



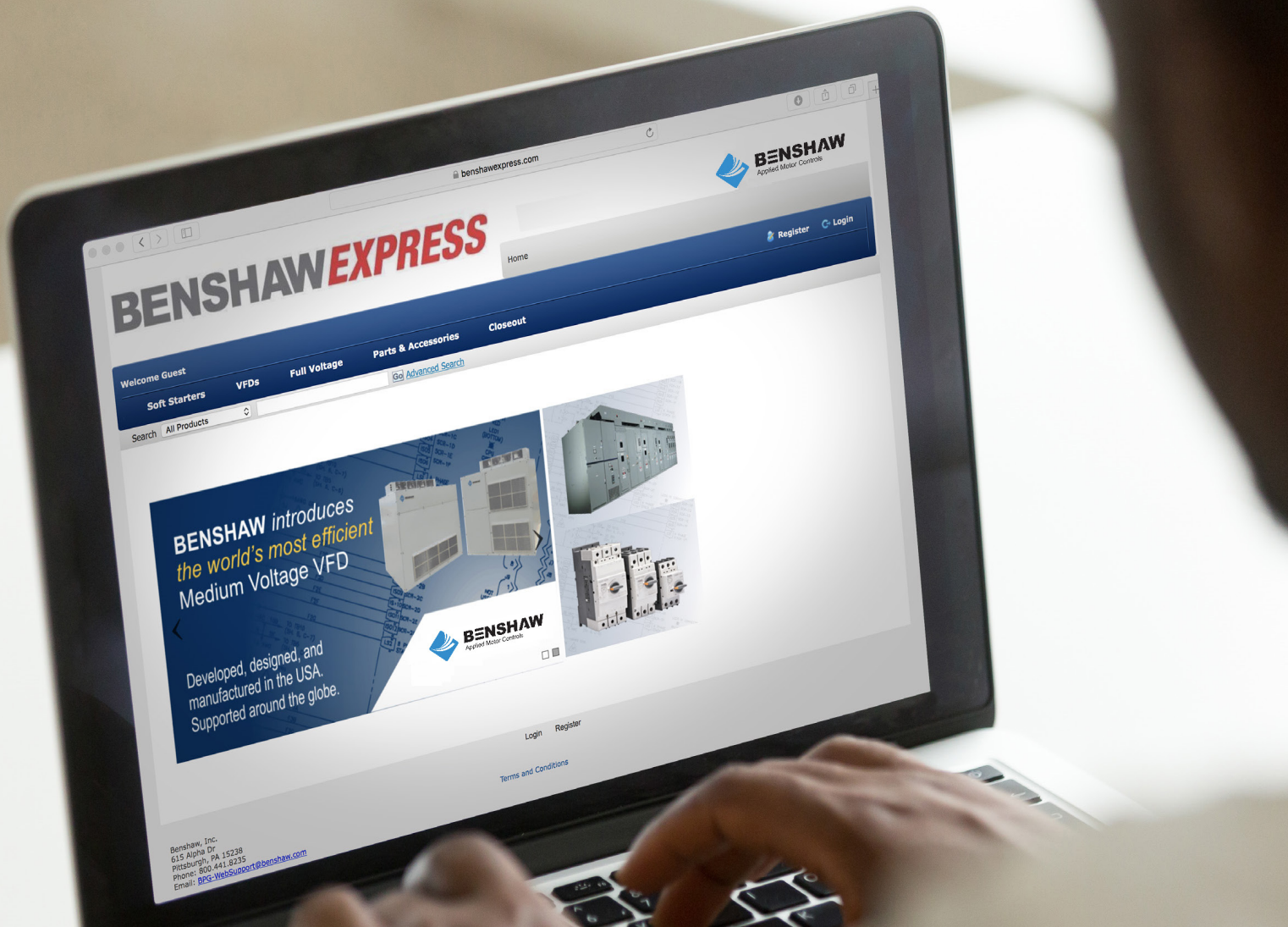
BENSHAW
Applied Motor Controls



2020 Product Catalog

Low Voltage Variable Frequency Drives

Rapid | Rugged | Global



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LOW VOLTAGE VARIABLE FREQUENCY DRIVES

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S SERIES - MICRO DRIVES

LOW VOLTAGE VARIABLE FREQUENCY DRIVES

FEATURES:

- Normal-duty and heavy-duty rated
- V/Hz control
- SVC control (IM and PM Motors)
- Torque Control
- EMC Filter (460V models)
- Communications: Modbus RTU (standard)
- Optional: Ethernet IP, Modbus TCP, Profibus
- Internal Brake IGBT
- Safe Torque Off (STO)
- Fire Mode
- IP20 enclosure. If NEMA type 1 is required see page 3 for conduit box adder.



OPEN CHASSIS — 230 V

Model Number	Normal Duty		Heavy Duty		Dimensions (H x W x D) (in.)	List Price
	HP	Amps	HP	Amps		
RSI-001-SS-2C	1	3.1	0.5	2.5	5.04 x 2.68 x 4.84	\$550.00
RSI-002-SS-2C	2	6	1	5	5.04 x 2.68 x 5.04	\$650.00
RSI-003-SS-2C	3	10	2	8	5.04 x 3.94 x 5.12	\$775.00
RSI-005-SS-2C	5	12	3	11	5.04 x 3.94 x 5.71	\$885.00
RSI-007-SS-2C	7.5	18	5.4	17	5.04 x 5.51 x 5.71	\$1,550.00
RSI-010-SS-2C	10	30	7.5	24	9.13 x 6.3 x 5.51	\$1,775.00
RSI-015-SS-2C	15	40	10	32	9.13 x 6.3 x 5.51	\$1,950.00

OPEN CHASSIS — 460 V

Model Number	Normal Duty		Heavy Duty		Dimensions (H x W x D) (in.)	List Price
	HP	Amps	HP	Amps		
RSI-001-SS-4C	1	2.0	0.5	1.3	7.09 x 2.68 x 5.12	\$775.00
RSI-002-SS-4C	2	3.1	1	2.5	7.09 x 2.68 x 5.12	\$825.00
RSI-003-SS-4C	3	5.1	2	4	7.09 x 3.94 x 5.51	\$875.00
RSI-005-SS-4C	5	6.9	3	5.5	7.09 x 3.94 x 5.51	\$995.00
RSI-007-SS-4C	7.5	10	5.4	9	7.09 x 5.51 x 5.51	\$1,575.00
RSI-010-SS-4C	10	16	7.5	12	9.13 x 6.3 x 5.51	\$1,895.00
RSI-015-SS-4C	15	23	10	16	9.13 x 6.3 x 5.51	\$2,075.00

S SERIES - MICRO DRIVE

LOW VOLTAGE VARIABLE FREQUENCY DRIVES

Input Voltage	3 ϕ , 200V - 240V, 380V - 480V (-15% to +10%)
Input Frequency	50 - 60 Hz. (+/-5%)
Output Voltage	3 ϕ , 200V - 240V, 380V - 480Vac
Output Frequency	0-400 Hz (Sensorless: 0-120 Hz)
Overload	120% Normal Duty / 150% Heavy Duty for 60 sec.
Ambient Temperature	Heavy load: 14-104 ° F (-10-40 ° C) / Normal load: 14-122 ° F (-10-50 ° C) with derating
Motor Control Method	V/Hz., Sensorless Vector (IM and PM motors), Slip Compensation, Torque Control
Keypad	7-Segment LED / Optional LCD
Communications	Modbus_RTU (standard) / Optional: Ethernet IP, Modbus TCP, Profibus DP
Digital Inputs	5 (NPN/PNP)
Analog Inputs	2 (4-20 mA and 0-10 V)
Digital Outputs	2 — (1) Relay (A1, B1, C1), (1) Open Collector Output (Q1)
Analog Outputs	1 (4-20 mA or 0-10 V, switch selectable)

DISPLAY / KEYPAD REMOTE MOUNTING

Part Number	Description	List Price
LCD-100001-00	REMOTE KEYPAD/DISPLAY (LCD)	\$200.00
RI-100033-00	CABLE, RJ45, 2M	\$75.00
RI-100033-01	CABLE, RJ45, 3M	\$100.00
CV-100017-00	COVER, "S" SERIES REMOTE KEYPAD, NEMA 4X	\$455.00

COMMUNICATION CARDS AND I/O CARDS**

Part Number	Description	List Price
PC-100091-00	PROFIBUS-DP OPTION CARD	\$895.00
PC-100092-00	ETHERNET IP & MODBUS TCP OPTION CARD	\$475.00
PC-100090-00	EXTENDED I/O CARD	\$925.00

** One option card installation per VFD

NEMA 1 CONDUIT KITS

Part Number	Description	List Price
EN-100994-00	Conduit Box, 1 HP~2 HP, 230V	\$100.00
EN-100994-01	Conduit Box, 3 HP~5 HP, 230V	\$100.00
EN-100994-02	Conduit Box, 7.5 HP, 230V	\$100.00
EN-100994-03	Conduit Box, 10 HP~15 HP, 230V/460V	\$100.00
EN-100994-04	Conduit Box, 1 HP~2 HP, 460V	\$100.00
EN-100994-05	Conduit Box, 3 HP~5 HP, 460V	\$100.00
EN-100994-06	Conduit Box, 7.5 HP, 460V	\$100.00

MOUNTING FLANGES

Part Number	Description	List Price
BRKT-100770-00	Mounting flange, 1 HP~2 HP, 230V	\$125.00
BRKT-100770-01	Mounting flange, 3 HP~5 HP, 230V	\$125.00
BRKT-100770-02	Mounting flange, 7.5 HP, 230V	\$125.00
BRKT-100770-03	Mounting flange, 10 HP~15 HP, 230V/460V	\$125.00
BRKT-100770-04	Mounting flange, 1 HP~2 HP, 460V	\$125.00
BRKT-100770-05	Mounting flange, 3 HP~5 HP, 460V	\$125.00
BRKT-100770-06	Mounting flange, 7.5 HP, 460V	\$125.00

SG SERIES - MULTI-PURPOSE

SG SERIES

RATINGS

Variable Torque:

7.5–40 HP @ 230 V

7.5–700 HP @ 460V

7.5–400 HP @ 600 V

HEAVY DUTY:

5–30 HP @ 230 V

5–500 HP @ 460 V

5–300 HP @ 600 V

STANDARD DUTY:

7.5–40 HP @ 230 V

7.5–700 HP @ 460V

7.5–400 HP @ 600 V



PRODUCT HIGHLIGHTS:

The SG series is a compact, economical drive designed for the most demanding applications. The flexible power stack allows the user to apply it to heavy-duty loads (150% for 60 secs), standard-duty loads (120% for 60 secs), or variable-torque loads (110% for 60 secs). With over 250 programmable parameters, Benshaw's SG series drives are configurable to meet the needs of almost any industrial application, yet remain simple and easy to use.

KEY ADVANTAGES:

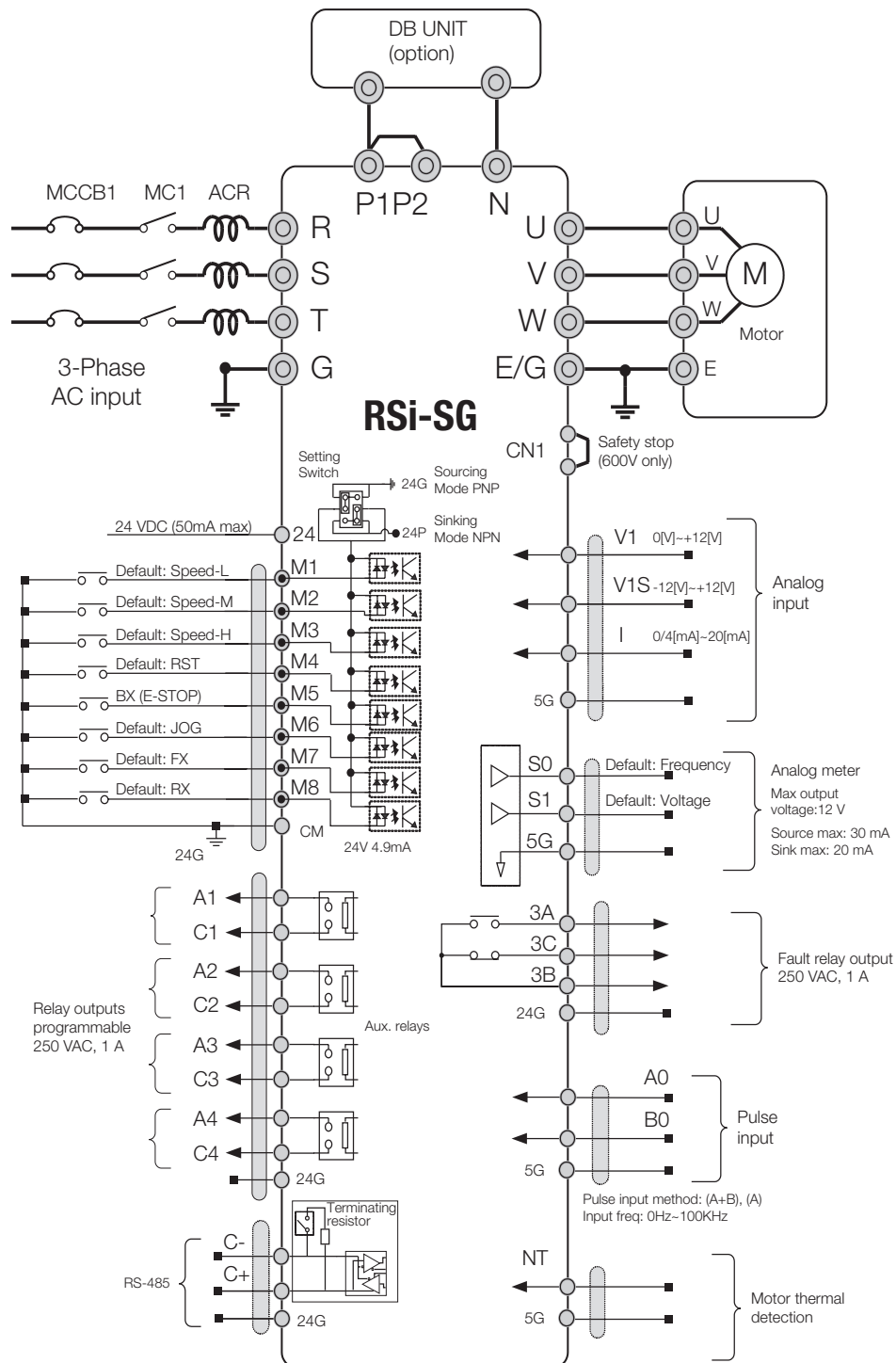
- Standard and heavy-duty ratings
- Sensorless vector control or V/Hz control
- Integral PID Control
- Integral multiple motor control for pumping applications
- Simple, easy-to-use LCD interface
- Uploadable / downloadable keypad
- Flexible, programmable I/O
- Economical, compact design
- Standard Modbus RTU
- Windows-based software

STANDARD FEATURES:

- **User interface:** 2-line LCD display, 16 characters per line
- **Digital metering:** Output currents, ground current, output frequency, DC link voltage, motor RPM, output motor voltage, run time and more
- **Digital inputs:** 8 digital inputs configurable to forward run, reverse run, 3 wire start / stop, reset, jog, preset speeds, motorized pot function, external trip, alternate ramp selections, HOA and more
- **Analog inputs:** 1 at 0/4–20 mA, 1 at 0–10 VDC (or -10 to 10 VDC)
- **Analog outputs:** 2 at 0–10 VDC (standard). Configurable to motor speed, output current, output voltage, DC link voltage, power, PID follower
- **Relay outputs:** 1 Form C fault relay output, 4 Form A relay outputs configurable to running, faulted, ready, at speed, high or low frequency levels, loss of signal, ready and more
- **Optional I/O:** Isolated analog output board (adds 2 additional analog outputs, 0/4–20 mA)
- **Voltage tolerance:** -15%, +10%
- **Control methods:** V/Hz, sensorless vector, slip compensation
- **V/Hz patterns:** Linear, squared, user-programmable V/Hz
- **Protection:** Overcurrent, ground fault, overvoltage, current limit, motor overload, phase loss, overheat, loss of signal and more
- **Stop methods:** Coast, decel, DC injection braking, flux braking and optional dynamic braking

SG SERIES - MULTI-PURPOSE

SG SERIES — BASIC WIRING DIAGRAM



SG SERIES - MULTI-PURPOSE



230 V

Model Number	Variable Torque		Standard Duty		Heavy Duty		Dimensions (in.)			Weight (lbs.)	List Price
	HP	Amps	HP	Amps	HP	Amps	H	W	D		
☞ RSI-007-SG-2B	7.5	24	7.5	22	5	17	11.2	5.9	6.2	11	\$1,500.00
☞ RSI-010-SG-2B	10	32	10	29	7.5	23	11.2	7.9	7.2	14	\$1,695.00
☞ RSI-015-SG-2B	15	46	15	42	10	33	11.2	7.9	7.2	14	\$1,850.00
☞ RSI-020-SG-2B	20	60	20	55	15	44	17.9	9.8	7.9	28	\$2,395.00
☞ RSI-025-SG-2B	25	74	25	67	20	54	17.9	9.8	7.9	29	\$3,150.00
☞ RSI-030-SG-2B	30	88	30	80	25	68	23.6	12	9.2	44	\$3,675.00
☞ RSI-040-SG-2B	40	115	40	105	30	84	23.6	12	9.2	44	\$4,350.00

460 V

Model Number	Variable Torque		Standard Duty		Heavy Duty		Dimensions (in.)			Weight (lbs.)	List Price
	HP	Amps	HP	Amps	HP	Amps	H	W	D		
☞ RSI-007-SG-4B	7.5	12	7.5	11	5	8	11.2	5.9	6.2	11	\$1,500.00
☞ RSI-010-SG-4B	10	16	10	14	7.5	11	11.2	7.9	7.2	14	\$1,850.00
☞ RSI-015-SG-4B	15	24	15	22	10	17	11.2	7.9	7.2	14	\$2,000.00
☞ RSI-020-SG-4B	20	30	20	27	15	22	17.9	9.8	7.9	28	\$2,595.00
☞ RSI-025-SG-4B	25	39	25	35	20	28	17.9	9.8	7.9	29	\$2,950.00
☞ RSI-030-SG-4B	30	45	30	41	25	34	23.6	12	9.2	44	\$3,750.00
☞ RSI-040-SG-4B	40	61	40	55	30	44	23.6	12	9.2	44	\$4,450.00
☞ RSI-050-SG-4B	50	75	50	68	40	55	25.3	11.8	10.5	60	\$5,495.00
☞ RSI-060-SG-4B	60	91	60	83	50	66	25.3	11.8	10.5	60	\$6,850.00
☞ RSI-075-SG-4B	75	110	75	100	60	80	25.3	11.8	11.2	64	\$7,875.00
☞ RSI-100-SG-4B	100	152	100	139	75	111	30.2	14.5	12.1	95	\$9,450.00
☞ RSI-125-SG-4B	125	183	125	167	100	134	30.2	14.5	12.1	95	\$11,550.00
☞ RSI-150-SG-4 • *	150	223	150	204	125	164	30.9	20.1	16.6	225	\$13,550.00
☞ RSI-200-SG-4 • *	200	264	200	242	150	194	30.9	20.1	16.6	225	\$16,275.00
☞ RSI-250-SG-4 • *	250	325	250	302	200	240	33.9	20.1	16.6	255	\$18,950.00
☞ RSI-350-SG-4 • *	350	432	300	396	250	317	42.5	27.2	17.3	450	\$24,155.00
☞ RSI-400-SG-4 • *	400	547	400	501	300	401	42.5	27.2	17.3	450	\$33,550.00
☞ RSI-500-SG-4 •	500	613	450	562	350	450	44.9	30.8	17.4	540	\$42,000.00
☞ RSI-600-SG-4 •	600	731	500	670	400	536	51.3	36.3	19.5	840	\$50,500.00
☞ RSI-700-SG-4 •	700	877	600	804	500	643	51.3	36.3	19.5	840	\$60,650.00

Variable Torque = 110% current for 1 minute / Standard Duty = 120% current for 1 minute / Heavy Duty = 150% current for 1 minute
Units ending in a "B" designate NEMA 1. Units not ending in a "B" are protected chassis units.

• Protected chassis only (power terminal covers do not meet NEMA 1).

* DC Link Reactor (internal)

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Available for same day shipping.

SG SERIES - MULTI-PURPOSE

600 V

Model Number	Variable Torque		Standard Duty		Heavy Duty		Dimensions (in.)			Weight (lbs.)	List Price
	HP	Amps	HP	Amps	HP	Amps	H	W	D		
☒ RSI-007-SG-6B	7.5	9	7.5	8.2	5	6.6	14	7.9	7.2	15	\$1,500.00
☒ RSI-010-SG-6B	10	12	10	11	7.5	9	14	7.9	7.2	16	\$1,850.00
☒ RSI-015-SG-6B	15	17	15	15.5	10	12	14	7.9	7.2	16	\$2,000.00
☒ RSI-020-SG-6B	20	23	20	21	15	17	17.9	9.8	7.9	28	\$2,595.00
☒ RSI-025-SG-6B	25	27	25	24.7	20	19.8	17.9	9.8	7.9	29	\$2,950.00
☒ RSI-030-SG-6B	30	34	30	31	25	25	23.6	12	9.2	44	\$3,750.00
☒ RSI-040-SG-6B	40	43	40	39	30	31.5	23.6	12	9.2	44	\$4,450.00
☒ RSI-050-SG-6B	50	55	50	50	40	43	25.3	11.8	11.5	71	\$5,495.00
☒ RSI-060-SG-6B	60	64	60	58.6	50	55	25.3	11.8	11.5	71	\$6,850.00
☒ RSI-075-SG-6B	75	80	75	73	60	64	25.3	11.8	11.5	71	\$7,875.00
☒ RSI-100-SG-6B	100	104	100	95	75	80	30.2	14.6	13.3	102	\$9,450.00
☒ RSI-125-SG-6B	125	128	125	117	100	104	30.2	14.6	13.3	102	\$11,550.00
☒ RSI-150-SG-6 • *	150	150	150	137	125	128	30.9	20	16.6	225	\$13,550.00
☒ RSI-200-SG-6 • *	200	200	200	184	150	147	33.9	20	16.6	255	\$16,275.00
☒ RSI-250-SG-6 • *	250	242	250	222	150	177	33.9	20	16.6	255	\$18,950.00
☒ RSI-350-SG-6 • *	350	333	300	305	250	244	42.5	27.2	17.7	450	\$24,155.00
☒ RSI-400-SG-6 • *	400	424	400	389	300	311	42.5	27.2	17.7	450	\$34,500.00

Variable Torque = 110% current for 1 minute / Standard Duty = 120% current for 1 minute / Heavy Duty = 150% current for 1 minute

Units ending in a "B" designate NEMA 1. Units not ending in a "B" are protected chassis units.

• Protected chassis only (power terminal covers do not meet NEMA 1).

* DC Link Reactor

☒ Web stocked

SG SERIES - MULTI PURPOSE

SG SERIES — OPTIONS AND ACCESSORIES

FIELD BUS COMMUNICATION CARDS

Model Number	Description	List Price
PC-400002-00	Profibus Communication Board Kit, SG VFD	\$895.00
PC-400003-00	LonWorks Communication Board Kit, SG VFD	\$1,000.00
PC-400004-00	BacNet Communication Board Kit, SG VFD	\$1,325.00
PC-400005-00	Modbus TCP Communication Board Kit, SG VFD	\$1,100.00

ANALOG OUTPUT CARD

Model Number	Description	List Price
VFD-RSI-SG-4-20-MA	4–20 mA Output Card, Adds (2) 4–20 mA Outputs	\$755.00

DISPLAY / KEYPAD REMOTE MOUNTING

Model Number	Description	List Price
LCD-100000-00	Replacement Display / Keypad	\$200.00
VFD-2M-RE-CABLE-SG	2 Meter Keypad Cable	\$100.00
VFD-3M-RE-CABLE-SG	3 Meter Keypad Cable	\$125.00
VFD-5M-RE-CABLE-SG	5 Meter Keypad Cable	\$145.00
VFD-KEYPAD-SG-BEZEL	Bezel, for SG Keypad, Remote Mounting	\$20.00
VFD-KEYPAD-SG-BLANK	Keypad Blank, Installs in Drive when Keypad Is Remote	\$20.00

S4 SERIES - NEMA 4X WASHDOWN / NEMA 12 SENSORLESS VECTOR DRIVES

S4 SERIES — STANDARD DUTY / HEAVY DUTY

RATINGS

STANDARD DUTY:

1 HP @ 115 V
1 to 25 HP @ 230 V
1 to 200 HP @ 460 V / 600 V

HEAVY DUTY:

0.5 HP @ 115 V
0.5 to 20 HP @ 230 V
0.5 to 150 HP @ 460 V / 600 V



RSI S4 SERIES PRODUCT HIGHLIGHTS:

The S4 Series is a line of high performance NEMA 4X (washdown) and outdoor rated variable frequency drives. Benshaw's S4 variable frequency drives are built to withstand the harshest environments and hold up under your most demanding pressure washing applications. All S4 Series drives combine a simple user interface with an array of features and are suited to almost any indoor or outdoor environment. S4 variable frequency drives come standard with over 180 configurable parameters to match specific application and interface requirements. A standard dynamic braking transistor and resistor are also included for regenerative applications.

KEY ADVANTAGES:

- NEMA 4X (washdown) and outdoor rated enclosure (≤ 100 HP)
- Sensorless vector control
- Standard braking transistor and resistor
- Standard and heavy duty ratings
- LCD plain English display
- Simple, easy-to-use interface
- Standard Modbus communication port
- Integral PI control

STANDARD FEATURES:

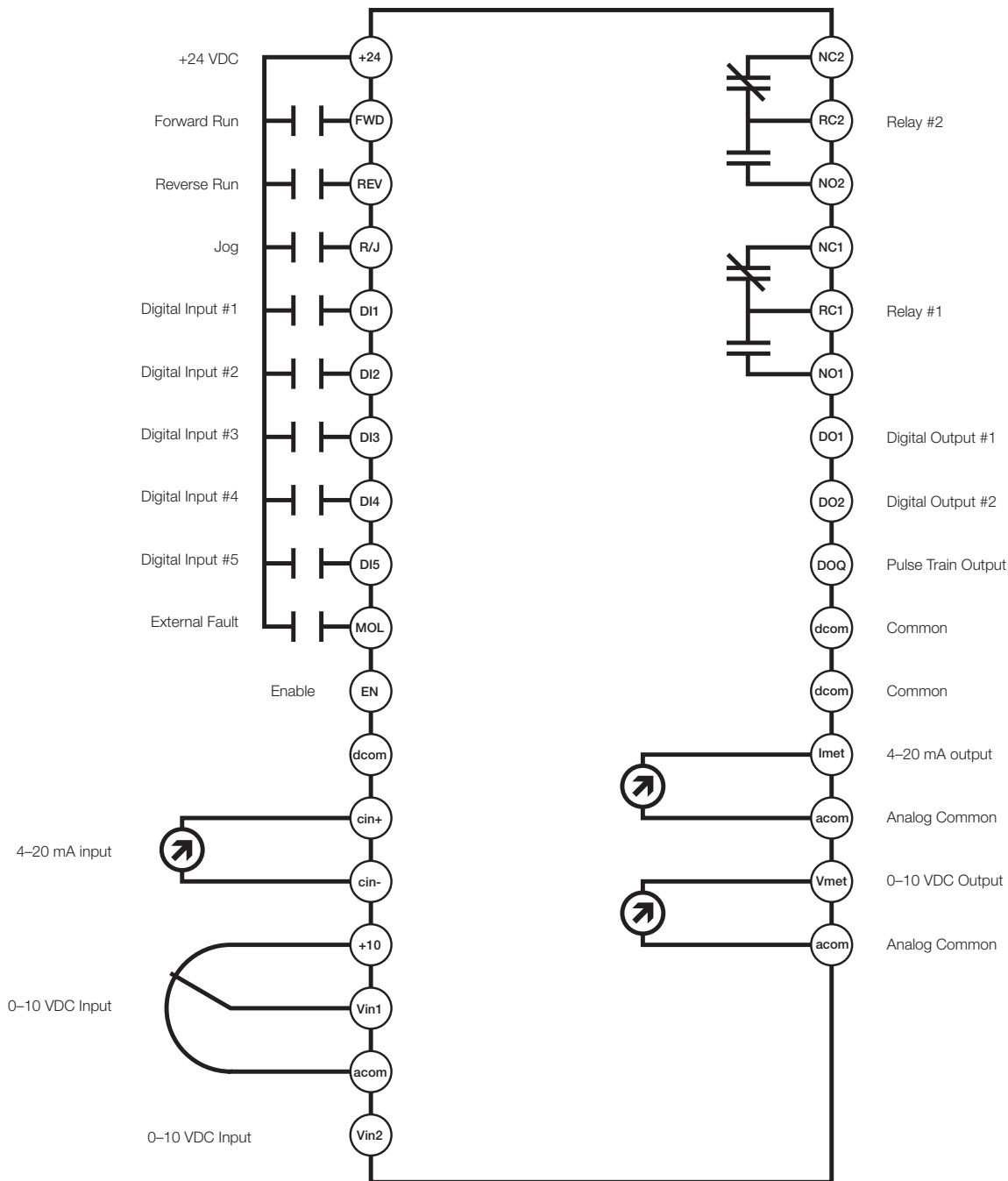
- **NEMA 4X washdown enclosure**
- Units 1–100 HP are NEMA 4X; units 125–200 HP are NEMA 12
- **Standard I/O:** 10 digital inputs, 2 analog inputs, 2 analog outputs, 2 relay outputs
- **User interface:** 20-character LCD display
- **Digital metering:** Output current, output volts, power, MWh meter, run time, power on time, bus voltage, output frequency
- **Communications:** Modbus

standard

- **Voltage tolerance:** $\pm 10\%$
- **Sensorless vector control**
- **V/Hz Pattern:** Linear, quadratic
- **Analog output functions:** Output voltage, output current, drive load, drive temp, stator frequency, output power
- **Analog inputs:** 0–10 VDC, 4–20 mA, -10 VDC to 10 VDC, pulse train input
- **Relay outputs:** Running, forward, reverse, ready, faulted, at speed, keypad control, adjustable torque levels, adjustable current levels, PID limits, loss of reference, timers
- **10 digital inputs configurable:** Run, preset speeds, jogging, PID disable, fault reset, drive enable, timers, motorized pot
- **User interface:** 20-character LCD display.
- **Braking functions:** DECEL, coast, DC injection, dynamic braking

S4 SERIES - NEMA 4X WASHDOWN / NEMA 12 SENSORLESS VECTOR DRIVES

S4 SERIES — BASIC WIRING DIAGRAM



S4 SERIES - NEMA 4X WASHDOWN / NEMA 12 SENSORLESS VECTOR DRIVES

115 V INPUT / 230 V OUTPUT

Model Number	Standard Duty		Heavy Duty		Dimensions (in.)			Weight (lbs.)	List Price
	HP	Amps	HP	Amps	H	W	D		
RSI-001-S4-1SW •	1	4.2	0.5	2.5	9.5	6.5	6.1	9	\$1925.00

• Single-phase 115 V input / 3-phase 230 V output

NEMA 4X / 230 V

Model Number	Standard Duty		Heavy Duty		Dimensions (in.)			Weight (lbs.)	List Price
	HP	Amps	HP	Amps	H	W	D		
RSI-001-S4-2W	1	4.2	0.5	2.5	9.5	6.5	6.1	9	\$1,925.00
RSI-002-S4-2W	2	6.8	1	4.8	9.5	6.5	6.1	9	\$1,975.00
RSI-003-S4-2W	3	9.6	2	7.8	9.5	6.5	8.5	9	\$2,035.00
RSI-005-S4-2W	5	15.2	3	11	12	8.7	6.5	14	\$2,415.00
RSI-007-S4-2W	7.5	22	5	17.5	12	8.7	6.5	14	\$2,475.00
RSI-010-S4-2W	10	28	7.5	25.3	17.4	10.8	7.9	30	\$3,922.00
RSI-015-S4-2W	15	42	10	37.2	17.4	10.8	7.9	30	\$4,565.00
RSI-020-S4-2W	20	54	15	48.3	20.2	11.3	11.7	50	\$6,760.00
RSI-025-S4-2W	25	68	20	62.1	20.2	11.3	11.7	50	\$7,024.00

NEMA 4X / NEMA 12 / 460 V

Model Number	Standard Duty		Heavy Duty		Dimensions (in.)			Weight (lbs.)	List Price
	HP	Amps	HP	Amps	H	W	D		
RSI-001-S4-4W	1	2.1	0.5	1.1	9.5	6.5	6.1	9	\$1,854.00
RSI-002-S4-4W	2	3.4	1	2.1	9.5	6.5	6.1	9	\$1,930.00
RSI-003-S4-4W	3	4.8	2	3.4	9.5	6.5	8.5	9	\$1,989.00
RSI-005-S4-4W	5	7.6	3	4.8	12	8.7	6.5	14	\$2,526.00
RSI-007-S4-4W	7.5	11	5	7.6	12	8.7	6.5	14	\$2,682.00
RSI-010-S4-4W	10	14	7.5	11	12	8.7	6.5	14	\$2,741.00
RSI-015-S4-4W	15	21	10	14	17.4	10.8	7.9	30	\$4,273.00
RSI-020-S4-4W	20	27	15	21	17.4	10.8	7.9	30	\$4,617.00
RSI-025-S4-4W	25	34	20	27	17.4	10.8	7.9	30	\$4,891.00
RSI-030-S4-4W	30	40	25	34	17.4	10.8	7.9	30	\$5,133.00
RSI-040-S4-4W	40	52	30	40	20.2	11.3	11.7	50	\$8,143.00
RSI-050-S4-4W	50	65	40	52	20.2	11.3	11.7	50	\$8,439.00
RSI-060-S4-4W	60	77	50	65	29.4	12.9	13.8	110	\$13,975.00
RSI-075-S4-4W	75	96	60	77	29.4	12.9	13.8	110	\$14,351.00
RSI-100-S4-4W	100	124	75	96	29.4	12.9	13.8	110	\$17,291.00
RSI-125-S4-4D *	125	156	100	124	50.5	16.5	18	354	\$24,994.00
RSI-150-S4-4D *	150	180	125	156	50.5	16.5	18	354	\$27,472.00
RSI-200-S4-4D *	200	240	150	180	50.5	16.5	18	354	\$28,235.00

* Units ending in "D" are NEMA 12, not washdown rated.

S4 SERIES - NEMA 4X WASHDOWN / NEMA 12 SENSORLESS VECTOR DRIVES



NEMA 4X / NEMA 12 / 600 V

Model Number	Standard Duty		Heavy Duty		Dimensions (in.)			Weight (lbs.)	List Price
	HP	Amps	HP	Amps	H	W	D		
RSI-001-S4-6W	1	1.7	0.5	0.9	12	8.7	6.5	14	\$2,365.00
RSI-002-S4-6W	2	2.7	1	1.7	12	8.7	6.5	14	\$2,376.00
RSI-003-S4-6W	3	3.9	2	2.7	12	8.7	6.5	14	\$2,387.00
RSI-005-S4-6W	5	6.1	3	3.9	12	8.7	6.5	14	\$2,448.00
RSI-007-S4-6W	7.5	9	5	6.1	12	8.7	6.5	14	\$2,525.00
RSI-010-S4-6W	10	11	7.5	9	12	8.7	6.5	14	\$3,075.00
RSI-015-S4-6W	15	17	10	11	17.4	10.8	7.9	30	\$4,840.00
RSI-020-S4-6W	20	22	15	17	17.4	10.8	7.9	30	\$5,011.00
RSI-025-S4-6W	25	27	20	22	17.4	10.8	7.9	30	\$5,253.00
RSI-030-S4-6W	30	32	25	27	17.4	10.8	7.9	30	\$6,050.00
RSI-040-S4-6W	40	41	30	32	20.2	11.3	11.7	50	\$8,415.00
RSI-050-S4-6W	50	52	40	41	20.2	11.3	11.7	50	\$8,773.00
RSI-060-S4-6W	60	68	50	52	29.4	12.9	13.8	110	\$15,400.00
RSI-075-S4-6W	75	82	60	62	29.4	12.9	13.8	110	\$15,675.00
RSI-100-S4-6W	100	107	75	77	29.4	12.9	13.8	110	\$18,150.00
RSI-125-S4-6D *	125	125	100	99	50.5	16.5	18	354	\$26,703.00
RSI-150-S4-6D *	150	144	125	125	50.5	16.5	18	354	\$27,781.00
RSI-200-S4-6D *	200	192	150	140	50.5	16.5	18	354	\$30,800.00

* Units ending in "D" are NEMA 12, not washdown rated.

VARIABLE FREQUENCY DRIVE OPTIONS

LINE REACTORS

480 V — 3% IMPEDANCE

Model Number			Open Dimensions (in.)				Enclosed Dimensions (in.)			Weight (lbs.)	Open List Price	Enclosed List Price
Open	Enclosed (NEMA 1)	HP	A	H	W	D	H	W	D			
KDRMA5L1	KDRMA5L1E01	1	2.1	3.63	4.45	1.78	12.25	12.5	6.75	11.6	\$200.00	\$445.00
KDRMA7L1	KDRMA7L1E01	2	3.4	3.63	4.45	1.78	12.25	12.5	6.75	11.8	\$215.00	\$455.00
KDRMA8L1	KDRMA8L1E01	3	4.8	3.63	4.45	1.78	12.25	12.5	6.75	11.8	\$235.00	\$475.00
KDRAA3L2	KDRAA3L2E01	5	7.6	4.44	4.25	2.64	12.25	12.5	6.75	13.4	\$245.00	\$495.00
KDRAA4L2	KDRAA4L2E01	7.5	11	4.44	4.25	2.64	12.25	12.5	6.75	13.6	\$275.00	\$515.00
KDRAA5L2	KDRAA5L2E01	10	14	4.44	4.25	2.64	12.25	12.5	6.75	13.7	\$345.00	\$595.00
REA-KDRB2L	REA-KDRB2L-E01	15	21	5	6	4	6.5	8	6	12	\$425.00	\$645.00
REA-KDRB1L	REA-KDRB1L-E01	20	27	5	6	4	6.5	8	6	12	\$445.00	\$695.00
REA-KDRD1L	REA-KDRD1L-E01	25	34	5.75	7.2	4.25	7.5	10	7	16	\$465.00	\$755.00
REA-KDRD2L	REA-KDRD2L-E01	30	40	5.75	7.2	4.25	7.5	10	7	16	\$595.00	\$875.00
REA-KDRC1L	REA-KDRC1L-E01	40	52	5.75	7.2	5	7.5	10	7	21	\$655.00	\$945.00
REA-KDRF2L	REA-KDRF2L-E01	50	65	7	9	6	9	12	8	37	\$750.00	\$1,145.00
REA-KDRF4L	REA-KDRF4L-E01	60	77	7	9	6	9	12	8	42	\$775.00	\$1,295.00
REA-KDRF3L	REA-KDRF3L-E01	75	96	7	9	6	15.5	15	13	65	\$1,050.00	\$1,685.00
REA-KDRH3L	REA-KDRH3L-E01	100	124	7	9	7	15.5	15	13	65	\$1,195.00	\$1,850.00
REA-KDRH2L	REA-KDRH2L-E01	125	156	9	11	7	15.5	15	13	75	\$1,675.00	\$2,125.00
REA-KDRH1L	REA-KDRH1L-E01	150	180	9	11	7	15.5	15	13	75	\$1,725.00	\$2,385.00
REA-KDRG3L	REA-KDRG3L-E01	200	240	9	11	8	15.5	15	13	100	\$2,195.00	\$2,850.00
REA-KDRG1L	REA-KDRG1L-E01	250	302	9	11	8	15.5	15	13	100	\$2,425.00	\$3,095.00
REA-KDRG2L	REA-KDRG2L-E01	300	361	9	11	8	15.5	15	13	100	\$2,495.00	\$3,125.00
REA-KDRJ2L	REA-KDRJ2L-E01	350	414	9	11	9	18.5	20	16	120	\$2,855.00	\$3,735.00
REA-KDRJ1L	REA-KDRJ1L-E01	400	477	9	11	9	18.5	20	16	120	\$3,155.00	\$4,050.00
REA-KDRL2L	REA-KDRL2L-E01	500	590	11.38	14.5	9.5	18.5	20	16	160	\$5,425.00	\$6,285.00
REA-KDRL3L	REA-KDRL3L-E01	600	720	11.38	14.5	9.5	18.5	20	16	205	\$6,875.00	\$7,735.00
REA-KDRS1L	REA-KDRS1L-E01	700	840	11.38	15	12.5	36	28.5	30.3	318	\$8,050.00	\$10,275.00

Line reactors reduce harmonics and protect the variable frequency drive from input power quality problems. They are also required on applications where the transformer kVA exceeds 10 times the kVA rating of the drive.

VARIABLE FREQUENCY DRIVE OPTIONS

LONG LEAD FILTERS (DV/DT)

480 V

Model Number		HP	A	Open Dimensions (in.)			Enclosed Dimensions (in.)			Weight (lbs.)	Open List Price	Enclosed List Price
Open	Enclosed (NEMA 1)			H	W	D	H	W	D			
FLTR-V1K2A00	FLTR-V1K2A01	0.75	2	9	5.5	7.25	9	5.5	10	11	\$900.00	\$1,450.00
FLTR-V1K3A00	FLTR-V1K3A01	1~1.5	3	9	5.5	7.25	9	5.5	10	11	\$925.00	\$1,475.00
FLTR-V1K4A00	FLTR-V1K4A01	2	4	9	5.5	7.25	9	5.5	10	11	\$955.00	\$1,485.00
FLTR-V1K6A00	FLTR-V1K6A01	3	6	9	5.5	7.25	9	5.5	10	11	\$975.00	\$1,495.00
FLTR-V1K8A00	FLTR-V1K8A01	5	8	9	5.5	8.25	9	5.5	10	11	\$995.00	\$1,525.00
FLTR-V1K12A00	FLTR-V1K12A01	7.5	12	9	5.5	8.25	9	5.5	10	11	\$1,025.00	\$1,595.00
FLTR-V1K16A00	FLTR-V1K16A01	10	16	9	5.5	8.25	9	5.5	10	15	\$1,045.00	\$1,625.00
FLTR-V1K18A00	FLTR-V1K18A01	10	18	9	5.5	8.25	9	5.5	10	15	\$1,155.00	\$1,695.00
FLTR-V1K21A00	FLTR-V1K21A01	15	21	9	5.5	8.25	9	5.5	10	15	\$1,300.00	\$1,765.00
FLTR-V1K25A00	FLTR-V1K25A01	15	25	9	5.5	8.25	9	5.5	10	15	\$1,395.00	\$1,800.00
FLTR-V1K27A00	FLTR-V1K27A01	20	27	9	5.5	8.25	9	5.5	10	15	\$1,450.00	\$1,875.00
FLTR-V1K35A00	FLTR-V1K35A01	25	35	12	8	9	12	8	11.5	23	\$1,500.00	\$1,925.00
FLTR-V1K45A00	FLTR-V1K45A01	30	45	12	8	9	12	8	11.5	23	\$1,595.00	\$2,000.00
FLTR-V1K55A00	FLTR-V1K55A01	40	55	12	8	9	12	8	11.5	23	\$1,625.00	\$2,185.00
FLTR-V1K80A00	FLTR-V1K80A01	50~60	80	12	8	9	12	8	11.5	29	\$2,295.00	\$2,840.00
FLTR-V1K110A00	FLTR-V1K110A01	75	110	12	8	10.25	16.5	18	15	68	\$2,685.00	\$3,895.00
FLTR-V1K130A00	FLTR-V1K130A01	100	130	8.5	11.75	9.5	16.5	18	15	83	\$3,150.00	\$4,395.00
FLTR-V1K160A00	FLTR-V1K160A01	125	160	8.5	11.75	10.5	16.5	18	15	83	\$3,450.00	\$4,725.00
FLTR-V1K200A00	FLTR-V1K200A01	150	200	8.5	11.75	9.25	16.5	18	15	93	\$3,795.00	\$4,925.00
FLTR-V1K250A00	FLTR-V1K250A01	200	250	8.5	11.75	9.25	16.5	18	15	93	\$3,875.00	\$5,000.00
FLTR-V1K305A00	FLTR-V1K305A01	250	305	8.75	11.75	12.25	16.5	18	30	117	\$4,225.00	\$5,050.00
FLTR-V1K362A00	FLTR-V1K362A01	300	362	8.75	11.75	12	16.5	18	30	117	\$4,825.00	\$5,695.00
FLTR-V1K420A00	FLTR-V1K420A01	350	420	10	11.75	13.75	16.5	18	30	132	\$5,595.00	\$6,075.00
FLTR-V1K480A00	FLTR-V1K480A01	400	480	10	11.75	13.75	16.5	18	30	138	\$5,955.00	\$6,800.00
FLTR-V1K600A00	FLTR-V1K600A01	500	600	12.75	15	13.75	16.5	18	30	168	\$6,250.00	\$7,445.00
FLTR-V1K750A00	FLTR-V1K750A01	600	750	12.75	15	14.5	16.5	18	30	180	\$10,195.00	\$13,335.00

Long lead filters should be considered on applications where the cable distance between the motor and the variable frequency drive exceeds 300 feet.

Long lead filters protect the motor from high dV/dt.

Consult motor manufacturer on selection of output filter.

VARIABLE FREQUENCY DRIVE OPTIONS

DYNAMIC BRAKE RESISTORS AND BRAKE MODULES



Dynamic brake resistors and modules are used to address overvoltage conditions with drives. Overvoltage trips occur when the DC bus in the drive increases to the overvoltage trip level. This increase in voltage occurs when the mechanical energy in the motor is converted into regenerative electrical energy, which is transferred back into the drive (the motor acts like a generator).

Regeneration can occur on an occasional basis or periodically (cyclical) depending on the type of load. A dynamic brake module and resistor are required to be added to the drive to dissipate this excess power. The module and resistor must be sized correctly depending on the application.

Regeneration occurs when:

- The deceleration time is too quick
- The load has high inertia and keeps rotating after the drive output power has decreased below that of the load (Ex: fly wheels, large fans)
- The load is an overhauling load, cyclical or periodic (Ex: pump jack, punch press)
- When the motor suddenly becomes unloaded (Ex: lumber mill saw applications)

Contact Benshaw for assistance with sizing brake resistors and brake modules.

INTEGRATED CONTROL SOLUTIONS USING BOTH BENSHAW AND ADDITIONAL BRANDS.



Benshaw builds customized engineered solutions to meet your most demanding applications.

Benshaw's success in the OEM and industrial marketplace is a direct result of our willingness as a company to think "beyond the box." We've made systems integration a central focus of our business, and we make learning your business a top priority.

By focusing on the bigger picture, we gain a better understanding of your process, your control requirements and your market objectives.

We then apply that knowledge toward the development and production of complete, cost-effective, fully integrated control solutions.

CUSTOMIZED ENCLOSURES:

Benshaw takes great pride in our ability to design and deliver custom control enclosures that truly complement the form and function of your machine.

NEMA 1, 12, 3R, 4 and 4X enclosures in unit mount, console mount, free-standing and wall-mount configurations are available to suit your needs.

Every enclosure we design is carefully crafted to meet your dimensional requirements, prototyped and tested for fit and compliance with relevant safety standards, fabricated to exacting tolerances and finished to your paint specification.

INTELLIGENT MOTOR CONTROLS:

Benshaw offers a full range of intelligent, programmable, low and medium voltage starters and drives—from fractional to 20,000 HP—to meet a variety of motor control needs.

Motor control products include full voltage starters, solid state reduced voltage starters and variable frequency drives.

Starter configurations include reversing, two-speed, DC braking, wye-delta, synchronous and wound rotor control.

ENGINEERED LOW VOLTAGE DRIVE PACKAGES

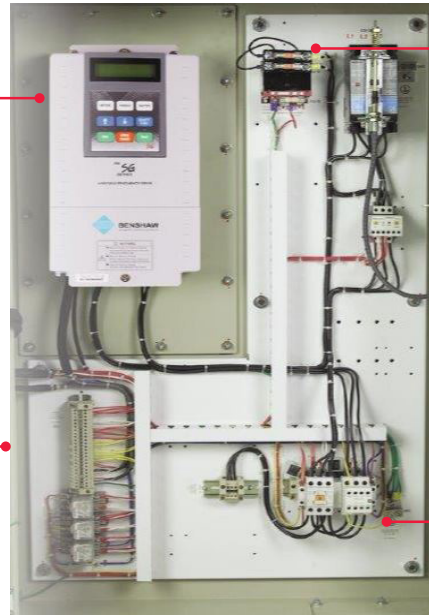
OVERVIEW

Benshaw is a recognized industry leader in the shipment of engineered drives from our state-of-the-art factory, with dedicated engineering teams and a complete inventory of components necessary to build engineered solutions for you. Select the enclosure, disconnect, bypass, pilot devices, control strategy and filters required to meet your most demanding applications.

Benshaw builds customized engineered solutions to meet your most demanding applications.

SG Series
Single AC Drive

User
terminal
strip



Control
power
transformer

Input circuit
breaker and
disconnect

Bypass
Contactor

CONTROL MODIFICATIONS — WHATEVER YOU SPECIFY

- Pilot devices, control power transformers, switches, meters, relays, space heaters, protective devices and more

COMBINATION DRIVE PACKAGES — TO MEET YOUR REQUIREMENTS

- Circuit breaker protection
- Non-fused disconnect protection
- Fusible disconnect protection
- Flange or rotary handle mechanism

BYPASS PACKAGES — TO FIT YOUR APPLICATION

- Three contactor
- Reduced voltage solid state starters

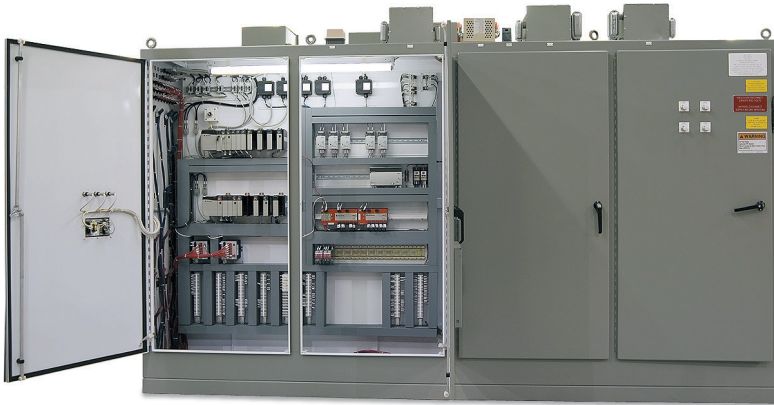
ENCLOSURES — TO MATCH YOUR ENVIRONMENT

- Standard designs — NEMA 1, 12, 3R
- Custom enclosures
- Special enclosures — 4, 4X, air conditioned
- Motor control packages (MCP), multiple VFD's, one package

FILTERS — FOR YOUR UNIQUE APPLICATION

- Line reactors 3% and 5%
- Long lead filters
- Load reactors
- Harmonic filters
- 18-pulse systems

LET OUR KNOWLEDGE BECOME YOUR COMPETITIVE EDGE.



INTEGRATED MACHINE LOGIC:

Benshaw can supply standard or PC-based programmable logic controllers, and will custom design hardware or software to meet process requirements.

INTEGRATED CONTROL SENSORS:

Benshaw can integrate any number of sensors, transducers, relays, switches, meters and protective devices, as required, to precisely monitor and respond to all critical process, machine or environmental variables.

INTEGRATED POWER PACKAGES:

Benshaw can also incorporate all of the power distribution components needed for your machine in one simple, plug-and-play package.

Turnkey power distribution packages typically include all internal and external motor control wiring harnesses, power wiring harnesses, motor/machine sensor connections and, if needed, a fully integrated power factor correction unit.

All power systems are factory tested at Benshaw to guarantee reliable performance.

TYPICAL OEM / INDUSTRIAL APPLICATIONS

- Air and process compressors
- Blowers and air handling equipment
- Chillers
- Conveyors
- Food / liquid processing equipment
- Industrial refrigeration equipment
- Municipal waste / water handling machines
- Pumps
- Pipelines
- Shredders / grinders
- Specialty machinery
- Transfer lines

CUSTOM-ENGINEERED DRIVE SOLUTIONS.

FOR ANY DRIVE APPLICATION. IN ANY CONFIGURATION.

Whether you need simple modifications made to one of Benshaw's standard drive packages, a custom engineered, application-specific drive package or a turnkey drive solution, Benshaw can help.

With engineering experience and complete motor control system production capabilities, Benshaw delivers all of the competence, convenience and value you'd expect from a leader in engineered control systems.

Whatever your motor control needs may be, Benshaw's engineering teams and application specialists can help you find a cost-effective, reliable solution.

QUALITY ASSURANCE TESTING

Benshaw's assembly teams perform a preliminary quality assurance inspection before delivery is made.

Drive assemblies undergo a variety of testing procedures, including motor operation testing, load testing, control circuit testing, wire pull testing, electrical performance checks, mechanical alignment inspection, torque measurement and user interface / pilot device functionality.

All test processes meet or exceed ISO 9001 requirements, and all tests are documented and archived for quality verification.

ENCLOSURES:

- Standard NEMA 1, 12 and 3R enclosure designs
- Custom enclosures
- NEMA 4, 4X, air conditioned and other special enclosures
- Motor control centers
- Combination drive packages
- 15–2,000A circuit breakers
- 40–2,000A non-fused disconnects
- 30–800A fusible disconnects
- Flange or rotary handle mechanisms

CONTROL MODIFICATIONS:

Over 250 control modifications and accessories are available from Benshaw, including:

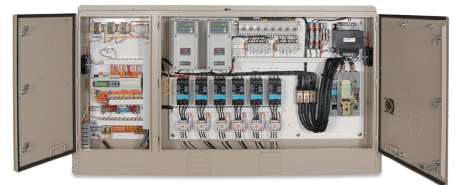
- Pilot devices
- Control power transformers
- Switches
- Meters
- Relays
- Space heaters
- Protective devices
- PLCs

BYPASS PACKAGES:

- Three contactor
- Reduced voltage solid state starters

FILTERS:

- Line reactors (3% and 5%)
- Long lead filters
- Passive harmonic filters
- 18-pulse systems (IEEE-519)



ENGINEERED PACKAGE OPTIONS

CLEAN POWER DRIVES

SG 519 SERIES

RATINGS

STANDARD DUTY:

50–700 HP @ 460 V

HEAVY DUTY:

40–500 HP @ 460 V

IEEE-519 Compliant

PRODUCT HIGHLIGHTS:

Benshaw's SG 519 Series drives are designed and manufactured to limit voltage and current distortion levels to within the levels defined by IEEE-519*. This eliminates the need for expensive, time-consuming harmonic analysis and avoids the resonance problems associated with inefficient harmonic filters.

Our municipal projects and engineering team will work with you to configure a clean power solution that meets your specifications and requirements.

MODULAR DESIGN:

The modular design of Benshaw's SG 519 Series drives eliminates maintenance problems inherent in older drive designs and improves drive reliability by significantly reducing power module part counts. This design approach also allows each drive unit to be custom-tailored to your specific requirements.

*IEEE-519-2014, TABLES 1 AND 2



OPTIONAL BYPASS:

An optional bypass design configuration (ATL or RVSS) is available for SG 519 drive packages when mission-critical reliability is important and disruptive downtime cannot be tolerated.

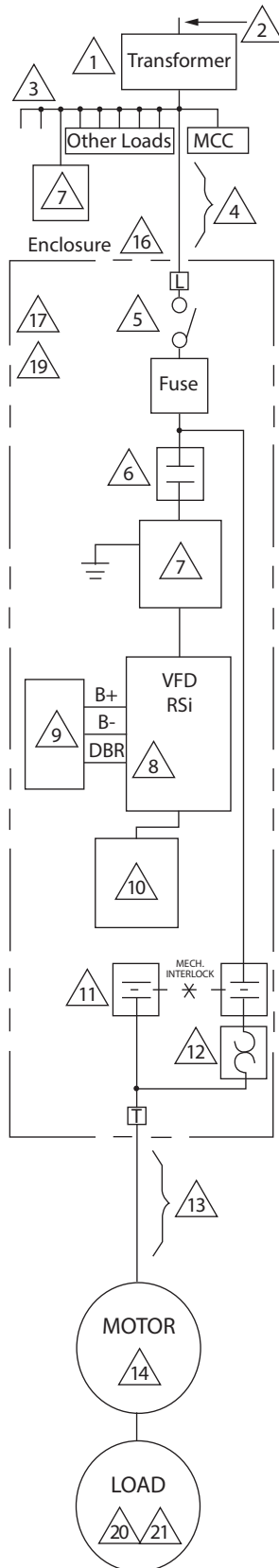
STANDARD FEATURES:

- SG Series drive
- NEMA 1 ventilated enclosure
- 65 kAIC circuit breaker with lockable disconnect
- Phase-shifting transformer and line reactor
- 12-pulse rectifier unit
- Control transformer with extra 120 V capacity
- Door-mounted control
- Keypad / display
- Start / stop buttons
- Reset button
- Hand-off-auto switch
- Speed potentiometer

OPTIONS

- Bypass (ATL or RVSS)
- Line fusing
- Output filter (reactor, long lead or sine wave)
- Enclosures — NEMA 12, 3R, 4 or 4X (with AC unit)
- RTD monitor
- Communications
- Control options to customer specification

VFD PRE-ORDER CHECK LIST



PURCHASER INFORMATION

Company Name _____

Contact Person _____

Email _____

Address _____

Phone Number _____

Supply — Incoming	1	Primary (Input) Volts ____ VAC ____ KVA ____ % Impedance Short Circuit Capability ____ ISC (Amps) Secondary (Output) Volts ____ WYE-Delta Connection: ☐ Yes ☐ No ☐ Grounded ☐ Ungrounded
PCC (Point of Common Coupling)	2	Harmonic Restrictions at PCC: ☐ Yes ☐ No ☐ IEEE 519-1992
Other Connected Loads	3	Other Connected Loads Present? Please list in detail in comments. Ex. PFCC, VFD, etc. ☐ Yes ☐ No
Feeder Cable	4	Cable Length ____ ☐ Conduit ☐ Teck ☐ Non-Shielded ☐ Shielded
Main Disconnect	5	☐ Breaker ☐ Fusible Disc. ☐ Line Fuses KAIC Rating ____
Input Isolation Contactor	6	☐ Yes ☐ No ☐ HP Rated ☐ NEMA Rated
Harmonic Suppression	7	Input Line Reactor 3 ☐ or 5 ☐ % Imp. ☐ Transformer ☐ Passive Filter ☐ Active Filter ☐ 18 Pulse ☐ RFI/EMI Filter
VFD Ratings	8	VFD - HP ____ KVA ____ KW ____ CT ☐ VT ☐ Volts ____ V ____ Amps ____ Model - RSi - ____ HP - ____ V - ____ Encl.
Dynamic Braking	9	Load Type: ☐ Decel Only ☐ Overhauling Duty Cycle ☐ 5% ☐ 10% ☐ 25% ☐ 50% ☐ 100%
Output Filter	10	☐ Reactor ☐ Long Lead ☐ Sine Wave 50 ft. ~ 300 ft. 300 ft. ~ 1500 ft. > 1500 ft.
Bypass	11	☐ 2 Contactor ☐ 3 Contactor ☐ RVSS ☐ HP Rated ☐ NEMA Rated ☐ IEC Rated
Overload	12	For ATL Bypass only: Class 1-40 ____



VFD PRE-ORDER CHECK LIST

Cable Length	 See 	Manufacturer _____			
		Length ____ Ft ____ m ____			
		Cable Specification:	☐ Non-Shielded	☐ Shielded	☐ Conduit
Motor Name Plate Data		Manufacturer _____			
		HP _____ Volts _____			
		RPM _____ FLA _____ S.F. _____			
		Amps _____ KVA/Code _____			
		Design _____ Frame _____			
		Breakdown torque _____ % _____ lb-ft			
		Temperature Rise _____ °C			
		Critical speed _____ RPM			
		Insulation VFD Grade NEMA MG 1 -1998, Part 3 1.4.4.2	☐ Yes	☐ No; See 	
		Over temperature protection:	Thermostat	Thermistor	
		RTD and type	☐ 100 Pt	☐ 10 Cu	☐ 100Ni ☐ 120Ni
		Does the motor require a blower for low speed operation?	☐ Yes		☐ No
		Insulated Bearing(s)	☐ Yes	☐ No	
Options		☐ Start P/B ☐ Local/Remote Sw.			
		☐ Stop P/B ☐ Pilot Lights			
		☐ Emergency Stop P/B ☐ - Run/Stop			
		☐ HOA Switch ☐ - Forward/Reverse			
		☐ Forward P/B ☐ - Jog			
		☐ Reverse P/B ☐ - Power			
		☐ Jog Forward P/B ☐ - Fault			
		☐ Jog Reverse P/B			
		☐ Potentiometer			
		☐ Fault Reset P/B			
		☐ Other _____			
Enclosure		UL Type _____ (1, 12, 3R, 4, 4X)			
		Ambient temperature range _____ °C to _____ °C			
		Altitude 0 to 3,300 ft. (1,000m) ☐ Other _____			
		Cable Entry/Exit Locations _____			
		Enclosure Size Restrictions	H _____	W _____	D _____
		Description _____			
Control		☐ Keypad ☐ Multi-Motor			
		☐ Terminal ☐ Master ☐ Follower			
		☐ 0 to 5VDC ☐ Analog Outputs			
		☐ 0 to 10VDC ☐ Analog Inputs			
		☐ ± 10VDC ☐ Digital Inputs			
		☐ 0/4 to 20mA ☐ Relay Outputs			

VFD PRE-ORDER CHECK LIST

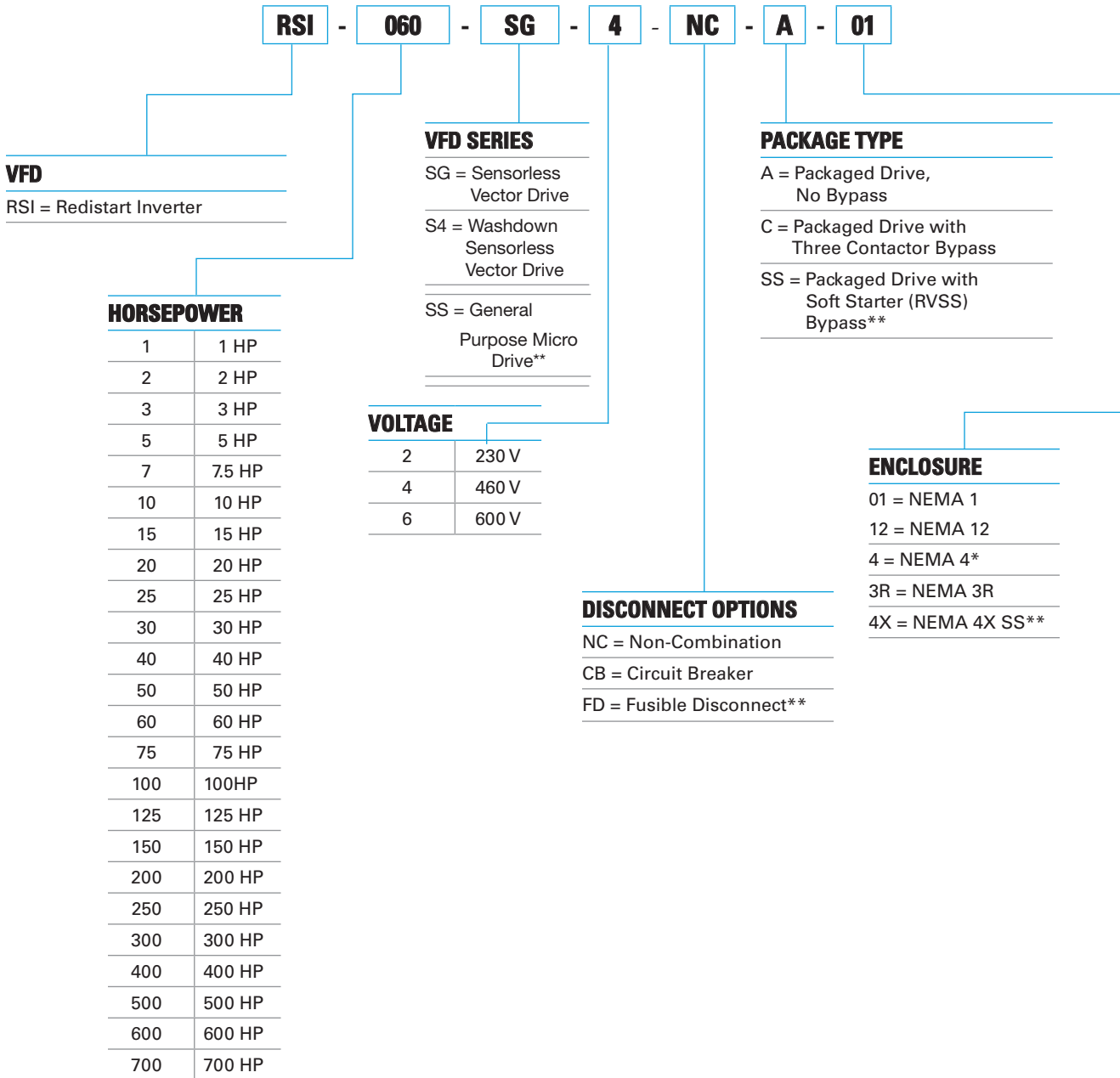
Communications		☐ DeviceNet	☐ Modbus RTU		
		☐ Profibus	☐ Other _____		
Motors		Motor Amps _____	Motor Volts _____		
		Frequency _____	RPM _____		
		Other (Please Specify) _____			
Application Details		☐ Constant Torque (150% for 60s)	☐ Standard-Duty Torque (120% for 60s)	☐ Variable Torque (110% for 60s)	
		☐ Load-Steady	☐ Pulsing	☐ Regenerative	
		Speed Range _____ to _____ RPM			
		☐ Load Flywheel Inertia (WK ²)			
		☐ Load Torque Profile			
		☐ Breakaway Torque lb.-ft.			
		Breakaway Torque Duration _____ sec.			
		Max. Peak Torque _____ lb.-ft.			
		Accel. Time _____ Decel. Time _____			
		☐ Torque vs. Speed Curve			
		Deceleration:	☐ Coast	☐ Ramp	☐ DC Injection
		Pump/Fan			
		Speed _____ Min. Speed _____ Starting and stopping cycle (details) _____			
		Holding Brake required?		☐ Yes	☐ No
Load Details		Fan	☐ Fin Fan Cooler	☐ Cooling Tower Fan	
		Pump	☐ Centrifugal Pump	☐ Centrifugal Compressor	☐ Electrical Submersible Pump (ESP)
		Oil Pump	☐ Pumpjack (PG)	☐ Progressive Cavity Screw Pump (PCP)	☐ PD Pump ☐ Slurry Pump
		Conveyor	☐ Screw Conveyor	☐ Belt Conveyor	☐ Flat Conveyor ☐ Bucket Conveyor ☐ Air Conveyor
		Extruder	☐ Single Extruder	☐ Dual Extruder	☐ Piston Extruder
		Other	☐ Number Throws	☐ Centrifuge	☐ Canter Line
			☐ Step-up Transformer:	☐ KVA	☐ Vprim ☐ Vsec ☐ V Z
		Gear ratio/Sheave ratio (Motor RPM/Load RPM) _____:_____ ☐ Single-phase input			

Additional Comments: _____



ENGINEERED PACKAGE PART NUMBER ASSEMBLER

SENSORLESS VECTOR DRIVES



* Air conditioning required.

** Consult factory.

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — SG SERIES

ENCLOSED DRIVES — NON-COMBINATION SENSORLESS VECTOR DRIVE - 230 V

7.5 - 40 HP / NEMA 1 AND 3R

Model Number	Variable Torque		Standard Duty		Heavy Duty		List Price			
	HP	Amps	HP	Amps	HP	Amps	A-01	C-01	A-3R*	C-3R*
RSI-007-SG2-NC-XX	7.5	22	7.5	22	5	15.2	\$6,525.00	\$6,875.00	\$6,565.00	\$6,865.00
RSI-010-SG2-NC-XX	10	29	10	29	7.5	22	\$6,650.00	\$6,985.00	\$7,095.00	\$7,455.00
RSI-015-SG2-NC-XX	15	42	15	42	10	28	\$6,925.00	\$7,350.00	\$7,765.00	\$8,225.00
RSI-020-SG2-NC-XX	20	54	20	54	15	42	\$7,425.00	\$7,950.00	\$8,255.00	\$8,775.00
RSI-025-SG2-NC-XX	25	68	25	68	20	54	\$7,955.00	\$8,695.00	\$8,795.00	\$9,525.00
RSI-030-SG2-NC-XX	30	80	30	80	25	68	\$8,325.00	\$9,235.00	\$9,165.00	\$10,000.00
RSI-040-SG2-NC-XX	40	104	40	104	30	80	\$8,725.00	\$9,855.00	\$9,555.00	\$10,695.00

A-01 = VFD in fan and filtered enclosure.

C-01 = VFD in fan and filtered enclosure with three contactor bypass circuit.

A-3R = VFD in fan and filtered 3R enclosure.

C-3R = VFD in fan and filtered 3R enclosure with three contactor bypass circuit.

For dimensions refer to page 29.

For options refer to pages 30 thru 32.

Variable Torque = 110% current for 1 minute.

Standard Duty = 120% current for 1 minute.

Heavy Duty = 150% current for 1 minute.

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — SG SERIES

ENCLOSED DRIVES — NON-COMBINATION SENSORLESS VECTOR DRIVE - 460 V

7.5 - 700 HP / NEMA 1 AND 3R

Model Number	Variable Torque		Standard Duty		Heavy Duty		List Price			
	HP	Amps	HP	Amps	HP	Amps	A-01	C-01	A-3R*	C-3R*
RSI-007-SG4-NC-XX	7.5	11	7.5	11	5	8	\$6,550.00	\$6,825.00	\$7,025.00	\$7,295.00
RSI-010-SG4-NC-XX	10	14	10	14	7.5	11	\$6,625.00	\$6,900.00	\$7,095.00	\$7,425.00
RSI-015-SG4-NC-XX	15	21	15	21	10	14	\$6,885.00	\$7,295.00	\$7,795.00	\$8,150.00
RSI-020-SG4-NC-XX	20	27	20	27	15	21	\$7,350.00	\$7,775.00	\$8,255.00	\$8,625.00
RSI-025-SG4-NC-XX	25	34	25	34	20	27	\$7,825.00	\$8,625.00	\$8,675.00	\$9,500.00
RSI-030-SG4-NC-XX	30	40	30	40	25	34	\$8,325.00	\$8,775.00	\$9,195.00	\$9,625.00
RSI-040-SG4-NC-XX	40	52	40	52	30	40	\$8,715.00	\$9,250.00	\$9,555.00	\$10,075.00
RSI-050-SG4-NC-XX	50	65	50	65	40	52	\$10,350.00	\$11,055.00	\$11,175.00	\$11,925.00
RSI-060-SG4-NC-XX	60	77	60	77	50	65	\$12,000.00	\$13,000.00	\$13,175.00	\$14,155.00
RSI-075-SG4-NC-XX	75	96	75	96	60	77	\$12,755.00	\$13,935.00	\$13,885.00	\$15,125.00
RSI-100-SG4-NC-XX	100	125	100	125	75	96	\$14,095.00	\$15,855.00	\$15,195.00	\$16,995.00
RSI-125-SG4-NC-XX	125	156	125	156	100	125	\$15,595.00	\$20,355.00	\$16,425.00	\$18,995.00
RSI-150-SG4-NC-XX	150	180	150	180	125	156	\$25,000.00	\$28,655.00	\$25,665.00	\$25,625.00
RSI-200-SG4-NC-XX	200	240	200	240	150	180	\$26,775.00	\$30,995.00	\$27,375.00	\$33,395.00
RSI-250-SG4-NC-XX	250	302	250	302	200	240	\$29,275.00	\$30,985.00	\$30,355.00	\$35,825.00
RSI-350-SG4-NC-XX	350	414	350	361	250	302	\$40,850.00	\$40,855.00	\$41,955.00	\$47,000.00
RSI-400-SG4-NC-XX	400	477	400	477	300	361	\$48,000.00	\$56,575.00	\$49,155.00	\$57,655.00
RSI-500-SG4-NC-XX	500	590	500	515	350	414	\$59,885.00	\$71,765.00	\$61,455.00	\$64,000.00
RSI-600-SG4-NC-XX	600	731	600	590	400	477	\$67,795.00	\$79,955.00	\$71,795.00	\$81,525.00
RSI-700-SG4-NC-XX	700	877	700	804	500	590	\$77,395.00	\$122,385.00	\$78,955.00	\$124,575.00

A-01 = VFD in fan and filtered enclosure.

C-01 = VFD in fan and filtered enclosure with three contactor bypass circuit.

A-3R = VFD in fan and filtered 3R enclosure.

C-3R = VFD in fan and filtered 3R enclosure with three contactor bypass circuit.

For dimensions refer to page 29.

For options refer to pages 30 thru 32.

Variable Torque = 110% current for 1 minute.

Standard Duty = 120% current for 1 minute.

Heavy Duty = 150% current for 1 minute.

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — SG SERIES

ENCLOSED DRIVES — COMBINATION CIRCUIT BREAKER SENSORLESS VECTOR DRIVES - 230 V

7.5 - 40 HP / NEMA 1 AND 3R

Model Number	Variable Torque		Standard Duty		Heavy Duty		List Price			
	HP	Amps	HP	Amps	HP	Amps	A-01	C-01	A-3R*	C-3R*
RSI-007-SG2-CB-XX	7.5	22	7.5	22	5	15.2	\$6,885.00	\$7,185.00	\$7,350.00	\$7,695.00
RSI-010-SG2-CB-XX	10	28	10	28	7.5	22	\$6,955.00	\$7,500.00	\$7,435.00	\$7,825.00
RSI-015-SG2-CB-XX	15	42	15	42	10	28	\$7,295.00	\$7,755.00	\$8,125.00	\$8,575.00
RSI-020-SG2-CB-XX	20	54	20	54	15	42	\$7,835.00	\$8,350.00	\$8,675.00	\$9,195.00
RSI-025-SG2-CB-XX	25	68	25	68	20	54	\$8,365.00	\$9,095.00	\$9,225.00	\$9,940.00
RSI-030-SG2-CB-XX	30	80	30	80	25	68	\$8,925.00	\$9,845.00	\$9,765.00	\$10,685.00
RSI-040-SG2-CB-XX	40	104	40	104	30	80	\$9,555.00	\$10,695.00	\$10,395.00	\$11,535.00

A-01 = VFD in fan and filtered enclosure.

C-01 = VFD in fan and filtered enclosure with three contactor bypass circuit.

A-3R = VFD in fan and filtered 3R enclosure.

C-3R = VFD in fan and filtered 3R enclosure with three contactor bypass circuit.

*Units should be mounted out of direct sunlight.

For dimensions refer to page 29.

For options refer to pages 30 thru 32.

Variable Torque = 110% current for 1 minute.

Standard Duty = 120% current for 1 minute.

Heavy Duty = 150% current for 1 minute.

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — SG SERIES

ENCLOSED DRIVES — COMBINATION CIRCUIT BREAKER SENSORLESS VECTOR DRIVES - 460 V

7.5 - 700 HP / NEMA 1 AND 3R

Model Number	Variable Torque		Standard Duty		Heavy Duty		List Price			
	HP	Amps	HP	Amps	HP	Amps	A-01	C-01	A-3R*	C-3R*
RSI-007-SG4-CB-XX	7.5	11	7.5	11	5	8	\$6,865.00	\$7,150.00	\$7,335.00	\$7,625.00
RSI-010-SG4-CB-XX	10	14	10	14	7.5	11	\$6,925.00	\$7,250.00	\$7,395.00	\$7,750.00
RSI-015-SG4-CB-XX	15	21	15	21	10	14	\$7,250.00	\$7,625.00	\$8,095.00	\$8,550.00
RSI-020-SG4-CB-XX	20	27	20	27	15	21	\$7,725.00	\$8,150.00	\$8,600.00	\$8,975.00
RSI-025-SG4-CB-XX	25	34	25	34	20	27	\$8,185.00	\$8,595.00	\$9,050.00	\$9,400.00
RSI-030-SG4-CB-XX	30	40	30	40	25	34	\$8,695.00	\$9,125.00	\$9,525.00	\$9,975.00
RSI-040-SG4-CB-XX	40	52	40	52	30	40	\$9,150.00	\$9,655.00	\$9,695.00	\$10,485.00
RSI-050-SG4-CB-XX	50	65	50	65	40	52	\$10,765.00	\$11,495.00	\$11,600.00	\$12,325.00
RSI-060-SG4-CB-XX	60	77	60	77	50	65	\$12,685.00	\$13,650.00	\$13,555.00	\$14,825.00
RSI-075-SG4-CB-XX	75	96	75	96	60	77	\$14,095.00	\$15,295.00	\$14,985.00	\$16,175.00
RSI-100-SG4-CB-XX	100	125	100	125	75	96	\$15,425.00	\$17,225.00	\$16,250.00	\$18,000.00
RSI-125-SG4-CB-XX	125	156	125	156	100	125	\$16,955.00	\$19,425.00	\$17,775.00	\$20,250.00
RSI-150-SG4-CB-XX	150	180	150	180	125	156	\$26,675.00	\$30,295.00	\$24,000.00	\$28,895.00
RSI-200-SG4-CB-XX	200	240	200	240	150	180	\$28,385.00	\$32,550.00	\$28,985.00	\$35,000.00
RSI-250-SG4-CB-XX	250	302	250	302	200	240	\$31,655.00	\$35,750.00	\$32,735.00	\$38,195.00
RSI-350-SG4-CB-XX	350	414	350	361	250	302	\$43,625.00	\$50,950.00	\$44,695.00	\$52,000.00
RSI-400-SG4-CB-XX	400	477	400	477	300	361	\$51,955.00	\$62,650.00	\$53,000.00	\$63,750.00
RSI-500-SG4-CB-XX	500	590	450	515	350	414	\$63,345.00	\$76,625.00	\$64,945.00	\$78,175.00
RSI-600-SG4-CB-XX	600	731	600	590	400	477	\$74,775.00	\$85,750.00	\$76,350.00	\$87,275.00
RSI-700-SG4-CB-XX	700	877	600	804	500	590	\$84,395.00	\$128,950.00	\$90,000.00	\$130,000.00

A-01 = VFD in fan and filtered enclosure.

C-01 = VFD in fan and filtered enclosure with three contactor bypass circuit.

A-3R = VFD in fan and filtered 3R enclosure.

C-3R = VFD in fan and filtered 3R enclosure with three contactor bypass circuit.

*Units should be mounted out of direct sunlight.

For dimensions refer to page 29.

For options refer to pages 30 thru 32.

Variable Torque = 110% current for 1 minute.

Standard Duty = 120% current for 1 minute.

Heavy Duty = 150% current for 1 minute.

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — SG SERIES

SG SERIES DIMENSIONS - 230 V

HP	Enclosure Dimensions			
	No Options	With Circuit Breaker or Line Reactor	3-Contactor Bypass	3-Contactor Bypass & Circuit Breaker
7.5	30x24x16	30x24x16	30x24x16	30x24x16
10	30x24x16	30x24x16	30x24x16	30x24x16
15	30x24x16	30x24x16	30x24x16	30x24x16
20	30x24x16	30x24x16	30x24x16	30x24x16
25	30x24x16	30x24x16	30x24x16	30x24x16
30	30x24x16	30x24x16	30x24x16	30x24x16
40	36x30x16	36x30x16	36x30x16	36x30x16

SG SERIES DIMENSIONS - 460 V

HP	Enclosure Dimensions			
	No Options	With Circuit Breaker or Line Reactor	3-Contactor Bypass	3-Contactor Bypass & Circuit Breaker
7.5	30x24x16	30x24x16	30x24x16	30x24x16
10	30x24x16	30x24x16	30x24x16	30x24x16
15	30x24x16	30x24x16	30x24x16	30x24x16
20	30x24x16	30x24x16	30x24x16	30x24x16
25	30x24x16	30x24x16	30x24x16	30x24x16
30	30x24x16	30x24x16	30x24x16	30x24x16
40	36x30x16	36x30x16	36x30x16	36x30x16
50	36x30x16	36x30x16	36x30x16	36x30x16
60	36x30x16	36x30x16	36x30x16	36x30x16
75	36x30x16	36x30x16	36x30x16	36x30x16
100	46x30x16	46x30x16	70x30x24	70x30x24
125	46x30x16	46x30x16	70x30x24	70x30x24
150	87x31x24	87x31x24	87x48x24	87x48x24
200	87x31x24	87x31x24	87x48x24	87x48x24
250	87x31x24	87x37x24	87x48x24	87x48x24
350	87x37x24	87x48x24	87x48x24	87x72x24
400	87x37x24	87x48x24	87x48x24	87x72x24
500	87x48x24	87x48x24	87x72x24	87x96x24
600	87x48x24	87x72x24	87x72x24	87x96x24
700	87x48x24	87x72x24	Consult Factory	Consult Factory

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — PILOT DEVICES

PUSH-BUTTONS

Model Number	Description	List Price
QB	Raised Stop Push-Button — Red	\$100.00
QC	Flush Start Push-Button — Green	\$100.00
QD	Jog Push-Button - Yellow	\$100.00
QE	OI Reset Push-Button — (For External OI Relay) — Black	\$100.00
QF	Reset Push-Button — Black	\$100.00
QG	Raised Push-Button — Specify Color and Function	\$100.00
QH	Flush Push-Button — Specify Color and Function	\$100.00
QJ	Mushroom Head Stop Push-Button — Red	\$125.00
QK	Illuminated Push-Button — Specify Color and Function	\$200.00
QL	On/Off Push-Button	\$100.00
QM	O/L trip Reset Button	\$100.00

PILOT LIGHTS

Model Number	Description	List Price
QN	Red Run Light	\$125.00
RJ	Green Stop Light	\$125.00
RK	Amber Fault Light	\$125.00
RL	Green Ready Light	\$125.00
RM	Amber Bypass Light	\$125.00
RN	Red Light — Specify Function	\$125.00
RP	Green Light — Specify Function	\$125.00
RQ	Amber Light — Specify Function	\$125.00
RR	White Light — Specify Function	\$125.00
RS	Blue Light — Specify Function	\$125.00
RT	Push to Test Contact Assembly (Addition to Above)	\$200.00
QP	Power On Light — White	\$200.00

SELECTOR SWITCHES

Model Number	Description	List Price
QV	Hand-Off-Auto Selector Switch	\$200.00
QW	Local-Off-Remote Selector Switch	\$200.00
TV	Key-Operated Hand-Off-Auto Selector Switch	\$250.00
TW	Dual Ramps Selector Switch	\$200.00
TX	Two-Position Selector Switch — Specify Function	\$200.00
TY	Three-Position Selector Switch — Specify Function	\$200.00
TZ	Other Selector Switch — Specify Function and Type	CF

For additional options, contact factory.

CF - Contact Factory

METERS

Model Number	Description	List Price
KT	Analog Ammeter	\$300.00
KU	Analog Ammeter (3-phase with selector)	\$300.00
KV	Analog Voltmeter	\$300.00
KW	Analog Voltmeter (3-phase with selector)	\$300.00
KX	Elapsed Timer Meter (analog, non-resettable)	\$300.00
KY	Operations Counter	
KZ	AC Wattmeter	
L2	AC Watt Hour Meter	
L3	Other Power Metering - Specify Function	
L4	Analog Ammeter (utilizes VFDs analog output)	
L5	Analog Voltmeter (utilizes VFDs analog output)	

POTENTIOMETERS

Model Number	Description	List Price
S7	1 Turn Potentiometer - NEMA 1	\$225.00
S8	10 Turn Potentiometer - NEMA 1	\$250.00

SPACE HEATERS

Model Number	Description	List Price
A171	Space Heater with Thermostat	\$450.00

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — LINE REACTORS (INSTALLED)

230 V — INPUT 3% AC LINE REACTORS

Model Number	HP	Volts	List Price
GA	1	230	\$345.00
GB	2	230	\$355.00
GC	3	230	\$395.00
GD	5	230	\$465.00
GE	7.5	230	\$525.00
GF	10	230	\$545.00
GG	15	230	\$565.00
GH	20	230	\$595.00
GJ	25	230	\$755.00

460 V — INPUT 3% AC LINE REACTORS

Model Number	HP	Volts	List Price
GL	2	460	\$215.00
GM	3	460	\$235.00
GN	5	460	\$245.00
GP	7.5	460	\$275.00
GQ	10	460	\$345.00
GR	15	460	\$425.00
GS	20	460	\$445.00
GT	25	460	\$465.00
GU	30	460	\$595.00
GV	40	460	\$655.00
GW	50	460	\$750.00
GX	60	460	\$775.00
GY	75	460	\$1,050.00
GZ	100	460	\$1,195.00
H2	125	460	\$1,675.00
H3	150	460	\$1,725.00
H4	200	460	\$2,195.00
H5	250	460	\$2,425.00
H6	300	460	\$2,495.00
H7	350	460	\$2,855.00
H8	400	460	\$3,155.00
H9	500	460	\$5,425.00
HA	600	460	\$6,875.00
HB	700	460	\$8,050.00

460 V — INPUT 5% AC LINE REACTORS

Model Number	HP	Volts	List Price
HN	2	460	\$265.00
HP	3	460	\$295.00
HQ	5	460	\$315.00
HR	7.5	460	\$355.00
HS	10	460	\$425.00
HT	15	460	\$515.00
HU	20	460	\$535.00
HV	25	460	\$565.00
HW	30	460	\$725.00
HX	40	460	\$785.00
HY	50	460	\$900.00
HZ	60	460	\$935.00
J2	75	460	\$1,265.00
J3	100	460	\$1,450.00
J4	125	460	\$2,000.00
J5	150	460	\$2,095.00
J6	200	460	\$2,650.00
J7	250	460	\$2,925.00
J8	300	460	\$2,995.00
J9	350	460	\$3,425.00
JA	400	460	\$3,785.00
JB	500	460	\$6,500.00
JC	600	460	\$8,250.00
JD	700	460	\$9,665.00

Line reactors reduce harmonics and protect the variable frequency drive from input power quality problems. They are also recommended on applications where the transformer kVA exceeds 10 times the KVA rating of the drive.

For additional options, contact factory.

ENGINEERED PACKAGE OPTIONS

SENSORLESS VECTOR DRIVES — LONG LEAD FILTERS (INSTALLED)

460 V — LONG LEAD FILTERS

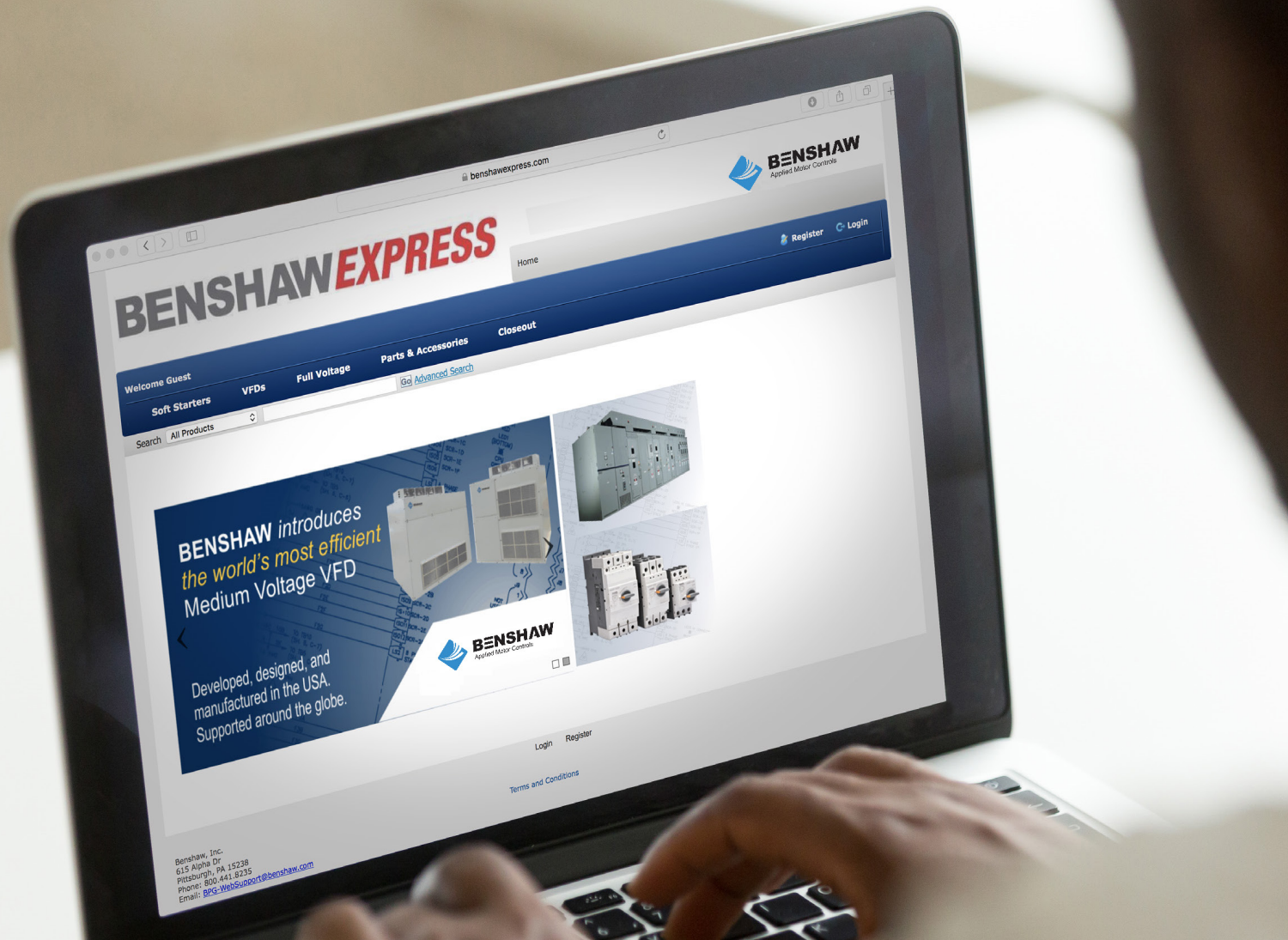
Model Number	HP	Volts	List Price
JW	1	460	\$1,050.00
JX	2	460	\$1,095.00
JY	3	460	\$1,125.00
JZ	5	460	\$1,200.00
K2	7.5	460	\$1,295.00
K3	10	460	\$1,350.00
K4	15	460	\$1,395.00
K5	20	460	\$1,455.00
K6	25	460	\$1,495.00
K7	30	460	\$1,550.00
K8	40	460	\$1,695.00
K9	50–60	460	\$2,095.00
KA	75	460	\$2,625.00
KB	100	460	\$2,965.00
KC	125	460	\$3,150.00
KD	150	460	\$3,365.00
KE	200	460	\$3,450.00
KF	250	460	\$3,595.00
KG	300	460	\$3,850.00
KH	350	460	\$4,125.00
KJ	400	460	\$4,625.00
KK	500	460	\$9,450.00
KL	600	460	CF
KM	700	460	CF

Long lead filters should be considered on applications where the cable distance between the motor and the variable frequency drive exceeds 300 feet.

Long lead filters protect the motor from high dV/dt.

Consult motor manufacturer on selection of output filter.

CF - Contact Factory



Benshaw's standard products are stocked in warehouses in the USA and Canada... ready for shipment to support your critical needs:

Benshaw.com

In the USA, call or fax

Phone: 412.968.0100

Fax: 412.968.5415

In Canada, call or fax

Phone: 519.291.5112

Fax: 519.291.2595

BenshawExpress.com

If you prefer to order online, BenshawExpress.com provides direct digital access to our complete inventory of standard controls, drives and spare parts - 24 hours a day, seven days a week, 365 days a year.

Save time with 24/7 online access at **benshawexpress.com**

Benshaw Express is a convenient, time-saving tool for Benshaw authorized distributors.

The Benshaw web store enables users 24/7 access to:

- Check price and availability
- Place orders
- Track open orders
- Obtain tracking for shipped orders
- View freight charges for recent shipments
- View invoices
- Customized levels of access

Access Benshaw Express by following the link on **Benshaw.com** or directly at **BenshawExpress.com**.

24/7 Technical Support

Benshaw is dedicated to providing comprehensive 24-hour-a-day, 7-day-a-week phone support. Benshaw provides repair, spare parts, field engineering, retrofit and training services, when and where you need us. You can count on our experienced team, backed by the latest diagnostics and repair tools and an extensive part inventory to support your operations.

Call 1.800.203.2416

24/7 Hotline Support from our operations

in Pittsburgh and Listowel (Canada):

- Technical phone support
- Overnight parts shipment
- 24-hour service dispatch
- Coordination of all service capabilities

Repairs

Repairs are made on Benshaw equipment by trained, experienced personnel, using the latest diagnostic and test equipment.

Field Services are performed on-site by skilled technicians, engineers or complete team if needed, including:

- Start-up commissioning
- Field repairs
- Field analysis/data collection
- Preventative maintenance
- Retrofits

The Benshaw Product Line

A wide range of motor controls and drives is available.

- Solid-state starters fractional up to 30,000HP at 15kV
- LV AC drives to 2,000HP, MV AC drives to 10,000HP
- Electromechanical controls to 800A

Benshaw express is a 24/7 online inventory and order entry system for authorized Benshaw distributors:

- 24/7 shipment
- Air or truck delivery

Visit us online at
benshaw.com and
benshawexpress.com,
or contact:

BENSHAW, Inc.

615 Alpha Drive
Pittsburgh, PA 15238
Phone: 412.968.0100

BENSHAW Canada

550 Bright Street East
Listowel, Ontario N4W
3W3
Phone: 519.291.5112
Fax: 519.291.2595

Specifications are subject to change without notice.

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BENSHAW
Applied Motor Controls