Ashbrook Simon-Hartley®

ASHBROOK KLAMPRESS®

12.0 ELECTRICAL COMPONENTS

12.1 TRIP CORD DATA

SAFETY PULL SWITCH, RAMSEY MODEL SPS-2D-3-NP
The safety pull switch shall be CSA approved for Class II Divisions 1 and 2, Groups E, F and G applications. The safety pull switch shall contain 2 SPDT, 10A, and 480V switch enclosed in a nickel-plated NEMA-4X weatherproof enclosure. Force applied to the pull cable at any position shall cause the actuating arm to rotate 20 degrees to a triple-locked position. Pull rating shall be 8-18 pounds. A spring loaded dog holds a cam detent in this position until manually reset. The safety pull switch shall meet OSHA requirements for safety shutdown.

12.2 BELT BREAKAGE SWITCH
Each belt is fitted with a proximity switch to sense extreme travel of the tensioning arm. If one of the belts should break the tension cylinders will extend the tensioning arm to the limits of its travel where it will contact the belt breakage limit switch.

12.3 BELT MISALIGNMENT SWITCH
There are two limit switches mounted inside the frame alongside the pressure rollers. If either belt wanders too close to the end of the pressure rollers it will trip the limit switch. Under no circumstance should you operate the press with these limit switches disabled. These switches are provided to avoid unnecessary damage to the belts in case the automatic belt tracking system cannot maintain the belts centered on the rollers.

12.4 DRAWINGS AND DATA SHEETS TO FOLLOW:

SK000995 Electric Assembly Drawing – Klampress Model '85
Ramsey Trip Cord Switch Data
Proximity Switch – Belt Breakage
Limit Switch – Belt Misalignment

TABLE OF CONTENTS

CAUTION

THIS DEVICE SHOULD BE PERIODICALLY TESTED AND INSPECTED FOR PROPER MECHANICAL AND ELECTRICAL OPERATION.

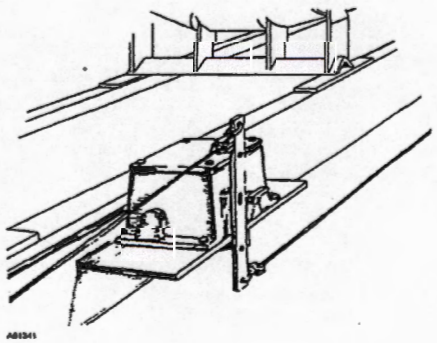
CHAPTER 1.0
SAFETY PULL SWITCH

1.1 INTRODUCTION

The Safety Pull Switch actuates when a force is applied to a pull cable at any position causing the actuator arm to rotate 20° to a "tripped locked" position. The switch stays in locked position until manually reset.

1.2 SPECIFICATIONS

1. Switch rating DPDT, 10 amps, 500 VAC
2. NEMA 4 weatherproof enclosure
3. Lock angle: 20 degrees
4. Pull rating: 25 inch/pounds = 7 to 17 lbs. depending on hole location
5. Two conduit opening, threaded 3/4" - 14 NPT
6. Recommended spacing between switches: 150 ft supported cable.
7. Recommended pull cable is a cable, aircraft, .094 diameter, 7 x 7 strand, with vinyl cover in a material type and color suitable for environment. Ramsey stocks a Part No. 0003676 galvanized, safety orange cable suitable for most applications.
8. FM approved for Class II, Division 1 & 2, Group E, F, & G
9. Adjustable Angle Actuator in 22-1/2° increments.



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CHAPTER 2.0
INSPECTION AND INSTALLATION

2.1 INSPECTION

Inspect the package for external damage before opening, as often times the carrier can be held responsible for shipping damages. After unpacking, inspect the unit for damaged parts, etc.

2.2 INSTALLATION

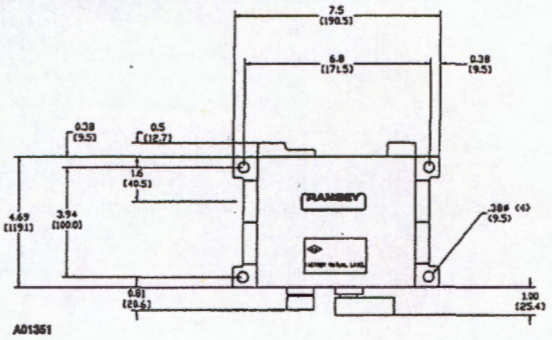
Refer to Figures 1-1 and 2-1 for installation methods or Figure 2-2 for an alternate mounting position.

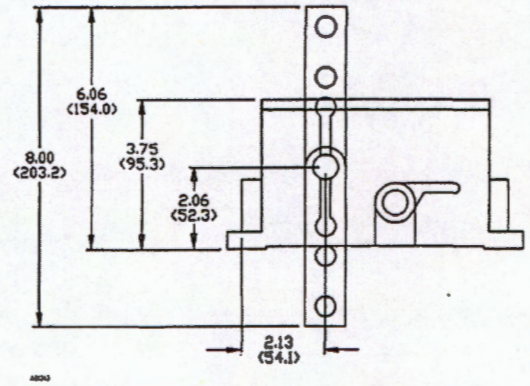
NOTE: Cable should have sufficient play to allow switch to operate in two directions.

2.3 TESTING

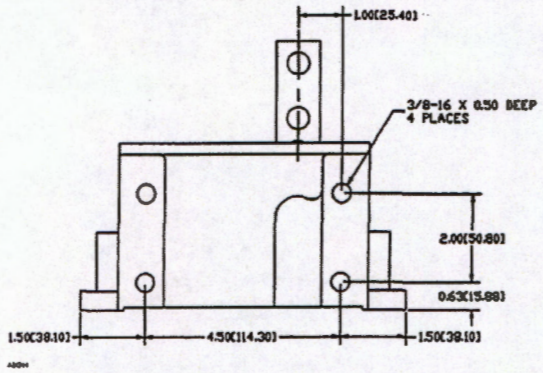
After installation, test the Safety Pull Switch to ensure proper mechanical and electrical operation.

Make sure cover is tightly secured and conduit sealed to prevent water or moisture from entering switch housing.





INSTALLATION
FIGURE 2-1

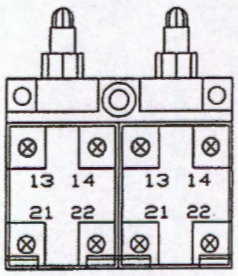


ALTERNATE MOUNTING
FIGURE 2-2

2.3 DESCRIPTION - ELECTRICAL

1. Each switch is supplied with 3/4" -14 NPT openings for conduit connections.

2. Two Switch - Figure 2-3 shows the terminal connections used in wiring a two switch unit. Two switch units are used for belt shutdown and alarm.



13--N.O.--14 13--N.O.--14
21--N.C.--22 21--N.C.--22

SWITCHES ARE RATED AT
10 AMP, 500 VAC
NON-INDUCTIVE.

SAFETY PULL SWITCH
TERMINAL CONNECTION
FIGURE 2-3

CHAPTER 3.0
THEORY OF OPERATION

3.1 GENERAL

Refer to Figure 2-1 while reading the following description.

3.2 OPERATION

The Safety Pull Switch must be mounted alongside the conveyor stringer. A pull cable is firmly fixed at one end and attached to the actuator arm of the Safety Pull Switch on the other end. This cable must have some play in it to ensure the switch will operate properly when cables are extended in opposite direction from the switch actuator arm.

When a force is applied in any position along the cable, the actuator will rotate 20°, then "tripped-locked" into position. A spring-loaded dog holds lever in detent position until actuating arm is manually reset.

At the time the arm is tripped, a switch is actuated which provides a DPDT circuit to interrupt the drive, thus stopping the conveyor. The second switch may be used to activate an alarm.

To reset the Safety Pull Switch, the reset lever must be depressed, thus placing the actuator arm in to operating position.

CHAPTER 4.0
SET-UP AND ADJUSTMENT

4.1 SET-UP

1. The recommended spacing between switches should not exceed 150 feet.
2. Cable lengths, if tied off at one end, should not exceed 75 feet.
3. Recommended pull cable is a cable, aircraft, .094 diameter, 7 x 7 strand, with vinyl cover in a material type and color suitable for environment. Ramsey stocks a Part No. 0003676 galvanized, safety orange cable suitable for most applications.
4. Eye bolts to support the cable should be spaced at 8 feet apart.
5. Safety Pull Switch is to be mounted alongside conveyor stringer.
6. Electrical hook-up should be completed as shown in Chapter 2.0.

4.2 ADJUSTMENT

All necessary adjustments are made at the factory. The unit does not require field adjustment.

CHAPTER 5.0
TROUBLESHOOTING

5.1 GENERAL

The Safety Pull Switch has been designed to operate in industrial environments.

5.2 TROUBLESHOOTING PROCEDURE

1. Check actuator lever to make sure it is in the normal position.
2. Check to see if terminal wires are connected properly and terminal screws are tight.
3. Check to see if the switch cams are not actuating the switch plunger. If so, reset cams.
4. Check switch contacts for proper operation. Replace when necessary.
5. If the above checks out all right, the problem is not with the Safety Pull Switch.

CHAPTER 6.0
MAINTENANCE, SPARES, AND REPAIRS

6.1 GENERAL

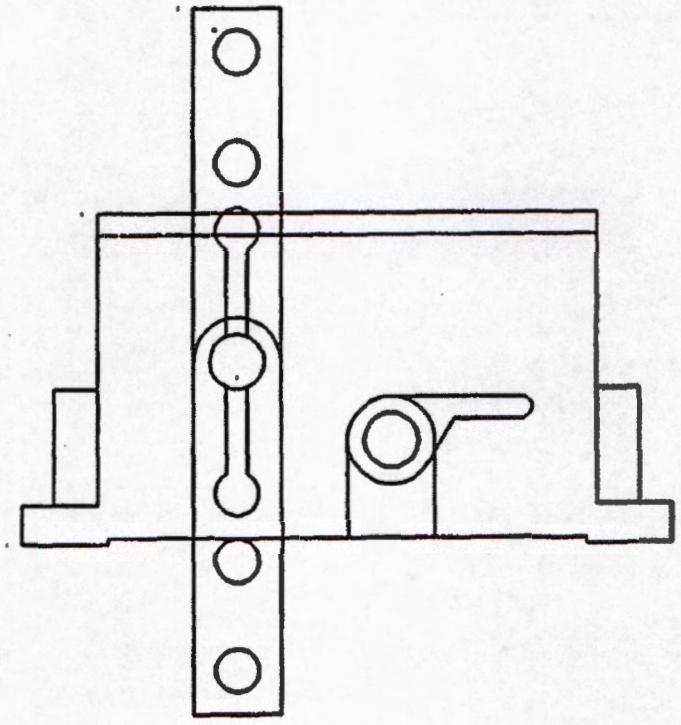
Except for the parts replacements mentioned below, Ramsey recommends that repairs not be attempted on this unit. Unauthorized repairs during the warranty period will void the warranty.

6.2 RECOMMENDED SPARES

(1) Switch: RTI Part No. 051020

RAMSEY
PRO-LINE

SAFETY PULL SWITCH



FM
Approved

Class II, Division: 1 & 2, Group E, F & G

MODEL SPS-2A-3-FM
(Double Switch)

INSTRUCTION MANUAL

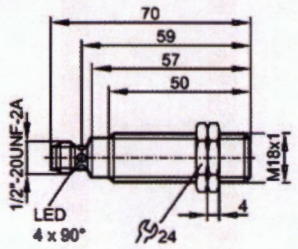
PART NO. 056202 **REC 3992 REV B 1/98**

~~Inductive sensors~~

IGT002

IGK2005-ARKA/M/V4A/LS
Inductive sensor
Metal thread M18 x 1
Quick disconnect

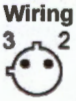
Sensing range 5 mm [f]
flush mountable

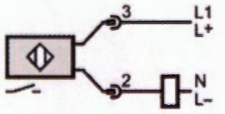


Made in Germany

Electrical design		AC/DC
Output		normally open
Operating voltage	[V]	20...140 AC/DC
Current rating (continuous)	[mA]	200 / 80 (> 80 °C)
Current rating (peak)	[mA]	î: 1.2 A (20 ms / 0.5 Hz)
Minimum load current	[mA]	5
Short-circuit protection		Yes (non-latching)
Reverse polarity protection		yes
Overload protection		yes
Voltage drop	[V]	< 5.5
Leakage current	[mA]	< 1
Power-on delay time [s]		approx. 1
Operating distance	[mm]	0...4.05
Hysteresis	[% of Sr]	1...20
Switching frequency	[Hz]	25 AC / 400 DC
Correction factors		mild steel = 1 / stainless steel approx. 0.7 / brass approx. 0.5 / Al approx. 0.4 / Cu approx. 0.3
Ambient temperature	[°C]	0...100
Protection		IP 68 / IP 69K *), II
EMC		EN 61000-4-2 ESD: 4 kV CD / 8 kV AD EN 61000-4-3 HF radiated: 10 V/m (80...1000 MHz) EN 61000-4-4 Burst: 2 kV EN 61000-4-5 Surge: 0.5 kV (line to line, Ri: 2Ohm) EN 61000-4-6 HF conducted: 10 V (0.15...80 MHz) EN 55011: class B
Housing materials		threaded sleeve: V4A (316S12); active face: PEEK (polyether ether ketone); lock nuts: high-grade stainless steel
Function display		
Switching status	LED	yellow (4 x 90°)
Connection		1/2" UNF-Connector
Weight	[kg]	0.068
Remarks		*) "COP"
Accessories (included)		2 lock nuts

Wiring





ALFA LAVAL ASHBROOK PART # 039201
(CABLE FOR USE WITH PROXIMITY
SWITCH PART # 039200)

ecomat 400

ifm electronic

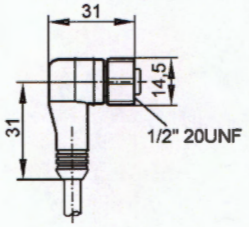
Connection technology

E18210

ifm electronic
Socket

For sensors with
1/2" connector

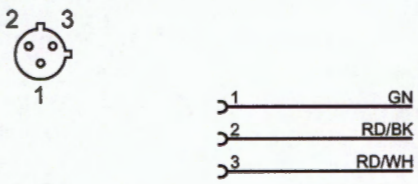
gold-plated contacts



Electrical design		AC/DC
Operating voltage	[V]	300 AC/DC
Design		angled
Ambient temperature	[°C]	-10...100
Protection		IP 68
Material body		PVC
Material nut		stainless steel 316Ti / 1.4571
Connection		PVC cable / 10 m; 3 x AWG 22 (3 x 0.34 mm²)
Sheath color		yellow

Wiring

Core colors
GN green
RD/BK red/black
RD/WH red/white

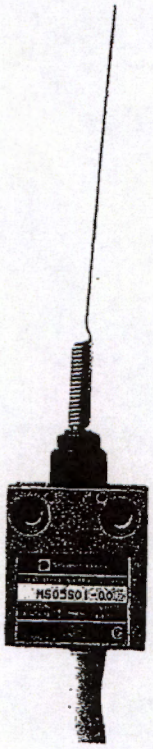


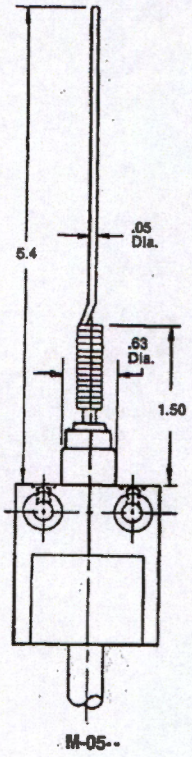
Belt Misalignment

Switch

Type	MS
Description	Miniature
Housing	Zinc die cast
Contact type	Epoxy encapsulated SPST Form C or SPDT snap action
Current rating	5A and 10A
Housing	NEMA 1,3,4,6,
Repeatability	6P,12,13
Temperature range: standard	
Temperature range: extended	-20°F to 200°F
Mechanical life	5 million
Plug-in	-
Rotary lever-spring return	Yes
Rotary lever - maintained	-
Rotary lever - 2 step	-
Top plunger	Yes
Top roller plunger	Yes
Side plunger	-
Side roller plunger	-
Omnidirectional	Yes
Special features	Prewired 3 SJTO cable Bushing mounted option
Applications	Machine tools, washing equipment Vehicles

Omnidirectional





M-05--

Interpretation of the catalog number

M	S	0	1	S	0	1	-	0	0

Mini Line M

Contact form
SPST Forms (standard) S
SPDT Form Za L

Actuator type

Top push plunger	0 1
Parallel roller plunger	0 2
Cross roller plunger	0 3
Rotary lever CW & CCW	0 4
Omnidirectional wire whisker	0 5
Bushing mounted top push plunger	0 6
Bushing mounted parallel roller plunger	0 7
Bushing mounted cross roller plunger	0 8
Adjustable top push plunger	0 9
Booted top push plunger	1 0
Booted parallel roller plunger	1 2
Booted cross roller plunger	1 3

Conductor length options

0 1	3 feet standard
0 2	6 feet
0 3	9 feet
0 4	12 feet
0 5	18 feet
1 3	33 feet

Contact type

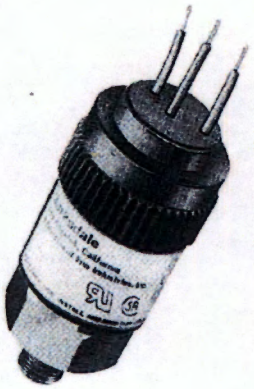
S	5 AWG silver contacts (Standard)
G	Gold crosspoint contacts

General options

Option	Description
0 2	16-4 SJTO cable
0 6	Side entrance 18-4 SJTO cable
1 0	Gray 18-4 SJTO cable
1 1	#4-18 AWG idividual conductors
2 1	Low force (top plunger only) 18 oz

Low Hydraulic Pressure Switch
Ashbrook Part No. 029872

Compact Switch - Field Adjustable Dia-Seal Piston and Piston Models



OPERATING CHARACTERISTICS • ORDERING DATA

FIELD ADJUSTABLE PRESSURE SWITCH — All values given in P.S.I. (Gauge)

Range	Pressure Setting Range				Approx. Actuation Value (Differential)	Proof Pressure	Catalog Number
	Decreasing		Increasing				
	Min.	Max.	Min.	Max.			
30" Hg (Vac)	1" Hg	28" Hg	6" Hg	30" Hg	1-6" Hg	30 psi	96221-BB1*
15	2.5	12.8	3	15	.5-2.2	1000	96211-BB1*
35	5	31	6	35	1.0-4.0	1000	96211-BB2*
50	8.5	44	10	50	1.5-6.0	1000	96211-BB3
125	22.5	112	25	125	2.5-13	1000	96211-BB4
250	70.0	220	80	250	10-30	1000	96211-BB5
500	110	440	130	500	20-60	1000	96211-BB6
600	190	450	250	600	60-150	7000	96201-BB1
1700	360	1450	430	1700	70-250	7000	96201-BB2
4400	1450	3900	1650	4400	200-500	7000	96201-BB3
7500	3650	6700	4000	7500	350-800	12000	96201-BB4
250	70.0	220	80	250	10-30	1000	96211-BB5-S0048
Approximate Shipping Weight: 0.95 lbs.							

*S0048 SPECIAL SET @ 150 PSI DECREASING To install, hand tighten then apply 180 in-lbs torque max.

General Description

The 96201 series switch utilizes a sealed piston sensor. The 96211 and 96221 series switches use a diaphragm piston sensor. These switches offer field adjustable set points. The differential is fixed and varies with pressure setting.

Electrical Connections include free leads as standard with optional spade terminals, DIN type connector or 1/2" NPT conduit connector, (male or female).

They are environmentally sealed and are resistant to shock and vibration. Designed to deliver millions of maintenance free cycles, the sealed piston and diaphragm piston designs are ideally suited for harsh environments.

WIRE CODE	PRESSURE		VACUUM	
Lead	Color	Pin	Color	Pin
Normally Closed	Blue	2	Red	3
Common	Purple	1	Purple	1
Normally Open	Red	3	Blue	2
Ground	Not used		Not used	

ELECTRICAL RATING			
Limit Switch Class	Voltage (Volts)	Maximum Continuous Current (Amps)	
		Resistive	Inductive
BB	125/250 VAC	5	5
CC	125/250 VAC	10	10

5 Amp @ 30 VDC maximum
All models incorporate Underwriters' Laboratories, Inc. listed and CSA approved single pole double throw snap-action switches.

Detail Data

Electrical Connection — Free leads approximately 12" long.

Pressure Connection — 1/4" NPT male.

Temperature Range — 96201 series = — 40° to 165°F.
96211 series = — 20° to 165°F.
(*0°F Min. as noted)
96221 series = 0° to 165°F.

Accuracy — ±2%

Wetted Materials
96201 series
Body — Brass
Seals — Buna N o'ring
Piston — Stainless steel

96211 & 96221 series
Body — Brass
Diaphragm — Buna N

Housing — Open type plastic housing.

Approvals/Listings — UL and CSA recognized.

Optional Modifications

Electrical — See diagrams below for optional conduit connections.

Wetted Material — Body: Stainless steel. To specify, add suffix -SS to catalog number.

Diaphragm/Seal — Other compounds available. Consult factory.

Process Connection — 7/16-20 SAE type male straight threads with o'ring seal, add suffix -P1.
1/4" BSP male straight threads with o'ring seal, add suffix -P3.

Tamper Resistant Screw — Add prefix "T" to catalog number.

Adjustment Instructions

Positive Pressure — Secure hex body with open end wrench. Hand turn adjustment sleeve clockwise to increase, counterclockwise to decrease set point.

Vacuum Pressure — Secure hex body with open end wrench. Hand turn adjustment sleeve counterclockwise to increase, clockwise to decrease set point.

Ordering Instructions — To ensure correct switch is furnished, always specify full catalog number (including required modifications), set point (increasing or decreasing) and service. Example: 96211-BB2-SS-T2 set at 15 psi increasing. Service, Dry Nitrogen.

NEMA 4x