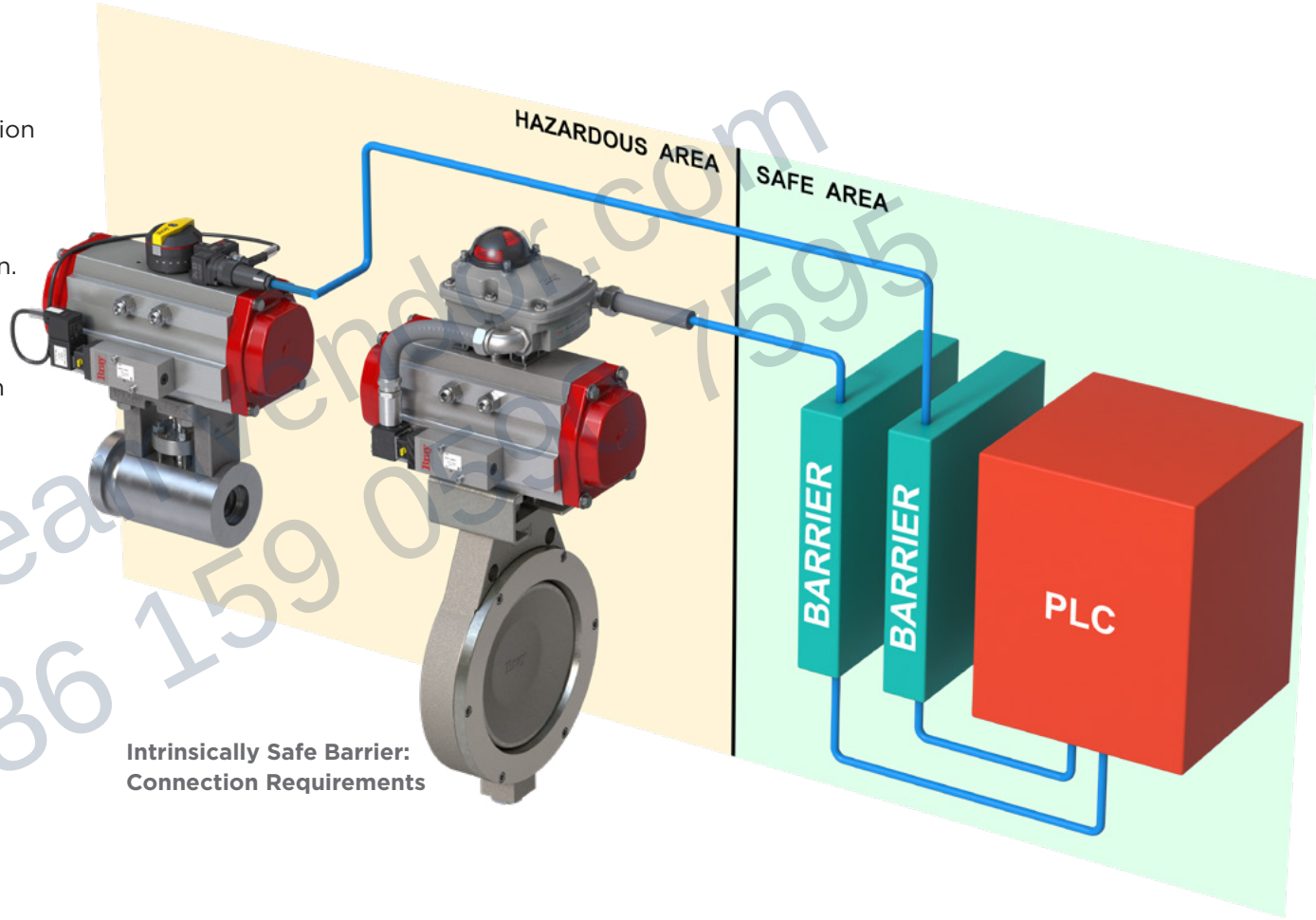
When specifying electronics in hazardous areas, it is important to ensure the device is equipped with the correct protection type. For some customers, the **intrinsically safe** protection type can be a cost effective, compact solution. Designed for safe operation of electrical equipment in hazardous areas, this protection technique limits the energy (electrical and thermal) available for ignition.

The success of intrinscially safe certification lies in choosing the right supporting components to meet the low-voltage requirements. This guide will help to outline some of Bray's common packages.



Intrinsically Safe Barrier: Connection Requirements

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HAZARDOUS LOCATION CLASSIFICATIONS

NEC 500

PROBABILITY OF HAZARDOUS MATERIAL	
DIVISION 1	**DIVISION 2**
Explosive atmosphere is **continually** or **likely** present.	Explosive atmosphere is **not likely** present.

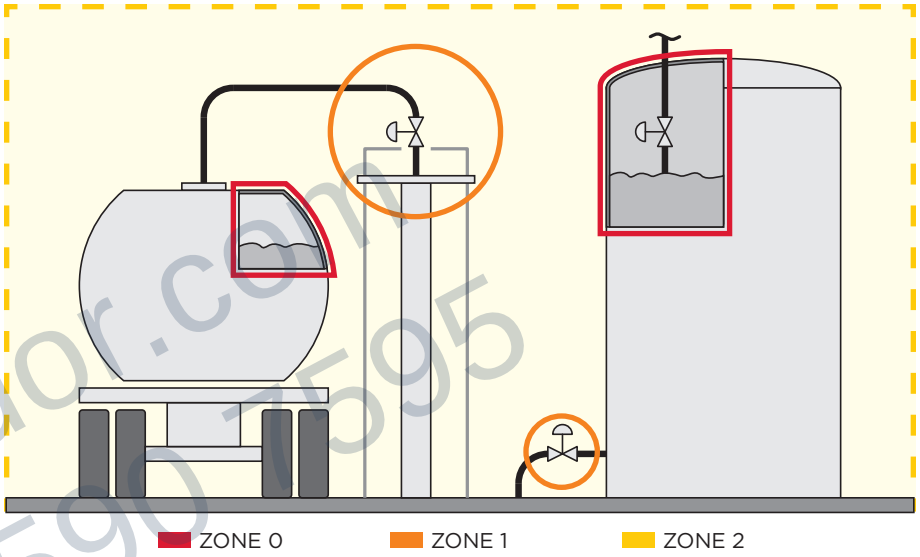
NATURE OF HAZARDOUS MATERIAL	
CLASS I — GASES & VAPORS	
DIVISION 1	**DIVISION 2**
GROUP A | Acetylene	
GROUP B | Hydrogen	
GROUP C | Ethylene	
GROUP D | Propane	
CLASS II — DUST	
DIVISION 1	**DIVISION 2**
GROUP E | Metal Dusts	
GROUP F | Carbon-based Dusts	
GROUP G | Non-conductive Dusts	
CLASS III — FIBERS & FLYINGS	

ATEX / IECEx

PROBABILITY OF HAZARDOUS MATERIAL		
ZONE 0 / 20	**ZONE 1 / 21**	**ZONE 2 / 22**
Explosive atmosphere is **continually** present.	Explosive atmosphere is **likely** present.	Explosive atmosphere is **not likely** present.

NATURE OF HAZARDOUS MATERIAL		
G — GASES & VAPORS		
ZONE 0	**ZONE 1**	**ZONE 2**
IIC | Acetylene & Hydrogen		
IIB+H2 | Hydrogen		
IIB | Ethylene		
IIA | Propane		
D — DUST		
ZONE 20	**ZONE 21**	**ZONE 22**
IIIC | Conductive Dusts		
IIIB | Non-conductive Dusts		
IIIA | Fibers		

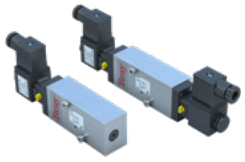
TYPICAL HAZARDOUS GASES & VAPORS APPLICATION



INTRINSICALLY SAFE PRODUCTS[1,2] | Electrically Limited

SERIES 6A
POSITIONER
NEC
CLASS I DIV 1 A,B,C,D
ATEX/IECEx
G ZONE 1 IIC
D ZONE 21 IIIC

SERIES 5A / 5B
VALVE STATUS MONITOR
NEC
CLASS I DIV 1 A,B,C,D
CLASS II/III DIV 1 E,F,G
ATEX/IECEx
G ZONE 0 IIC



SERIES 60
SOLENOID
NEC
CLASS I DIV 1 A,B,C,D
CLASS II DIV 1 E,F,G

SERIES 54
PROXIMITY SENSOR
NEC
CLASS I DIV 1 A,B,C,D
CLASS II DIV 1 E,F,G
ATEX/IECEx
G ZONE 0 IIC

NOTES:
1 For full rating specifications, see product literature.
2 Order with appropriate intrinsically safe barrier.

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NAMUR Sensor + Adjustable Activator + Optional Solenoid
INTRINSICALLY SAFE

Bray

1 NAMUR SENSOR

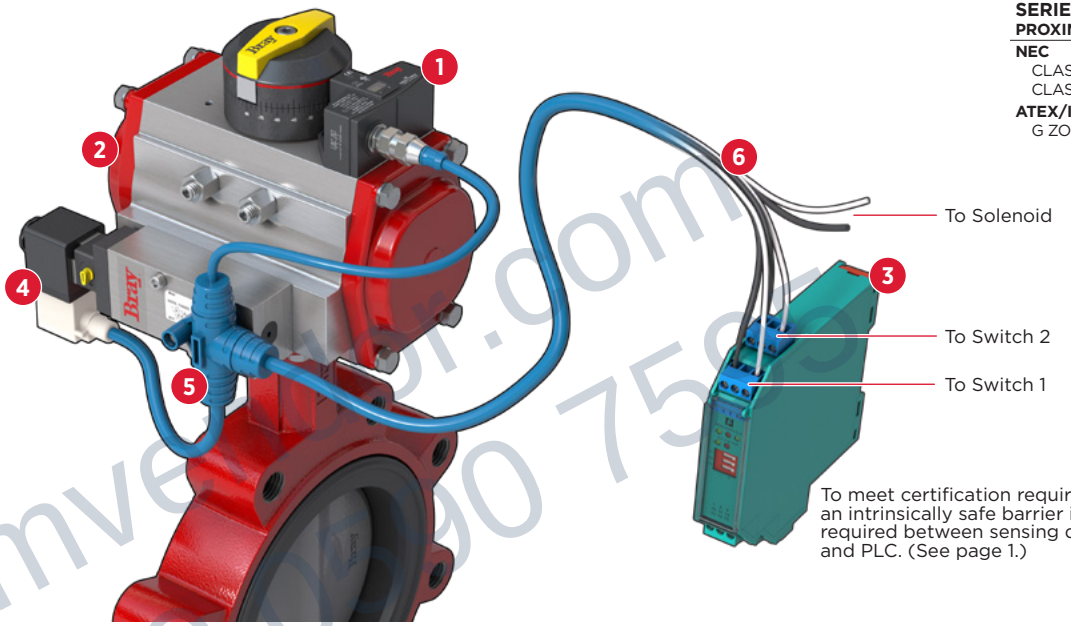
DESCRIPTION	PART NUMBER
I.S. Proximity Sensor	540003-71104533

2 ACTIVATOR (Choose One)

DESCRIPTION	PART NUMBER
S92/93 Sizes 063–128 Imperial	54063A-14800536
S92/93 Sizes 160–210 Imperial	54160A-14800536
S92/93 Sizes 063–128 Metric	54063A-14850536
S92/93 Sizes 160–255 Metric	54160A-14850536
S98 Metric	54063A-14850536
S92/93 Sizes 063–128 Imperial	54063C-14800536
S92/93 Sizes 160 Imperial	54160C-14800536
S92/93 Sizes 210 Imperial	54210C-14800536
S92/93 Sizes 063–128 Metric	54063C-14850536
S92/93 Sizes 160 Metric	54160C-14850536
S92/93 Sizes 210–255 Metric	54210C-14850536
S98 Metric	54063C-14850536

3 BARRIER[1] (Optional)

DESCRIPTION	PART NUMBER
Intrinsically Safe Barrier 24V	090006-71134533



To meet certification requirements, an intrinsically safe barrier is required between sensing device and PLC. (See page 1.)

SERIES 54
PROXIMITY SENSOR
NEC
CLASS I DIV 1 A,B,C,D
CLASS II DIV 1 E,F,G
ATEX/IECEx
G ZONE 0 IIC

S92/S93 RACK & PINION ACTUATOR

4 SOLENOID

DESCRIPTION	PART NUMBER
I.S. 24VDC	600250-21526536

5 CONNECTOR

DESCRIPTION	PART NUMBER
Y-Connectors	600250-23662536

6 CORDSET

DESCRIPTION	PART NUMBER
6 pin M12 to Flying Lead	090004-76152534

OR

S98 SCOTCH YOKE ACTUATOR[2]

4 SOLENOID (Choose One)

DESCRIPTION	PART NUMBER
I.S. 24VDC SR	VSG-3421-D14-HCC-XISX6-D024
I.S. 24VDC DA	VSG-4422-D14-HCC-XISX6-D024

5 CONNECTOR

NONE

6 CORDSET

DESCRIPTION	PART NUMBER
6 pin M12 to Flying Lead	090004-76152534

OR

NO SOLENOID

4 SOLENOID

NONE

5 CONNECTOR

DESCRIPTION	PART NUMBER
4 pin M12 to Flying Lead	090004-76145534

6 CORDSET

NONE

NOTES:
1 An intrinsically safe barrier is required to meet certification requirements. (See page 1.)
2 Consult factory mounting.
3 For 4 switches, change “2” after H to “4”.
4 Refer to specific product technical manuals for additional details.

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NAMUR Sensor + Adjustable Activator + Optional Solenoid + Conduit Connections
INTRINSICALLY SAFE

SERIES 54
PROXIMITY SENSOR
NEC
CLASS I DIV 1 A,B,C,D
CLASS II DIV 1 E,F,G
ATEX/IECEx
G ZONE 0 IIC

1 NAMUR SENSOR

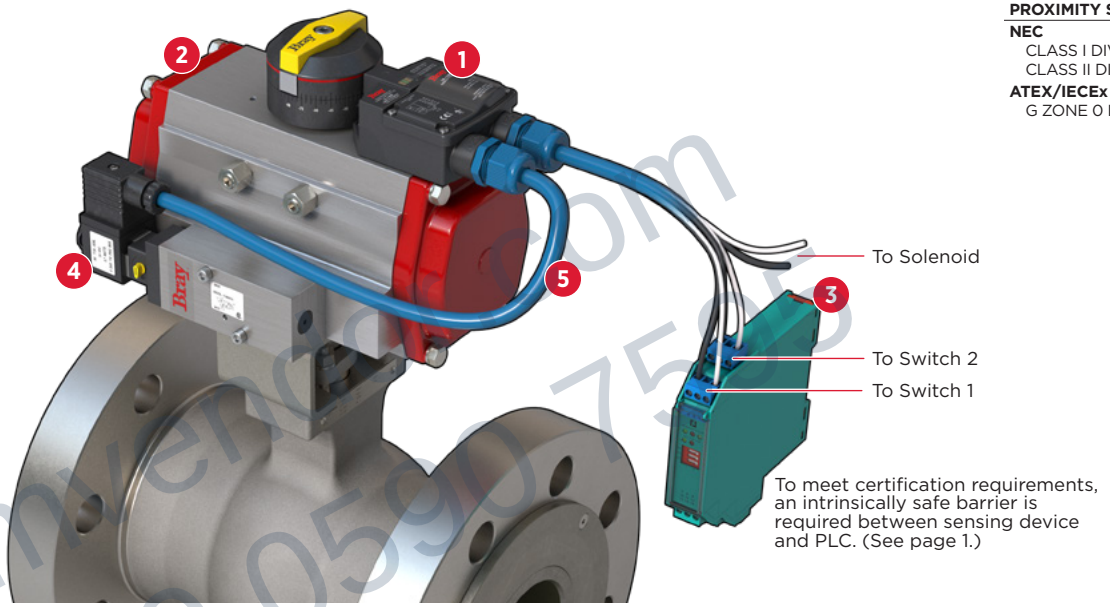
DESCRIPTION	PART NUMBER
I.S. Proximity Sensor	540013-71104533

2 ACTIVATOR (Choose One)

DESCRIPTION	PART NUMBER
S92/93 Sizes 063–128 Imperial	54063A-14800536
S92/93 Sizes 160–210 Imperial	54160A-14800536
S92/93 Sizes 063–128 Metric	54063A-14850536
S92/93 Sizes 160–255 Metric	54160A-14850536
S98 Metric	54063A-14850536
S92/93 Sizes 063–128 Imperial	54063C-14800536
S92/93 Sizes 160 Imperial	54160C-14800536
S92/93 Sizes 210 Imperial	54210C-14800536
S92/93 Sizes 063–128 Metric	54063C-14850536
S92/93 Sizes 160 Metric	54160C-14850536
S92/93 Sizes 210–255 Metric	54210C-14850536
S98 Metric	54063C-14850536

3 BARRIER[1] (Optional)

DESCRIPTION	PART NUMBER
Intrinsically Safe Barrier 24V	090006-71134533



S92/S93 RACK & PINION ACTUATOR

4 SOLENOID

DESCRIPTION	PART NUMBER
I.S. 24VDC	600250-21526536
I.S. Gland	600251-71106533

5 PREWIRE KIT

OR

S98 SCOTCH YOKE ACTUATOR[2]

4 SOLENOID (Choose One)

DESCRIPTION	PART NUMBER
I.S. 24VDC SR	VSG-3421-D14-HCC-XISX6-D024
I.S. 24VDC DA	VSG-4422-D14-HCC-XISX6-D024

5 PREWIRE KIT

OR

NO SOLENOID

4 SOLENOID

NONE

5 PREWIRE KIT

NOTES:
1 An intrinsically safe barrier is required to meet certification requirements. (See page 1.)
2 Consult factory mounting.
3 For 4 switches, change “2” after H to “4”.
4 Refer to specific product technical manuals for additional details.

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NAMUR Sensor + Adjustable Activator + Optional Solenoid + S-Connector
INTRINSICALLY SAFE

1 NAMUR SENSOR

DESCRIPTION	PART NUMBER
I.S. Proximity Sensor	540043-71104533

2 CORDSET

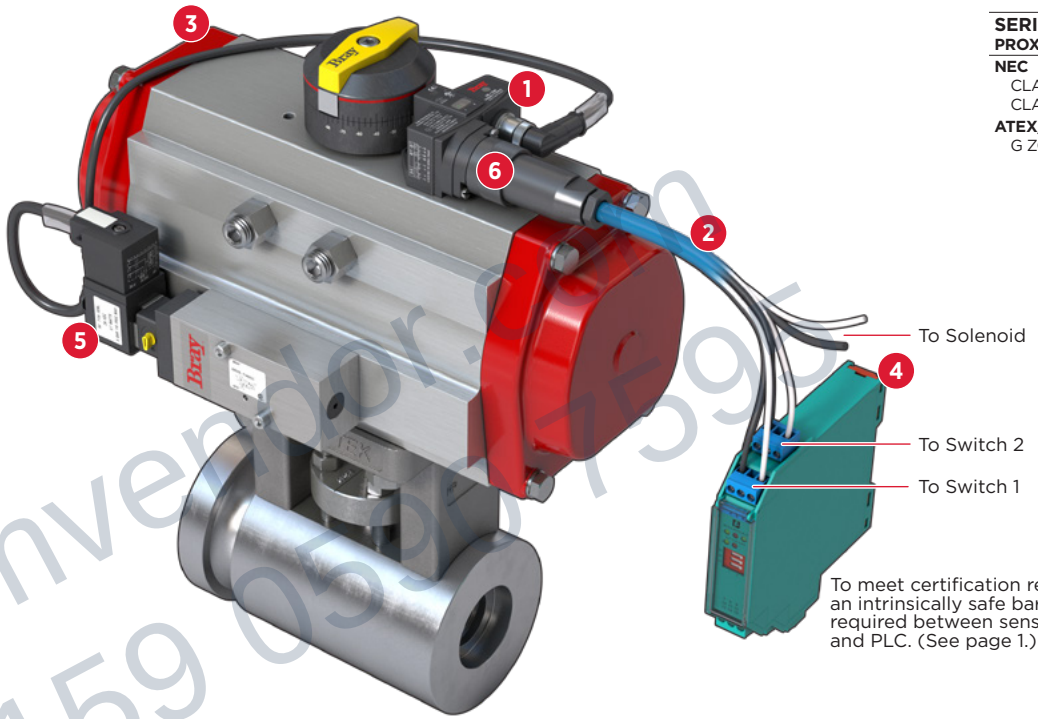
DESCRIPTION	PART NUMBER
Cordset Rd24 Pin	090700-71155517

3 ACTIVATOR (Choose One)

DESCRIPTION	PART NUMBER
S92/93 Sizes 063–128 Imperial	54063A-14800536
S92/93 Sizes 160–210 Imperial	54160A-14800536
S92/93 Sizes 063–128 Metric	54063A-14850536
S92/93 Sizes 160–255 Metric	54160A-14850536
S98 Metric	54063A-14850536
S92/93 Sizes 063–128 Imperial	54063C-14800536
S92/93 Sizes 160-210 Imperial	54160C-14800536
S92/93 Sizes 063–128 Metric	54063C-14850536
S92/93 Sizes 160-255 Metric	54160C-14850536
S98 Metric	54063C-14850536

4 BARRIER[1] (Optional)

DESCRIPTION	PART NUMBER
Intrinsically Safe Barrier 24V	090006-71134533



SERIES 54
PROXIMITY SENSOR

NEC
CLASS I DIV 1 A,B,C,D
CLASS II DIV 1 E,F,G

ATEX/IECEx
G ZONE 0 IIC

S92/S93 RACK & PINION ACTUATOR

5 SOLENOID

DESCRIPTION	PART NUMBER
I.S. 24VDC	600250-21526536

6 CONNECTOR

DESCRIPTION	PART NUMBER
S-Connector	090001-76160882

OR

S98 SCOTCH YOKE ACTUATOR[2]

5 SOLENOID (Choose One)

DESCRIPTION	PART NUMBER
I.S. 24VDC SR	VSG-3421-D14-HCC-XISX6-D024
I.S. 24VDC DA	VSG-4422-D14-HCC-XISX6-D024

6 CONNECTOR

DESCRIPTION	PART NUMBER
S-Connector	090001-76160882

OR

NO SOLENOID

5 SOLENOID

NONE

6 CONNECTOR

NONE

NOTES:
1 An intrinsically safe barrier is required to meet certification requirements. (See page 1.)
2 Consult factory mounting.
3 For 4 switches, change “2” after H to “4”.
4 Refer to specific product technical manuals for additional details.

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NAMUR Valve Status Monitor + 2 Switches + Optional Solenoid + Connector
INTRINSICALLY SAFE

1 NAMUR VALVE STATUS MONITOR

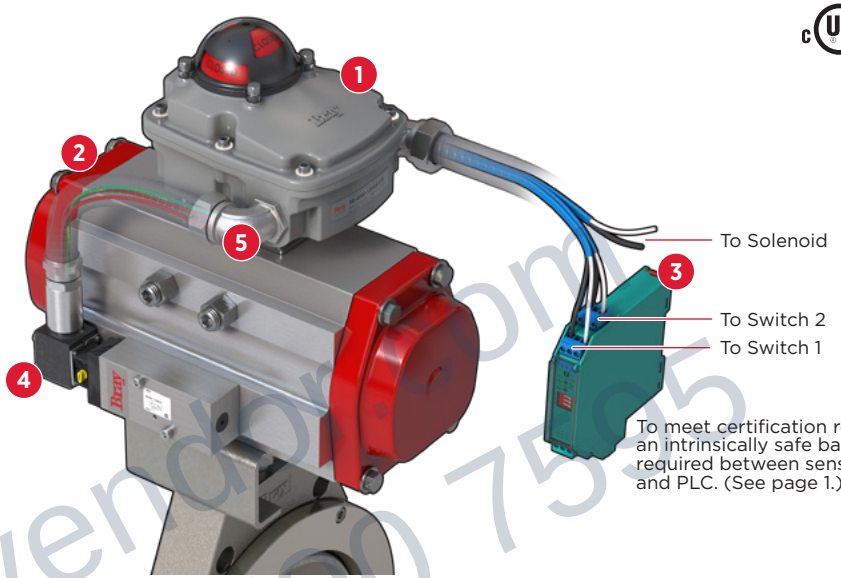
DESCRIPTION	PART NUMBER
5A 2 Prox Switch Aluminum	5A0000-126H2536[3]
5B 2 Prox Switch Aluminum	5B0000-126H2536[3]
5A 2 Prox Switch Resin	5A0000-126H2517[3]
5B 2 Prox Switch Resin	5B0000-126H2517[3]

2 MOUNTING (Choose One)

DESCRIPTION	PART NUMBER
S92/93 Sizes 063–128 Imperial	5B0000-22600534
S92/93 Sizes 160–210 Imperial	5B0000-22601534
S92/93 Sizes 063–128 Metric	5B0000-22650534
S92/93 Sizes 160–255 Metric	5B0000-22651534
S98 Metric	5B0000-22630534

3 BARRIER[1] (Optional)

DESCRIPTION	PART NUMBER
Intrinsically Safe Barrier 24V	090006-71134533



To meet certification requirements, an intrinsically safe barrier is required between sensing device and PLC. (See page 1.)

SERIES 5A / 5B
VALVE STATUS MONITOR
NEC
CLASS I DIV 1 A,B,C,D
CLASS II/III DIV 1 E,F,G
ATEX/IECEx
G ZONE 0 IIC

S92/S93 RACK & PINION ACTUATOR

4 SOLENOID

DESCRIPTION	PART NUMBER
I.S. 24VDC	600250-21526536

5 CONNECTOR

DESCRIPTION
Conduit

OR

S98 SCOTCH YOKE ACTUATOR[2]

4 SOLENOID (Choose One)

DESCRIPTION	PART NUMBER
I.S. 24VDC SR	VSG-3421-D14-HCC-XISX6-D024
I.S. 24VDC DA	VSG-4422-D14-HCC-XISX6-D024

5 CONNECTOR

DESCRIPTION
Conduit

OR

NO SOLENOID

4 SOLENOID

NONE

5 CONNECTOR

NONE

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NOTES:
1 An intrinsically safe barrier is required to meet certification requirements. (See page 1.)
2 Consult factory mounting.
3 For 4 switches, change “2” after H to “4”.
4 Refer to specific product technical manuals for additional details.

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SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

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