LEROY SOMER®

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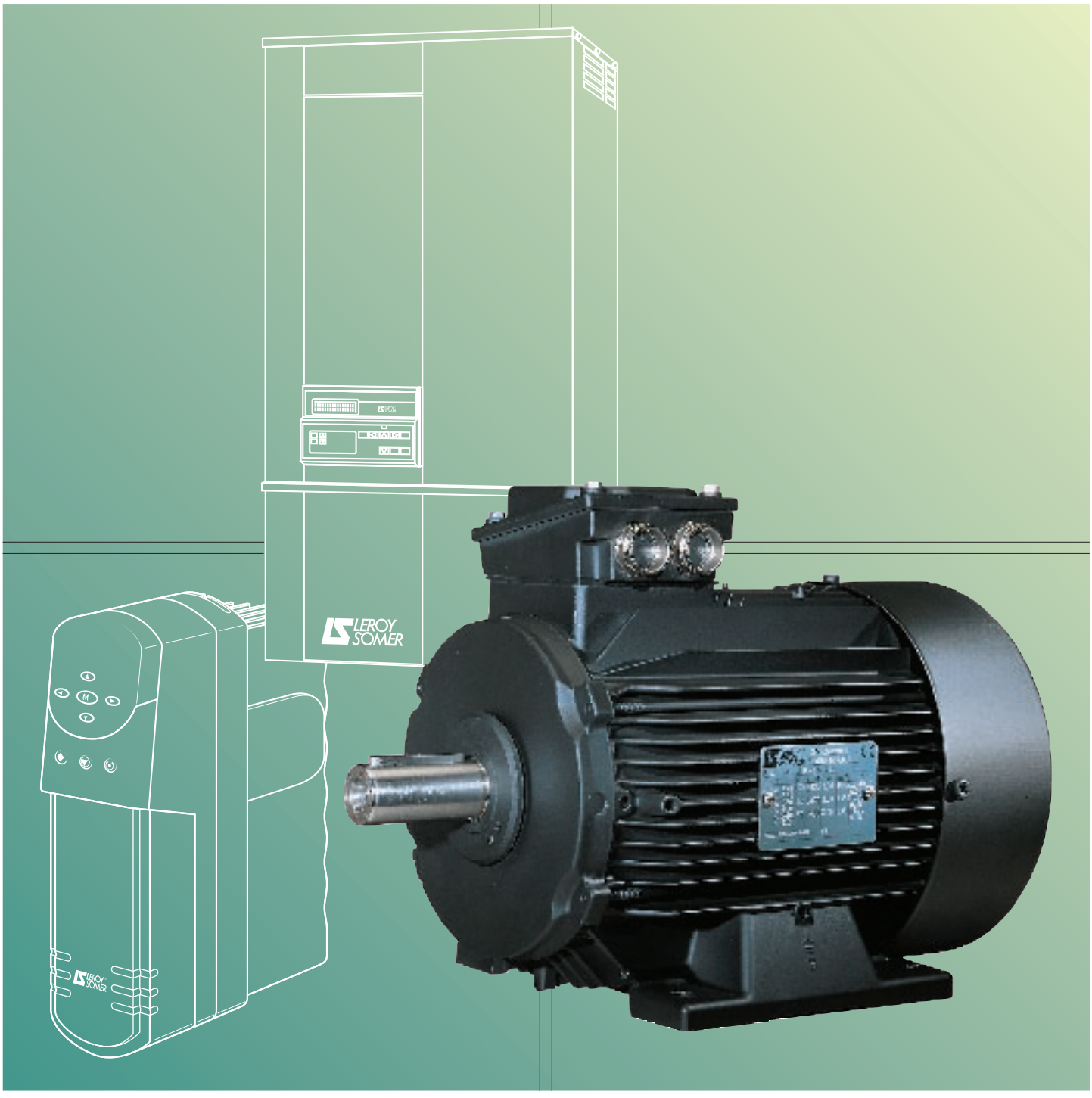


LSMV

3-phase TEFV induction motors for variable speed drive systems 0.18 to 132 kW

LSMV

LSMV : The LEROY-SOMER solution

for variable speed applications, the result of many years of experience in drive systems.

LSMV : A complete range of induction motors designed to be supplied via electronic speed controllers and to meet the requirements of variable speed.

- By optimising operation at **constant torque down to 10% of the rated speed** without derating or forced ventilation.
- By boosting acceleration without modifying the frame size over the whole range.

LSMV : A flexible design concept with a complete range of options from which to build solutions to exactly match application requirements:

- Speed accuracy, safety of rotation :
  → *Incremental encoder.*
- Position control :
  → *Absolute encoder.*
- Positive safety :
  → *Brake.*
- Operation outside guaranteed speed range :
  → *Forced ventilation.*
- External finish :
  → *Standard, customised.*

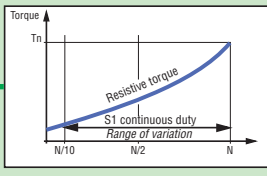
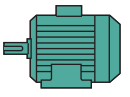
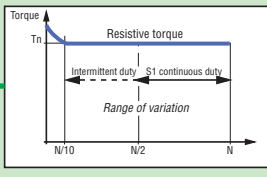
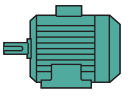
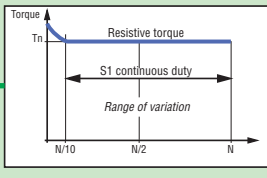
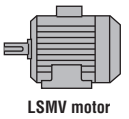
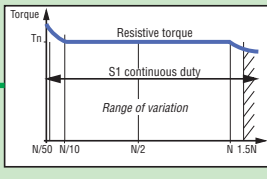
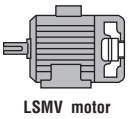
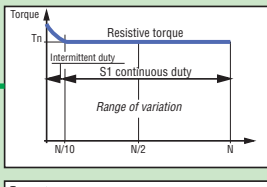
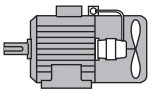
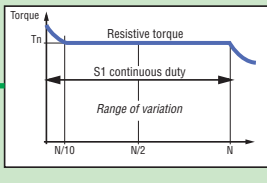
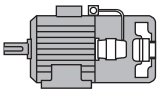
LSMV: Guaranteed interchangeability with standard motors through conformity with the IEC standard, whilst benefiting from electrical adaptation of the basic motor.

LSMV : A product born of experience, designed to meet technical criteria defined by LEROY-SOMER in the areas of thermal reserve, watertightness, mechanism of rotation, concentricity, noise level, modularity and standardisation. It also benefits from enhanced balancing, increased thermal reserve, improved efficiency and integrated thermal protection. All of these features have **ISO 9001** certification.

LSMV : A range integrated into the ser-vice package offered by LEROY-SOMER including short or specially arranged lead times, based on a system where the customer fixes his own despatch date.

OUTSTANDING LEVEL OF PERFORMANCE ADAPTED TO VARIABLE SPEED

LSMV : A simple and clear selection guide, allowing you to choose the right motor to suit the needs of your application.

Centrifugal or quadratic resistive torque applications		Operation with resistive torque depending on the speed for f < 50 Hz	 **LS motor**
General or constant resistive torque applications		Operation over a speed range of 25 to 50 Hz (1 to 2) in continuous duty (S1)	 **LS motor**
		Operation over a speed range of 5 to 50 Hz (1 to 10) in continuous duty (S1)	 **LSMV motor**
		Operation over extreme speed ranges : < 5 Hz and > 70 Hz	 **LSMV motor with forced ventilation**
		Operation : - from 0 to 50 Hz with a range of 0 to 5 Hz in intermittent duty - with good precision of both speed and torque dynamics	 **LSMV motor with encoder**
		Operation : - from 0 to 50 Hz with a range of 0 to 5 Hz in continuous duty - with good precision of both speed and torque dynamics	 **LSMV motor with encoder and forced ventilation**

LEROY SOMER

LSMV

AN ELECTRIC MOTOR WHICH OPERATES AT VARIABLE SPEED WITHOUT DERATING

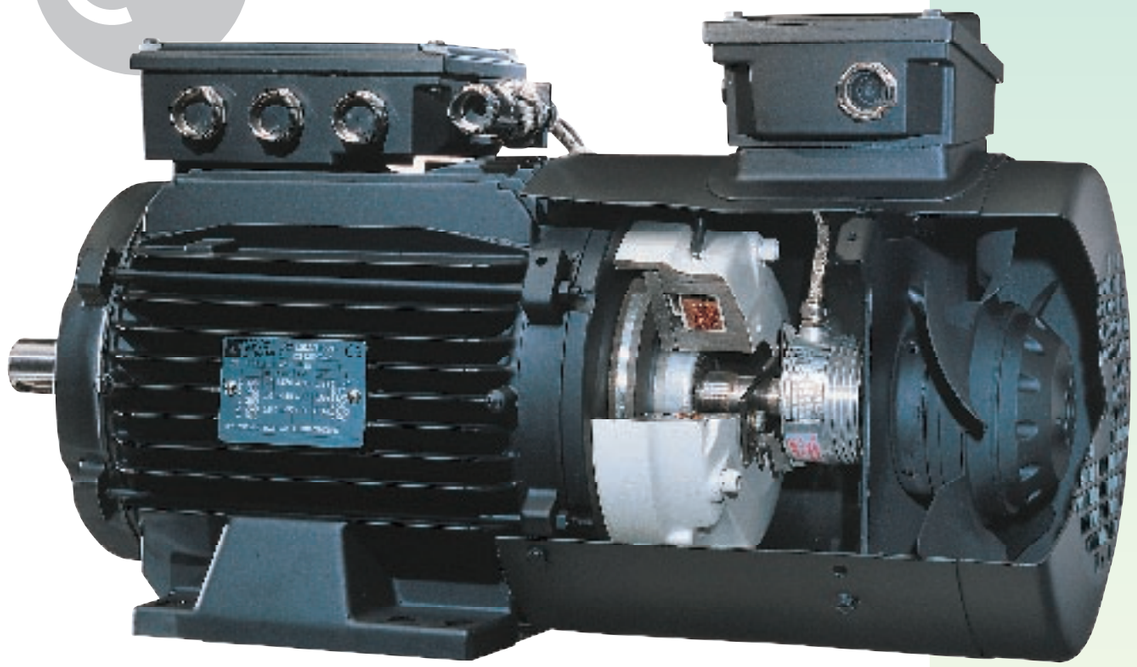
A motor which benefits from a high level of modularity whilst retaining the advantages of ***availability*** *associated with standard motors.*

Reduced maintenance
Limiting the temperature rise increases the total life and performance of the motor.

Powerful dynamics *enhanced by the availability of significant torque both at startup and at all speeds.*

Noise reduction *for improved ease of use, achieved by the addition of cast iron end shields at both drive end and non-drive end.*
Higher balancing class :
- S, for frame size ≤ 132
- R, for frame size ≥ 160.

Reinforced mechanical resistance.
Use of metal terminal box(es) and fan cover.



Energy savings
Innovative design of the magnetic circuits has improved mains operation, leading to increased efficiency at the rated speed.

Maximum operating safety
Protection via 3 PTC sensors installed in the motor winding.

Extended life *due to the choice of balancing and the concentric design.*

Interchangeability
The whole LSMV range conforms fully with IEC standards; the motor can therefore be exchanged with any other standard motor.

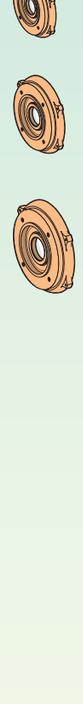
THE BASE

FLANGES

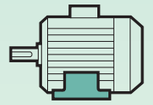
Standard / non-standard

Face mounted (FT)

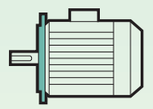
Flange mounted (FF)



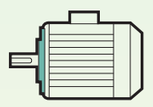
FIXING METHODS



Foot mounted motor



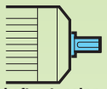
Flange mounted motor (FF)



Face mounted motors (FT)

THE MODULES

OPTIONS



2nd shaft extension

Drip cover

- ***CUSTOMISED MECHANICS***

Forced ventilation

- ***OPERATION OUTSIDE SPEED RANGE***

Forced ventilation, 230 or 400V :
- *Single phase*
  - *for frame size ≤ 132*
- *3-phase*
  - *for frame size ≥ 160*

Separate connection terminal box

FCO-FCL-FCPL brake
BK holding brake

- ***BRAKING***

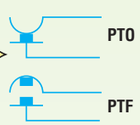
Positive safety on stopping :
- *BK (1.2 TN) or FCO (1.8 TN) brake for frame size ≤ 132*
- *FCPL (1.8 TN) brake for frame size ≥ 160*

Encoder

- ***SPEED PRECISION***

Incremental encoder :
- *from 1 to 5000 points/revolution, 5V or 11/30V*

Absolute encoder :
- *up to 4096 points/4096 revolutions (SSI or RS 485)*
- *Separate metal connection.*



PTO

PTF

Thermal protection

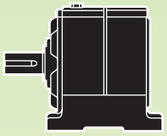
- ***THERMAL PROTECTION***

PTC equipment in series for monitoring transient overloads

Optional equipment :
PTO or PTF, for monitoring non-transient overloads.

ADAPTATIONS

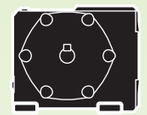
- ***COAXIAL GEARBOXES***



Helical gears

Epicyclic gears

- ***RIGHT ANGLE GEARBOXES***



Bevel gears

Worm gears

- ***PARALLEL SHAFT GEARBOXES***

Helical gears

MEETS THE LATEST REQUIREMENTS OF VARIABLE SPEED
RATED TORQUE - EXTENDED SPEED RANGE

A WIDE RANGE OF OPTIONS ARE AVAILABLE

LEROY SOMER

LSMV

0.18 to 132 kW

■ The **LSMV** is the basis for a wide range of motors for variable speed control.
LEROY-SOMER also offers the following models :
PLSMV : aluminium cage motors to IP 23 protection.
FLSMV, FLSCMV : cast iron cage motors for use in extreme environmental conditions.

MAIN DESIGN CHARACTERISTICS

Frame : **Aluminium alloy**
Bearings : **Cast iron**
Protection : **IP 55**
Insulation : **Class F**
Voltage: **400V ± 10%**
For relative humidity up to **95%**
Terminal boxes : **Aluminium**
Fan cover : **Metal**

Bearings : **C3 play, LHT lubrication, DE thrust type, locked in flange-mounted versions**
Balancing :
- **Class S :** Frame size 80 to 132
- **Class R :** Frame size 160 to 315

Sensors : **PTC** in the winding
Paint : System **Ia**, black **RAL9005**

4 Poles

Mains supply 400 V - 50 Hz
Motor connection : Y 400 V

Type	Rated power at 50 Hz P_n kW	Rated speed N_n min^{-1}	Rated torque M_n Nm	Maximum torque M_m Nm	No-load current I_o A	Rated current $I_{n\,(400V)}$ A	Power factor $Cos\,\varphi$	Efficiency η %	Moment of inertia J kg.m^2	Weight IM B3 kg
LSMV 71 L	0.18	1455	1.19	4.8	0.65	0.67	0.57	69	0.000675	6.4
LSMV 71 L	0.25	1450	1.68	5.9	0.85	0.91	0.58	70	0.000675	6.4
LSMV 71 L	0.37	1452	2.44	7.7	0.95	1.3	0.58	71	0.00085	7.3
LSMV 80 L	0.55	1420	3.7	8.2	1.25	1.65	0.71	68	0.0013	8.2
LSMV 80 L	0.75	1435	4.9	15	1.43	2	0.71	77	0.0024	11
LSMV 90 SL	1.1	1445	7.2	17	1.33	2.5	0.82	79	0.0039	17
LSMV 90 L	1.5	1435	9.9	23	1.54	3.2	0.84	80	0.0049	17
LSMV 100 L	2.2	1440	14.6	39.2	2.27	4.7	0.83	81	0.0071	24
LSMV 100 L	3	1430	19.4	56.4	3.1	6.3	0.82	81	0.0071	24
LSMV 112 MG	4	1460	26	84	4.6	8.4	0.8	85	0.015	33.3
LSMV 132 SM	5.5	1460	37	121	4.4	10.4	0.87	86	0.0334	55
LSMV 132 M	7.5	1455	49.4	139	4.7	14	0.89	87	0.035	55
LSMV 132 M	9	1460	58.8	185	6.5	16.8	0.88	88	0.0385	65
LSMV 160 MR	11	1460	71.7	233	6.6	20.2	0.88	89	0.069	100
LSMV 160 LU	15	1465	97.8	371	11.7	28.3	0.85	90.7	0.096	109
LSMV 180 M	18.5	1468	120	360	14.1	34.4	0.84	92.4	0.123	136
LSMV 180 LU	22	1468	143	459	16.9	40.7	0.84	92.8	0.145	155
LSMV 200 L	30	1476	194	591	22.9	55.8	0.83	93	0.24	200
LSMV 225 SR	37	1475	240	704	28.9	68.9	0.82	93.9	0.29	235
LSMV 225 MG	45	1483	290	937	34.9	82.9	0.83	94.2	0.63	320
LSMV 250 ME	55	1481	354	1020	38.5	100	0.84	94.4	0.73	340
LSMV 280 SD	75	1482	483	1562	55.1	137.1	0.83	94.9	0.96	430
LSMV 280 MK	90	1488	577	1912	68.2	165	0.83	94.9	2.32	655
LSMV 315 SP	110	1489	706	2563	81.7	200	0.83	94.9	2.79	750
LSMV 315 MR	132	1488	847	2771	77	230	0.88	94.3	3.27	860

*Different numbers of poles and voltages can be selected from the items contained in the **LSMV technical catalogue**, or from specifications for particular products.*

DESIGNATION - CODING

Example : LSMV 180 M 18.5 kW

4 P 1500 min-1	LSMV 180 M	18.5 kW	IM 1001 (IM B3)	400 V	50 Hz	IP 55
No of poles Speed(s)	Type	Rated power	Mounting arrangements IEC 34-7	Supply voltage	Mains frequency	Degree of protection IEC 34-5