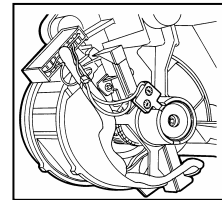


**SUMMING UP OF THE TACHOMETRIC GENERATORS AND BRUSHES FOR  
COMMUTATOR / ASYNCHRONOUS MOTORS USED IN WASHING MACHINES AND  
WASHER-DRYERS Rev. 02**

Commutator motors used on models with spin speed from 650 to 1800 rpm are produced by:

- **SOLE / ACC / NIDEC**
- **FHP**
- **CESET**
- **BSH**
- **ECM**
- **WELLING**



Each of these motors can be alternatively fitted in production to the same model. For this reason, there might be a possibility that motors made by different suppliers can be supplied as spare parts in place of the original one. The different motors are perfectly interchangeable with the previous one. For any type of motor, tachometric generators and brushes are available as well. As it is not possible to determine through the spare part no. which motor has been fitted to the appliance, we suggest you to check the brand on the component itself: In this way it is possible to get the correct part no. of the brushes and generators. Should there be any doubt, it is possible to get the production code on the rating plate of the motor (124xxxxxx\_132xxxxxx\_147xxxxxx). The following table displays the correct part nos. and the resistive values of the motor windings as well.

Supplier	Tachometric generator part no.	Brush part no.
<b>SOLE / ACC / NIDEC</b>	Version with <b>504 Ω</b> coil: <b>5020 48 73-00/9</b>	Up to July <b>1992</b> (serial no. 230...) <b>white</b> support: <b>5068 17 42-00/8</b>
	Version with <b>184 Ω</b> coil: <b>5022 90 52-00/1</b>	From august <b>1992</b> (serial no. 231...) <b>black</b> support: <b>5022 65 88-00/7</b>
<b>FHP</b>	Produced up to <b>1997</b> : <b>5021 25 04-00/0</b>	Up to august <b>1990</b> (serial no. 036...) <b>5068 04 90-00/5</b>
	In production from <b>1997/98</b> : <b>5024 01 54-00/0</b>	From September <b>1990</b> (serial no. 037...) <b>400 60 20-34/3</b> (replaces part no. 5022 17 78-00/9)
<b>CESET</b>	<b>5023 20 55-00/9</b>	<b>5021 63 97-00/5</b>

## Commutator motors - Summing up

UNIVERSAL MOTORS (with 10-terminal connection box)											
Motor supplier code	Brand	Type	V/Hz	Spin speed	Pulley Ø mm	Winding resistance (Ω)				Part nos. (*)	
						½ field (1-5/10)	Stator (5-10)	Rotor (8-9)	Tacho (3-4)	Tachometric generator	Brush
12403680..	SOLE/ACC/NIDEC	20584014	220-240/50	650-850	21.5	no	1.48±1.71	1.67±1.92	504±7%	50204873009	50226588007
12403690..	SOLE/ACC/NIDEC	20584027	220-240/50	1000-1500	25.26	0.59±7%	1,18±7%	2,2±7%	184±7%	50229052001	50226588007
12405280..	FHP	UO 112 G40	220-240/50	850-1000	21.26	no	1,7±7%	1,95±7%	135±7%	50240154000	4006020343
12405282..	FHP	UO 112 G40	220-240/50	850-1000	21.26	no	1,7±7%	1,95±7%	135±7%	50240154000	4006020343
12405290..	FHP	UOZ 112 G63	220-240/50	1000-1500	25.26	0.55±7%	1.1±7%	2.15±7%	135±7%	50240154000	4006020343
12405390..	FHP	UOZ 112 G63	220-240/50	1000-1200	21.26	0.52±7%	1.2±7%	1.75±7%	135±7%	50240154000	4006020343
12405480..	CESET	MCA38/64.148/ZN1	220-240/50	850-1000	21.5	no	1.07±7%	2.28±7%	68.7±7%	50232055009	50216397005
12405481..	CESET	MCA38/64.148/ZN5	230-240/50	850-1000	21.5	no	1.86±7%	2.46±7%	68.7±7%	50232055009	50216397005
12406500..	FHP	U 112 G63	220-240/50	1000	25.26	no	0.98±1.34	1.97±2.27	135±7%	50240154000	4006020343
12406510..	SOLE/ACC/NIDEC	20584028	220-240/50	1000	25.26	no	1.09±1.26	2.04±2.34	184±7%	50229052001	50226588007
12408470..	CESET	MCA30/64.148/ZN4	220-240/50	600-850	16.4	no	1.95±7%	2.57±7%	68.7±7%	50232055009	50216397005
12408471..	CESET	MCA30/64.148/ZN4	220-240/50	600-850	16.4	no	1.95±7%	2.57±7%	68.7±7%	50232055009	50216397005
12421230..	SOLE/ACC/NIDEC	20584513	230-240/50	1150	21.5	no	1,07±7%	1.6±7%	184±7%	50229052001	50226588007
12421390..	SOLE/ACC/NIDEC	20584514	230-240/50	1150	21.5	0.89±7%	1.77±7%	2,14±7%	184±7%	50229052001	50226588007
12421391..	SOLE/ACC/NIDEC	20584514	230-240/50	1150	21.5	0.89±7%	1.77±7%	2,14±7%	184±7%	50229052001	50226588007
12423100..	SOLE/ACC/NIDEC	20584020	220-240/50	1000	21.5	no	1.03±1.17	1.62±1.87	184±7%	50229052001	50226588007
12427070..	SOLE/ACC/NIDEC	20584024	220-240/50	1000-1200	21.5	0.55±7%	1,1±7%	1,75±7%	184±7%	50229052001	50226588007
12427071..	SOLE/ACC/NIDEC	20584024	220-240/50	1000-1200	21.5	0.55±7%	1,1±7%	1,75±7%	184±7%	50229052001	50226588007
12427073..	SOLE/ACC/NIDEC	20584024	220-240/50	1000-1200	21.5	0.55±7%	1,1±7%	1,75±7%	184±7%	50229052001	50226588007
12427170..	SOLE/ACC/NIDEC	20580052	230-240/50	1000	19	no	1.65±7%	1.8±7%	504±7%	50204873009	50226588007
12427270..	CESET	MCA38/64.148/ZN3	220-240/50	1000	19	no	1.07±7%	2.28±7%	68.7±7%	50232055009	50216397005
12427780..	SOLE/ACC/NIDEC	205880052	230-240/50	850-1000	21.5	no	1.65±7%	1.8±7%	504±7%	50204873009	50226588007
12430180..	CESET	MCA61/64.148/ZN10	230-240/50	1000-1600	25.26	0.37±7%	1,5±7%	1,8±7%	68.7±7%	50232055009	50216397005
12430470..	FHP	UOZ 112 G63	220-240/50	1600	25.26	1,1±7%	2.92±7%	1.63±7%	135±7%	50240154000	4006020343
12430471..	FHP	UOZ 112 G63	220-240/50	1600	25.26	1,1±7%	2.92±7%	1.63±7%	135±7%	50240154000	4006020343
12430472..	FHP	UOZ 112 G63	220-240/50	1600	25.26	1,1±7%	2.92±7%	1.63±7%	135±7%	50240154000	4006020343
12430600..	SOLE/ACC/NIDEC	20584303	230-240/50	600-850	16.4	no	1.65±7%	1,8±7%	184±7%	50229052001	50226588007
12430610..	FHP	UO 112 G40	230-240/50	650-850	16.4	no	1,7±7%	1,95±7%	135±7%	50240154000	4006020343
12430620..	CESET	MCA38/64.148/ZN9	230-240/50	600-850	16.4	no	1.75±7%	2,3±7%	68.7±7%	50232055009	50216397005
12430980..	SOLE/ACC/NIDEC	20584087	230/50	1600	25.26	0.47±7%	1.3±7%	1.72±7%	184±7%	50229052001	50226588007
12430990..	FHP	UZ 112 G63	230-240/50	1150	21.26	no	1.12±7%	1.75±7%	135±7%	50240154000	4006020343
12439100..	FHP	UZ 112 G63	230-240/50-60	1150	21.26	no	1.09±7%	1.5±7%	135±7%	50240154000	4006020343
12439101..	FHP	UZ 112 G63	230-240/50	1150	21.26	no	1.09±7%	1.5±7%	135±7%	50240154000	4006020343
12458150..	CESET	MCC61/64.148/ZN9	230-240/DC	1000-1600	25.26	0.37±7%	1.8±7%	1.64±7%	68.7±7%	50232055009	50216397005
12461790..	SOLE/ACC/NIDEC	20584603	240/50	1600	25.26	0.56±7%	1.43±7%	1.72±7%	184±7%	50229052001	50226588007
12461791..	SOLE/ACC/NIDEC	20584603	240/50	1600	25.26	0.56±7%	1.43±7%	1.72±7%	184±7%	50229052001	50226588007
12466020..	FHP	UOZ112 G55	220-240/50	1000-1200	21.26	0.62±7%	1.23±7%	1.6±7%	135±7%	50240154000	4006020343
12461792..	SOLE/ACC/NIDEC	20584603	240/50	1600	25.26	0.56±7%	1.43±7%	1.72±7%	184±7%	50229052001	50226588007
12466021..	FHP	U112 G55	220-240/50	1000	21.26	no	1.23±7%	1.6±7%	135±7%	50240154000	4006020343
12467840..	FHP	UOZ112 G63	240/50	1400	25.26	0.63±7%	1.35±7%	2.6±7%	135±7%	50240154000	4006020343

## UNIVERSAL MOTORS (with 10-terminal connection box)

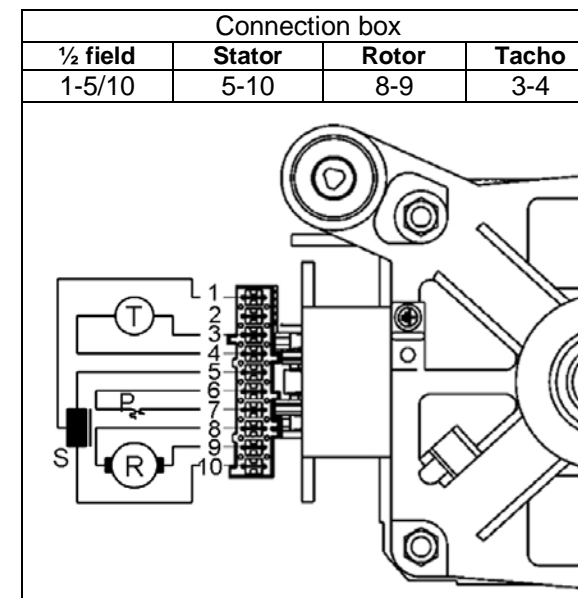
Motor supplier code	Brand	Type	V/Hz	Spin speed	Pulley Ø mm	Winding resistance (Ω)				Part nos. (*)	
						½ field (1-5/10)	Stator (5-10)	Rotor (8-9)	Tacho (3-4)	Tachometric generator	Brush
12470100..	SOLE/ACC/NIDEC	20580056	230-240/50	600-850	16.4	no	2.00±7%	1.8±7%	504±7%	50204873009	50226588007
12470102..	SOLE/ACC/NIDEC	20580056	230-240/50	600-850	16.4	no	2.00±7%	1.8±7%	504±7%	50204873009	50226588007
12471900..	FHP	UOZ112 G63	200/60	1000-1200	21.26	0.5±7%	1.01±7%	1.82±7%	135±7%	50240154000	4006020343
12474470..	FHP	UOZ112 G63	230/50	850-1400	25.26	0.59±7%	1.35±7%	2.2±7%	135±7%	50240154000	4006020343
12483510..	CESET	MCA61/64.148/ZN4	230-240/50	1400	25.26	0.6±7%	1.88±7%	1.78±7%	68.7±7%	50232055009	50216397005
12483520..	CESET	MCA61/64.148/ZN3	230-240/50	1200	21.5	0.6±7%	1.88±7%	1.78±7%	68.7±7%	50232055009	50216397005
12492030..	SOLE/ACC/NIDEC	20584027	220-240/50	1050-1200	21.5	0.59±7%	1.18±7%	2.2±7%	184±7%	50229052001	50226588007
12494610..	CESET	MCA52/64.148/ZN4	230-240/50	1000	21.5	no	1.3±7%	1.9±7%	68.7±7%	50232055009	50216397005
13205550..	CESET	MCA61/64.148/ZN14	230-240/50	1200	21.5	no	1.13±7%	1.78±7%	68.7±7%	50232055009	50216397005
13207990..	FHP	UOZ 112 G70	230/50	1600	25.26	0.41±7%	1.26±7%	1.75±7%	135±7%	50240154000	4006020343
13211010..	FHP	UOZ 112 G63	210-230/60	1150	21.26	0.53±7%	1.00±7%	1.75±7%	135±7%	50240154000	4006020343
13219502..	BSH	1BA6755	230-240/50	1150	21.5	no	1.67±7%	1.62±7%	-----	-----	-----
13222780..	SOLE/ACC/NIDEC	20584615	220/60	1400	25.26	0.48±7%	0.96±7%	1.72±7%	184±7%	50229052001	50226588007
13230360..	ECM	UAH522300-82R01	230-240/50	1000-1200	21.5	0.73±7%	1.46±7%	2±7%	91±7%	-----	50216397005
13230570..	ECM	UAH382300-51R01	230-240/50	850	16.4	no	1.95±7%	2.3±7%	91±7%	-----	50216397005
13252870..	SOLE/ACC/NIDEC	20584024	220-240/50	1000	21.5	0.55±7%	1.1±7%	1.77±7%	184±7%	50229052001	50226588007
13252960..	SOLE/ACC/NIDEC	20580052	220-240/50	1000	21.5	no	1.65±7%	1.8±7%	504±7%	50204873009	50226588007
13252970..	SOLE/ACC/NIDEC	20584087	230/50	1600	25.26	0.45±7%	1.25±7%	1.72±7%	184±7%	50229052001	50226588007
14711100..	SOLE/ACC/NIDEC	20584616	200-240/50	1000	19	0.61	1.23	1.72	184±7%	50229052001	50226588007

(\*) part nos. presently in production

### Remarks on the windings:

- ↺ Check the connectors (wiring) and the presence of outcoming / bent terminals.
- ↺ Check the presence of traces / deposits of water or detergent and their cause
- ↺ Check the earthed windings / components (or with poor insulation to earth) by means of a tester with a minimum capacity of 40 MΩ between single terminal and the housing (read ∞).
- ↺ Check the individual windings according to the table.

P=motoprotector  
R=rotor  
S=stator  
T=tachometric



## UNIVERSAL MOTORS (with 7-terminal connection box)

Motor supplier code	Brand	Type	V/Hz	Spin speed	Pulley Ø mm	Winding resistance (Ω)				Part nos. (*)	
						½ field (1-2/5)	Stator (2-5)	Rotor (3-4)	Tacho (6-7)	Tachometric generator	Brush
12405481..	CESET	MCA38/64.148/ZN5	230-240/50	850-1000	21.5	no	1.86±7%	2.46±7%	68.7±7%	50232055009	50216397005
12405482..	CESET	MCA38/64.148/ZN5	230-240/50	850-1000	21.5	no	1.86±7%	2.46±7%	68.7±7%	50232055009	50216397005
12408472..	CESET	MCA30/64.148/ZN4	220-240/50	600-850	16.4	no	1.95±7%	2.57±7%	68.7±7%	50232055009	50216397005
12408473..	CESET	MCA30/64.148/ZN4	220-240/50	600-850	14.5	no	1.95±7%	2.57±7%	68.7±7%	50232055009	50216397005
12421231..	SOLE/ACC/NIDEC	20584513	230-240/50	1150	21.5	no	1,07±7%	1.6±7%	184±7%	50229052001	50226588007
12421392..	SOLE/ACC/NIDEC	20584514	230-240/50	1150	21.5	0.89±7%	1.77±7%	2,14±7%	184±7%	50229052001	50226588007
12421393..	SOLE/ACC/NIDEC	20584549	230/50	1400	25.26	0.67±7%	1.77±7%	2,14±7%	184±7%	50229052001	50226588007
12430601..	SOLE/ACC/NIDEC	20584303	230-240/50	600-850	16.4	no	1.65±7%	1,8±7%	184±7%	50229052001	50226588007
12430611..	FHP	UO 112 G40	230-240/50	650-850	16.4	no	1,7±7%	1,95±7%	135±7%	50240154000	4006020343
12430621..	CESET	MCA38/64.148/ZN9	230-240/50	600-850	16.4	no	1.75±7%	2,3±7%	68.7±7%	50232055009	50216397005
12439102..	FHP	UZ 112 G63	230-240/50-60	1150	21.26	no	1.09±7%	1.5±7%	135±7%	50240154000	4006020343
12439103..	FHP	UZ 112 G63	230-240/50	1150	21.26	no	1.09±7%	1.5±7%	135±7%	50240154000	4006020343
12461792..	SOLE/ACC/NIDEC	20584603	240/50	1600	25.26	0.56±7%	1.43±7%	1.72±7%	184±7%	50229052001	50226588007
12466025..	FHP	UOZ112G55	230-240/50	1150	21.5	0.62±7%	1.23±7%	1.65±7%	137±7%	50240154000	4006020343
12470103..	SOLE/ACC/NIDEC	20580056	230-240/50	600-850	16.4	no	2.00±7%	1.8±7%	504±7%	50204873009	50226588007
12483501..	FHP	U 112 G30	230-240/50	650-850	16.4	no	2.07±7%	2.85±7%	137±7%	50240154000	4006020343
12494611..	CESET	MCA52/64.148/ZN4	230-240/50	1000	21.5	no	1.3±7%	1,9±7%	68.7±7%	50232055009	50216397005
13205551..	CESET	MCA61/64.148/ZN14	230-240/50	1200	21.5	no	1.13±7%	1.78±7%	68.7±7%	50232055009	50216397005
13207991..	FHP	UOZ 112 G70	230/50	1600	25.26	0.41±7%	1.26±7%	1.75±7%	135±7%	50240154000	4006020343
13211011..	FHP	UOZ 112 G63	210-230/60	1150	21.26	0.53±7%	1.00±7%	1.75±7%	135±7%	50240154000	4006020343
13219506..	BSH	1BA6755	230-240/50	1150	21.5	no	1.6±7%	1.73±7%	15.1±7%	-----	-----
13222781..	SOLE/ACC/NIDEC	20584615	220/60	1550	25.26	0.48±7%	1.05±7%	1.72±7%	184±7%	50204873009	50226588007
13230361..	ECM	UAH522300-82R02	230-240/50	1000-1200	21.5	0.73±7%	1.46±7%	2±7%	91±7%	-----	50216397005
13230362..	ECM	UAH522300-82R04	230-240/50	1000-1200	18.5	0.68±7%	1.46±7%	2±7%	91±7%	-----	50216397005
13230571..	ECM	UAH382300-51R03	230-240/50	850	16.4	no	1.95±7%	2.3±7%	91±7%	-----	50216397005
13230572..	ECM	UAH382300-51R03	230-240/50	850	16.4	no	1.95±7%	2.3±7%	91±7%	-----	50216397005
13230573..	ECM	UAH382300-51R03	230-240/50	850	14.5	no	1.95±7%	2.3±7%	91±7%	-----	50216397005
13241520..	WELLING	HXG52B01	230-240/50	1200	21.5	no	0.91±7%	2.24±7%	103±7%	405505049/8	405505048/0
13241522..	WELLING	HXG52A07	230-240/50	1200	21.5	0.8±7%	1.62±7%	2.24±7%	103±7%	405505049/8	405505048/0
13252872..	SOLE/ACC/NIDEC	20584024	220-240/50	1000	21.5	0.55±7%	1.1±7%	1.77±7%	184±7%	50204873009	50226588007
13252874..	SOLE/ACC/NIDEC	20584456	220-240/50	1000-1200	18.5	0.58±7%	1.15±7%	1.77±7%	184±7%	50204873009	50226588007
13252961..	SOLE/ACC/NIDEC	20580052	220-240/50	1000	21.5	no	1.65±7%	1.8±7%	504±7%	50204873009	50226588007
13252971..	SOLE/ACC/NIDEC	20584087	230/50	1400	25.26	0.45±7%	1.25±7%	1.72±7%	184±7%	50204873009	50226588007
13260340..	CESET	MCA52/64.148/ZN22	230-240/50	1000	21.5	no	1.62±7%	1,9±7%	68.7±7%	50232055009	50216397005
13260350..	CESET	MCA61/64.148/ZN35	230-240/50	1400	25.26	0.65±7%	1.65±7%	1.78±7%	68.7±7%	50232055009	50216397005
13271260..	SOLE/ACC/NIDEC	20584631	230/50	1400-1600	25.26	0.67±7%	1.86±7%	1.72±7%	184±7%	50204873009	50226588007
13271270..	SOLE/ACC/NIDEC	20584553	230-240/50	1000-1200	21.5	1.05±7%	2.1±7%	2.14±7%	184±7%	50204873009	50226588007
13271271..	SOLE/ACC/NIDEC	WU126T55E01	230-240/50	1400	25.26	0.85±7%	2.1±7%	2.14±7%	184±7%	50204873009	50226588007
13271280..	BSH	1BA6765-0ZD	230-240/50	1400-1600	25.26	0.45±7%	1.05±7%	1.56±7%	15.1±7%	-----	-----
13273760..	SOLE/ACC/NIDEC	WU126T55E00	230-240/50	1400	21.5	0.56±7%	1.4±7%	1.6±7%	184±7%	50204873009	50226588007
13275100..	SOLE/ACC/NIDEC	WU126T35E00	230-240/50	850	14.5	no	2.2±7%	1.8±7%	184±7%	50204873009	50226588007
13275110..	CESET	MCA38/64.148/ZN55	230-240/50	850	14.5	no	2.12±7%	2.25±7%	68.7±7%	50232055009	50216397005

## UNIVERSAL MOTORS (with 7-terminal connection box)

Motor supplier code	Brand	Type	V/Hz	Spin speed	Pulley Ø mm	Winding resistance (Ω)				Part nos. (*)	
						½ field (1-2/5)	Stator (2-5)	Rotor (3-4)	Tacho (6-7)	Tachometric generator	Brush
13277151..	WELLING	HXG52A09	230-240/50	1400	21.5	0.7±7%	1.46±7%	1.82±7%	103±7%	405505049/8	405505048/0
13277152..	WELLING	HXG52A09	230-240/50	1000-1200	18.5	0.7±7%	1.46±7%	1.82±7%	103±7%	405505049/8	405505048/0
13277580..	SOLE/ACC/NIDEC	WU126T50E00	230-240/50	1000-1200	18.5	0.76±7%	1.53±7%	1.77±7%	184±7%	50204873009	50226588007
14711100..	SOLE/ACC/NIDEC	20584616	200-240/50	1000	19	0.61±7%	1.23±7%	1.72±7%	184±7%	50229052001	50226588007
14711101..	SOLE/ACC/NIDEC	20584616	200-240/50	1000	19	0.61±7%	1.23±7%	1.72±7%	184±7%	50229052001	50226588007

(\*) part nos. presently in production

### Remarks on the windings:

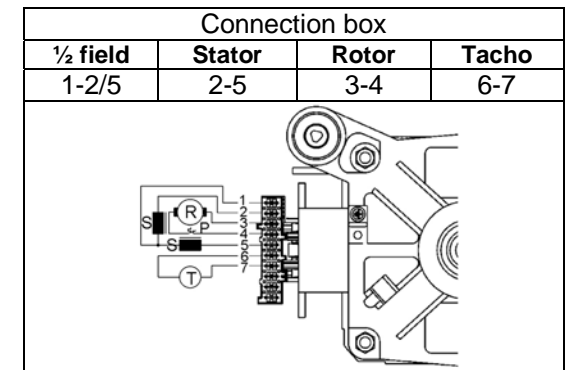
- ↪ Check the connectors (wiring) and the presence of outcoming / bent terminals.
- ↪ Check the presence of traces / deposits of water or detergent and their cause
- ↪ Check the earthed windings / components (or with poor insulation to earth) by means of a tester with a minimum capacity of 40 MΩ between single terminal and the housing (read ∞).
- ↪ Check the individual windings according to the table.

P=motoprotector

R=rotor

S=stator

T=tachometric





### THREE-PHASE MOTORS (with 8/5-terminal connection box)

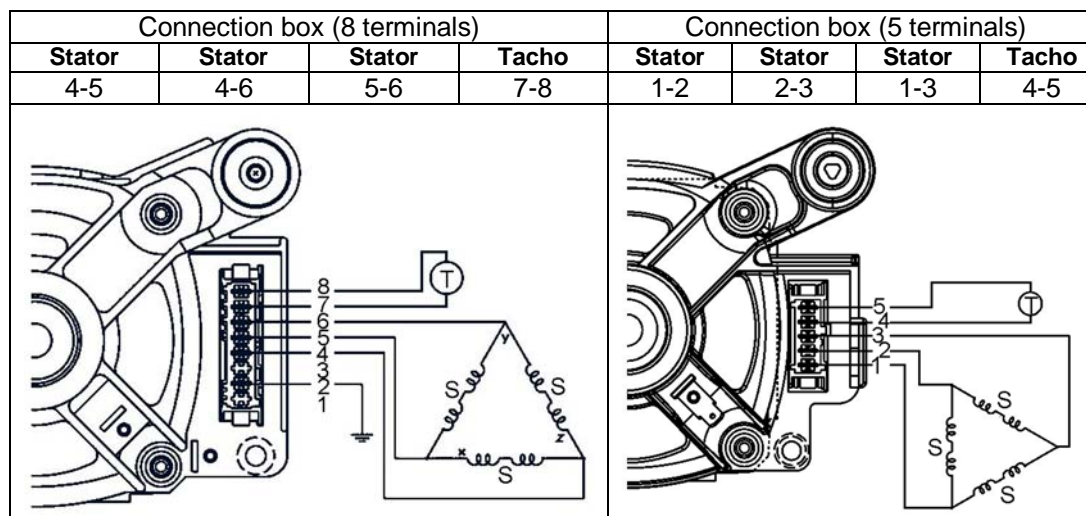
Motor supplier code	Brand	Type	V/Hz	Spin speed	Pulley Ø mm	Winding resistance (Ω)				Part nos. (*)
						Stator (4-5)	Stator (4-6)	Stator (5-6)	Tacho (7-8)	Tachometric generator
13219300..	CESET	CIM 2/55-132ZH	195/300	1800	25.26	5,4±7%	5,4±7%	5,4±7%	121±7%	50280023008
						Winding resistance (Ω)				
						Stator (1-2)	Stator (2-3)	Stator (1-3)	Tacho (4-5)	
13247650..	SOLE/ACC/NIDEC	20585119	195/300	1800	25.26	5,4±7%	5,4±7%	5,4±7%	188±7%	50296236008
13238680..	ECM	CZ-551950-51R01	195/300	1800	25.26	5,4±7%	5,4±7%	5,4±7%	91±7%	-----
14710100..	CESET	CIM 2/55-132ZH	195/300	1800	25.26	5,4±7%	5,4±7%	5,4±7%	121±7%	50280023008

(\*) part nos. presently in production

**Remarks on the windings:**

- ↪ Check the connectors (wiring) and the presence of outcoming / bent terminals.
- ↪ Check the presence of traces / deposits of water or detergent and their cause
- ↪ Check the earthed windings / components (or with poor insulation to earth) by means of a tester with a minimum capacity of 40 MΩ between single terminal and the housing (read ∞).
- ↪ Check the individual windings according to the table.

S=stator  
T=tachometric



Revision	Date	Description
01	06/2009	Update of supplier list and table
02	11/2010	Update of supplier list and table