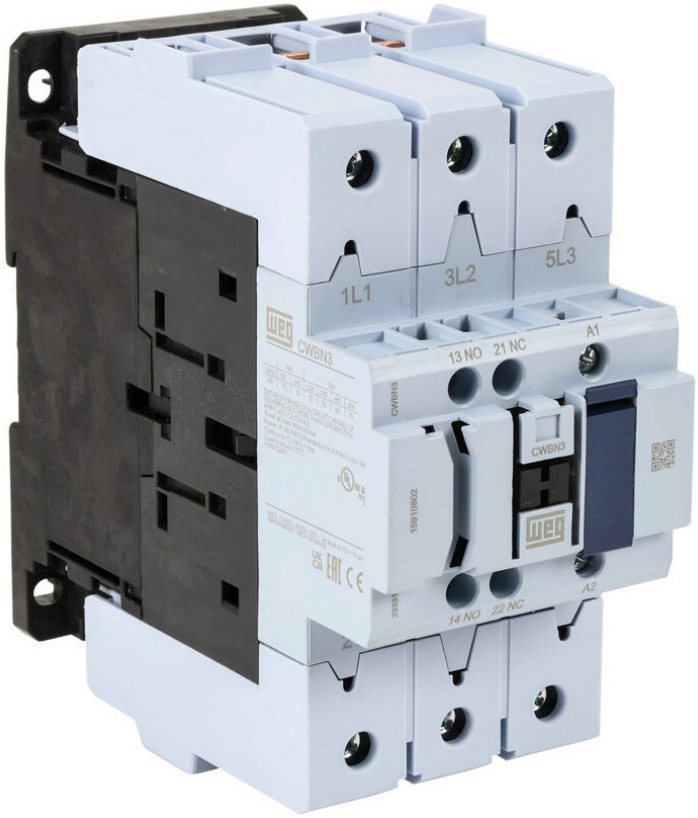
CWBN Series NEMA Contactors



CWBN3-11-30D15

Overview

WEG's NEMA-rated contactors meet or exceed the standards defined by the National Electrical Manufacturers Association for full-voltage or reduced-voltage motor starting.

The CWBN series has been designed for industrial duty and with reliability in mind. They are rated for inductive loads up to 95A or 50 hp @ 460V.

Customers who are accustomed to specifying contactors (and starters) by a particular NEMA size can easily use the WEG CWBN series.

With their compact footprints, CWBN contactors allow total panel space optimization with only a few compact frame sizes from 2 to 50 hp @ 460V.

Accessories include side- and front-mounted auxiliary contact blocks and reversing components.

Applications

- Paper & Cellulose
- Wood
- Cement
- Chemical and Petrochemical
- Mining
- Steel
- Oil & Gas
- Irrigation and Pumping Systems
- Sugar & Alcohol
- Fans
- Civil Construction
- Refrigeration
- Machines and Processes in General
- Load Lifting
- Automation

CWBN Series NEMA Contactors

NEMA contactors have been a mainstay in the industrial marketplace in the US for decades and are known for being robust and able to handle any industrial application. WEG's NEMA-rated contactors meet or exceed NEMA standards defined for full voltage or reduced voltage motor starting. [1]

The WEG CWBN series NEMA-rated contactor line has been designed for industrial duty and with reliability in mind and are rated for inductive loads up to 95A or 50 hp @ 460V.

Customers who are used to specifying contactors (and starters) by a particular NEMA size (size 00, 0, 1, 2, 3) now can use WEG CWBN series NEMA rated contactors. Customers enjoy the ease of choosing the product and WEG reliability while still getting the sophisticated arc quenching techniques to reduce excess heat on the contacts.

With their compact footprints, CWBN contactors allow total panel space optimization, with only a few compact frame sizes from 2 to 50 hp @ 460V.

Reducing inventory is a "snap" with CWB's common accessories. For example, side- and front-mounted auxiliary contact blocks are the same from 2 to 50 hp @ 460V.

Features

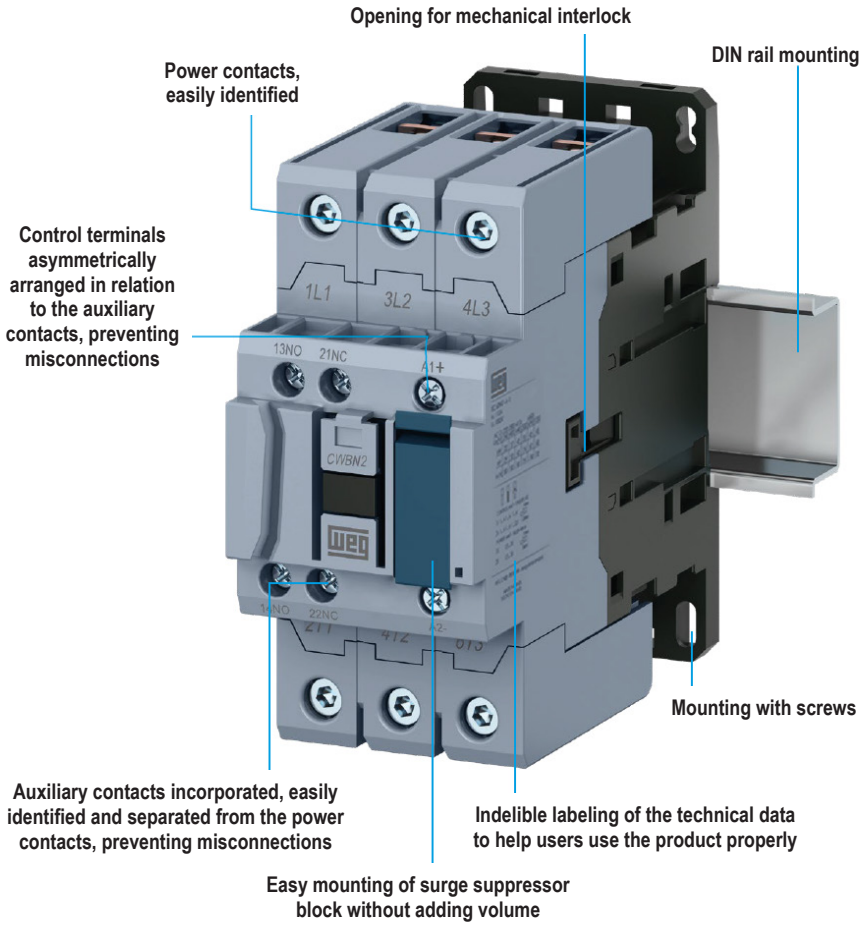
- Available from size 00 to Size 3
- Designed for industrial applications with reliability in mind
- Reduced inventory with common accessories
- Ease of choosing product
- Adjustable overload protection available (no heaters needed). Example: Eaton XT Series electronic overload relays, MMS or MCBs
- Arc quenching technology
- WEG RW Series: Adjustable thermal overload relay for motor protection

Certifications

c UL us CE

UL file number E202315

[1] NEMA Standards Publication ICS 2-2000 (R2005). Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600V.



Part Number	NEMA Size
CWBN00-11-30D15	Size 00
CWBN00-11-30V24	Size 00
CWBN00-11-30D39	Size 00
CWBN0-11-30D15	Size 0
CWBN0-11-30V24	Size 0
CWBN0-11-30D39	Size 0
CWBN1-11-30D15	Size 1
CWBN1-11-30V24	Size 1
CWBN1-11-30D39	Size 1
CWBN2-11-30D15	Size 2
CWBN2-11-30V24	Size 2
CWBN2-11-30D39	Size 2
CWBN3-11-30D15	Size 3
CWBN3-11-30D39	Size 3
CWBN3-11-30E65	Size 3

CWBN Series NEMA Contactors

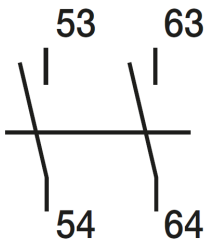
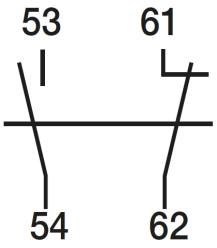
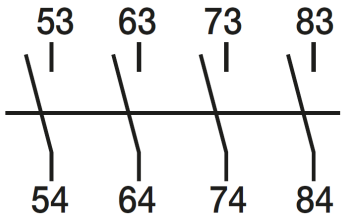
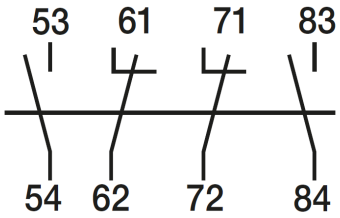
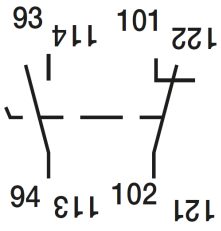
CWBN00-11-30D15

CWBN3-11-30D15

WEG CWBN Series Contactors Selection Guide

Part Number	Price	Coil Voltage	Ie Max (Ue≤440V)	Maximum UL Horsepower						Built-In Auxiliary Contacts Per Contactor		Drawing
				Single-Phase		Three-Phase						
			AC-3 (A)	115V	230V	200V	230V	480V	575V	N.O.	N.C.	
AC Coil												
CWBN00-11-30D15	$47.50	120 VAC 50/60 Hz	9	1/3	1	1.5	1.5	2	2	1	1	PDF
CWBN00-11-30V24	$47.50	208-240 VAC 60 Hz										PDF
CWBN00-11-30D39	$47.50	480 VAC 50/60 Hz										PDF
CWBN0-11-30D15	$55.00	120 VAC 50/60 Hz	18	1	2	3	3	5	5	1	1	PDF
CWBN0-11-30V24	$55.00	208-240 VAC 60 Hz										PDF
CWBN0-11-30D39	$55.00	480 VAC 50/60 Hz										PDF
CWBN1-11-30D15	$76.00	120 VAC 50/60 Hz	25	2	3	7.5	7.5	10	10	1	1	PDF
CWBN1-11-30V24	$76.00	208-240 VAC 60 Hz										PDF
CWBN1-11-30D39	$76.00	480 VAC 50/60 Hz										PDF
CWBN2-11-30D15	$108.00	120 VAC 50/60 Hz	50	3	7.5	10	15	25	25	1	1	PDF
CWBN2-11-30V24	$108.00	208-240 VAC 60 Hz										PDF
CWBN2-11-30D39	$108.00	480 VAC 50/60 Hz										PDF
CWBN3-11-30D15	$194.00	120 VAC 50/60 Hz	95	7.5	15	25	30	50	50	1	1	PDF
CWBN3-11-30D39	$194.00	480 VAC 50/60 Hz										PDF
CWBN3-11-30E65	$254.00	110-255 VAC 50/60 Hz / VDC										PDF

CWBN Series NEMA Contactors Terminal Markings

Terminal Markings According to IEC/EN 60947				
Diagram	*Reference*	*Configuration*	*Auxiliary Contacts*	
			N.O.	*N.C.*
Front-Mounted Auxiliary Contact Blocks				
	BFB-20	20	2	0
	BFB-11	11	1	1
	BFB-40	40	4	0
	BFB-22	22	2	2
Side-Mounted Auxiliary Contact Blocks				
	BLB-11	11	1	1

CWBN Series NEMA Contactors Specifications

WEG CWBN Series Contactors General Specifications								
			CWBN00	CWBN0	CWBN1	CWBN2	CWBN3
Compliance With Standards			IEC/EN 60947-1 IEC/EN 60947-4-1 IEC/EN 60947-5-1 UL 60947				
Rated Insulation Voltage U_i (Pollution Degree 3)	IEC/EN 60947-4-1	V	690			1000	
	UL, CSA	V	600				
Rated Impulse Withstand Voltage U_e	IEC/EN 60947-4-1	kV	6				
Frequency Limits		Hz	25 - 400				
Mechanical Lifespan	AC Coil	Millions of cycles	10			6	
	DC Coil	Millions of cycles	10			6	
Electrical Lifespan	I_e AC-3	Millions of cycles	2.0	1.8	1.6	1.6	1.1
Degree of protection (IEC/EN 60529)	Main terminals		IP10 (front)				
	Coil and auxiliary contacts		IP20 (front)				
Mounting			By screws or DIN 35mm rail (EN 50022)				
Coil Connection Points	Contactors with AC coil		2				
	Contactors with DC coil		2				
Vibration Resistance (IEC/EN 60068-2-27)	Open contactor	(g)	4				
	Closed contactor	(g)	4				
Resistance to mechanical shocks (½ senoide = 11 ms - IEC/EN 60068-2-27)	Open contactor	(g)	10				
	Closed contactor	(g)	15				
Ambient Temperature		Operating	-25 to +55 ºC [-13 to 13 ºF]				
		Storage	-55 to +80 ºC [-67 to +176 ºF]				
Maximum Operation Altitude Without Modification In the Rated Values [1]		m [ft]	3000 [9842.5]				

1) For altitudes of 3,000 - 4,000m (0.90 x Ie and 0.80 x Ui) and of 4,000 - 5,000m (0.80 x Ie and 0.75 x Ui).

CWBN Series NEMA Contactors Specifications

Control Circuit - Alternating Current (AC)

			CWBN00/0/1	CWBN2	CWBN3
Rated Insulation Voltage U_i (Pollution Degree 3)	IEC/EN 60947-4-1	(V)	690	1000	1000
	UL, CSA	(V)	600	600	600
Standard Voltage at 50/60 Hz		(V)	12 to 500	24 to 500	24 to 500
Coil Operating Limits	At 50 Hz	(xUs)	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1
	At 60 Hz	(xUs)	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1
Coil 50/60 Hz Pick Up and Drop Out		Pick Up	0.5 to 0.8 xUs	0.5 to 0.8 xUs	0.5 to 0.8 xUs
		Drop Out	0.2 to 0.6 xUs	0.2 to 0.6 xUs	0.2 to 0.6 xUs
Average Consumption Coil 50/60 Hz (60 Hz Operation)	Magnetic Circuit Closed	(VA)	7.5	17.5	25
	Power Factor Switched ON	(cos Φ)	0.27	0.28	0.40
	Thermal Power Dissipation	(W)	1.5 - 2.5	4 - 5.5	9 - 11
	Closing of the Magnetic Circuit	(VA)	75	185	410
	Power Factor Switching ON	(cos Φ)	0.7	0.55	0.48
Average Consumption Coil 50/60 Hz (50 Hz Operation)	Magnetic Circuit Closed	(VA)	9	27	27
	Power Factor Switched ON	(cos Φ)	0.24	0.25	0.4
	Thermal Power Dissipation	(W)	1.5 - 2.5	5.5 - 7.8	11 - 13.4
	Closing of the Magnetic Circuit	(VA)	90	202	426
	Power Factor Switching ON	(cos Φ)	0.8	0.54	0.5
Average Operating Time	Closing of the N.O. contacts	(ms)	15 - 25	10 - 15	8 - 12.5
	Opening of the N.O. contacts	(ms)	8 - 12	8 - 12	4 - 8

Control Circuit - Direct Current (DC)

			CWBN00/0/1	CWBN2	CWBN3
Rated Insulation Voltage U_i (Pollution Degree 3)	IEC/EN 60947-4-1	(V)	690	1000	–
	UL, CSA	(V)	600	600	–
Standard Voltages		(V)	12 to 500	24 to 500	–
Average Consumption DC Coil	Magnetic Circuit Closed	(W)	5.8	10.6	–
	Closing of the Magnetic Circuit	(W)	5.8	15.5	–
Coil Pick Up and Drop Out		Pick Up	0.8 to 1.1 xUs	0.8 to 1.1 xUs	0.8 to 1.1 xUs
		Drop Out	0.1 to 0.6 xUs	0.1 to 0.6 xUs	0.1 to 0.6 xUs
Average Operating Time	Closing of the N.O. Contacts	(ms)	35 - 45	20 - 30	–
	Opening of the N.O. Contacts	(ms)	8 - 12	4 - 8	–

Control Circuit - Electronic Coils (AC/DC)

			CWBN00/0/1	CWBN2	CWBN3
Rated Insulation Voltage U_i (Pollution Degree 3)	IEC/EN 60947-4-1	(V)	–	–	1000
	UL, CSA	(V)	–	–	600
Standard Voltages		(V)	–	–	24 - 500
Coil Operating Limits	At V DC	(xUs)	–	–	0.8 - 1.1
	At 50 Hz	(xUs)	–	–	0.8 - 1.1
	At 60 Hz	(xUs)	–	–	0.8 - 1.1
Average Consumption			–	–	1 x Us and cold coil
Coil Pick Up and Drop Out		Pick Up	0.8 to 1.1 xUs	0.8 to 1.1 xUs	0.8 to 1.1 xUs
		Drop Out	0.1 to 0.6 xUs	0.1 to 0.6 xUs	0.1 to 0.6 xUs
AC Power Supply (60 Hz)	Magnetic Circuit Closed	(VA)	–	–	10.8
	Power Factor	(cos Φ)	–	–	0.47
	Thermal Power Dissipation	(W)	–	–	5.1
	Closing of the Magnetic Circuit	(VA)	–	–	217
	Power Factor	(cos Φ)	–	–	0.88
DC Power Supply	Magnetic Circuit Closed	(W)	–	–	2 - 5
	Closing of the Magnetic Circuit	(W)	–	–	180 - 220
Average Operating Time	Closing of the N.O. Contacts	(ms)	–	–	32 - 48
	Opening of the N.O. Contacts	(ms)	–	–	30 - 55

Note: See product datasheet on Automationdirect.com website for additional specifications

CWBN Series Contactors Specifications

WEG CWBN Series Contactors Specifications – Main Contacts

			CWBN00	CWBN0	CWBN1	CWBN2	CWBN3
Rated Operational Current I_e	AC-3 (Ue ≤440V)	(A)	9	18	25	50	95
	AC-4 (Ue ≤440V)	(A)	4.4	8.5	10.4	21	52
	AC-1 (θ ≤55 °C, Ue ≤690V)	(A)	25	32	40	90	140
Rated Operational Voltage U_e	IEC/EN 60947-4-1	V	690			1000	
	UL, CSA	V	600				
Conventional Thermal Current I_{th} (θ ≤55 °C)		(A)	25	32	40	90	140
Making Capacity - IEC/EN 60947		(A)	250	300	450	1000	1100
Breaking Capacity IEC/EN 60947	(Ue ≤400V)	(A)	250	300	450	1000	1100
	(Ue =500V)	(A)	220	250	350	880	970
	(Ue =690V)	(A)	150	180	250	640	700
Acceptable Short-Time Current (no current flowing during recovery time of 15 min and θ ≤40 °C)	1s	(A)	210	240	380	820	1200
	10s	(A)	105	145	240	400	720
	1 min	(A)	60	80	120	230	410
	10 min	(A)	30	40	50	110	140
Short Circuit Protection of the Main Contacts Fuse (gL/gG) or UL RK5	@600V - UL/CSA	kA	5				
	Coordination Type 1	(A)	25	50	63	100	–
	Coordination Type 2	(A)	20	25	35	80	–
Average Impedance Per Pole		(mΩ)	2.5	2.5	2	1.6	0.7
Average Power Dissipation Per Pole	AC-1	(W)	1.5	2.5	3.2	13	15
	AC-3	(W)	0.2	0.8	1.2	4	7
Minimum Switching Capacity		(V/mA)	50/100				
Utilization Category AC-3							
Rated Operational Current I_e (θ ≤55 °C)	(Ue ≤440V)	(A)	9	18	25	50	95
	(Ue =500V)	(A)	9	15.8	23	45	84
	(Ue =690V)	(A)	7	12.8	16.5	35	61
Orientative Rated Operational Power Three-phase Induction Motors (50/60 Hz) IV poles - 1800 rpm	220/240V	(kW)	2.2	4.5	6.5	15	22
		(cv)	3	6	8.7	20	30
	380/400V	(kW)	4	7.5	12.5	22	45
		(cv)	5.5	10	16.8	29	60
	415/440V	(kW)	4.5	9.2	12.5	30	55
		(cv)	6	12.5	16.8	40	75
	500V	(kW)	5.5	10	15	30	55
		(cv)	7.5	13.4	20	40	75
	660/690V	(kW)	5.5	11	15	33	55
		(cv)	7.5	15	20	44	75
Maximum Percentage	600 ops/hr	(%)	100	100	100	100	100
Utilization Category AC-4							
Rated Operational Current I_e	(Ue ≤440V)	(A)	4.4	8.5	10.4	21	52
	(Ue =500V)	(A)	3.9	8	12	17.8	46
	(Ue =690V)	(A)	2.8	5.4	12	17	33
Orientative Rated Operational Power Three-phase Induction Motors (50/60 Hz) IV poles - 1,800 rpm (200,000 operations)	220/240V	(kW)	1.5	2.2	3	5.5	15
		(cv)	2	3	4	7.4	20
	380/400V	(kW)	2.2	4	5.5	11	22
		(cv)	3	5.4	7.4	14.7	30
	415/440V	(kW)	2.2	3.7	5.5	11	30
		(cv)	3	5	7.4	14.7	40
	500V	(kW)	2.2	5	7.5	15	30
		(cv)	3	6.7	10	20.1	40
	660/690V	(kW)	2.2	5	10	15	30
		(cv)	3	6.7	13.4	20.1	40

Notes: In order to achieve acceptable reliability for application and/or continuity test on the power contacts, a minimum voltage and current of 50V and 100 mA, respectively, must be used. For lower values, the auxiliary contacts must be used.

1 cv to hp = 0.98592hp

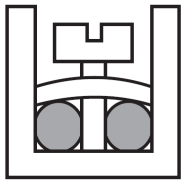
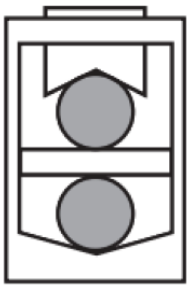
CWBN Series Contactors Specifications

WEG CWBN Series Contactors Specifications – Main Contacts (continued)							
			CWBN00	CWBN0	CWBN1	CWBN2	CWBN3
Conventional Thermal Current I_{th} ($\theta \leq 55$ °C)	$\theta \leq 55$ °C	(A)	25	32	40	90	140
	$\theta \leq 65$ °C	(A)	20	26	32	72	112
	$\theta \leq 75$ °C	(A)	18	22	28	63	98
Maximum Orientative Operational Current According to the Ambient Temperature	$\theta \leq 60$ °C (Ue ≤690V)	(A)	25	32	40	90	140
Maximum Operational Power $\theta \leq 55$ °C (three-phase resistors)	220/230V	(kW)	10.4	13.3	16.6	37.4	58.2
	380/400V	(kW)	17.3	22.2	27.7	62.4	97.0
	415/440V	(kW)	19.1	24.4	30.5	68.6	106.7
	500V	(kW)	21.7	27.7	34.6	77.9	121.2
	660/690V	(kW)	29.9	38.2	47.8	107.6	167.3
Current Values for Connections	2 Poles in Parallel		I_e x 1.7				
	3 Poles in Parallel		I_e x 2.4				
	4 Poles in Parallell		I_e x 3.2		–		
Percentage of Maximum Operational Current	600 ops/h	(%)	100	100	100	100	100

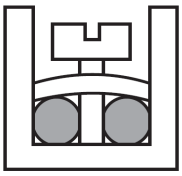
Auxiliary Contacts Technical Specifications					
			CWBN00 (built In)	BFB (Front Mounted)	BLB (Side Mounted)
Compliance With the Standards			IEC 60947-5-1		
Rated Insulation Voltage U_i (pollution degree 3)	IEC/EN 60947-4-1, VDE 0660	(V)	690		
	UL, CSA	(V)	600		
Rated operational voltage U_e	IEC/EN 60947-4-1, VDE 0660	(V)	690		
	UL, CSA	(V)	600		
Conventional thermal current I_{th} ($\theta \leq 55$ °C)		(A)	10		
Rated Operational Current I_e					
AC-15 (IEC/EN 60947-5-1)	220/230V	(A)	10		
	380/440V	(A)	4		
	500V	(A)	2.5		
	660/690V	(A)	1.5		
DC-13 (IEC/EN 60947-5-1)	24V	(A)	4		
	48V	(A)	2		
	110V	(A)	0.7		
	220V	(A)	0.3		
	440V	(A)	0.15		
Making Capacity	$U_e \leq 690$V 50/60 Hz - AC-15	(A)	0.1		
Breaking Capacity	$U_e \leq 400$V 50/60 Hz - AC-15	(A)	1 x I_e		
Short Circuit Protection With Fuse (gL/gG) or UL RK5, CC		(A)	10		
Control Circuit Reliability		(V/ma)	17 / 5		
Electrical Life		(Millions of Operations)	1		
Mechanical Life		(Millions of Operations)	10		
Non-Overlapping Time Between N.O. and N.C. contacts		(ms)	1.5		
Impedance of the Contacts		(mΩ)	2.5		

CWBN Series Contactors Specifications

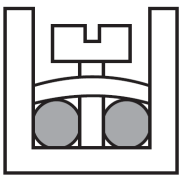
WEG CWBN Series Contactors Specifications – Terminal Capacity and Tightening Torque

			Power Circuit			
			CWBN00/0	CWBN1	CWBN2	CWBN3
Mounting System Screw Type			Phillips Number 2	Phillips Number 2	Allen (4mm)	Allen (4mm)
Flexible Conductor Without Terminal	mm^2		1 x 1-6 2 x 1-6	1 x 2.5-10 2 x 2.5-10	–	–
Flexible Conductor With Terminal	mm^2		1 x 1-6 2 x 1-4	1 x 1.5-10 2 x 1.5-6	–	–
Solid Wire	mm^2		1 x 1-6 2 x 1-6	1 x 2.5-10 2 x 2.5-10	–	–
Tightening Torque	N•m		1.7	2.5	–	–
Flexible Conductor Without Terminal	mm^2		–	–	1 x 2.5-35 2 x 2.5-35	1 x 2.5-70 2 x 2.5-70
Flexible Conductor With Terminal	mm^2		–	–	1 x 2.5-35 2 x 2.5-35	1 x 2.5-70 2 x 2.5-70
Solid Wire	mm^2		–	–	1 x 2.5-35 2 x 2.5-35	1 x 2.5-70 2 x 2.5-70
Tightening Torque	N•m		–	–	5.0	6.0

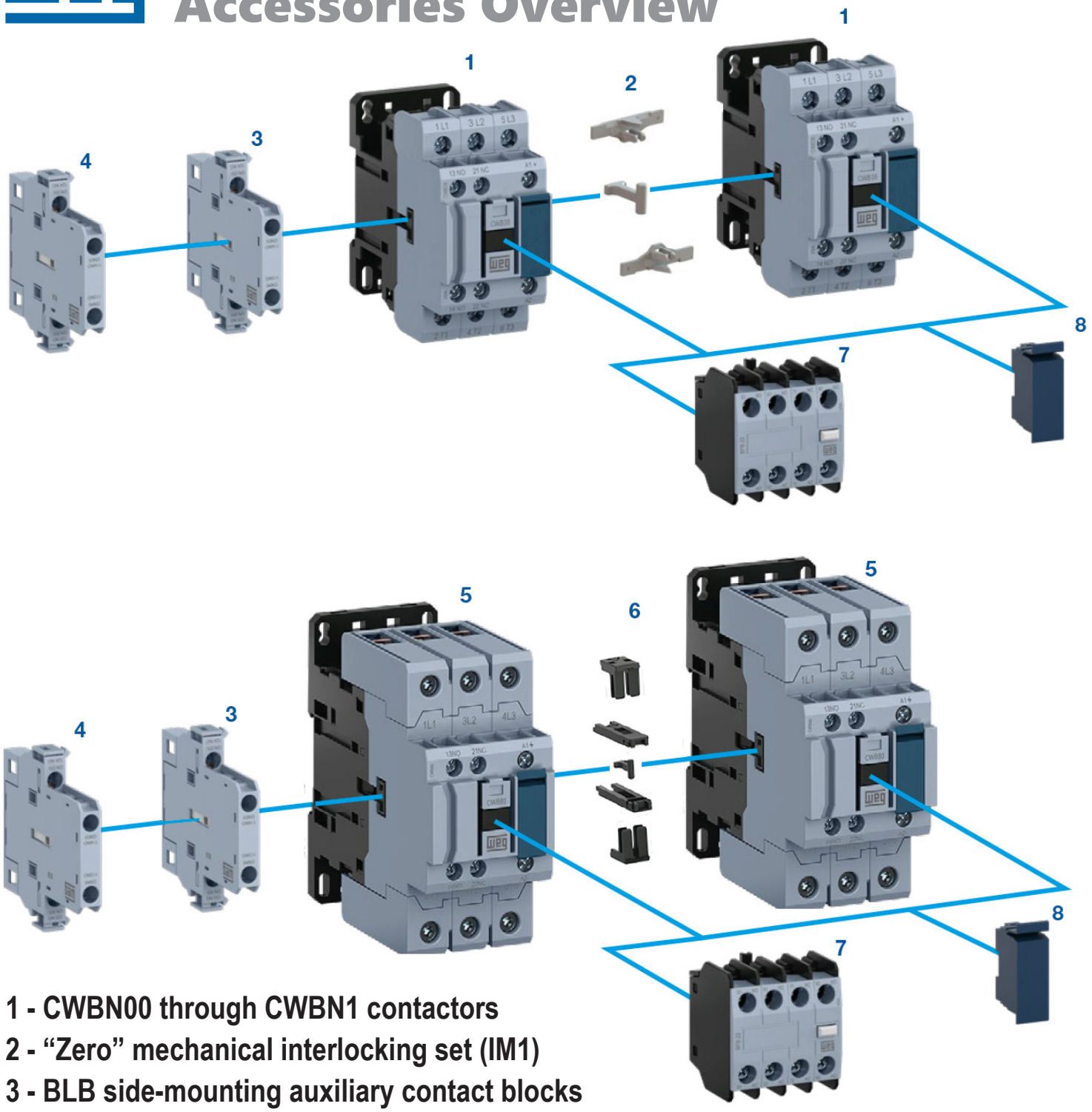
Control and Auxiliary Circuit – Terminal Capacity and Tightening Torque

			CWBN00 through CWBN3
Mounting System Screw Type			Phillips Number 2
Flexible Conductor Without Terminal/Ferrules	mm^2		1 x 1-4 2 x 1-4
Flexible Conductor With Terminal/Ferrules	mm^2		1 x 1-4 2 x 1-2.5
Solid Wire	mm^2		1 x 1-4 2 x 1-4
Tightening Torque	N•m		1.0

Auxiliary Contact Blocks – Terminal Capacity and Tightening Torque

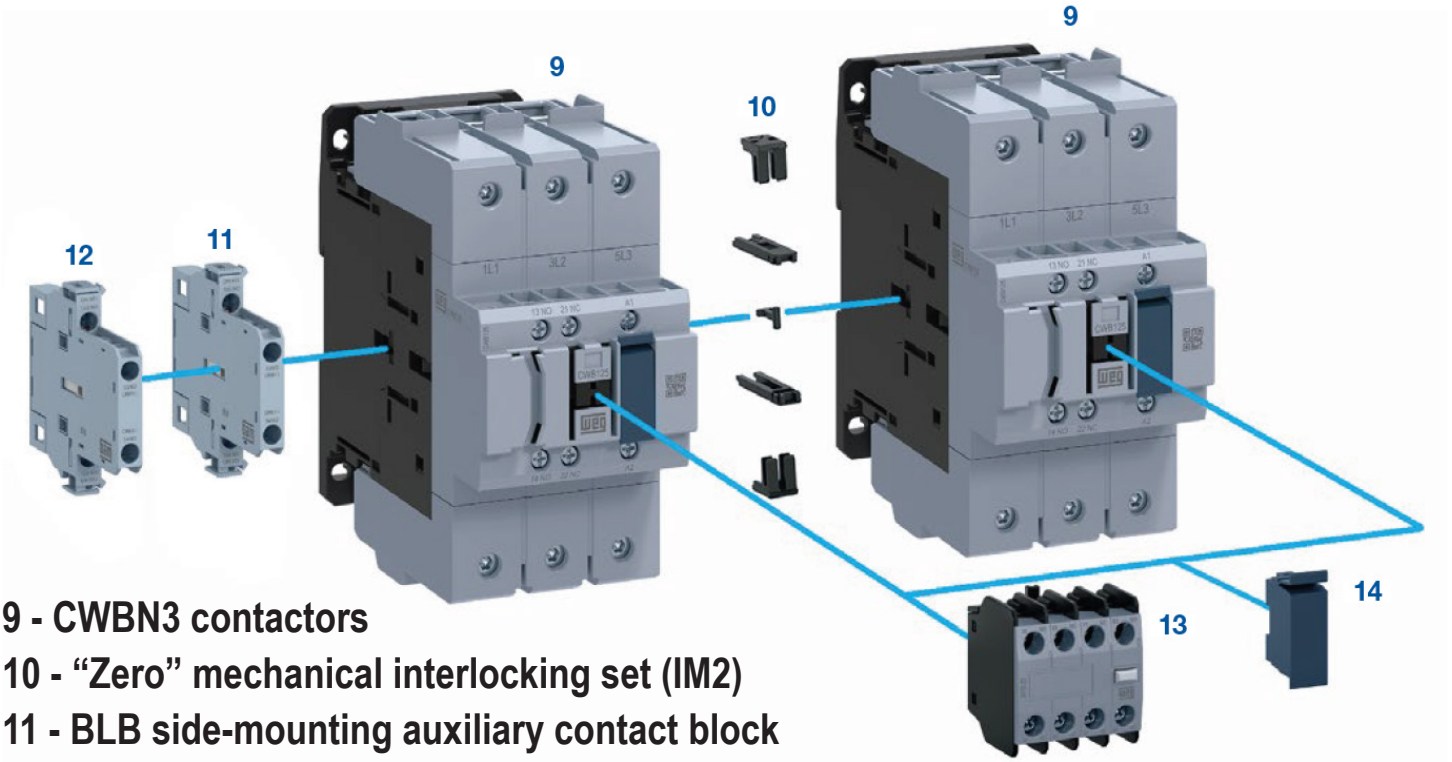
			BFB (Front) BLB (Side)
Mounting System Screw Type			Phillips Number 2
Flexible Conductor Without Terminal/Ferrules	AWG		1 x 1-2.5 2 x 1-2.5
Flexible Conductor With Terminal/Ferrules	AWG		1 x 1-2.5 2 x 1-2.5
Solid Wire	AWG		1 x 1-2.5 2 x 1-2.5
Tightening Torque	N•m [lb•ft]		1.0

CWBN Series NEMA Contactors Accessories Overview



1 - CWBN00 through CWBN1 contactors
2 - “Zero” mechanical interlocking set (IM1)
3 - BLB side-mounting auxiliary contact blocks
4 - BLRB side-mounting auxiliary contact blocks
(not sold by AutomationDirect.com)
5 - CWBN2
6 - “Zero” mechanical interlocking set (IM2)
7 - BFB front-mounted auxiliary block
8 - Surge suppressor blocks

CWBN Series NEMA Contactors Accessories Overview (continued)



9 - CWBN3 contactors
10 - "Zero" mechanical interlocking set (IM2)
11 - BLB side-mounting auxiliary contact block
12 - BLRB side-mounting auxiliary contact block (not sold by AutomationDirect.com)
13 - BFB front auxiliary contact block
14 - Surge suppressor block

Front-Mounted Auxiliary Contact Blocks Selection Guide

	Part Number	Price	For Use With	Maximum Number Of Additional Contacts/Contactor	Auxiliary Contacts N.O.	Auxiliary Contacts N.C.	Weight	Drawing
	BFB-11 [1]	$9.25	CWB9 through CWB125 and CWBN00 through CWBN3	4 (max 1 block)	1	1	63g [2.2 oz]	PDF
	BFB-20	$9.50			2	0		PDF
	BFB-22 [1]	$15.00			2	2		PDF
	BFB-40	$15.00			4	0		PDF

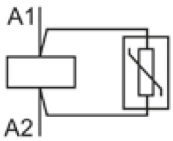
1) Complies with requirements of IEC/EN 60947-4-1 about mirror contacts and the requirements of IEC/EN 60947-5-1 about mechanically linked contacts.

Side-Mounted Auxiliary Contact Blocks Selection Guide

	Part Number	Price	For Use With	Maximum Number Of Additional Contacts/Contactor	Auxiliary Contacts N.O.	Auxiliary Contacts N.C.	Weight	Drawing
	BLB-11 [1]	$10.50	CWB9 through CWB125 and CWBN00 through CWBN3	4	1	1	34g [1.2 oz]	PDF

CWBN Series NEMA Contactors Accessories and Spare Parts

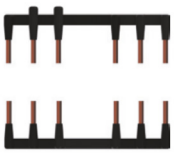
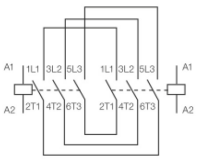
Plug-In Surge Suppressors Selection Guide

	Part Number	Price	For Use With	Voltage	Diagram	Weight	Drawing
	VRB-E34	$15.50	CWB(S)9 through CWB(S)110 and CWBN00 through CWBN3	50 to 127 VAC 50/60 Hz 60 to 180 VDC		8g [0.3 oz]	PDF
	VRB-E50	$15.50		130 to 250 VAC 50/60 Hz 180 to 300 VDC			PDF
	VRB-D73	$15.50		400 to 510 VAC 50/60 Hz			PDF

Mechanical Interlocks Selection Guide

	Part Number	Price	For Use With	Description	Weight	Drawing
	IM1	$6.00	CWB(S)9 through CWB(S)38 and CWBN00 through CWBN1	Mounting set for interlocking two contactors with the same frame type. Snaps in without tools.	4g [0.14 oz]	PDF
	IM2	$7.75	CWB(S)40 through CWB(S)125 and CWBN2 through CWBN3			PDF

Reversing Bar Selection Guide

	Part Number	Price	For Use With	Description	Diagram	Weight	Drawing
	EC-R1	$28.00	CWB9 through CWB38 and CWBN00 CWBN0 CWBN1	Easy-connection setting of power terminals for reversing starters		40g [1.4 oz]	PDF
	EC-R2	$35.00	CWB40 through CWB80 and CWBN2			110g [3.9 oz]	PDF
	EC-R3	$46.50	CWB95 through CWB125 and CWBN3			250g [8.8 oz]	PDF

Note: Allows assembly of WEG RW27 Series overloads and MPW