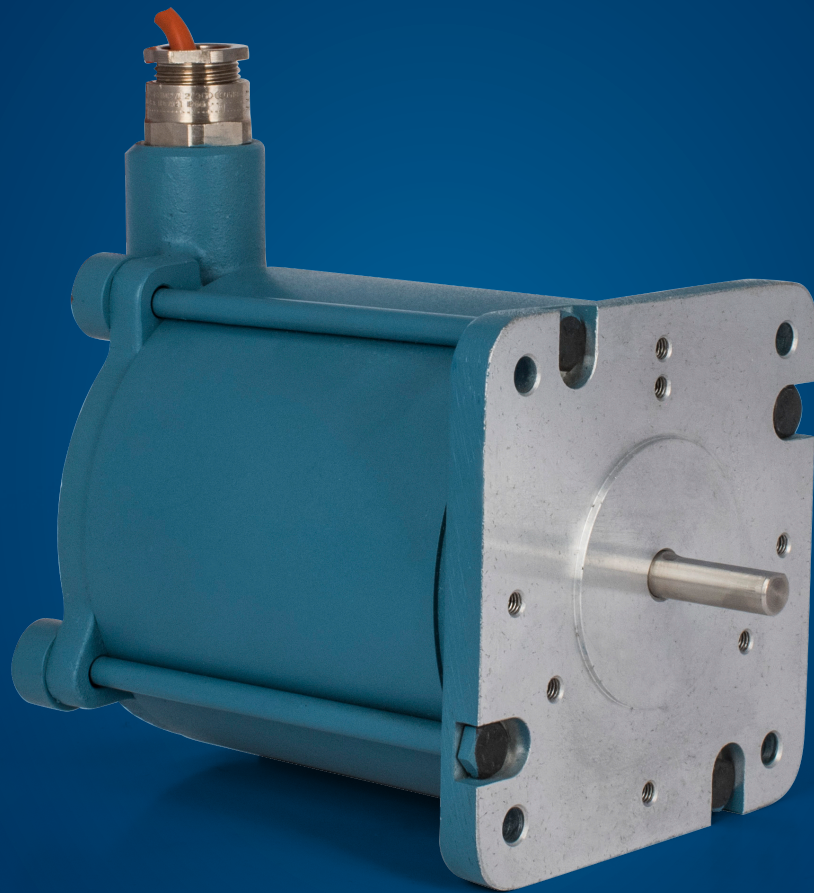


# X Series Hazardous Duty Synchronous Motor

## Selection Guide



X Series Synchronous Motor

**KOLLMORGEN**

A REGAL REXNORD BRAND

# Kollmorgen: Your Partner, In Motion.

Every solution comes from a real understanding of the challenges facing machine designers and users.

Innovators consistently rate Kollmorgen as one of their best motion systems manufacturing partners. Whether you are looking for classic servo motors, direct-drive servo motors, stepper motors, drives & amplifiers, gearing, actuation, or multi-axis motion controllers, Kollmorgen is one of the few companies in the world that actually designs and manufactures all of these products.

Our customers are leaders in many industries such as Aerospace & Defense, Printing, Packaging & Converting, Food & Beverage Processing, Medical Imaging, In Vitro Diagnostics & Laboratory Automation, Pharmaceutical Manufacturing, Material Forming and Cutting, Oil & Gas, and Robotics. Kollmorgen is also a leader in Warehouse Automation, including complete AGV systems, software, awareness and autonomy.

Our Automation Solutions can be found on Mars and in space, ships and submarines, O&G drilling and metrology, surgical robots and laser eye surgery, even inside artificial hearts. These are just a few applications that demand high-performance and high-quality while satisfying their specific needs.

Because motion matters, it's our focus: Motion can distinctly differentiate a specific machine and deliver a marketplace advantage by increasing its performance and dramatically improving Overall Equipment Effectiveness (OEE).

High-performance motion can make your customer's machine more reliable and energy-efficient, enhance accuracy and improve operator safety. Motion also represents endless possibilities for innovation.

We've always understood this potential, and thus have kept motion at our core and in our Vision, Mission & Values, relentlessly developing products that offer precise control of torque, velocity and position accuracy in machines that rely on complex motion.

**Removing the Barriers of Design, Sourcing, and Time**

At Kollmorgen, we know that OEM engineers can achieve a lot more when obstacles aren't in the way. So, we clear obstacles in three important ways:

**Integrating Standard and Custom Products**

The optimal solution is often not clear-cut. Our application expertise allows us to modify standard products or develop totally custom solutions across our whole product portfolio so that designs can take flight.

**Providing Motion Solutions, Not Just Components**

As companies reduce their supplier base and focus their engineering manpower on the product design, they need a total system supplier with a wide range of integrated solutions. Kollmorgen offers complete solutions as well as motion subsystems that combine programming software, engineering services and best-in-class motion components.

**Global Footprint**

With direct sales, engineering support, manufacturing facilities, and distributors spanning the Americas, Europe, the Middle East, and Asia, we're close to OEMs worldwide. Our proximity helps speed delivery and lend support where and when they're needed.

**Financial and Operational Stability**

Kollmorgen is part of Regal Rexnord. A key driver in the growth of all Regal Rexnord segments is the Regal Rexnord Business System, which relies on the principle of "kaizen" – or continuous improvement. Using world-class tools, cross-disciplinary teams of exceptional people evaluate processes and develop plans that result in superior performance.

**Kollmorgen: Your partner. In Motion.**

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**Table of Contents**

- ▶ **X Series Hazardous Duty AC Synchronous Motors** **4**
- Model Nomenclature 5
- Connection Information 5
- X 25x, 70x Outline Drawings 6
- X 110x, 150x Outline Drawings 7
- X Series 25x, 70x, 110x, 150x Performance Data 8
- ▶ **Phase Shifting Components** **9**

# X Series Hazardous Duty AC Synchronous Motors



UL, File E32246  
Class I, Divisions 1 & 2, Group D

These hazardous-duty synchronous motors provide torque up to 1,500 oz-in (1059 N-cm) and are available in NEMA 42 and 66 frame sizes (110 mm and 170 mm). They run at 72 rpm with a 120 Vac or 240 Vac, 60 Hz power supply, or 60 rpm with a 240 Vac, 50 Hz power supply.

## Features

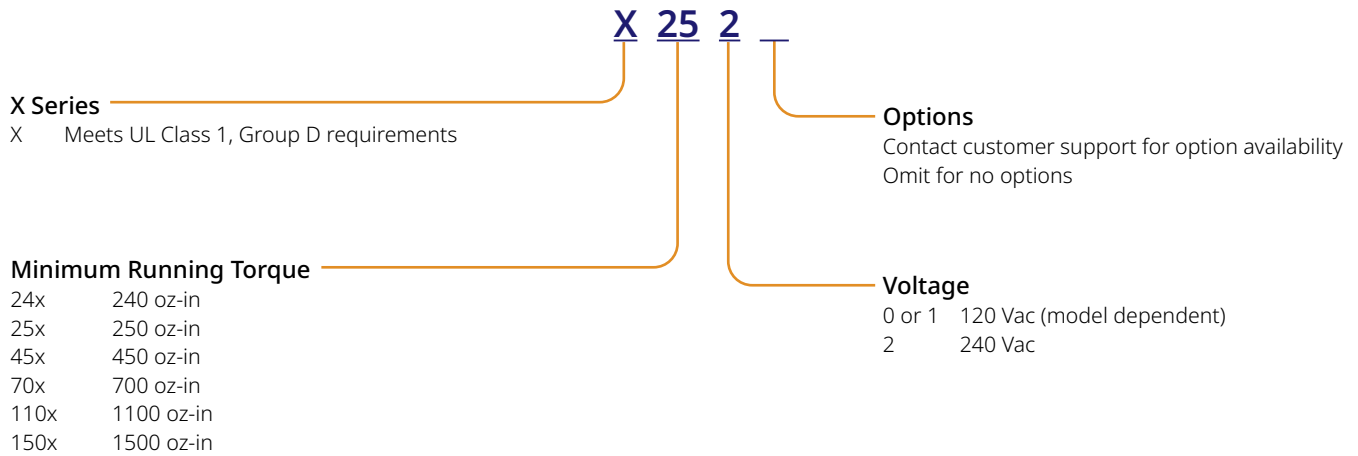
- » NEMA Sizes 42 and 66
- » Motor torque up to 1,500 oz-in (1059 N-cm)
- » 72 rpm at 60 Hz, 60 rpm at 50 Hz
- » 120 and 240 volt AC versions
- » UL Listed versions meet Class I, Division 1&2, Group D requirements
- » UL Listed versions have a conduit connection
- » Leaded connections

## General Specifications

Phases	1Ø
Operating Temperature	-20°C to +40°C
Insulation Class	Class B, 130°C
Insulation Voltage Rating	240 Vac
Insulation Resistance	100 Megohms

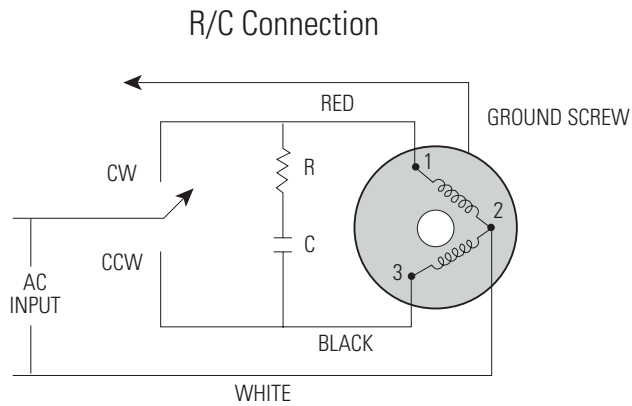


## X Series Hazardous Duty AC Synchronous Motor Nomenclature



## X Series Connection Information

### Connection Diagram

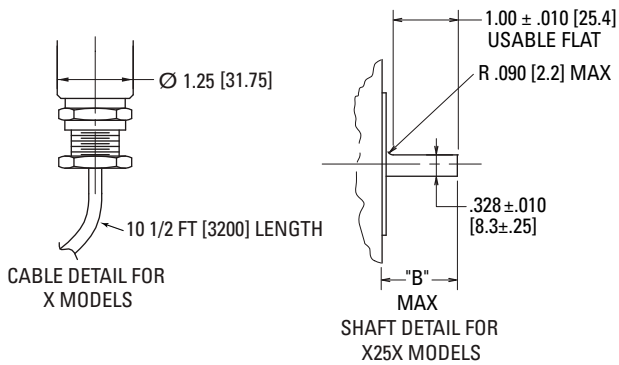
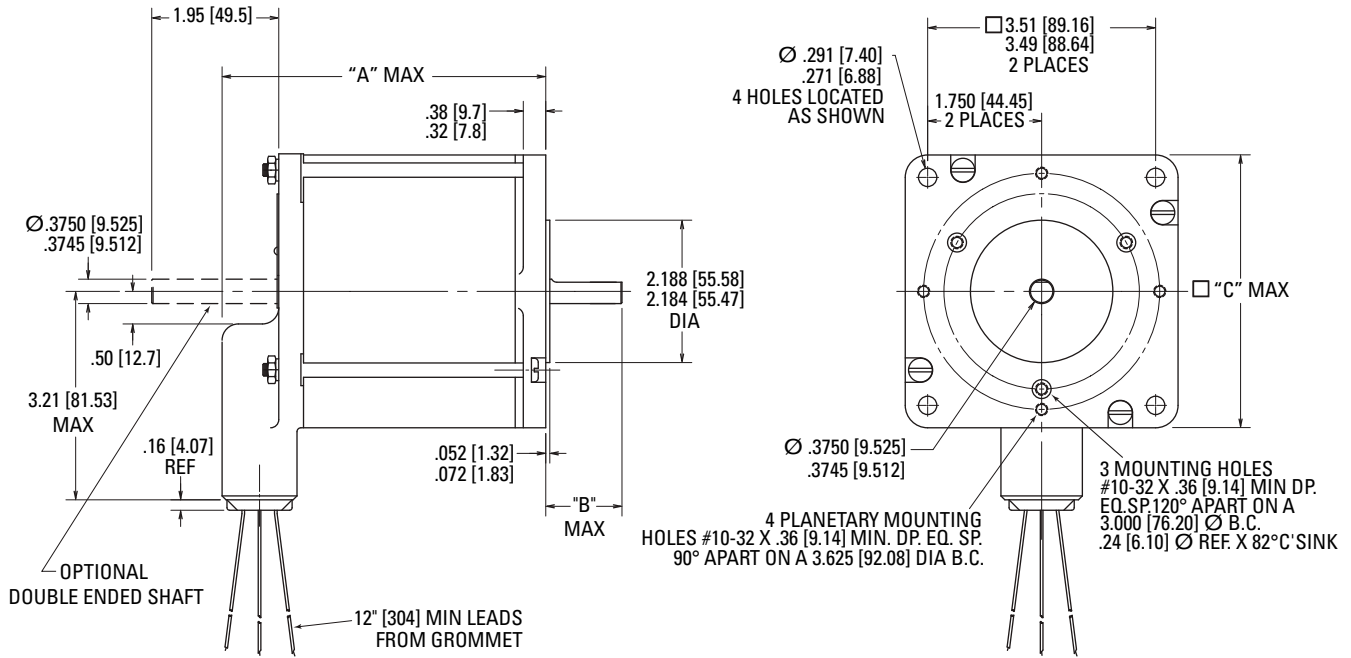


NOTE:  
1 - Direction or rotation is determined when viewed from end opposite mounting surface.

### Single-Phase Operation

# X Series Hazardous Duty AC Synchronous Motors

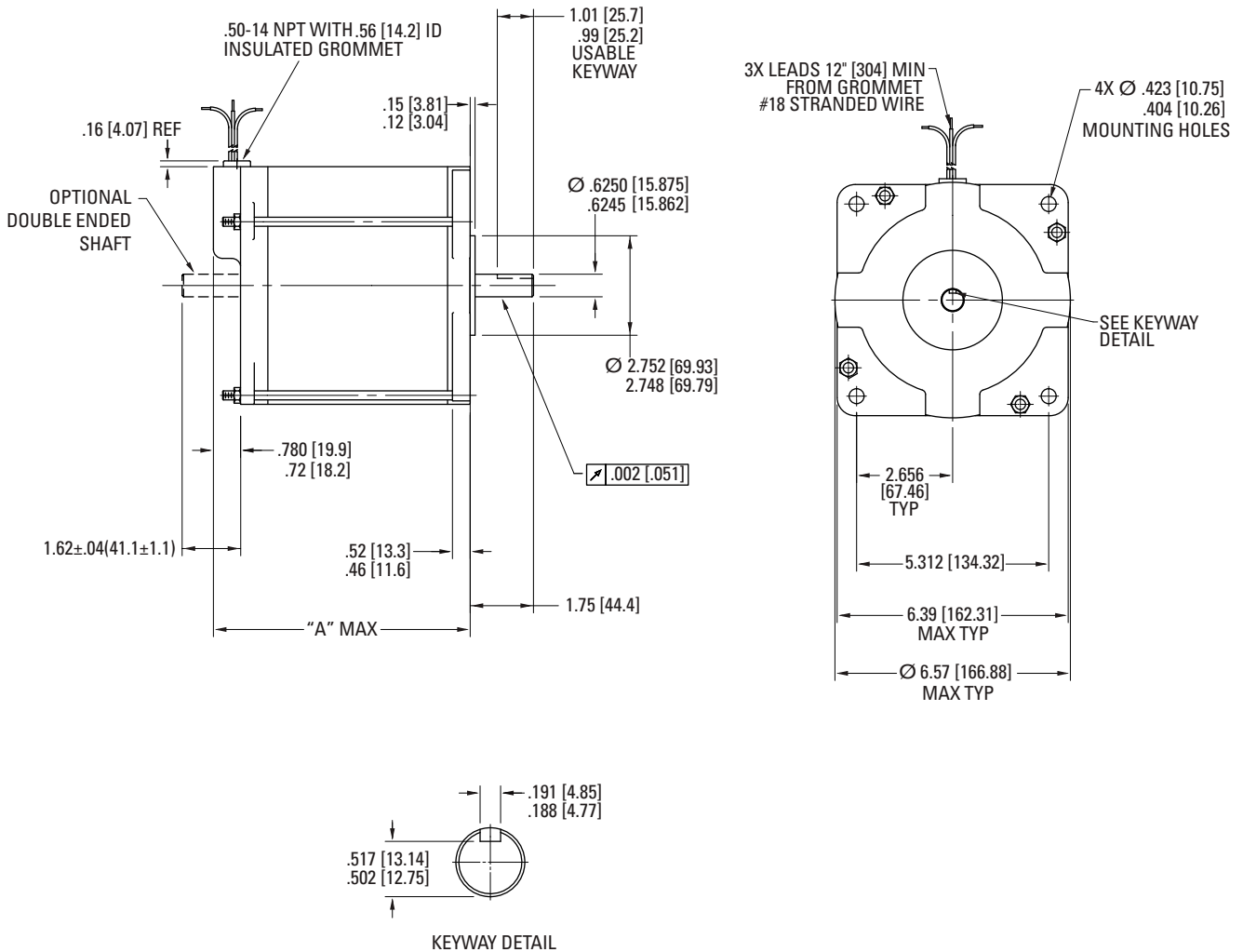
## X 25x, 70x Outline Drawings



Model	"A" Max	"B" Max	"C" Max
X250 / X252	5.06 (129)	1.17 (29.7)	4.20 (107)
X700	7.45 (189)	1.38 (35.1)	4.20 (107)

Dimensions in inches [mm]

## X 110x, 150x Outline Drawings



Model	"A" Max
X1100 / X1102	7.1 (180)
X1500 / X1502	8.41 (214)

Dimensions in inches [mm]

# X Series Hazardous Duty AC Synchronous Motors

## X Series 25x, 70x, 110x, 150x Performance Data

Model	Rated Torque oz-in (Nm)	Load Inertia* oz-in-s <sup>2</sup> (kg-cm <sup>2</sup> )	Line Current A (RMS/Ø)	Weight lb (kg)	Shaft Loading		Wiring Diag.	Phase Shifting Components				
					Radial Force lb (N)	Axial Force lb (N)		Resistor			Capacitor (330 Vac)	
								Resistor part no.	Ohms	Watts	Capacitor part no.	µF

### 60 Hz, 120 Vac, 1Ø, 72 RPM

X250	250 (1.77)	0.12 (8.8)	0.60	9.0 (4.1)	25 (111)	50 (222)	R/C	201052-013	150	50	201053-010	6.5
X700	700 (4.94)	0.43 (30)	1.1	n/a	n/a	n/a	R/C	201052-027	150	100	201053-032	12.5
X1100	1100 (7.77)	0.37 (26)	3.0	36 (16)	50 (222)	100 (445)	R/C	201052-025	100	160	201053-026	17.5
X1500	1800 (10.6)	0.50 (35)	3.0	42 (19)	50 (222)	100 (445)	R/C	201052-020	55	375	201053-014	30

### 60 Hz, 240 Vac, 1Ø, 72 RPM

X252	250 (1.77)	0.12 (8.8)	0.4	9.0 (4.1)	25 (111)	50 (222)	R/C	201052-015	500	50	201053-012	1.75
X702	700 (4.94)	0.43 (30)	0.6	n/a	n/a	n/a	R/C	201052-028	500	100	20153-030	3
X1102	1100 (7.77)	0.37 (26)	1.5	36 (16)	50 (222)	100 (445)	R/C	201052-026	400	160	201053-028	4
X1502	1800 (10.6)	0.50 (35)	1.5	42 (19)	50 (222)	100 (445)	R/C	201052-018	250	200	201053-016	8

### 50 Hz, 240 Vac, 1Ø, 60 RPM

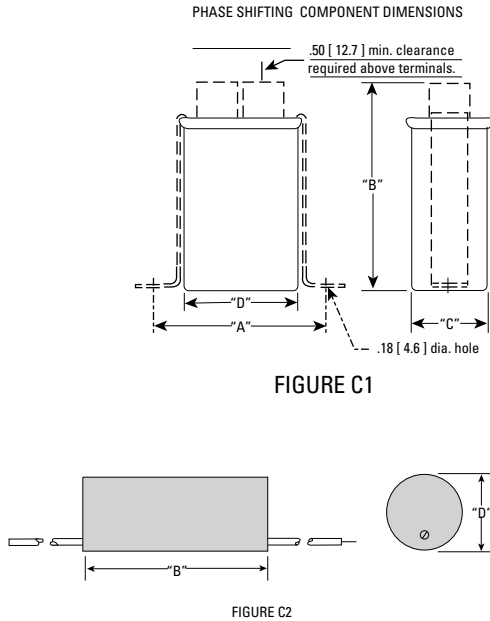
X252	250 (1.77)	0.12 (8.8)	0.4	9.0 (4.1)	25 (111)	50 (222)	R/C	201052-015	500	50	201053-012	1.75
X702	700 (4.94)	0.43 (30)	0.6	n/a	n/a	n/a	R/C	201052-028	500	100	201053-028	4
X1102	1100 (7.77)	0.37 (26)	1.5	36 (16)	50 (222)	100 (445)	R/C	201052-026	400	160	201053-029	6
X1502	1800 (10.6)	0.50 (35)	1.5	42 (19)	50 (222)	100 (445)	R/C	201052-018	250	200	201053-019	9

\* This is the maximum rigidly attached load inertia the motor will reliably start. If the load is attached to the motor with a 5° flex coupling, the motor will start loads up to seven times listed.



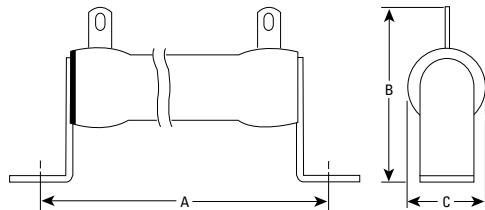
# Phase Shifting Components

## Capacitor Kits



Kit Number	Figure	µfd	VAC	A		B		C		D	
				in	mm	in	mm	in	mm	in	mm
201053-010	C1	6.5	330	2.66	67.6	4.14	105	1.31	33	2.16	55
201053-012	C1	1.75	660	2.66	67.6	3.77	96	1.31	33	2.16	55
201053-014	C1	30	330	3.41	86.6	7.56	192	1.91	49	2.91	74
201053-016	C1	8	660	3.41	86.6	5.81	148	1.91	49	2.91	74
201053-019	C1	9	660	4.16	105.7	5.81	148	1.97	50	3.66	93
201053-026	C1	17.5	330	3.41	86.6	4.84	123	1.91	49	2.91	74
201053-028	C1	4	660	2.66	67.6	3.7	94	1.31	33	2.16	55
201053-029	C1	6	660	2.66	67.6	4.83	123	1.31	33	2.16	55
201053-030	C1	3	660	2.66	67.6	4.08	104	1.31	33	2.16	55
201053-032	C1	12.5	330	2.66	67.6	6.08	154	1.31	33	2.16	55
201053-037	C2	7.5	250	-	-	2.0	51	-	-	1.10	28
201053-038	C2	2	250	-	-	2.0	51	-	-	0.66	17
201053-041	C2	2.5	250	-	-	2.0	51	-	-	0.67	17
201053-042	C2	14	250	-	-	2.5	64	-	-	1.15	29
201053-044	C2	3	250	-	-	2.0	51	-	-	0.68	17
201053-061	C2	4	250	-	-	2.0	51	-	-	0.81	21
201053-063	C1	0.75	370	2.66	67.6	2.79	71	1.31	33	2.16	55
201053-068	C2	1.5	250	-	-	2.0	51	-	-	0.66	17
201053-069	C2	6	250	-	-	2.0	51	-	-	1.10	28
201053-070	C1	1	370	2.66	67.6	2.79	71	1.31	33	2.16	55
201053-071	C1	1.75	370	2.66	67.6	2.79	71	1.31	33	2.16	55
201053-072	C1	2	370	2.66	67.6	2.79	71	1.31	33	2.16	55
201053-073	C1	3	370	2.66	67.6	2.79	71	1.31	33	2.16	55
201053-074	C2	11	250	-	-	2.0	51	-	-	1.30	33
201053-075	C1	1.5	370	2.66	67.6	2.79	71	1.31	33	2.16	55
201053-076	C2	5	250	-	-	2.0	51	-	-	1.10	28
201053-081	C1	20	330	3.41	86.6	6.09	155	1.91	49	2.91	74
201053-082	C1	7.5	660	3.41	86.6	5.81	148	1.91	49	2.91	74

## Resistor Kits



Kit Number	ohms	watts	A		B		C	
			in	mm	in	mm	in	mm
201052-013	150	50	4.88	124	1.44	37	1	25.4
201052-015	500	50	4.88	124	1.44	37	1	25.4
201052-018	250	200	11.5	292	2.75	70	1.13	28.7
201052-020	55	375	11.5	292	2.69	68.3	1.25	31.8
201052-025	100	160	9.38	238	2.5	64	1.13	28.7
201052-026	400	160	9.38	238	2.5	64	1.13	28.7
201052-027	150	100	5.88	150	2.76	70	1.38	35
201052-028	500	100	5.88	150	2.76	70	1.38	35
201052-033	1,000	12	2.5	64	0.94	24	0.32	8.1
* 201052-034	600	12	2.5	64	0.94	24	0.32	8.1
201052-035	600	25	3	76	1.94	50	0.75	19
* 201052-036	1,100	25	3	76	1.94	50	0.75	19
201052-037	300	50	4.88	124	1.44	37	1	25.4
* 201052-039	900	50	4.88	124	1.44	37	1	25.4
201052-041	250	50	4.88	124	1.44	37	1	25.4
* 201052-043	600	50	4.88	124	1.44	37	1	25.4
201052-045	1,000	100	5.88	150	2.76	70	1.38	35
* 201052-046	400	100	5.88	150	2.76	70	1.38	35
201052-047	600	100	5.88	150	2.76	70	1.38	35
201052-049	400	50	4.88	124	1.44	37	1	25.4
* 201052-050	1,000	25	3	76	1.94	50	0.75	19
201052-101	75	100	5.88	150	2.76	70	1.38	35
201052-102	200	100	5.88	150	2.76	70	1.38	35
201052-103	250	100	5.88	150	2.76	70	1.38	35
201052-104	50	200	11.5	292	2.75	70	1.13	28.7
201052-105	200	200	11.5	292	2.75	70	1.13	28.7
201052-106	150	200	11.5	292	2.75	70	1.13	28.7

\* Kit contains two resistors. Dimensions shown are for one resistor.

## More Expertise for a More Successful Machine

Our global engineering, service and support network provides deep knowledge of all the major industries that rely on advanced motion control and automation technology. We offer world-class engineering expertise, self-service design tools, personalized field service, and easy access to our design, application and manufacturing centers in strategic locations across the globe.

## About Kollmorgen

Kollmorgen, a Regal Rexnord brand, has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, linear actuators, AGV (Automated Guided Vehicle) control solutions, and automation control platforms. We deliver breakthrough solutions that combine exceptional performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

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