RE620	*RE650*	*SEB*	*RE50*
Ø 58 mm		Ø 50 mm	Ø 50 mm
63.5x63.5 mm			
Ø 31.75 mm	Ø 50 mm		
4 holes		3 holes on Ø 36 mm	
Axial or radial cable or MIL connector		Axial cable or MIL connector	Axial M12 connector or cable L 1 m
6 – 8 – 9.52 – 10 mm		10 mm	6 – 8 – 10 mm
aluminium (series RE) or ABS (series E)		ABS	Aluminium
IP64 –*IP65 on request, with sealing ring on the shaft*			IP64
2 ÷ 12500 / 50000 (version REV)		2 ÷ 12500	
On request *(type RE621/RE641)*		On request *(type SEB-Z)*	On request *(type RE51)*
8/24 Vdc – 5 Vdc			
Push pull - line driver TTL/HTL– $1V_{pp}$ sinusolidal outputs		Push pull – line driver TTL/HTL	Push pull – line driver TTL/HTL

MECHANICAL VERSIONS ALSO AVAILABLE FOR SERIES

REV 50000 i/g	•			
EM	•	•		
EP	•	•		

Series REV

HIGH PPR Number
1000÷50000 ppr

Glass disk - Aluminium case
Supply voltage: 5÷28 Vdc
Output signals: push-pull or line driver
Axial/radial cable/connector
Protection degree IP65, optional IP66

Series EM

MAGNETIC ENCODERS
8÷2048 ppr

Magnetic operating principle
ABS or aluminium case
Supply voltage: 8÷24 Vdc or 5Vdc or 5÷24 Vdc
Output signals: push-pull or line driver
Axial/radial cable/connector
Protection degree IP64, optional IP65

Series EP

PROGRAMMABLE ENCODERS
8÷2048 ppr

8÷2048 ppr **programmable** by the user
Zero reference pulse
Magnetic operating principle
ABS or aluminium case
Supply voltage: 5÷28 Vdc
Output signals: push-pull or line driver
Axial/radial cable/connector
Protection degree IP64, optional IP65

Series RE50:

Compact sized encoder • Body high: 48 mm
Connections by M12 connector 5 or 8 pins (socket connector excluded)
Optional: 5 or 10 m cable ended with flying socket connector

Encoder RE50

►INCREMENTAL

ROUND-FLANGED

SYNCHRO FLANGE

CLAMPING FLANGE

	RE520	*RE540*	*RE510*	*RE530*
Dimensions	Ø 58 mm			
Flange	Ø 58 mm			RE0444 Ø 110 mm
Centering mask	Ø 50 mm	Ø 36 mm	Ø 31.75 mm	
Fixing	Servo 3 holes on Ø 42 mm	3 holes on Ø 48 mm	3 holes on Ø 47.6 mm	
Connections	Axial or radial cable or MIL connector			
Shaft Ø	6 – 8 – 9.52 – 10 mm			11 mm
Housing material	aluminium (series RE) or ABS (series E)			Aluminium
Protection degree	IP64 –*IP65 on request, with sealing ring on the shaft*			
PPR no.	2 ÷ 12500 / 50000 (version REV)			
Zero reference	On request *(type RE521/RE541/RE511/RE531)*			
Supply voltage	8/24Vdc - 5Vdc			
Output signals	Push-pull – line driver TTL/HTL –1 V_{pp} sinusoidal outputs			
MECHANICAL VERSIONS ALSO AVAILABLE FOR SERIES				
REV 50000 i/g	•	•		
EM	•	•	•	•
EP	•	•	•	

Series REV

HIGH PPR Number
1000÷50000 ppr

Glass disk - Aluminium case
Supply voltage: 5÷28 Vdc
Output signals: push-pull or line driver
Axial/radial cable/connector
Protection degree IP65, optional IP66

Series EM

MAGNETIC ENCODERS
8÷2048 ppr

Magnetic operating principle
ABS or aluminium case
Supply voltage: 8÷24 Vdc or 5Vdc or 5÷24 Vdc
Output signals: push-pull or line driver
Axial/radial cable/connector
Protection degree IP64, optional IP65

Series EP

PROGRAMMABLE ENCODERS
8÷2048 ppr

8÷2048 ppr **programmable** by the user
Zero reference pulse
Magnetic operating principle
ABS or aluminium case
Supply voltage: 5÷28 Vdc
Output signals: push-pull or line driver
Axial/radial cable/connector
Protection degree IP64, optional IP65

Encoder RE530

Encoder RE520

Encoder E540

Encoder RE540

ENCODERS

HOLLOW SHAFT




RE400	*RE470*	*RE410*	*RE450*
Ø 58 mm	Ø 58 mm	Ø 58 mm	Ø 58 mm
Ø 53.5 mm	Ø 72 mm	Ø 58 mm	Ø 58 mm
3 holes on Ø 30 mm	4 holes on Ø 63.5 mm	Anti-rotational support	Anti-rotational elastic support
Axial or radial cable or MIL connector			
6, 8, 10 mm		8, 10, 12, 14, 15 mm	
aluminium (series RE) or ABS (series E)			
IP64			
2 ÷ 12500			
On request *(type E401/E471/E411/E431)*			
8/24 Vdc – 5 Vdc			
Push-pull – line driver TTL/HTL – 1 V_{pp} sinusoidal outputs			

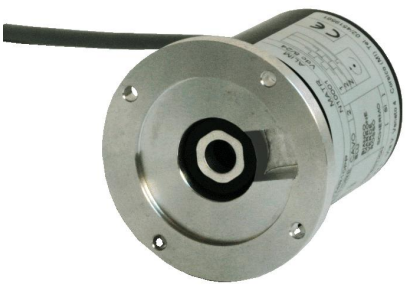
MECHANICAL VERSIONS ALSO AVAILABLE FOR SERIES				
REV				
EM	•	•	•	•
EP	•	•	•	•


Encoder RE410


Encoder RE400

Encoder E430

Encoder E470



►ENCODER FITTINGS

COUPLINGS

JOINTS series **BSS / WA,** aluminium
Hole Ø mm 6-6, 6-10, 8-8, 8-10, 10-10

JOINTS series **SK**
Polyamid fiberglass reinforced
Aluminium connecting element
Hole Ø mm 4-4, 6-6, 8-8, 10-10

JOINTS series **FK**
Nickel plated steel
Hole Ø mm 6-6, 6-8, 8-8

JOINTS **PAGUFLEX PF0606**
Galvanized steel-polyurethane connecting element
Hole Ø mm 6-6, 8-8

MEASURING WHEELS

MEASURING WHEEL 552
Aluminium wheel, smooth rubber surface, development 500±1 mm, accuracy ±0.2%
Hole Ø 8 or 10 mm

MEASURING WHEEL 251
Aluminium wheel, smooth rubber surface, development 200±0.2 mm, accuracy 0,1%
Hole Ø 6, 8 or 10 mm

Aluminium **MEASURING WHEELS,** development 200 or 500 mm
MRAR milled-aluminium surface
MRAN pointed polyurethane surface
MRAG corrugated polyurethane surface

SUPPORTING ARM

Encoder with supporting arm and wheel

Encoder **supporting arm** type **B100**

►ORDERING INFORMATION

ELAP encoders offer different options for mechanical size, flange type, shaft dimension, connection type and position, case material – as well as a choice of electronic signals, fieldbus interfaces, resolution values, ppr no.

A number of information are necessary to define the requested encoder type, when placing an order :

INCREMENTAL ENCODERS

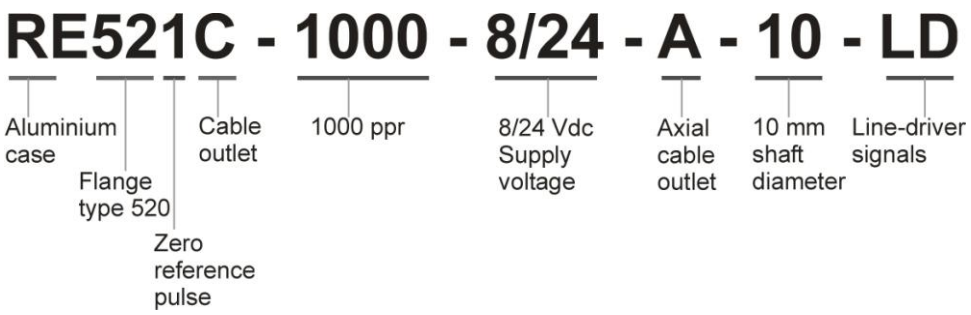
- ***SERIES***
  Eg E30, E40S, RE50, E620, EM, etc.
- ***CASE MATERIAL***
  Aluminium/ABS
- ***FLANGE TYPE***
  Eg 520/540/620 etc.
- ***SHAFT Ø***
  4, 6, 8, 9.52, 10 mm etc.
- ***CONNECTIONS TYPE & POSITION***
  Cable/Connector - Axial/Radial
- ***PULSES/REVOLUTION NO.***
  2÷50000
- ***ZERO REFERENCE***
  0/1
- ***SUPPLY VOLTAGE***
  5 Vdc, 5÷28 Vdc, 10÷30 Vdc
- ***OUTPUT SIGNALS***
  Push-pull, Line driver

ABSOLUTE ENCODERS

- ***SERIES***
  Eg MEM, MEM-BUS, EMA etc.
- ***CASE MATERIAL***
  Aluminium/ABS
- ***FLANGE TYPE***
  Eg 520/540/620 etc.
- ***SHAFT Ø***
  4, 6, 8, 9.52, 10 mm etc.
- ***CONNECTIONS TYPE & POSITION***
  Cable/Connector - Axial/Radial
- ***SINGLE/MULTITURN***
- ***RESOLUTION***
  4-13 bit
- ***STEP NO.***
  2-16 bit
- ***CODE***
  Binary/Gray
- ***SUPPLY VOLTAGE***
  5÷28 Vdc, 10÷30 Vdc
- ***OUTPUT SIGNALS***
  SSI, PARALLEL, 0-10V ANALOGUE
  Interface:
  EterhCAT/PROFINET/PROFIBUS/CANopen

The encoder nomenclature indicates the encoder specifications:

Example:



▶ SALES NETWORK

ELAP sales network includes several distributors worldwide. Visit our site to find a distributor in your Country.

▶ WWW.ELAP.IT

Visit our site **www.elap.it** to stay updated about our products and events.

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