2022/2023

BURNER BOOK

COCHRANE SUPPLY

TRAINING
COMBUSTION CONTROLS
TRAINING

CONTROLS FOR COMMERCIAL & INDUSTRIAL BURNER BOILER APPLICATIONS

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COCHRANE SUPPLY

www.cochranesupply.com

SHOP IN-STORE, EARN REWARDS!

Earn a variety of prizes when you purchase Flame Safeguard products at any Cochrane Supply counter now through February 28, 2023!* For counter orders:

- **Over $500,** get a $5 Gift Card!
- **Over $1,000,** get a signature Cochrane Supply ball cap.
- **Over $1,000,** get a Cochrane Supply spring assisted folding knife!
- **Over $2,000,** get a Cochrane Supply Stadium Seat!

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COCHRANE SUPPLY

Your Leading **Smart Building Controls** Distributor.

ACTi
Video Surveillance & Analytics
Acuity Brands
Lighting Controls
Adams Manufacturing
Ignition Modules
Advanced Controls, Inc.
Relays & Starters
AIPHONE
Intercom Solutions
Altronix
Security Power Solutions
ANT Technologies
Cloud-Based Project & Service Tracking
Antunes
Pressure Switches
Apollo (Air Products)
Smoke Detectors & Accessories
ASCO
Solenoid Valves & Actuators
Automation Components, Inc.
BAS Sensors & Transmitters
AXIS Communications
Video Surveillance
BAPI
BAS Sensors & Transmitters
Barnes & Jones
Steam Traps & Repair Parts
BASO Gas Products LLC
Gas Valves, Pilots, Ignition Modules
Belimo
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Cleveland Controls
Pressure Switches
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Neptronic
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Norgas
Gas Regulators & Meters

ONICON
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Networks & BACnet Networking Tools
Phoenix Contact
Industrial Controls, Panel Accessories & Networking
Prolon Controls
Light Commercial Building Controls
Relevant Solutions (Intec Controls)
Gas Detection
Resideo (Honeywell Homes)
Residential Comfort & Combustion
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Tekmar Controls
Boiler Controls
Testo
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VPN Solutions
Triatek
Fume Hood Controls
Tridium, Inc.
Building Automation & Security Software
United Enertech
Dampers, Louvers, Fans & Air Measuring
Vaisala, Inc.
Sensing Devices
Valley Tool & Design
Damper Accessories
Veris Industries
Energy Management Solutions
Viconics
Building Controls
Wattstopper by Legrand
Lighting Controls
Weiss Instruments
Temperature & Pressure Instruments
Westwood Products
Flame Rods & Igniters
White Rodgers
Residential Comfort & Controls
Yaskawa
Variable Frequency Drives

3

Honeywell

PRIMARY FSG RELAYS

RM7890 Primary Controls
Replaces RA890F,G,H, & Requires Q7800 Subbase & R78 Amplifiers

RM7890A1015	Automatic Primary Relay
RM7890B1014	Automatic Primary Relay, Shutter Drive
RM7890B1048	Enhanced Primary with VPS**

RM7895 Primary Controls
Replaces R7795A,B—R4795A,D & Requires Q7800 Subbase, R78A Amplifiers & ST Purge Cards

RM7895A1014	Intermittent Primary Relay
RM7895B1013	Intermittent Primary Relay with Air Flow Switch Check
RM7895C1012	Interrupted Primary Relay
RM7898A1000	Enhanced Primary with VPS**

RM7838A and B Semi-Automatic Primary Controls
Replaces R4138, Requires Q7800 Subbase, R78 Amplifiers & ST Purge Cards

RM7838A1014	Semi-Automatic Primary Relay with Display
RM7838B1013	Enhanced Primary Relay with Display

PROGRAMMER FSG RELAYS

RM7840 Programmer FSG Relay
Replaces R4140 & Requires Q7800 Subbase, R78 Amplifiers, ST Purge Cards

RM7840E1016	Relay Module, 4-Wire Modulation, Proven High/Low Fire, ESP*
RM7840G1014	Relay Module, 4-Wire Modulation, Proven Low Fire
RM7840L1018	Relay Module, 4-Wire Modulation, Proven High/Low Fire
RM7840M1017	Relay Module, On/Off, Proven Low Fire
RM7840L1075	Enhanced Programmer with Purge & VPS**

RM7800 Programmer FSG Relay
Replaces BC7000 (includes keypad) & Requires Q7800 Subbase, R78 Amplifiers, ST Purge Cards

RM7800E1010	Relay Module with Keypad, 4-Wire Modulation, Proven High/Low Fire, ESP*
RM7800G1018	Relay Module with Keypad, 4-Wire Modulation, Proven Low Fire
RM7800L1012	Relay Module with Keypad, 4-Wire Modulation, Proven High/Low Fire
RM7800M1011	Relay Module with Keypad, On/Off, Proven High/Low Fire
RM7800L1087	Enhanced Programmer with Keypad & VPS**

*ESP = Energy Savings Prepurge **VPS = Valve Proving System

TEST

FREE FSG RELAY TESTING by professionally-trained staff at any Cochrane Supply store counter!

**S7800A1142
Enhanced Keyboard**
Allows for programming the VPS and post purge as well as configuring of S7830 expanded annunciator terminals to match user system drawings, providing an aid for troubleshooting.

**S7800A2142
Display Module**
Allows for programming the VPS and post purge. Provides current system status and first-out annunciation and system diagnosis using a five-row by 64-column readout. The KDM is part of the 7800 series of microprocessor-based burner controls for gas/oil/coal or combination fuel single burner applications.

**S7810M1003
ControlBus Module-MODBUS**
Operates as ModBus RTU slave device with ability to remotely mount the S7800 Keyboard Display Module. It installs directly on the front of 7800 Series Relay Modules and provides ModBus communications bus interface with remote reset option.

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FLAME SIGNAL AMPLIFIERS

|	
R7847A1025	Green, Rectification, 0.8 to 1 Second Response Time
R7847A1033	Green, Rectification, 2 to 3 Second Response Time
R7847B1023	Green, Rectification, Dynamic AMPLI-CHECKtm 0.8 to 1 Second Response Time
R7847B1031	Green, Rectification, Dynamic AMPLI-CHECKtm 2 to 3 Second Response Time
R7847C1005	Purple, Ultraviolet, use with Purple-Peeper, Dynamic AMPLI-CHECKtm 2 to 3 Second Response Time
R7848A1008	Red, Infrared, 2 to 3 Second Response Time
R7849A1015	Purple, Ultraviolet, 0.8 to 1.0 Second Response Time
R7849A1023	Purple, Ultraviolet, use with Mini-Peeper, 2 to 3 Second Response Time
R7849B1013	Purple, Ultraviolet, use with Mini-Peeper, Dynamic AMPLI-CHECKtm 0.8 to 1 Second Response Time
R7849B1021	Purple, Ultraviolet, use with Mini-Peeper, 2 to 3 Second Response Time, Circuitry Self Test
R7851B1000	White, Ultraviolet, Dynamic AMPLI-CHECKtm 2 to 3 Second Response Time
R7852A1001	Red /White, Infrared, 2 to 3 Second Response Time
R7861A1026	Purple, Ultraviolet, 2 to 3 Second Response Time Used With C7061 Detector
R7886A1034	Blue, Ultraviolet, Dynamic SELF-CHECK, 0.8 to 1 Second Response Time, ...Adjustable Sensitivity
R7886A1001	Blue, Ultraviolet, Dynamic SELF-CHECK, 2 to 4 Second Response Time, Adjustable Sensitivity

PLUG-IN PURGE TIMER CARD

Q7800A1005	Universal Wiring Subbase, Panel Mounting
Q7800B1003	Universal Wiring Subbase, Wall Mounting

Use with RM7800, RM7840, RM7895, RM7838 Relay Modules

Part Number	Prepurge Timing
ST7800A1005	2 seconds
ST7800A1013	7 seconds
ST7800A1021	10 seconds
ST7800A1039	30 seconds
ST7800A1047	40 seconds
ST7800A1054	60 seconds
ST7800A1062	90 seconds
ST7800A1070	2.5 minutes
ST7800A1088	4.0 minutes
ST7800A1096	6.0 minutes
ST7800A1104	9.0 minutes
ST7800A1112	12.0 minutes
ST7800A1120	15.0 minutes
ST7800A1138	22.0 minutes
ST7800A1146	30.0 minutes
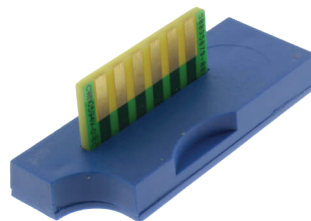
PILOT ASSEMBLIES

Rectification flame sensing can be used with Honeywell and Fireye amplifiers.

Part Number	Description	Application
FRS4-12 FRS4-6	Flame Rod, 1/4" NPT Mount 12" Rod Flame Rod, 1/4" NPT Mount 6" Rod	Standard Flame Rod, cut to length, heat before bending
Q179A1001 Q179A1035 Q179A1050 Q179A1092	I Tip Style 45° RH Tip Style T Tip Style 45° T Tip Style	Flame Rod & Gas Pilot, for intermittent or interrupted ignition

IGNITION TRANSFORMERS

Part Number	Description
A06-SA6	120 VAC Primary, 6000 VAC Secondary, 175 VA, 60 Hz, 1 Phase
A10-LA2	120 VAC Primary, 10000 VAC Secondary, 250 VA, 60 Hz
Q624A1014	120 VAC, 50/60 Hz

INFRARED FLAME SENSORS

Part Number	Description
C7915A1028	3/4" NPT Mount, 48" Lead Wire with Lead Sulfide Photocell, -20 to 125°

C7915

ULTRAVIOLET FLAME SENSORS

Part Number	Description
C7027A1023	MiniPeeper, 0 to 215°
C7027A1031	MiniPeeper, 1/2" Mount, 8' Lead Wire, -40 to 215°
C7027A1049	MiniPeeper, 1/2" Mount, 8' Lead Wire, 1/2" NPT Conduit, 0 to 215°
C7027A1064	MiniPeeper, 1/2" Mount, 24' Lead Wire, 1/2" NPT Conduit, -40 to 215°
C7027A1072	MiniPeeper, 1/2" Mount, 8' Lead Wire, 1/2" NPT Conduit, -40 to 215°
C7035A1023	1" Mount, 6' Lead Wire, Replaceable UV Tube, 0 to 250°
C7012E1112	1" NPT Mount, Dynamic Self-Check, 120V
C7012E1146	3/4" NPT Mount, Dynamic Self-Check, 208V
C7012E1153	1" NPT Mount, Dynamic Self-Check, 120V, Low Temp, -40 to 175°
C7961E1014	1" NPT Mount, Dynamic Self-Check, 120V, Low Temp, -40 to 175°

C7961E1014

TEST

FREE TESTING on RM7800 Series 1000 & the OEM Series 2000 version controllers at Cochrane Supply counters!

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HONEYWELL SLATE - Integrated Combustion Equipment Management!

A single platform for almost any application. With the revolutionary integration of configurable safety and programmable logic, SLATE is easily customized for virtually any commercial or industrial combustion application. In less time, and with far less complexity. With SLATE, your team can engineer custom solutions for a variety of markets without going back to the manufacturer. Purchase only the modules your application requires and choose how to use them.

Actuators

FEATURES:
- It's modular—buy only the modules you need and choose how to use them with simple wiring commands
- Provides 24 VDC or 24 to 240 VAC flame safeguard
- Dual fuel capability; DIN rail mountable
- Designed to mount inside electrical enclosure as part of a system
- Flexible programming tools help you develop and implement differentiating applications more quickly
- Load your custom application kit with a PC for faster duplication
- SLATEAXTOOL software install and license required

powered by

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framework®

| Base Unit R8001A1001 | Burner Control R8001B2001 | UV Flame Amp R8001S1071 | Fuel Air Ratio R8001C6001 | Safety Limit R8001L8001 | Annunciator R8001N7001 | Digital I/O R8001D4001 | Analog I/O R8001U3001 |

HONEYWELL SLATE COLOR DISPLAY - 10" Color LCD Display

R8001K1010

The R8001K1010 SLATE 10" Color Touch Screen Display provides users with the ability to create vivid application displays using web technology. The screen is web enabled, and with the SLATE Web Editor tool, creating screens is simple and easy.

FEATURES:
- Display screens are web pages served from SLATE Base Module
- Integrated view of SLATE system
- Standard Honeywell pages for Burner Control, Fuel Air Ratio, Limit and Base Modules

FLAME SCANNERS

SIEMENS

QRA2(1) UV Scanner U.V. side-viewing detector with flange and clamp used with LFL Burner Controls
QRA4U UV Scanner QRA4U U.V. detector with NPSM thread conn. for LFL Burner Controls
QRA10 UV Scanner U.V. detector with die cast aluminum housing normal sensor tube
QRA75 UV Scanner U.V. self scanner for LMV

QRA4U

QRA2(1)

QRA75

QRA10

LME7 BURNER CONTROL

The burner control LME7 is a microprocessor-based unit with matching system components for the control and supervision of forced draft burners of medium to high capacity. Ease of installation, programming and commissioning are incorporated into a reliable, field proven control.

LFL FLAME SAFEGUARD

With an incomparable record for safety and reliability, the globally approved LFL Flame Safeguard continues to be one of the most widely used flame safeguards around the world. Siemens LFL burner controls provide burner sequencing and flame monitoring for the supervision of individual gas, oil, or dual fueled burners.

SQN7 CONTROL MOTOR

Designed to drive gas and air dampers for burners with small to medium capacities, the SQN7 Control Motor provides line voltage, floating control and optional feedback for low torque applications. Features include: line voltage floating or proportional control, optional feedback potentiometer, up to 22 in-lb torque, and an auxiliary switch.

LDU11 VALVE LEAK TEST SYSTEM

The Siemens LDU11 gas valve leak test control checks for leakage through the shutoff valves prior to burner start-up and/or immediately after burner shutdown. The cost-effective, easy to install LDU11 adds a substantial degree of safety to any combustion system.

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SIEMENS LMV3

The LMV3 Linkageless Burner Management System sets an industry standard for cost-effective single or dual fuel burner controls-from easy installation, programming and commissioning to reliable, proven control. Effortless commissioning, simple programming, and easy installation allows for maximum ROI.

With the LMV3, Siemens forges new ground delivering a fully-integrated flame safeguard, linkageless system that is not only easy to install and use, but also provides improved burner performance and efficiency and ensures safe operation.

• Single and dual fuel versions
• Gas valve leak test on startup, shutdown, both or neither
• Proof of closure switch monitoring

• Programmable overlap of the pilot and main gas valves
• Programmable stops to pause startup sequence in: pre-purge, pre-ignition, pilot ignition, and main flame
• Adjustable purge timing up to 60 minutes
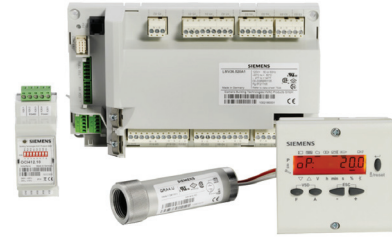
SIEMENS LMV5

The LMV5 Linkageless Burner Management System sets the standard high–from easy installation, programming and commissioning to reliable, proven control. With the LMV5, Siemens forges new ground delivering a fully-integrated system that is not only easy to install and use, but also provides improved burner performance and efficiency and ensures safe operation.

• Fuel to air ratio curve can easily be adjusted at any point in the firing rate
• 15 programmable points, with 4 independent positions including pre-purge, ignition, post-purge and standby
• User friendly menu system for fast programming, commissioning
• Worldwide approvals and technical support

RWF50 TEMPERATURE CONTROLLER

The RWF50 is used mainly for controlling the temperature or pressure in oil- or gas-fired heating plants. It is used either as a 3-position controller without angular positioning feedback or a continuous controller with analog output depending on the version. An external switch can be used to change to a 2-position controller for controlling 2-stage burners. The integrated thermostat function switches the burner on and off.

PRIMARY FSG RELAYS

Micro M Series
Replaces UVM, TFM, M Series II

Chassis
MEC120   VAC with Standard Plug-in Board

Programmer Modules
MEP100   Relight Operation, 10 Second, PTFI
MEP230   Selectable Purge, PTFI Timing, Recycle or Non-Recycle
                     Post Purge, Prove Air Open at Start

Amplifier Modules
MEUVI   Ultraviolet, 0.8 Second Response Time
MEUV4   Ultraviolet, 3 Second Response Time
MERT1   Flame Rod, Photocell, 0.8 Second Response Time
MERT4   Flame Rod, Photocell, 3 Second Response Time

M-Series II
Replaces UVM & TFM

Chassis

MC120   120 VAC, Standard
MC120R   120 VAC with Remote Reset Capability

Programmer Modules

MP100   Relight Function
MP230   Selectable Recycle/Non-Recycle Function, Trial Flame
                     Ignition and Purge Timing

Amplifier Modules

MAUV1   Ultraviolet, 2-4 Second Response Time
MAUV1T   Ultraviolet, 0.8 Second Response Time
MART1   Flame Rod, 2-4 Second Response Time
MART1T   Flame Rod, 0.8 Second Response Time

Subbases for Both Micro M and M-Series II

61-3060   Surface Mounting, Closed
61-5042   Cabinet Mounting, Open

Micro M Series

M Series II

MP100

61-3060

TEST

FREE FSG RELAY TESTING
by professionally-trained staff at
any Cochrane Supply store counter!

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PRIMARY FSG RELAY CROSS-REFERENCE

MicroM Replacement from old M-Series and M-Series II

M-Series	M-Series II			MicroM Series		
Assembly	Chassis	Amplifier	Programmer	Chassis	Amplifier	Programmer
UVMID	MC120	MAUV1T	MP100	MEC120	MEUV1	MEP100
UVM1F	MC120	MAUV1	MP100	MEC120	MEUV4	MEP100
TFM1D	MC120	MART1T	MP100	MEC120	MERT1	MEP100
TFM1F	MC120	MART1	MP100	MEC120	MERT4	MEP100
UVM2	MC120	MAUV1	MP230	MEC120	MEUV1	MEP230
TFM2	MC120	MART1	MP230	MEC120	MERT4	MEP230
UVM3	MC120	MAUV1	MP230	MEC120	MEUV4	MEP230
TFM3	MC120	MART1	MP230	MEC120	MERT4	MEP230

PROGRAMMER FSG RELAYS

Flame Monitor® Control

E110

Chassis
E110   Flame Monitor Control, Standard, w/Dust Cover & Screw

Display
ED510   Display Module, LCD Display w/Keypad, 2 Line x 16
                Characters, For Programmers and Primary Relays

Programmer Modules
EP160   30 Second Purge, 10 & 15 Second Trial for Ignition,
                4 Second Response Time, Non-Recycle, Modulation
EP260   30 Second Purge, 10 & 15 Second Trial for Ignition,
                4 Second Response Time, Recycle, Modulation
EP380   30 Second Purge, 5 & 10 Second Trial for Ignition,
                4 Second Response Time, Recycle, On-Off
EP390   90 Second Purge, 5 & 10 Second Trial for Ignition,
                4 Second Response Time, Recycle, On-Off
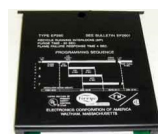
ED510

Amplifier Modules
EUV1   Ultraviolet Amplifiers
EIR1   Infrared Amplifier (High Sensitivity)
ERT1   Flame Rod Amplifier

EP160

D & E Series Subbases
60-1386-2   Closed Base
60-1466-2   Open Base

EIR1

INFRARED FLAME SENSORS

Fireye Part Number	Description
48PT1-1003	1/2" NPT Straight Mount, 8' Lead Wire, Older Style*
48PT1-9003	1/2" NPT Angle Mount, 8' Lead Wire, Older Style*
48PT1-9007	1/2" NPT Angle Mount, 4' Lead Wire, Older Style*
48PT2-1003	1/2" NPT Straight Mount, 8' Lead Wire
48PT2-1007	1/2" NPT Straight Mount, 4' Lead Wire
48PT2-9003	1/2" NPT Angle Mount, 8' Lead Wire
48PT2-9007	1/2" NPT Angle Mount, 4' Lead Wire

*Older Style: P-Series Controls (e.g. 28FJ8, 29RF5)

ULTRAVIOLET FLAME SENSORS

Fireye Part Number	Description
UV1A6	1/2" NPT Mount, 6' Lead Wire, Non-Replaceable Tube
UV2	3/8" NPT Mount, 3' Lead Wire, Non-Replaceable Tube
45UV5-1009	1" NPT Mount, 8' Lead Wire, Self-Checking, Explosion Proof

FIREYE INTEGRATED SCANNERS

Simplicity 65UV5
The Fireye 65UV5 flame scanner is a microprocessor-based flame scanner utilizing an ultraviolet tube-type sensor and an electro-mechanical self-checking shutter mechanism. The Fireye 65UV5 flame scanner incorporates an internal flame relay with a fixed ON/OFF threshold thereby eliminating the need for an external flame amplifier.

 65UV5

Phoenix 85UVF
The Fireye Phoenix type 85UVF/IRF flame scanners are microprocessor-based devices utilizing a solid state flame detection sensor. The Phoenix flame scanners incorporate an internal flame relay with automatically set ON/OFF thresholds, thereby eliminating the need for a remote flame amplifier or flame switch.

 85UVF

InSight 95IR/95UV/95DS
The Fireye InSight Type 95IR, 95UV, and 95DS flame scanners are microprocessor-based flame scanners utilizing solid state infrared (IR), ultraviolet (UV) or dual (IR and UV) sensors. The Fireye InSight Type 95 flame scanners incorporate an internal flame relay with adjustable ON/OFF thresholds, thereby eliminating the need for a remote flame amplifier.

 InSight

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Did you know that Cochrane Supply offers training on numerous topics including Flame SafeGuard and Combustion Theory Analysis? Learn from our industry leaders by sIgning up at cochranetechservices.com!

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FIREYE NEXUS - Intregrated Flame Safeguard Capabilities!

NXF4000
The NXF4000 is an electronic parallel positioning and O2 trim combustion control system built into a compact, flexible user-configurable package. This controller will support sequencing/lead lag and up to 10 servo motors.

PPC6000
The Fireye PPC6000 is a state of the art stand-alone parallel positioning system for all types of liquid or gaseous fuel fired combustion systems. When combined with a Fireye flame safeguard system such as the Fireye BurnerLogix control, the PPC6000 offers the most compact and advanced parallel positioning system available.

PPC4000
The PPC4000 is an electronic parallel positioning and O2 trim combustion control system built into a compact, flexible user-configurable package. This controller will support sequencing/lead lag and up to 10 servo motors.

NXTSD507HD   NXF4000

NXD410TS

NXD410 Keypad Display
The NXD410 is a full text-based LCD display. Fifteen keys, including fast-access, one-push keys, provide information at a glance.

Servo Motors
Three servo motor sizes are available for the PPC4000. High accuracy 0.1 degree over 90 degrees resolution.

PPC4000

O2 Probe
Fireye's oxygen probe provides stack temperature and oxygen measurement. Available in three lengths with a low cost replaceable sensor. Oxygen trim automatically and continuously compensates for all the variables that affect efficient combustion.

Danfoss
Full range of drives from 208-240, 380-480 and 500-600 volts three-phase. Save time during commissioning while reducing programming errors that can lead to nuisance faults. Additional product features:

Danfoss

- Pre-configured at the factory for use with the Fireye Nexus product line
- Auxiliary contact blocks mounted and wired to terminals for Blower Motor Starter Interlock requirement
- One additional auxiliary contact block for profile selection when applied with the Fireye PPC series, mounted and wired to terminals
- Single line voltage input for start in both VFD and Bypass mode
- Line voltage contactors for drive output and bypass
- Dedicated Danfoss/Fireye wiring diagram clearly showing all required interconnecting wiring between the Nexus and the drive. Also includes a list of all option parameters changed by the factory for reference.

NXCESO2

Servo Motor

YP110

FX04, FX20, FX50

BURNERLOGIX

|	
Chassis/Amplifier	120 VAC, 50/60 Hz | YB110UV, YB110UVSC, YB110IR, YB110FR, YB110DC
	230 VAC, 50/60 Hz | YB230UV, YB230UVSC, YB230IR
Programmer Module	YP100, YP102, YP200, YP202, YP300, YP302, YP113, YP138, YP118
Display Module	BLV512 - Vacuum Flourescent, BLL510 - Liquid Crystal
Wiring Base	60-2814-1 | Open Bottom, Cabinet Mount 60-2812-1 | Closed Bottom, Conduit Knockout
Wiring Base	60-2810-1 | Pre-Wired, 4-Foot, Color-Coded

BLV512 w/Optional Display

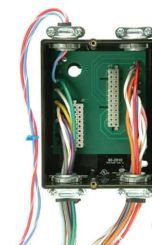BLV512 w/Optional Display & Programmer
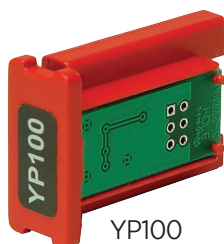
YP100
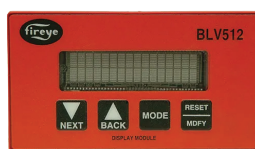
BLV512

60-2814-1

60-2810-1

Note: The Phoenix QDWR models with electrical quick-disconnect have replaced the original WR models equipped with 10 feet of captive cable. The QDWR models (with 59-546-X cables) are also suitable for use in Class I Division 2 hazardous areas, thereby eliminating the need for the "EXWR" models.

VERIS WET DIFFERENTIAL PRESSURE SENSORS

|	
PWLX04S	12 to 30 VDC/24 VAC Input 4 to 20 mA/0 to 5 V/0 to 10 V Output Wet Media Differential Pressure Transducer with LCD Display, 0 to 100 psig
PW2LX04S	12 to 24 VDC Input 4 to 20 mA Output Wet Media Differential Pressure Transducer with LCD Display, 0 to 100 psig
PWRLX04S006A	15 to 30 VDC/24 VAC Input 4 to 20 mA/0 to 5 V/0 to 10 V Output Wet Media Differential Pressure Remote Transducer with 6 ft Armored Cable, 0 to 100 psig
PWXX04S	12 to 30 VDC/24 VAC Input 4 to 20 mA/0 to 5 V/0 to 10 V Output Wet Media Differential Pressure Transducer, 0 to 100 psig

PWRLX04S006A

PWLX04S

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PHOENIX CONTACT ILC 2050 BI

The ILC 2050 BI is a Niagara-based controller that is ideal for mission-critical applications, including boiler rooms. It is compatible with the existing Niagara workbench used to program any Niagara controller. Its I/O is easily discoverable within the Niagara workbench with free rivers specific to this controller. The ILC 2050 BI includes the following features:

- Industrially-graded hardware
    - UL 508 certification
    - Shock-and-vibration testing
    - I/O port-to-port isolation
- Dense I/O expandability in a small footprint
- Modularity of I/O for mixing and matching signals as needed
- Time-optimized engineering using the Niagara 4 framework
- Support for all the main communication protocols used in building infrastructure automation
- Planning, engineering, and visualization in the Java-based Niagara 4 framework
- Easy extension of the Niagara 4 framework with self-programmed functions
- Four LAN, two USB, and two RS-485 interfaces are integrated
- Safe and reliable intelligent safety solutions protect personnel and machinery, and ensure high system availability
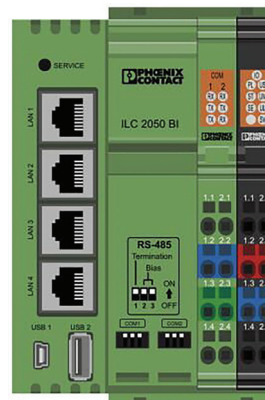
YASKAWA MATRIX DRIVE

The HV600 variable-speed drive (3-250 HP) is engineered for use in HVAC building automation applications requiring reliable motor control. The HV600 features your choice of IP20/UL Type 1, IP55/UL Type 12, or IP20/Protected Chassis protection classes. Every HV600 comes with HVAC application-specific software presets, a Hand-Off-Auto LCD keypad, a high-visibility Status Ring for quick visual indication of drive status, and a real-time clock for system accuracy.

- Simple steps for efficient commissioning
- DriveWizard® Mobile app for drive management on smart mobile devices
- Safe programming without main three-phase power
- Timer controls for starting, stopping, and speed changes
- Built-in building automation protocols
- Emergency Override for occupant safety in fire events

HV600

YASKAWA

The Z1000U Matrix Drive incorporates matrix technology to directly convert input AC voltage to output AC voltage. The drive is ideally suited for HVAC applications providing **ultra-low harmonic distortion**, energy savings, and serviceability in a space-saving design. The Z1000U HVAC Matrix Drive was honored with the **Product of the Year Award** by Consulting-Specifying Engineer Magazine.

Z1000U

TESTO COMBUSTION ANALYZERS

300 Combustion Analyzer
The user-friendly and highly efficient testo 300 with smart-touch technology has numerous advantages, including but not limited to:

FEATURES:
- Operation via smart-touch - The smart-touch display responds immediately without any delay, allowing intuitive operation.
- Emailing of reports - The testo 300 enables the convenient creation of documentation directly on site, and the dictation function even saves you typing in the process. Send reports immediately via Wi-Fi.
- Keep an eye on all measuring values - You can see the system's parameters right away on the large 5" HD display.
- Get the results faster - Clearly structured menus for all relevant measurements are already stored in the measuring instrument and guide you efficiently through the application.
- Completely worry-free - It has quality sensor technology, measures high CO values up to 30,000ppm and comes standard with the longest warranty in the industry.

SEITRON AMERICAS ANALYZERS

S1500-P Portable Combustion Analyzer with Built-In Printer
S1500-P Analyzer with O2, CO, CO2, Efficiency, Excess Air, Draft, Pressure, Temp, Rechargeable Battery and AC Plug, 12" (300mm) Probe with 5' (1.5m) Dual Hose, ABS Case, Calibration Certificate, Operating Manual, Cheat Sheet, Water Trap, Paper Roll, 2000 Internal Data Storage, PC Software, Bluetooth TM Connectivity, Differential Pressure Manometer Kit (1 Hose), Automatic Outdoor Air Temperature Saving for ALL 90%+ Systems and Condensing Systems for TRUE Efficiency Calculations + iOS and Android App Included.

S1500-P

S4500-3 Portable Commercial/Industrial Emissions Analyzer
S4500-3 Analyzer with O2, CO, Standard NO/NOx Gas Sensors, Upgradable to 4th Gas Sensor. Efficiency, Excess Air, Draft, Pressure, Temp, Rechargeable Battery and AC Plug, 12" (300mm) Probe with 5' (1.5m) Dual hose, ABS Case, Calibration Certificate, Operating Manual, Cheat Sheet, Water Trap, Paper Roll, 2000 Internal Data Storage, PC Software, Bluetooth TM Connectivity, Differential Pressure Manometer Kit (1 Hose), Automatic Outdoor Air Temperature Saving for ALL 90%+ Systems and Condensing Systems for TRUE Efficiency Calculations + iOS and Android App Included.

S4500-3

Novo Portable Combustion Analyzer
The Novo Combustion Analyzer is designed to make combustion analysis quick and intuitive. Robust, reliable, precise. The Novo inherits the tradition of the Seitron analyzers and joins it with renewed software and hardware in order to offer a device easier to use. Main Features: With or Without Build-In Printer, 7" Touch Display for Easy Menu Navigation, Up to 4 Gas Sensors Including Low NOx, Long-Life O2 Sensor and High-Range CO With Dilution Pump, Dedicated Probe With One Simple Connection, Integrated Water Trap with LED Backlight for Easy Maintenance, Simultaneous Measurement of Gas and Combustion Results, Dual Range Sensor Technology, and More.

Novo Series

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DUNGS PRESSURE SWITCHES

DUNGS®
Combustion Controls

The GAO-, GMH- and GML-A4... ventless pressure switches are adjustable pressure switches for automatic burner controls. These pressure switches are suitable for making and/or breaking a circuit when the medium pressure changes relative to the set point. The set point can be set in the field by an adjustable dial with an integrated scale. Test nipple integrated in metal housing to verify set point.

Part Number	Dung's Product Description
FGPS-GAO-002	GAO-A405 2-20 WC 217-092A
	GAO-A4-4-5 2-20 WC PIPE MT GAS SW NEMA4
	HI OR LOW AUTO RESET UL CSA FM
FGPS-GAO-1260	GAO-A4-4-6 12-60 WC 217-093A
	GAO-A4-4-6 12-60 WC PIPE MT GAS SW NEMA4
	HI OR LOW AUTO RESET UL CSA FM
FGPS-GMH-0120	GMH-A4-4-4 1-20 WC 217-326A
	GMH-A4-4-4 1-20 WC PIPE MT GAS SW NEMA4
	HIGH MAN RESET UL CSA FM
FGPS-GMH-1260	GMH-A4-4-6 12-60 WC 217-327A
	GMH-A4-4-6 12-60 WC PIPE MT GAS SW NEMA4
	HIGH MAN RESET UL CSA FM
FGPS-GML-0120	GML-A4-4-4 1-20 WC 217-340A
	GML-A4-4-4 1-20 WC PIPE MT GAS SW NEMA4
	LOW MAN RESET UL CSA FM
FGPS-GML-1260	GML-A4-4-6 12-60 WC 217-341A
	GML-A4-4-6 12-60 WC PIPE MT GAS SW NEMA4

GET YOUR COMBUSTION ANALYZER CALIBRATED BEFORE IT'S TOO LATE!

Did you know you can bring in your Testo, Sietron, or E-instruments analyzer to a Cochrane Suply Branch to be sent back for calibration repair. Stop in today to learn more!

V5097A,B VALVE
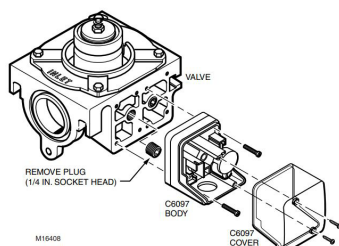
Part Number	Description; Pipe Size
V5097A1004/U	Small Body Low Pressure Integrated Valve; 3/4", 1", 1-1/4", 2"
V5097A1012/U	Large Body Low Pressure Integrated Valve; 2", 2-1/2", 3"
V5097B1002/U	Small Body Low Pressure Integrated Valve; 3/4", 1", 1-1/4", 2"
V5097B1010/U	Large Body Low Pressure Integrated Valve; 2", 2-1/2", 3"

V48/V88 - DIAPHRAGM GAS VALVES

Part Number	Pipe NPT	Pressure
120V		
V48A2151	3/4"	1/2 psi
V48A2169	1"	1/2 psi
V48A2177	1-1/4"	1/2 psi
V48A2185	1-1/2"	1/2 psi
V48A2243	2"	1 psi
V48A2250	2-1/2"	1 psi
V48A2268	3"	1 psi
24V		
V88A1659	3/4"	1/2 psi
V88A1618	1"	1/2 psi
V88A1626	1-1/4"	1/2 psi
V88A1634	1-1/2"	1/2 psi
V88A1709	2"	1 psi
V88A1717	2-1/2"	1 psi
V88A1725	3"	1 psi

REPLACEMENT PARTS

Gas Valve Actuators	
V4055A1064	120V, 5 psi, 26 Sec
V4055A1098	120V, 5 psi, 13 Sec
V4055D1019	120V, 5 psi, 13 Sec used w/proof of closure
V4062A1131	120V, 5 psi, 13 Sec Hi-Lo-OFF

Honeywell

Pilot Valves	
V046C	1/8", 1/4" or 3/8"

Main Gas Valves	
V5055	1"
V5055	1-1/4"
V5055	1-1/2"
V5055	2-1/2"
V5055	3"

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HYDRAMOTOR GAS VALVES

ASCO®

The normally-closed aluminum body valves provide main line gas shutoff and control for boilers, furnaces and ovens. Also with flanged cast iron body for pipe sizes up to 6".

Actuators

AHD Series Actuators have been replaced with the E Series. The valve body must be changed as the new style will not fit on the old body style.

AH2E102A4	On/Off Slow Opening
AH2E112A4	On/Off Fast Opening
AH2E112S	On/Off, Fast Open, Proof of Closure
AH4E112S4	Hi/Low/Off, Fast Open, Proof of Closure
AH4E112A4	Hi/Low/Off, Fast Open
AH8E112A4	Modulating

Valves - Standard for On-Off Applications

V710EBS	3/4"
V710FBS	1"
V710GBS	1-1/4"
V710HBS	1-1/2"
V710JBS	2"
V710KBS	2-1/2"
V710LBS	3"
V710NBF	4"

C6097A,B INTEGRATED PRESSURE SWITCHES

AH/V710

Can be mounted on V5097 Valve

Part Number	Description
C6097A3012	3 to 21" WC, Manual Reset, NO, 1/4" NPT
C6097A3020	3 to 21" WC, Manual Reset, NO, Mounts on V5097 Valve
C6097B3028	3 to 21" WC, Manual Reset, NC, 1/4" NPT
C6097B3036	3 to 21" WC, Manual Reset, NO, Mounts on V5097 Valve
C6097A3004	.4 to 5" WC, Auto Recycle 1/4" NPT, Use with VPS

8215 Series

SOLENOID VALVES | VENT VALVES

The normally-closed gas valves are used for pilot or main gas shut-off applications. Actuator and valve assemblies - 120V.

V4295A1015	1/2" NPT, 2 psi		**Normally-Open Vent Valves**	
V4295A1023	3/4" NPT, 2 psi			
V4295A1031	1" NPT, 2 psi		**V4295S1005**	3/4" NPT, 2 psi
V4295A1049	1-1/4" NPT, 2 psi		**V4295S1013**	1" NPT, 2 psi
V4295A1056	1-1/2" NPT, 2 psi		**V4295S1021**	1-1/4" NPT, 2 psi
V4295A1064	2" NPT, 2 psi			

VENT VALVES

2-Way, Normally Open, 120V

8215G033	3/4"
8215C053	1"
8215C063	1-1/4"
8215C073	1-1/2"
8215C083	2"

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ACTUATORS AND VALVES

Designed to install faster, operate safer, and deliver proven reliability, Siemens VG Series Single and Double Gas Valves combine with SKP Series Electro-Hydraulic Actuators to provide gas safety shutoff, constant pressure regulation and air/gas ratio control.

To meet all of your application needs, VG Series Gas Valves are available in the following sizes:

- 1-1/2 to 3" threaded double valves
- 4 to 6" flanged double valves
- 1/2 to 3" threaded single valves

VGG10.254U	1" Gas Valve Body
VGG10.404U	1-1/2" Gas Valve Body
VGG10.504U	2" Gas Valve Body
VGG10.654U	2-1/2" Gas Valve Body
VGG10.804U	3" Gas Valve Body

Providing gas safety shutoff control for industrial and commercial burner applications, all SKP Actuators deliver reliable and safe on-off control:

- Proof-of-Closure (POC) Over Travel to ensure safety
- Modular design and quick connect wire terminals for fast installations
- Extremely low 13.5 VA power consumption

SKP15.011U1	On/Off Safety Shut Off Valve Actuator
SKP25.011U1	On/Off Safety Shut Off Valve Actuator w/(SPDT) Proof Of Closure Switch
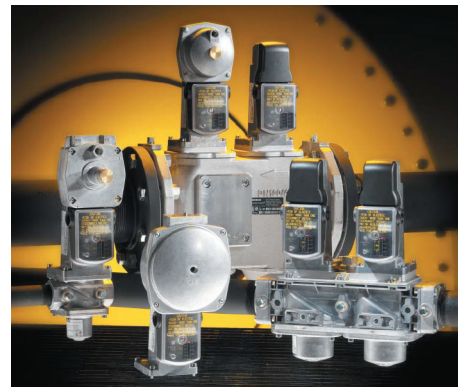
SIEMENS

GET EXPERT ADVICE!

Did you know Cochrane Supply has dedicated **Flame Safeguard and Combustion Controls Experts** on staff? Paul Wisnieski (paulw@cochranesupply.com) and Chris Myers (cmyers@cochranesupply.com) have more than 60 years of combined FSG industry experience and are here to support you! Contact them with your questions today!

sales@cochranesupply.com

SINGLE GAS PRESSURE SWITCHES

Maximum Pressure: 15 PSI, Ambient Temperature: -40º to 170ºF

Manual Reset High Range (HGP-G)	8103116101	0.5" to 4" WC
	8101111202	1" to 21" WC
	8101111303	5" to 35" WC
Manual Reset Low Range (LGP-G)	8103116101	0.5" to 4" WC
	8103116202	1" to 21" WC
	8103116303	5" to 30" WC
Auto Reset High Range (RHGP-G)	8102111101	0.2" to 2" WC
	8102111102	0.8" to 4" WC
	8102111304	5" to 35" WC
Auto Reset Low Range (RLGP-G)	8104116304	5" to 30" WC
	8104116102	0.5" to 4" WC
	8104116203	3" to 21" WC

HGP-G/LGP-G

DOUBLE GAS PRESSURE SWITCHES

Maximum Pressure: 10 PSI, Ambient Temperature: -40º to 170ºF

Manual Reset	Auto Reset	High Range	Low Range
804111701	804112101	2" to 16" WC	1" to 6" WC
804111702	804112102	5" to 28" WC	1" to 6" WC
804111703	804112103	10" to 50" WC	1" to 6" WC
804111704	804112104	2" to 16" WC	2" to 14" WC
804111705	804112105	5" to 28" WC	2" to 14" WC
804111706	804112106	10" to 50" WC	2" to 14" WC

HGP-A
Replacements still available

AIR DIFFERENTIAL VACUUM PRESSURE SWITCHES

Maximum Pressure: 10 PSI, Ambient Temperature: -40º to 170ºF

801111301B	JD-2 Blue Spring	0.07" to 1.7" WC
801111302B	JD-2 Gray Spring	0.1" to 4" WC
801111303B	JD-2 Red Spring	0.1" to 24" WC

HLGP-A

QP PRESSURE SWITCHES

The QP Pressure Switch is available in a variety of pressure ranges and can be easily automatically or manually reset.

QPH31.050M00	High Pressure Switch 2-20" wc Manual Reset
QPH31.150M00	High Pressure Switch 10-60" wc Manual Reset
QPH31.050A00	High Pressure Switch 2-20" wc Auto Reset
QPL31.010M00	Low Pressure Switch 1/2-4" wc Manual Reset
QPL31.050M00	Low Pressure Switch 1-20" wc Manual Reset
QPL31.010A00	Low Pressure Switch 1/2-4" wc Auto Reset

LEVER ACTING REGULATORS

Operating inlet pressure certified up to 2 psi, 8" wc, come with 7" to 11" wc spring

Part Number	Pipe Size	Capacities to...
325-3L-44	1/2" NPT	250 CFH
325-5L-66	3/4" NPT	600 CFH
325-5L-88	1" NPT	600 CFH
325-7L-1010	1-1/4" NPT	1,250 CFH
325-7L-1212	1-1/2" NPT	1,250 CFH
325-9L-1212	1-1/2" NPT	2,250 CFH
325-9L-1616	2" NPT	2,250 CFH
325-11L-2020-NG02	2-1/2" NPT	4,500 CFH

BALANCE VALVE REGULATORS

Operating pressure up to 10 psi, outlet pressure 1" wc to 42" wc, comes with 3" to 6" wc

Part Number	Pipe Size	Capacities to...
210D-88	1" NPT	5,000 CFH
210D-1010	1-1/4" NPT	6,500 CFH
210D-1212	1-1/2" NPT	6,500 CFH
210E-1616	2" NPT	12,000 CFH
210G-2020	2-1/2" NPT	24,000 CFH
210G-2424	3" NPT	27,000 CFH

SELECTRA - GAS FLAME MODULATION SYSTEM

For use with direct fired burners - standard temperature adjustment range 55º to 90ºF, capacities to 30,000,000 BTU/H

Valves and Accessories for Both Series	
M411-44	1/2" Modulating Gas Valve
M511-34	1/2" x 3/4" Modulating Gas Valve
M611-88	1" Modulating Gas Valve
SC10C-B651	Signal Conditioner (4 to 20 mA to Valve)
MT1-9	Mixing Tube and Sensor (9" Length)
Series 14 System - Used in Make-Up Air Applications	
A1014R	Amplifier (Used with All Temperature Ranges)
A1014L	Amplifier (All Ranges - Low Fire Start)
TD114	Remote Temperature Selector (55º to 90ºF)
TD114A	Remote Temperature Selector (80º to 130ºF)
TS114	Discharge Air Temp Sensor (55º to 90ºF)
TS114A	Discharge Air Temp Sensor (80º to 130ºF)
Series 44 System - Used in Space Heating Applications	
A1044R	Amplifier (Min 40º to 80ºF, Max 80º to 140ºF)
T244	Selectrastat (Senses & Selects; 55º to 90ºF)
TS144	Discharge Air Temp Sensor (Min 40º to 80ºF, Max 80º to 140ºF)

MAXITROL

325-3L
ISA Certified for 2 psi (LP) and 5 psi (natural)

A1014R

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NORGAS QUICK SELECTION GUIDE

Norgas

1) Choose regulator type by inlet PSI and SCFH capacity
Flow CFH of Natural Gas 7" w.c. Outlet

NGR02 — 7" w.c. Set Point - 1" Pressure Drop

Inlet Pressure	ORIFICE				
	1/8"	3/16"	1/4"	3/8"	1/2"
0.5	117	101	169	203	242
1	136	148	210	260	571
2	221	210	296	377	1039
3	234	257	460	468	1429
5	292	351	649	1169	1558
10	338	545	1091	1748	1740
15	390	701	1481	2104	
20	491	818	1870	2403	
30	619	1286	2571		
40	717	2260	3251		
50	805	2494	3636		
60	997	2571	4052		
80	1403	3696			
100	1675	4595			
125	1850	4812			

Green S02A used to develop table

NGR04 — 7" w.c. Set Point - 1" Pressure Drop

Inlet Pressure	ORIFICE					
	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"
1	377	740	1013	1039	2065	2078
2	623	1140	1636	1818	3740	3896
3	805	1299	2143	2961	4948	5610
5	935	2104	4403	5000	6935	8571
8	1325	3000	5844	6429	9195	10987
10	1558	3299	6390	7052	10286	11065
15	2026	3896	8104	8571		
25	2610	4156	11610			
35	3195	4909				
50	4286	5961				
75	6234					
100	7247					
125	9399					

Gray S04B used to develop table

NGR06 — 7" w.c. Set Point - 1" Pressure Drop

Inlet Pressure	ORIFICE					
	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"
1	390	1130	2338	2805	3312	4052
2	662	2065	3584	3390	5649	6273
3	857	2416	3896	4208	6701	8805
5	1130	3039	5299	5297	8961	12831
8	1442	3701	6390	6701	12234	15195
10	1558	4052	6857	7052	15506	15584
15	1948	4870	8182	8416	21569	23616
25	2649	6156	10909	12952	25650	26598
35	3273	6390	14776	16782	28273	
50	4325	6244	19455	22492	32338	
60	5206	8522	22585	26304	34117	
75	6000	9780				
100	7286	11927				
125	9402	13988				

Black S0608C used to develop table

NGR08 — 7" w.c. Set Point - 1" Pressure Drop

Inlet Pressure	ORIFICE							
	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	1-3/8"
1	390	857	982	2104	2961	4208	4286	6234
2	545	1403	1543	3039	3818	5143	7636	8961
3	701	1714	1964	3896	4831	5766	9039	9896
5	1013	2494	2665	5455	6390	6701	11610	12779
8	1247	3195	5844	7169	9662	12857	16364	17532
10	1558	3662	6468	8961	11065	15662	18701	21662
20	2182	5377	9818	14182	19558	20260	26883	37403
30	3117	7013	12779	19481	25169	25714	32338	
40	3896	8416	16753	23377	27273	27662	37403	
50	4831	9818	21506	25325	28501	28675		
60	5922	11221	27273	33662	33850	34121		
70	6692	13372						
90	8446	16626						
125	11512	22308						

Green S0608B used to develop table

2) Choose spring - Spring Selection Guide

NGR02 — Spring Chart

Color	Outlet Range	P/N
Green	6.5"wc - 16"wc	S02A
Silver	14"wc - 1psig	S02B
Yellow/Black	26"wc - 1.5psig	S02C
Yellow	1psig - 3psig	S02D
White (HP)	2psig - 5psig	S0204E

NGR06 — Spring Chart

Color	Outlet Range	P/N
Orange	2"wc - 4"wc	S0608A
Green	3"wc - 7"wc	S0608B
Black	5"wc - 13"wc	S0608C
Purple	7"wc - 20" wc	S0608D
Silver	19"wc - 2 psig	S0608E
Yellow	1.5 psig - 3 psig	S0608F
White	2.5 psig - 7 psig	S0608G

NGR04 — Spring Chart

Color	Outlet Range	P/N
Brown	3"wc - 7"wc	S04A
Gray	4"wc - 13"wc	S04B
Black	9"wc - 14"wc	S04C
Blue	9"wc - 15"wc	S04D
Silver	12"wc - 20" wc	S04E
Red/Gray (HP)	13"wc - 28"wc	S04F
Yellow (HP)	1psig - 2psig	S04G
Red (HP)	1psig - 2.5psig	S04H
White (HP)	1psig - 3psig	S0204E

NGR08 — Spring Chart

Color	Outlet Range	P/N
Orange	2"wc - 4"wc	S0608A
Green	5"wc - 8"wc	S0608B
Black	8"wc - 18"wc	S0608C
Purple	13"wc - 24"wc	S0608D
Silver	1 psig - 2 psig	S0608E
Yellow	2 psig - 4 psig	S0608F
White	4 psig - 7 psig	S0608G

NGR02
- 1/2" to 1-1/4" NPT
- Inlet 10 to 125 psi
- Outlet 6.5" WC to 5 psi

NGR04
- 1-1/4" NPT to 3" FL
- Inlet 10 to 125 psi
- Outlet 3" WC to 3 psi

NGR06
- 1-1/4" to 3" FL
- Inlet 25 to 125 psi
- Outlet 2" WC to 7 psi

NGR08
- 1-1/4" NPT to 3" FL
- Inlet 25 to 125 psi
- Outlet 2" WC to 7 psi

COCHRANE SUPPLY

Dedicated to making our customers **successful** since 1967.

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Grand Rapids, MI 49504
800.306.5104

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14 South Superior St
Toledo, OH 43604
419.243.1711

NORTHEAST OHIO
1503 Brookpark Rd
Cleveland, OH 44109
216.465.3595

INDIANA
5347 W Raymond St
Indianapolis, IN 46241
463.900.4117

KENTUCKY
11501 Plantside Dr, Ste 1
Louisville, KY 40299
502.208.3640

COLORADO
700 W Mississippi, E-6,
Denver, CO 80223
502.208.3640

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