

## Information

Please note that the following data may be incomplete.  
When ordering spare parts please indicate the complete serial number.

## Catalog designation

R137 DRN132M4/DH

Further information online on <http://www.sew-eurodrive.de>



## Product data

Serial number	: 87.7748129702.0001.19.50
Speed [r/min]	: 1774 / 9.4
Total ratio [i]	: 188,45
Ma max [Nm]	: 8.000
Output torque [Nm]	: 7610
Service factor SEW-FB	: 1,05
Mounting position	: M1
Connection type	: 001
ISO code	: CLP HC 150
Lubricant type	: Synth.Oil
Lubricant volume [l]	: 10,00
.	: KWB_0421 KWB_0320
Motor power [kW]	: 7.5
Motor power [HP]	: 10
Motor frequency [Hz]	: 60
Cyclic duration factor S1-S10	: S1
Motor voltage [V] / conn. type	: 330/575 delta/star
Rated current [A]	: 18,50 / 10,60
cos phi	: 0,77
Thermal cl.[°C]/Enclosure[IP]	: 155(F) / 65
Service factor motor	: 1.15
International efficiency class	: IE3
Efficiency (100% Pn) [%]	: 91,7
Design specification	: USA (UR) /Canada (CSA)
K.V.A.code	: K
Design	: NEMA A
Ambient temperature min. [°C]	: -20
Ambient temperature max. [°C]	: 40
CT speed range	: 300-1800rpm
Nameplate	: English / Imperial units

## Information

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## Catalog designation

S47 DRN80M4/DH

Further information online on <http://www.sew-eurodrive.de>



## Product data

Serial number	: 87.7749951202.0001.19.50
Speed [r/min]	: 1751 / 145
Total ratio [i]	: 12,10
Ma max [Nm]	: 109
Output torque [Nm]	: 46
Service factor SEW-FB	: 2,40
Mounting position	: M1B
Connection type	: 001
ISO code	: CLP HC 460
Lubricant type	: Synth.Oil
Lubricant volume [l]	: 0,35
.	: KWB_0193 KWB_0301
Motor power [kW]	: 0.75
Motor power [HP]	: 1.0
Motor frequency [Hz]	: 60
Cyclic duration factor S1-S10	: S1
Motor voltage [V] / conn. type	: 330/575 delta/star
Rated current [A]	: 2,15 / 1,24
cos phi	: 0,70
Thermal cl.[°C]/Enclosure[IP]	: 155(F) / 65
Service factor motor	: 1.15
International efficiency class	: IE3
Efficiency (100% Pn) [%]	: 85,5
Design specification	: USA (UR) /Canada (CSA)
K.V.A.code	: M
Design	: NEMA C
Ambient temperature min. [°C]	: -20
Ambient temperature max. [°C]	: 40
CT speed range	: 300-1800rpm
Nameplate	: English / Imperial units

## Information

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## Catalog designation

S47 DRN80M4/DH

Further information online on <http://www.sew-eurodrive.de>



## Product data

Serial number	: 87.7749951203.0001.19.50
Speed [r/min]	: 1751 / 145
Total ratio [i]	: 12,10
Ma max [Nm]	: 109
Output torque [Nm]	: 46
Service factor SEW-FB	: 2,40
Mounting position	: M1A
Connection type	: 001
ISO code	: CLP HC 460
Lubricant type	: Synth.Oil
Lubricant volume [l]	: 0,35
.	: KWB_0195 KWB_0302
Motor power [kW]	: 0.75
Motor power [HP]	: 1.0
Motor frequency [Hz]	: 60
Cyclic duration factor S1-S10	: S1
Motor voltage [V] / conn. type	: 330/575 delta/star
Rated current [A]	: 2,15 / 1,24
cos phi	: 0,70
Thermal cl.[°C]/Enclosure[IP]	: 155(F) / 65
Service factor motor	: 1.15
International efficiency class	: IE3
Efficiency (100% Pn) [%]	: 85,5
Design specification	: USA (UR) /Canada (CSA)
K.V.A.code	: M
Design	: NEMA C
Ambient temperature min. [°C]	: -20
Ambient temperature max. [°C]	: 40
CT speed range	: 300-1800rpm
Nameplate	: English / Imperial units

## Information

Please note that the following data may be incomplete.  
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## Catalog designation

S47 DRN80M4/DH

Further information online on <http://www.sew-eurodrive.de>



## Product data

Serial number	: 87.7749939503.0001.19.50
Speed [r/min]	: 1751 / 145
Total ratio [i]	: 12,10
Ma max [Nm]	: 109
Output torque [Nm]	: 46
Service factor SEW-FB	: 2,40
Mounting position	: M1B
Connection type	: 001
ISO code	: CLP HC 460
Lubricant type	: Synth.Oil
Lubricant volume [l]	: 0,35
.	: KWB_0193 KWB_0301
Motor power [kW]	: 0.75
Motor power [HP]	: 1.0
Motor frequency [Hz]	: 60
Cyclic duration factor S1-S10	: S1
Motor voltage [V] / conn. type	: 330/575 delta/star
Rated current [A]	: 2,15 / 1,24
cos phi	: 0,70
Thermal cl.[°C]/Enclosure[IP]	: 155(F) / 65
Service factor motor	: 1.15
International efficiency class	: IE3
Efficiency (100% Pn) [%]	: 85,5
Design specification	: USA (UR) /Canada (CSA)
K.V.A.code	: M
Design	: NEMA C
Ambient temperature min. [°C]	: -20
Ambient temperature max. [°C]	: 40
CT speed range	: 300-1800rpm
Nameplate	: English / Imperial units



## Information

Please note that the following data may be incomplete.  
 When ordering spare parts please indicate the complete serial number.  
 This product  
 - is a special design

## Catalog designation

ST77/T DRN100LM4/RS/DH

Further information online on <http://www.sew-eurodrive.de>



## Product data

Serial number	: 87.7749951204.0001.19.50
Speed [r/min]	: 1762 / 26
Total ratio [i]	: 66,67
Ma max [Nm]	: 970
Output torque [Nm]	: 640
Service factor SEW-FB	: 1,50
Mounting position	: M1B
Rotation	: Clockwise (looking at output shaft)
Drive with special feature	: Yes
Connection type	: 001
ISO code	: CLP HC 460
Lubricant type	: Synth.Oil
Lubricant volume [l]	: 1,80
.	: KWB_0061 KWB_0301
Motor power [kW]	: 2.2
Motor power [HP]	: 3.0
Motor frequency [Hz]	: 60
Cyclic duration factor S1-S10	: S1
Motor voltage [V] / conn. type	: 330/575 delta/star
Rated current [A]	: 5,90 / 3,35
cos phi	: 0,73
Thermal cl.[°C]/Enclosure[IP]	: 155(F) / 65
Service factor motor	: 1.15
International efficiency class	: IE3
Efficiency (100% Pn) [%]	: 89,5
Design specification	: USA (UR) /Canada (CSA)
K.V.A.code	: M
Design	: NEMA A
Ambient temperature min. [°C]	: -20
Ambient temperature max. [°C]	: 40
CT speed range	: 750-1800rpm
Nameplate	: English / Imperial units
Nameplate text	: right rotation

# Gates Poly Chain® GT® Carbon® Belt System Specifications

To satisfy a wide range of loads, speeds and applications, Poly Chain GT Carbon belts and sprockets are made in a selection of sizes, capacities and dimensions.

The three principal dimensions of a belt are:

**pitch      pitch length      width**

Belt pitch is the distance in millimeters between two adjacent tooth centers as measured on the pitch line of the belt. Belt pitch length is the total length (circumference) in millimeters as measured along the pitch line. The theoretical pitch line of a Poly Chain GT Carbon belt lies within the tensile member.

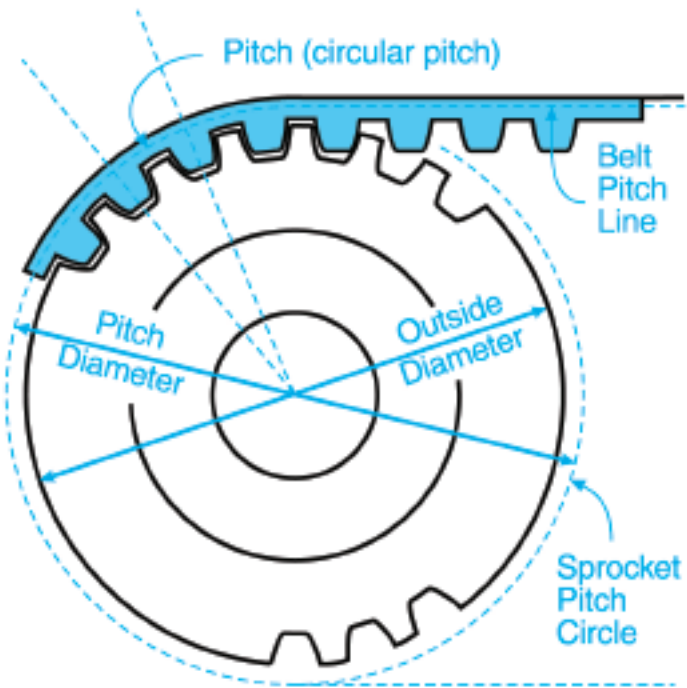
The three principal dimensions of a sprocket are:

**pitch      number of sprocket grooves      width**

On the sprocket, pitch is the distance between groove centers and is measured on the sprocket's pitch circle. See illustration at right. The pitch circle of the sprocket coincides with the pitch line of the belt mating with it. The sprocket's pitch diameter is always greater than its outside diameter.

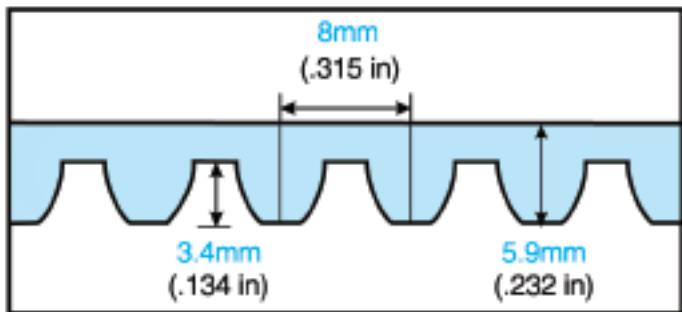
Any Poly Chain GT Carbon belt must be run with Poly Chain GT2 sprockets of the same pitch.

Gates Poly Chain GT Carbon belts are made in 8mm and 14mm pitches. Standard belt sizes are listed in the stock Poly Chain GT Carbon Belt Tables on page 3. Specifications for the 8mm and 14mm pitch belts list the belt pitch lengths, number of teeth, stock widths and appropriate weights. Using the information from these tables, a code for ordering a specific belt can be determined as shown in the following examples:



Belt Pitch (mm)	Belt Pitch Length (mm)	Belt Width (mm)
8MGT	640	12
14MGT	1190	37

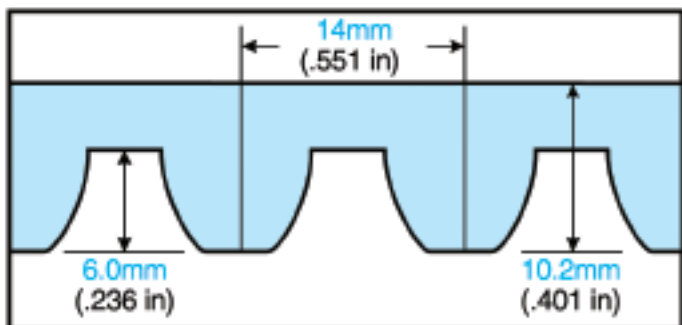
## 8mm Pitch — Reference Dimensions



Sprockets for Poly Chain GT Carbon belts are also made in 8mm and 14mm pitches. Standard sprocket sizes are listed in the Sprocket Specification Tables on Pages 64 through 74. For each Poly Chain GT Carbon belt width, there is a table listing the sprocket code symbol, the applicable bushing style and pertinent dimensional information. The sprocket code symbol components are determined by using the following examples:

Pitch (mm)	Sprocket Designation & No. of Grooves	Width (mm)
8MX	48S*	12
14MX	36S*	37

## 14mm Pitch — Reference Dimensions



\*The "S" is used after the number of grooves to help identify it is a sprocket and avoid any confusion with the belt code.

The bushing style to be used with a specific sprocket is listed in the Sprocket Specifications Tables. Reference to the Stock Bushings for Poly Chain GT2 plus Bore and Keyseat information will give you the data needed to order the proper bushing. For example,

**Style 2517 Bushing with a 2-inch bore**

[Home](#) > [Synchronous Belts and Sprockets](#) > [Belts](#) > [Poly Chain](#) > [GT](#) > **8MGT-544-21**



## Product Details for 8MGT-544-21

Category: GT

[Print this page](#)

Attributes	Values
Product Number	92701070
Product Name	Poly Chain GT Carbon
Profile	GT
Pitch	8 mm
Number of Teeth	68
Top Belt Width per strand (inch)	0.83
Top Belt Width per strand (mm)	21
Length (inch)	21.42
Length (mm)	544
Core Material	Polyurethane
Tensile Cord	Carbon
Fabric Cover	Blue Nylon
RMA Oil and Heat Resistant	Yes
RMA Static Conductive	No
Weight (lbs)	0.11

# Gates Poly Chain® GT® Carbon® Belt Standard Line

## Stock Sizes

### 8mm Pitch Lengths

Description	No. of Teeth	Length	
		mm	in
8MGT-640	80	640	25.20
8MGT-720	90	720	28.35
8MGT-800	100	800	31.50
8MGT-896	112	896	35.28
8MGT-960	120	960	37.80
8MGT-1000	125	1000	39.37
8MGT-1040	130	1040	40.95
8MGT-1120	140	1120	44.09
8MGT-1200	150	1200	47.24
8MGT-1224	153	1224	48.19
8MGT-1280	160	1280	50.39
8MGT-1440	180	1440	56.69
8MGT-1600	200	1600	62.99
8MGT-1760	220	1760	69.29
8MGT-1792	224	1792	70.55
8MGT-2000	250	2000	78.74
8MGT-2200	275	2200	86.61
8MGT-2240	280	2240	88.19
8MGT-2400	300	2400	94.49
8MGT-2520	315	2520	99.21
8MGT-2600	325	2600	102.36
8MGT-2800	350	2800	110.24
8MGT-2840	355	2840	111.81
8MGT-3048	381	3048	120.00
8MGT-3200	400	3200	125.98
8MGT-3280	410	3280	129.13
8MGT-3600	450	3600	141.73
8MGT-4000	500	4000	157.48
8MGT-4400	550	4400	173.23
8MGT-4480	560	4480	176.38

### 14mm Pitch Lengths

Description	No. of Teeth	Length	
		mm	in
14MGT-994	71	994	39.13
14MGT-1120	80	1120	44.09
14MGT-1190	85	1190	46.85
14MGT-1260	90	1260	49.61
14MGT-1400	100	1400	55.12
14MGT-1568	112	1568	61.73
14MGT-1610	115	1610	63.84
14MGT-1750	125	1750	68.90
14MGT-1890	135	1890	74.41
14MGT-1960	140	1960	77.17
14MGT-2100	150	2100	82.68
14MGT-2240	160	2240	88.19
14MGT-2310	165	2310	90.95
14MGT-2380	170	2380	93.70
14MGT-2450	175	2450	96.46
14MGT-2520	180	2520	99.21
14MGT-2590	185	2590	101.97
14MGT-2660	190	2660	104.72
14MGT-2800	200	2800	110.24
14MGT-3136	224	3136	123.46
14MGT-3304	236	3304	130.08
14MGT-3360	240	3360	132.28
14MGT-3500	250	3500	137.80
14MGT-3850	275	3850	151.58
14MGT-3920	280	3920	154.33
14MGT-4326	309	4326	170.32
14MGT-4410	315	4410	173.62

### 8mm Widths

12mm (.47 in.)	21mm (.83 in.)	36mm (1.42 in.)	62mm (2.44 in.)
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### 14mm Widths

20mm (.79 in.)	37mm (1.46 in.)	68mm (2.68 in.)	90mm (3.54 in.)	125mm (4.92 in.)
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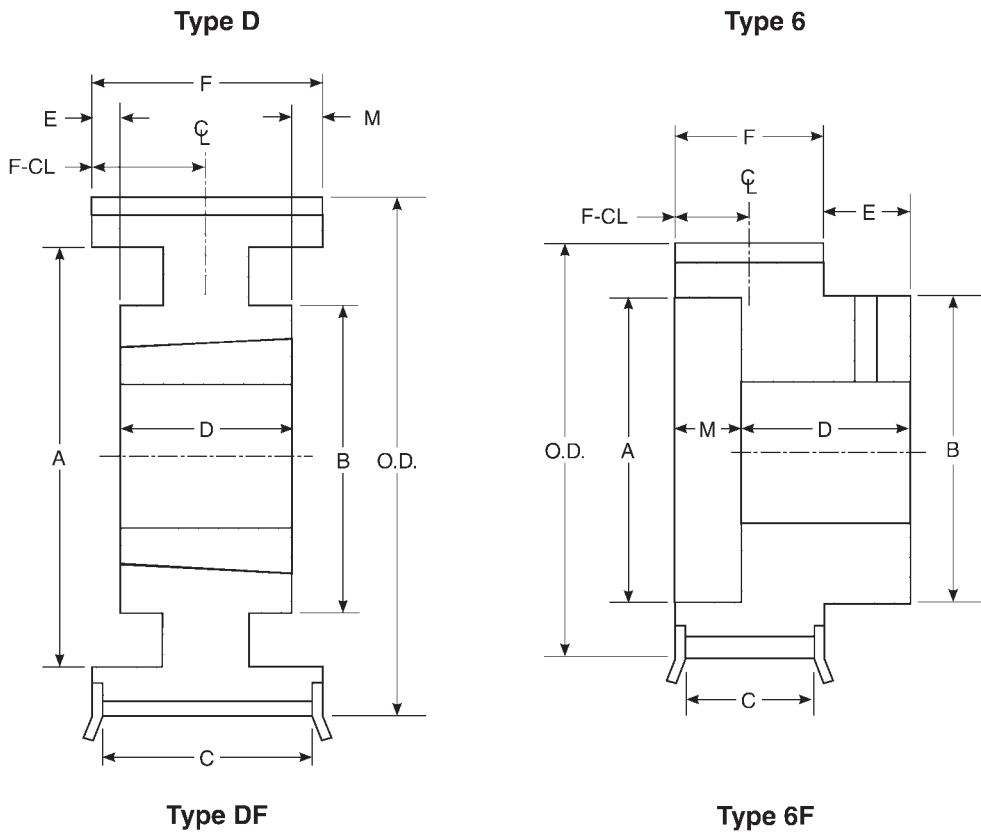
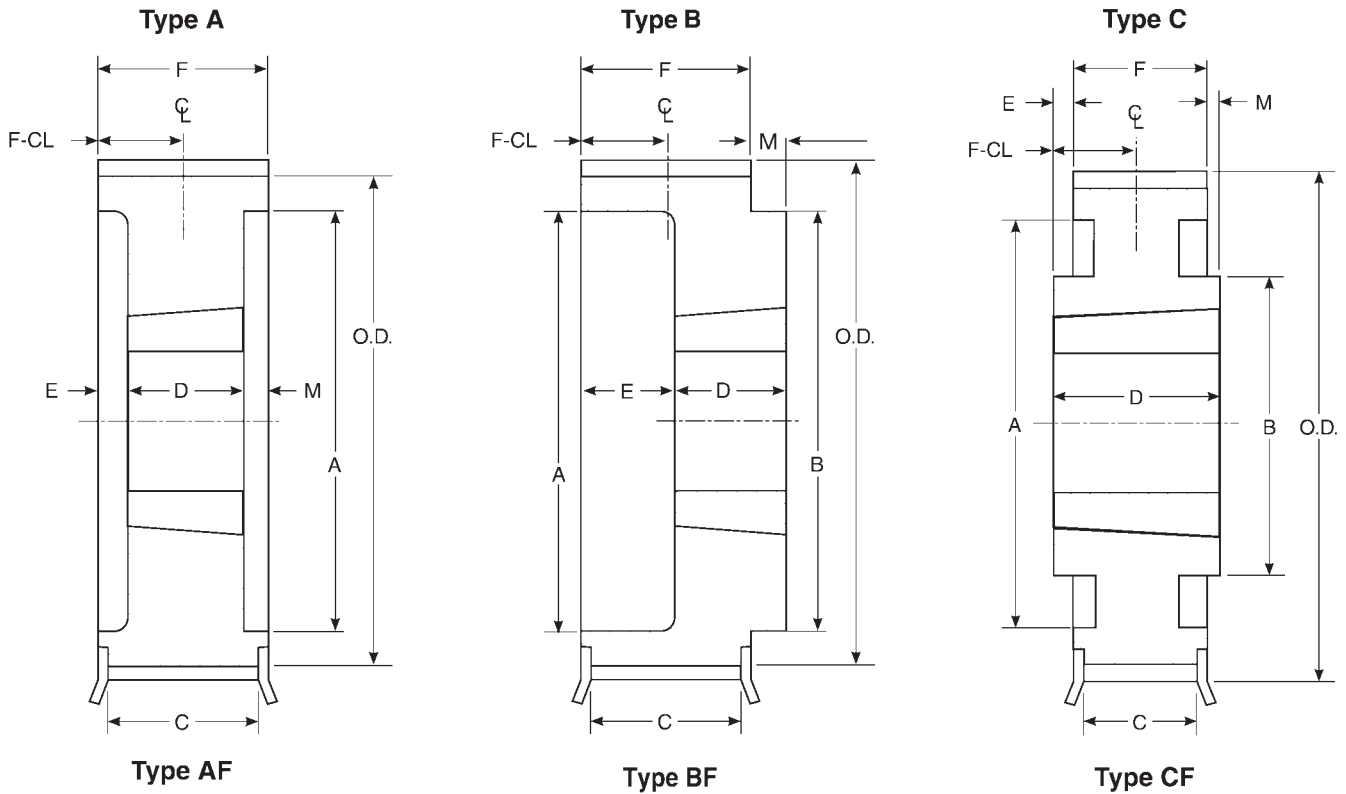
### Long Length Poly Chain GT2 Belting Stock Widths

8mm Pitch Widths			14mm Pitch Widths	
12mm	21mm	36mm	20mm	37mm

Special widths available upon request.

Dimensions are given in inches and millimeters. Inches are shown in black type. Millimeters are shown in blue type.

# Gates Poly Chain® GT®2 Sprocket Specifications



2D and 3D Sprocket Drawings are available at [www.gates.com/designview](http://www.gates.com/designview)

# Stock 8mm Gates Poly Chain® GT®2 Sprocket Specifications—continued

Sprocket Number	Number of Teeth	Diameters (in)			Design Type	Dimensions (in)										F-CL	Bushing Size	Bore Sizes		Approx. Wt. (lb)	Approx. Wt. WRF <sup>2</sup>	Mater. Spec
		O.D.	Flange Ref.	Pitch		A	B	C	D	E	F	M	Min	Max								
8MX-22S-21	22	2.206	2.143	2.610	AF-1	1.63	—	0.92	0.88	—	1.20	0.33	0.60	1008	0.500	1.000	0.6	0.002	DI, NP			
PB8MX-22S-21	22	2.206	2.143	2.610	6F-1	—	1.79	0.92	1.65	0.45	1.20	0	0.60	MPB	0.500	1.188	1.3	0.005	DI			
8MX-25S-21	25	2.506	2.443	2.910	AF-1	1.92	—	0.92	0.88	—	1.20	0.33	0.60	1108	0.500	1.125	0.8	0.005	GI, NP			
PB8MX-25S-21	25	2.506	2.443	2.910	6F-1	—	2.08	0.92	1.65	0.45	1.20	0	0.60	MPB	0.500	1.500	1.8	0.009	DI			
8MX-26S-21	26	2.607	2.544	2.906	AF	1.85	—	0.92	0.88	—	1.2	0.32	0.6	1108	0.500	1.125	0.80	0.006	GI, NP			
8MX-27S-21	27	2.707	2.644	3.207	AF	1.95	—	0.92	0.88	—	1.2	0.32	0.6	1108	0.500	1.125	0.90	0.007	GI, NP			
8MX-28S-21	28	2.807	2.744	3.210	AF-1	2.18	—	0.92	0.88	—	1.20	0.33	0.60	1108	0.500	1.125	1.0	0.008	G, SS, NP			
PB8MX-28S-21	28	2.807	2.744	3.210	6F-1	—	2.24	0.92	1.65	0.45	1.20	0	0.60	MPB	0.500	1.750	2.3	0.014	DI, SS			
8MX-29S-21	29	2.907	2.844	3.09	AF	2.15	—	0.92	0.88	—	1.2	0.32	0.6	1108	0.500	1.125	1.00	0.010	GI, SS, NP			
8MX-30S-21	30	3.008	2.945	3.410	AF-1	2.38	—	0.92	0.88	—	1.20	0.33	0.60	1108	0.500	1.125	1.3	0.011	GI, SS, NP			
PB8MX-30S-21	30	3.008	2.945	3.410	6F-1	—	2.54	0.92	1.77	0.57	1.20	0	0.60	MPB	0.500	1.813	2.8	0.020	DI, SS			
8MX-31S-21	31	3.108	3.045	3.328	AF	2.35	—	0.92	1	—	1.2	0.2	0.6	1210	0.500	1.250	1.10	0.013	GI, NP			
8MX-32S-21	32	3.208	3.145	3.610	AF-1	2.58	—	0.92	1.00	—	1.20	0.20	0.60	MPB	0.500	1.250	1.4	0.015	DI, SS, NP			
PB8MX-32S-21	32	3.208	3.145	3.610	6F-1	—	2.73	0.92	1.77	0.57	1.20	0	0.60	MPB	0.500	2.000	3.2	0.026	DI, SS			
8MX-33S-21	33	3.308	3.245	3.566	AF	2.6	—	0.92	1	—	1.2	0.2	0.6	1610	0.500	1.688	1.10	0.016	DI, NP			
8MX-34S-21	34	3.409	3.346	3.810	AF-1	2.66	—	0.92	1.00	—	1.20	0.20	0.60	1610	0.500	1.688	1.4	0.018	DI, SS, NP			
8MX-35S-21	35	3.509	3.446	3.805	AF	2.75	—	0.92	1	—	1.2	0.2	0.6	1610	0.500	1.688	1.30	0.021	GI, NP			
8MX-36S-21	36	3.609	3.546	4.010	AF-1	2.96	—	0.92	1.00	—	1.20	0.20	0.60	1610	0.500	1.688	1.66	0.023	DI, SS, NP			
8MX-37S-21	37	3.709	3.646	4.044	AF	2.95	—	0.92	1	—	1.2	0.2	0.6	1610	0.500	1.688	1.60	0.028	GI, NP			
8MX-38S-21	38	3.810	3.747	4.210	AF-1	3.15	—	0.92	1.00	—	1.20	0.20	0.60	1610	0.500	1.688	1.9	0.030	DI, SS, NP			
8MX-39S-21	39	3.910	3.847	4.41	AF	3.14	—	0.92	1	—	1.2	0.2	0.6	1610	0.500	1.688	1.90	0.035	GI, NP			
8MX-40S-21	40	4.010	3.947	4.410	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	2.0	0.037	DI, SS, NP			
8MX-41S-21	41	4.110	4.047	4.52	BF	—	3.4	1	—	1.25	1.2	0.05	0.6	2012	0.500	2.125	2.30	0.043	DI, NP			
8MX-42S-21	42	4.211	4.148	4.910	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	2.4	0.048	GI, SS, NP			
8MX-45S-21	45	4.511	4.448	4.910	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	3.0	0.067	GI, SS, NP			
8MX-48S-21	48	4.812	4.749	5.210	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	3.7	0.092	GI, SS, NP			
8MX-50S-21	50	5.013	4.950	5.410	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	4.2	0.111	GI, SS, NP			
8MX-53S-21	53	5.314	5.251	5.500	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	5.0	0.145	GI, SS, NP			
8MX-56S-21	56	5.614	5.551	6.010	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	5.8	0.184	GI, SS, NP			
8MX-60S-21	60	6.015	5.952	6.420	AF-1	—	—	0.97	1.25	—	1.25	0	0.63	2012	0.500	2.125	6.9	0.247	GI, SS, NP			
8MX-63S-21	63	6.316	6.253	6.720	CF-1	5.71	3.76	0.92	1.25	—	1.20	0.05	0.60	2012	0.500	2.125	4.1	0.154	GI, NP			
8MX-67S-21	67	6.717	6.654	6.880	CF-1	6.14	4.50	0.92	1.75	—	1.20	0.55	0.60	2517	0.500	2.688	5.7	0.232	GI, NP			
8MX-71S-21	71	7.118	7.055	7.500	CF-1	6.51	4.50	0.92	1.75	—	1.20	0.55	0.60	2517	0.500	2.688	6.1	0.275	GI, NP			
8MX-75S-21	75	7.519	7.456	7.920	CF-1	6.90	4.50	0.92	1.75	—	1.20	0.55	0.60	2517	0.500	2.688	6.5	0.323	GI, NP			
8MX-80S-21	80	8.020	7.957	8.420	CF-1	7.23	4.50	0.92	1.75	—	1.20	0.55	0.60	2517	0.500	2.688	7.5	0.432	GI, NP			
8MX-90S-21	90	9.023	8.960	—	C-2	7.78	4.50	—	—	—	1.20	0.55	0.60	2517	0.500	2.688	11.0	0.825	GI, NP			
8MX-112S-21	112	11.229	11.166	—	C-2	10.00	4.50	—	—	—	1.20	0.55	0.60	2517	0.500	2.688	16.0	1.892	GI, NP			
8MX-140S-21	140	14.036	13.973	—	C-3	11.74	4.88	—	—	—	1.20	0.55	0.60	2517	0.500	2.688	24.1	4.707	GI, NP			
8MX-180S-21	180	18.046	17.983	—	C-3	15.49	6.25	—	—	—	1.20	0.80	0.60	3020	0.875	3.250	39.0	12.02	GI, NP			
8MX-224S-21	224	22.457	22.394	—	C-3	19.86	6.25	—	—	—	1.20	0.80	0.60	3020	0.875	3.250	53.4	26.34	GI, NP			

Material Spec : GI - Grey Iron DI - Ductile Iron SS - Stainless Steel Design Type Suffix: 1 - Solid 2 - Web 3 - Arms

Note: 2D and 3D sprocket drawings are available at [www.gates.com/p/catalog](http://www.gates.com/p/catalog)

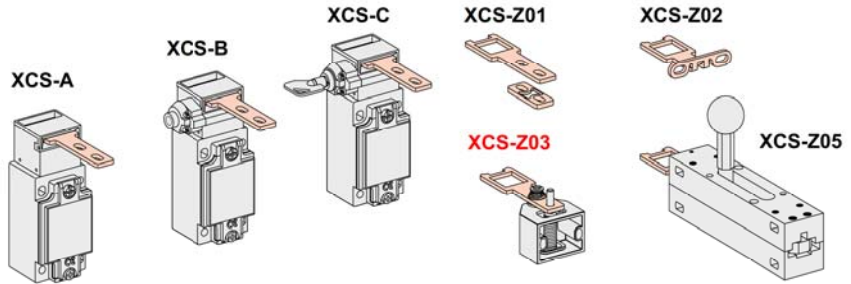
NOTE: •Weights for Minimum Plain Bore (MPB) Sprockets are with minimum bore. •Weights and WRF<sup>2</sup> for Bushed Sprockets do not include bushings. •WRF<sup>2</sup> values have lb-ft<sup>2</sup> units.

**Details shown which do not affect drive function may be changed without notification.**





**Safety interlock switch**  
**Interrupteurs de sécurité**  
**Sicherheits-Positionsschalter**  
**Interruptores de seguridad**  
**Interruttori di sicurezza**  
**Interruptores de segurança**



### English

The devices have been designed in compliance with the standards currently in effect: IEC 60947, EN 292, EN 60204, EN 1088 to ensure the safety of machine operators and operating reliability. When correctly installed they can give a category 3 control circuit per EN 954 (2 redundant NC contacts) or a category 4 control circuit per EN 954 (if combined with the PREVENTA XPS-FB safety module).

### Français

Les appareils ont été conçus d'après les normes en vigueur : IEC 60947, EN 292, EN 60204, EN 1088, afin d'assurer la sécurité des opérateurs machines et la fiabilité de fonctionnement. Correctement installés, ils permettent d'obtenir un circuit de commande de catégorie 3 selon EN 954 (2 contacts "O" utilisés en redondance) ou un circuit de commande de catégorie 4 selon EN 954 (avec l'emploi du module de sécurité PREVENTA XPS-FB).

### Deutsch

Die Geräte wurden gemäß den geltenden Normen IEC 60947, EN 292, EN 60204, EN 1088 entwickelt und gewährleistet damit die Sicherheit für den Maschinenbediener sowie eine hohe Betriebszuverlässigkeit. Bei einer korrekten Installation erhalten Sie eine Steuerschaltung der Klasse 3 gemäß EN 954 (2 redundante «O»-Kontakte) oder eine Steuerschaltung der Klasse 4 gemäß EN 954 (bei Einsatz des Sicherheitsmoduls PREVENTA XPS-FB).

### Español

Los aparatos han sido diseñados según las normas vigentes: IEC 60947, EN 292, EN 60204, EN 1088, para asegurar la seguridad de los operadores de máquinas y la fiabilidad del funcionamiento. Cuando su instalación es correcta, permiten conseguir un circuito de mando de categoría 3 según la norma EN 954 (2 contactos «O» utilizados en redundancia) o un circuito de mando de categoría 4 según EN 954 (asociando el módulo de seguridad PREVENTA XPS-FB).

### Italiano

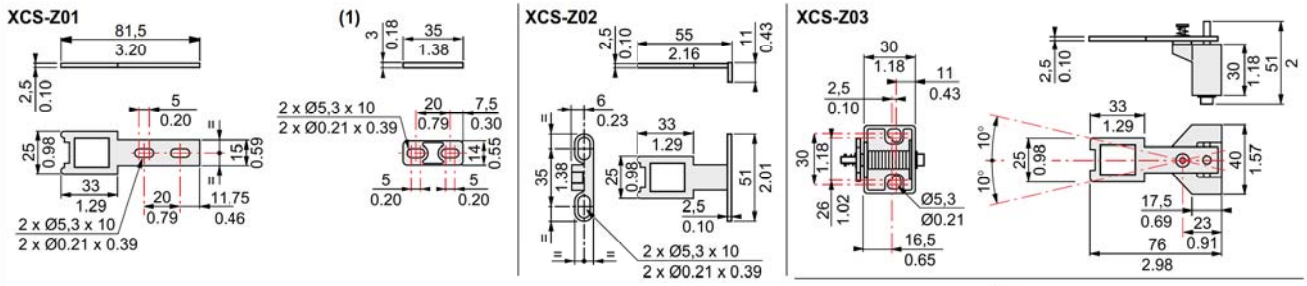
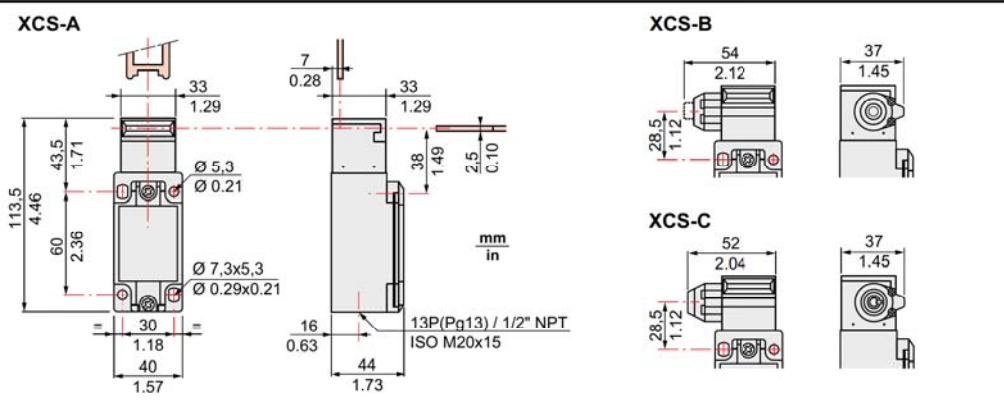
Gli apparecchi sono stati progettati secondo le norme in vigore : IEC 60947, EN 292, EN 60204, EN 1088 allo scopo di garantire la sicurezza degli operatori e l'affidabilità del funzionamento. Se installati correttamente, essi consentono di ottenere un circuito di comando di categoria 3 secondo EN 954 (2 contatti NC usati in ridondanza) o un circuito di comando di categoria 4 secondo EN 954 (associando il modulo di sicurezza PREVENTA XPS-FB).

### Português

Os aparelhos foram concebidos segundo as normas em vigor: IEC 60947, EN 292, EN 60204, EN 1088, de maneira a garantir a segurança dos operadores das máquinas e a fiabilidade de funcionamento. Correctamente instalados, permitem a obtenção de um circuito de comando de categoria 3 segundo EN 954 (2 contactos «NF» utilizados em redundância) ou um circuito de comando de categoria 4 segundo a norma EN 954 (associando o módulo de segurança PREVENTA XPS-FB).

**Dimensions**  
**Encombremets**  
**Abmessungen**  
**Dimensiones**  
**Dimensioni**  
**Dimensões**

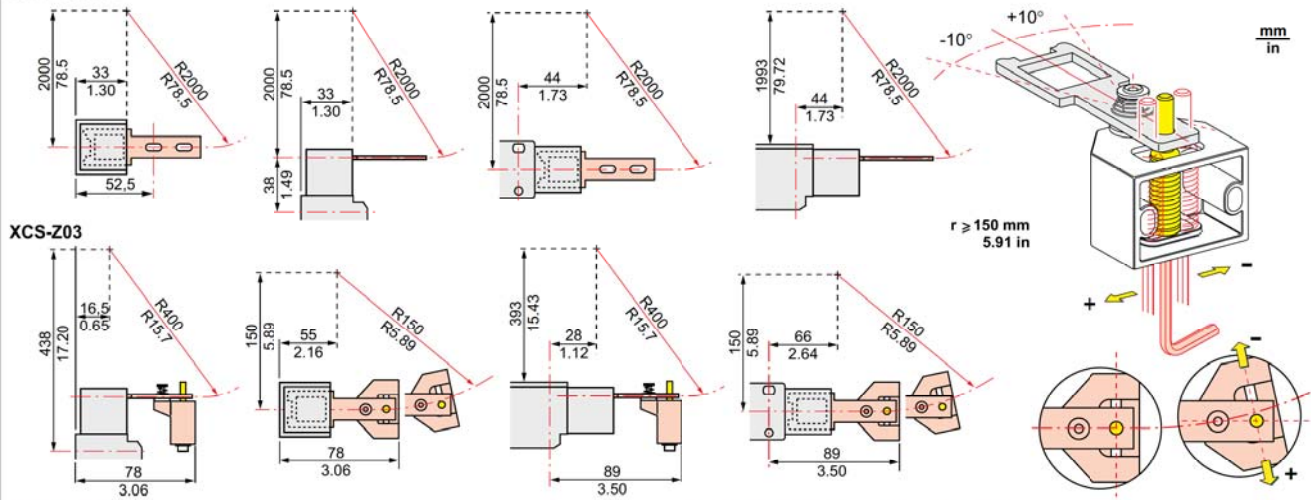
**1/2" NPT :**  
in case of connection by a metal conduit, a flexible metal conduit shall be used.  
Max. conduit torque :  
9 N.m / 80 Lb.in



- (1) Shim provided with XCS-Z01 enabling an XCK-J with a ZCK-Y07 key to be replaced by an XCS-A/B/C with an XCS-Z01 key without redrilling any attaching holes.
- (1) Cale fournie avec XCS-Z01 permettant de remplacer un XCK-J avec une clé ZCK-Y07 par un XCS-A/B/C avec une clé XCS-Z01 sans repercer aucun trous de fixation
- (1) Mit XCS-Z01 geliefert Keil, der es ermöglicht, mit einem Schlüssel ZCK-Y07 ein XCK-J durch ein XCS-A/B/C mit einem Schlüssel XCS-Z01 zu ersetzen, ohne daß erneut eine Befestigungsbohrung vorzunehmen ist.
- (1) Cala suministrada con XCS-Z01 que permite reemplazar un XCK-J, con una llave ZCK-Y07, por un XCS-A/B/C, con una llave XCS-Z01, sin tener que volver a perforar ningún agujero de fijación.
- (1) Un inserto fornito con XCS-Z01 permette di sostituire un XCK-J con una chiave ZCK-Y07 da un XCS-A/B/C con una chiave XCS-Z01 senza realizzare attri lori di fissaggio.
- (1) Cunha fornecida com XCS-Z01 permitindo substituir um XCK-J com chave ZCK-Y07 por um XCS-A/B/C com chave XCS-Z01, mantendo os mesmos furos de fixação.

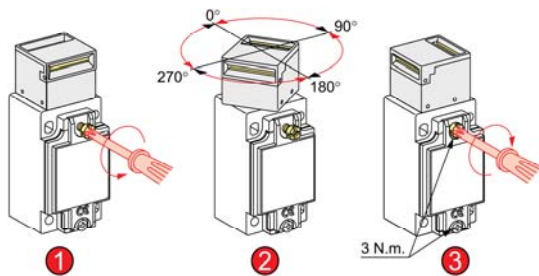
**Tongued key actuation radii**  
**Rayons d'actionnement des clés languettes**  
**Betätigungsradien der Zungenschlüssel**  
**XCS-Z01/Z02**

**Radios de accionamiento de las llaves lengüetas**  
**Raggio minimo di azionamento**  
**Raios de accionamento das chaves de lingueta**



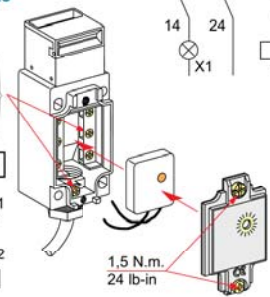
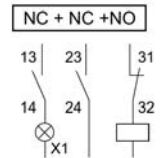
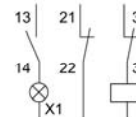
**Head orientation**  
**Orientation de la tête**  
**Ausrichtung des Kopfteils**  
**Orientación de la cabeza**  
**Orientamento della testa**  
**Orientação da cabeça**

**Tightening torque, tightening capacity**  
**Couple de serrage, capacité de serrage**  
**Anziehdrehmoment, Anziehvermögen**  
**Par de apriete, capacidad de apriete**  
**Coppia di serraggio, capacità di serraggio**  
**Binário de aperte, capacidade de aperte**



mini : 1 x 0,5 mm<sup>2</sup>  
 maxi : 2 x 1,5 mm<sup>2</sup>  
 mini : 1 #20 AWG  
 maxi : 2 #16 AWG  
 0,8 N.m. / 13 lb-in

**NC + NO + NO**



**Adjustment of tongued keys**  
 The safety interlock switch must not be used as a mechanical stop for the moving guard

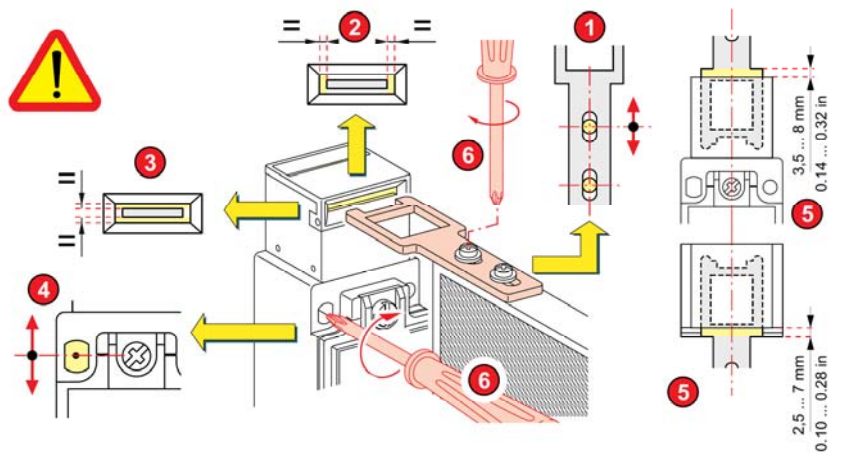
**Réglage des clés languettes**  
 L'interrupteur de sécurité ne doit pas servir de butée mécanique de votre protecteur mobile

**Einstellung der Zungenschlüssel**  
 Der Sicherheits-Positionsschalter darf nicht als mechanischer Anschlag für die mobile Schutzvorrichtung verwendet werden

**Ajuste de los pestillos**  
 El interruptor de seguridad no debe servir de tope mecánico de su protector móvil

**Regolazione degli azionatori**  
 L'interruttore di sicurezza non deve servire da arresto meccanico della protezione mobile

**Regulação das chaves de lingueta**  
 O interruptor de segurança não deve servir como batente mecânica do protector móvel





Position of keylock on XCS-B/C

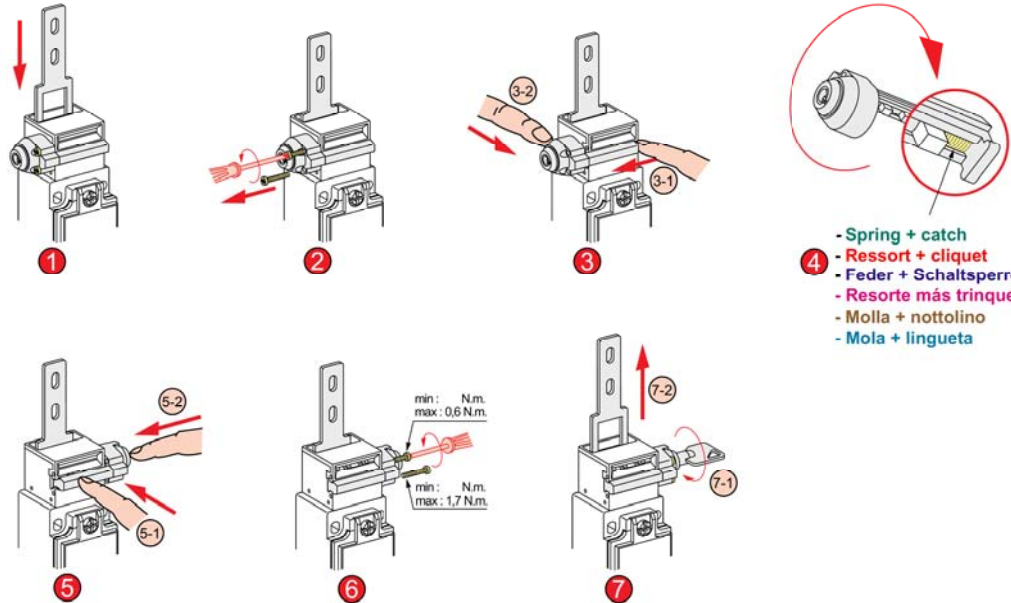
Orientation serrure à clé sur XCS-B/C

Ausrichtung des Schlosses auf dem XCS-B/C

Orientación cerradura de llave en XCS-B/C

Orientamento serradura a chiave su XCS-B/C

Orientação fechadura a chave em XCS-B/C



Wiring diagram

Mise en œuvre électrique

Elektrische Installation

Instalación eléctrica

Collegamenti elettrici

Instalação eléctrica

**⚠ DANGER**

**HAZARDOUS VOLTAGE**

Disconnect all power before working on equipment.

Electric shock will result in death or serious injury.

\* For mechanical/electrical redundancy, add another switch with positive opening contacts

Pour une redondance mécanique et électrique, ajouter un autre interrupteur à manœuvre positive d'ouverture

Für mechanische und elektrische Redundanz, wird ein weiterer Schalter mit Zwangsöffnung benötigt

Para conseguir una redundancia mecánica y eléctrica, añadir otro interruptor de posición de apertura positiva

Per realizzare la ridondanza meccanica ed elettrica, inserire un altro fincorsa a manovra positiva d'apertura

Para uma redundância mecânica e eléctrica, juntar um outro interruptor fim-de-curso com manobra positiva de abertura

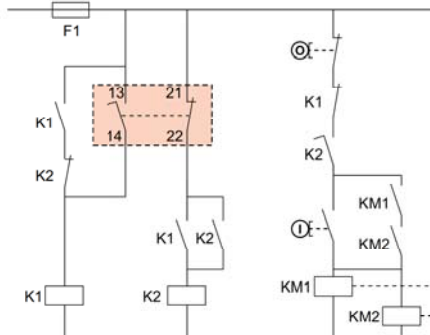
Cat. 1 (EN 954-1)

XCS-A5--

XCS-B5--

XCS-C5--

NC + NO



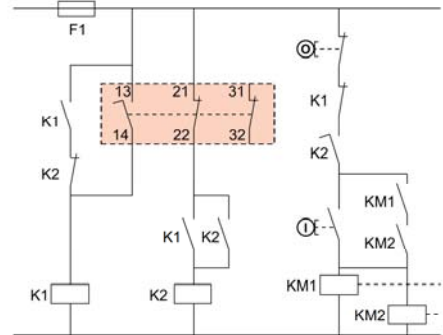
Cat. 3\* (EN 954-1)

XCS-A7--

XCS-B7--

XCS-C7--

NC + NC + NO



Contact status

Etat des contacts

Kontaktzustand

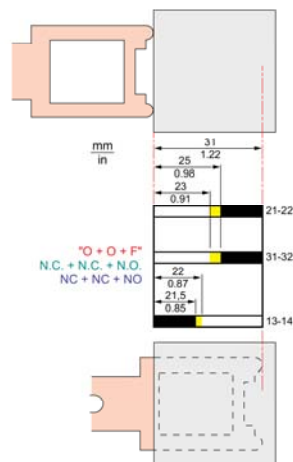
Estado de los contactos

Stato dei contatti

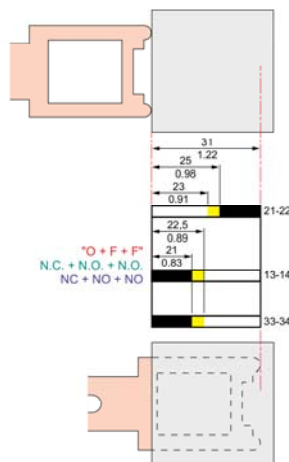
Estado dos contactos

-	Contact closed (1)
-	Contact fermé (1)
-	-Kontakt geschlossen (1)
-	-Contacto cerrado (1)
-	-Contatto chiuso (1)
-	-Contacto fechado (1)
-	Contact open (0)
-	-Contact ouvert (0)
-	-Kontakt geöffnet (0)
-	-Contacto abierto (0)
-	-Contatto aperto (0)
-	-Contacto aberto (0)
-	Transient state
-	-Etat transitoire
-	-Übergangszustand
-	-Estado transitorio
-	-Stato transitorio
-	-Estado transitório

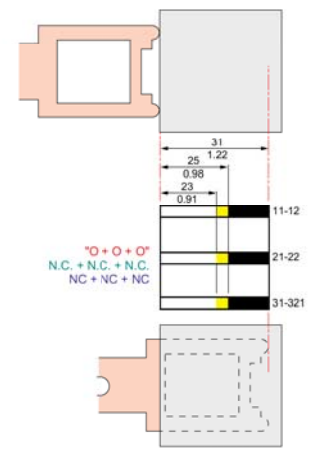
NC + NC + NO



NC + NO + NO



NC + NC + NC



# Lifeline 4

Installation Instructions

Installationsanleitung

Notice d'installation

Istruzioni per l'installazione

Instrucciones de instalación



**Allen-Bradley**



Drg. No: 14585 Issue 9  
EO: 28594



[www.ejaltd.com](http://www.ejaltd.com) - [www.ab.com/safety](http://www.ab.com/safety)

Installation must be in accordance with the following steps and stated specifications and should be carried out by suitably competent personnel. Adherence to the recommended maintenance instructions forms part of the warranty.

**WARNING:** Do not defeat, tamper, remove or bypass this unit. Severe injury to personnel could result.

Bei der Installation müssen die im Folgenden beschriebenen Anweisungen und angegebenen Spezifikationen eingehalten werden. Zudem darf die Installation nur von entsprechend qualifizierten Mitarbeitern ausgeführt werden. Werden die empfohlenen Wartungsanweisungen nicht eingehalten, entfällt die Gewährleistung.

**WARNUNG:** Nehmen Sie niemals Eingriffe am Gerät vor, und zerlegen, entfernen oder überbrücken Sie das Gerät nicht. Andernfalls können schwere Körperverletzungen die Folge sein.

L'installation doit être effectuée par un personnel qualifié conformément aux étapes et aux spécifications suivantes. Le respect des instructions de maintenance recommandée est l'une des conditions de la garantie.

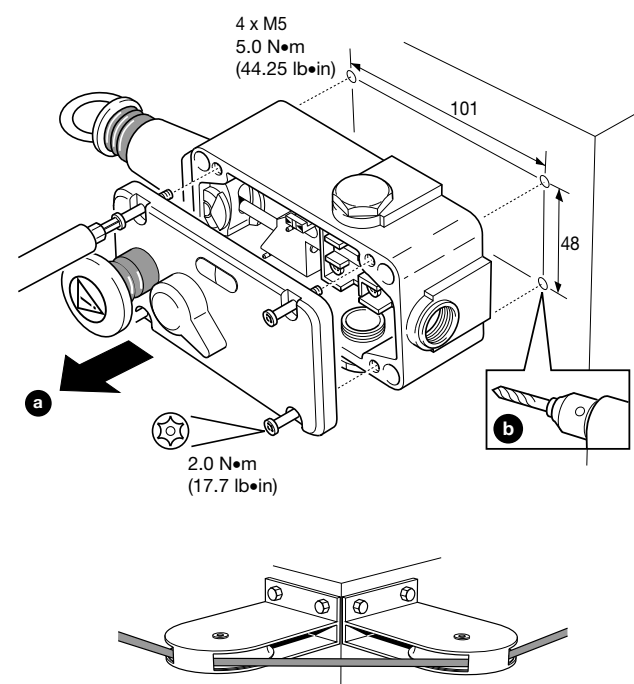
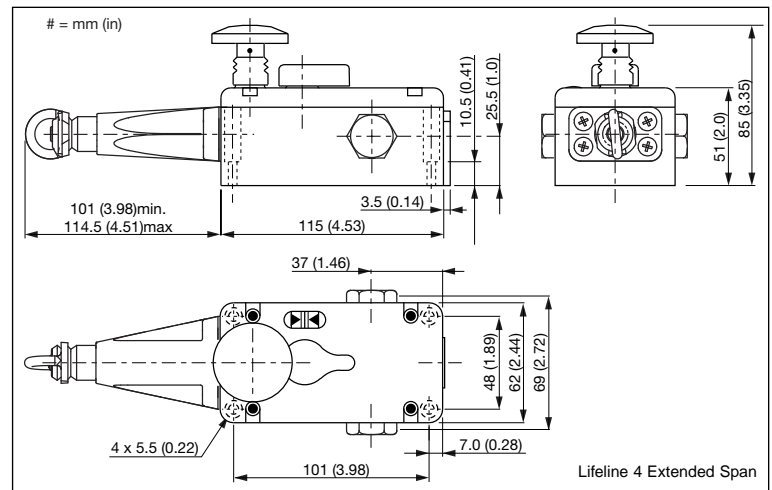
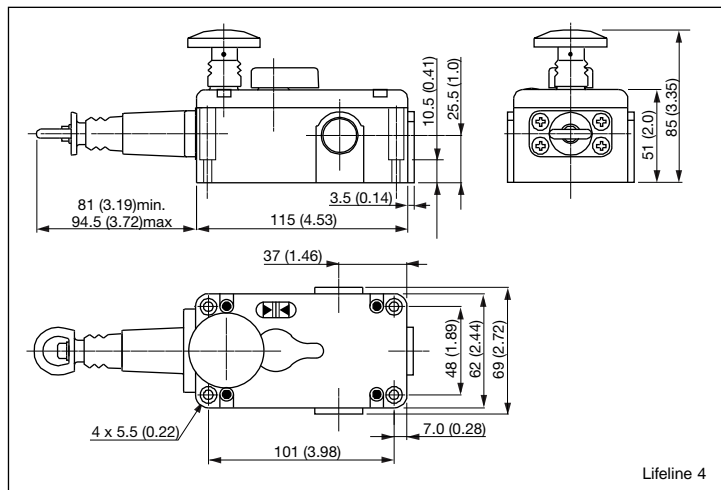
**AVERTISSEMENT:** ne pas entraver le fonctionnement de cet interrupteur, ne pas le modifier, le retirer ni le contourner au risque de s'exposer à de graves blessures.

Le operazioni di installazione devono essere eseguite da personale competente conformemente alle fasi qui di seguito illustrate nonché alle specifiche stabilite. Il rispetto delle istruzioni di manutenzione raccomandate costituisce parte della garanzia.

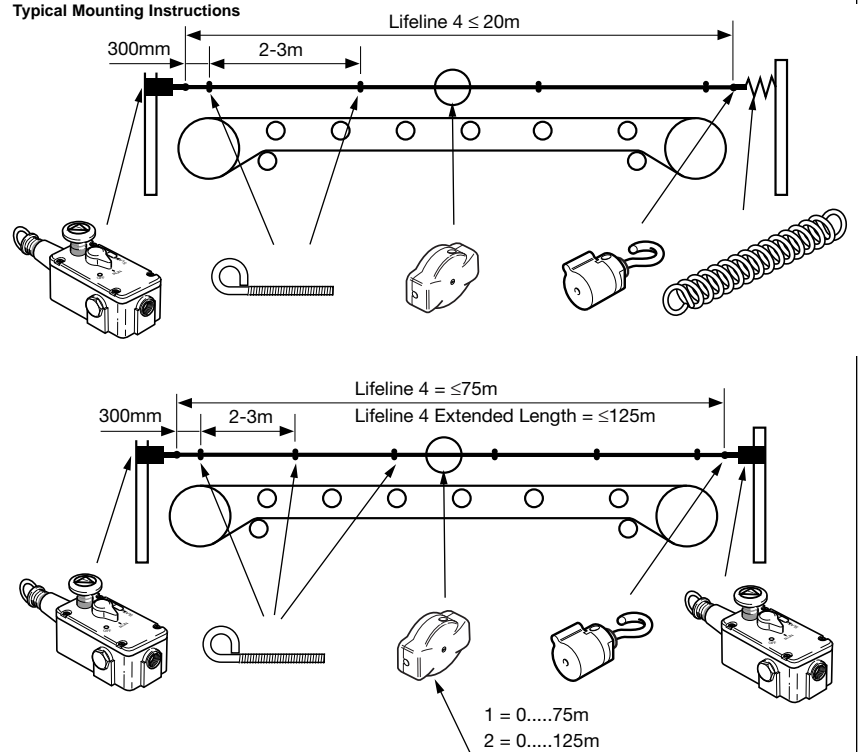
**ATTENZIONE:** non forzare, manomettere, rimuovere o bypassare questa unità. Pericolo di gravi lesioni alle persone.

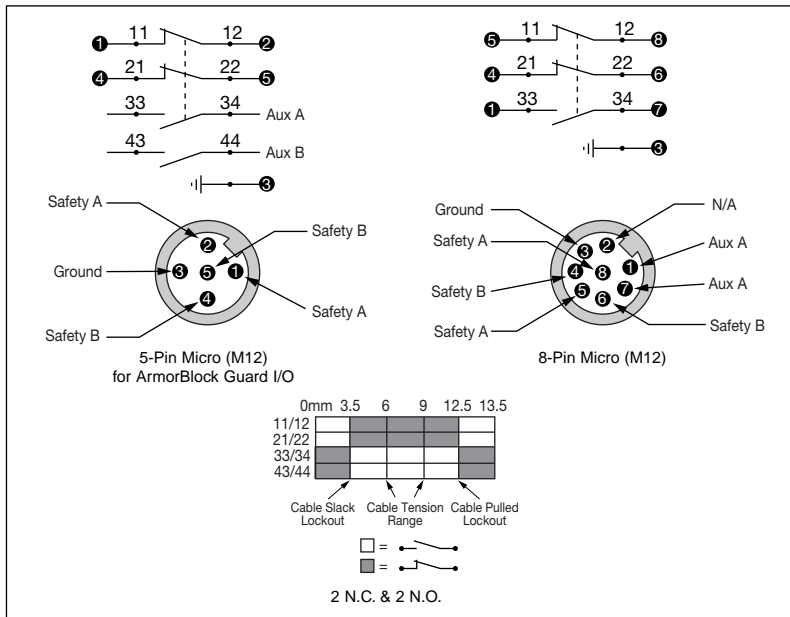
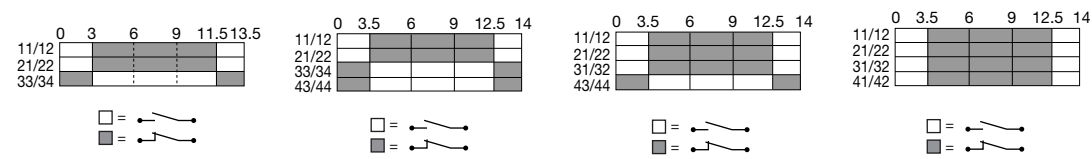
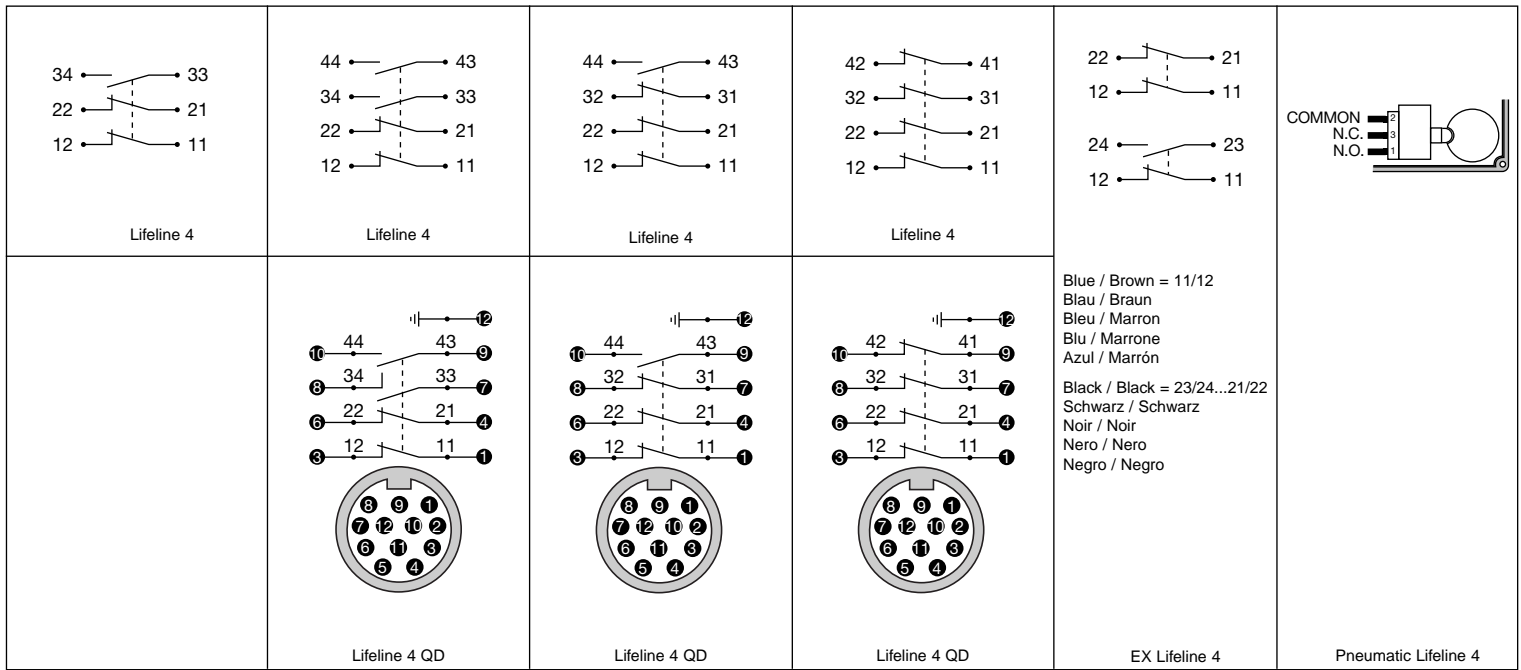
La instalación debe realizarse según los pasos siguientes y las especificaciones establecidas, y debe ser realizada por personal debidamente capacitado. El cumplimiento de las instrucciones de mantenimiento recomendadas forma parte de la garantía.

**ADVERTENCIA:** No cambie ni manipule indebidamente, ni desmonte u omite esta unidad. Esto podría causar lesiones personales graves.



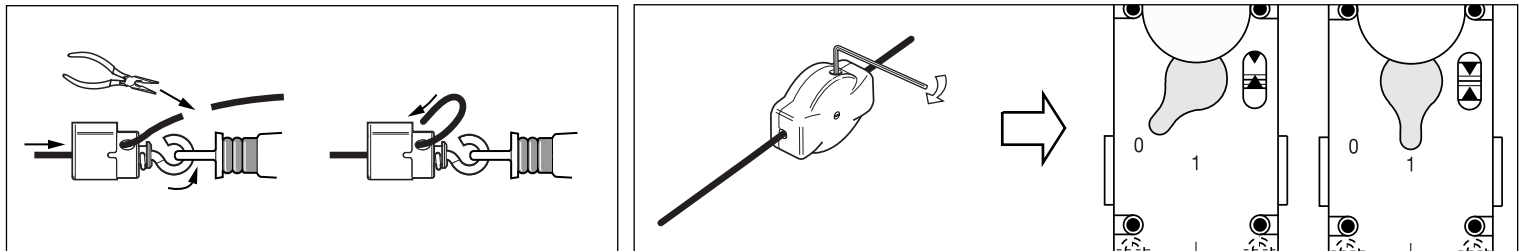
### Typical Mounting Instructions





**Connectors Ratings**

	Max. Ratings		Applicable Standards
	AC	DC	
4-Pin Micro (M12)	250V, 4A	250V, 4A	IEC 61076-2-101:2003
5-Pin Micro (M12)	60V, 4A	60V, 4A	IEC 61076-2-101:2003
6-Pin Micro (M12)	30V, 2A	30V, 2A	IEC 61076-2-101:2003
8-Pin Micro (M12)	30V, 2A	30V, 2A	IEC 61076-2-101:2003
12-Pin M23	63V, 6A	63V, 6A	IEC 61984:2001



# S30 Sensors AC-Voltage Series



## Instruction Manual

Self-Contained, AC-Operated Sensors



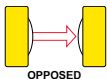

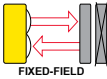
- Featuring EZ-BEAM® technology, the specially designed optics and electronics provide reliable sensing without the need for adjustments
- 30 mm plastic threaded barrel sensor in opposed, retroreflective, or fixed-field sensing modes
- Completely epoxy-encapsulated to provide superior durability, even in harsh sensing environments rated to IP69K
- Innovative dual-indicator system takes the guesswork out of sensor performance monitoring
- 20 V ac to 250 V ac (3-wire hookup); SPST solid-state switch output, maximum load 300 mA



**WARNING: Not To Be Used for Personnel Protection**

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

## Models

Sensing Mode	Model <sup>1</sup>	Output	Range	LED
 OPPOSED	S303E	—	60 m (196.8 ft)	Infrared, 950 nm
	S30AW3R	LO		
	S30RW3R	DO		
 POLAR RETRO	S30AW3LP	LO	6 m (19.7 ft)	Visible red, 680 nm
	S30RW3LP	DO		
 FIXED-FIELD	S30AW3FF200	LO	200 mm (7.9 in) cutoff	Infrared, 880 nm
	S30RW3FF200	DO		
	S30AW3FF400	LO	400 mm (15.7 in) cutoff	
	S30RW3FF400	DO		
	S30AW3FF600	LO	600 mm (23.6 in) cutoff	
	S30RW3FF600	DO		

## Fixed-Field Mode Overview

S30 Sensor self-contained fixed-field sensors are small, powerful, infrared diffuse mode sensors with far-limit cutoff (a type of background suppression). Their high excess gain and fixed-field technology allow detection of objects of low reflectivity, while ignoring background surfaces.

The cutoff distance is fixed. Backgrounds and background objects must always be placed beyond the cutoff distance.

<sup>1</sup> Standard 2 m (6.5 ft) cable models are listed.

- 9 m (30 ft) cable: add suffix "W/30" (for example, S303E W/30).
- 4-pin Micro-style QD models: add suffix "Q1" (for example, S303EQ1). A model with a QD connector requires a mating cable.



## Specifications

### Supply Voltage and Current

20 av V to 250 V ac (50 Hz to 60 Hz)  
 Average current: 20 mA  
 Peak current:

- 200 mA at 20 V ac
- 500 mA at 120 V ac
- 750 mA at 250 V ac

### Supply Protection Circuitry

Protected against transient voltages

### Output Configuration

SPST solid-state ac switch; three-wire hookup; light operate or dark operate, depending on model

Light Operate: Output conducts when sensor sees its own (or the emitter's) modulated light

Dark Operate: Output conducts when the sensor sees dark

### Required Overcurrent Protection



**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to <http://www.bannerengineering.com>.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

### Output Rating

- 300 mA maximum (continuous)
- Fixed-Field models: derate 5 mA/°C above +50° C (+122° F)
- Inrush capability: 1 amp for 20 ms, non-repetitive
- OFF-state leakage current: < 100 mA
- ON-state saturation voltage: 3 V at 300 mA ac; 2 V at 15 mA ac

### Output Protection Circuitry

Protected against false pulse on power-up

### Output Response

- Time Opposed mode: 16 ms ON, 8 ms OFF
- Other models: 16 ms ON and OFF



**NOTE:** 100 ms delay on power-up; outputs do not conduct during this time.

### Repeatability

- Opposed mode: 2 ms
- Other models: 4 ms
- Repeatability and response are independent of signal strength

### Indicators

- Two LEDs (Green and Yellow)
- Green ON steady: power to sensor is ON
- Yellow ON steady: sensor sees light
- Yellow flashing: excess gain marginal (1 to 1.5 times) in light condition

### Construction

PBT polyester housing; polycarbonate (opposed-mode) or acrylic lens

### Environmental Rating

Leakproof design rated NEMA 6P, DIN 40050 (IEC IP69K)

### Connections

2 m (6.5 ft) attached cable, or 4-pin Micro-style quick-disconnect fitting

### Operating Conditions

- Temperature: -40 °C to +70 °C (-40 °F to +158 °F)
- Humidity: 90% at +50 °C maximum relative humidity (non-condensing)

### Vibration and Mechanical Shock

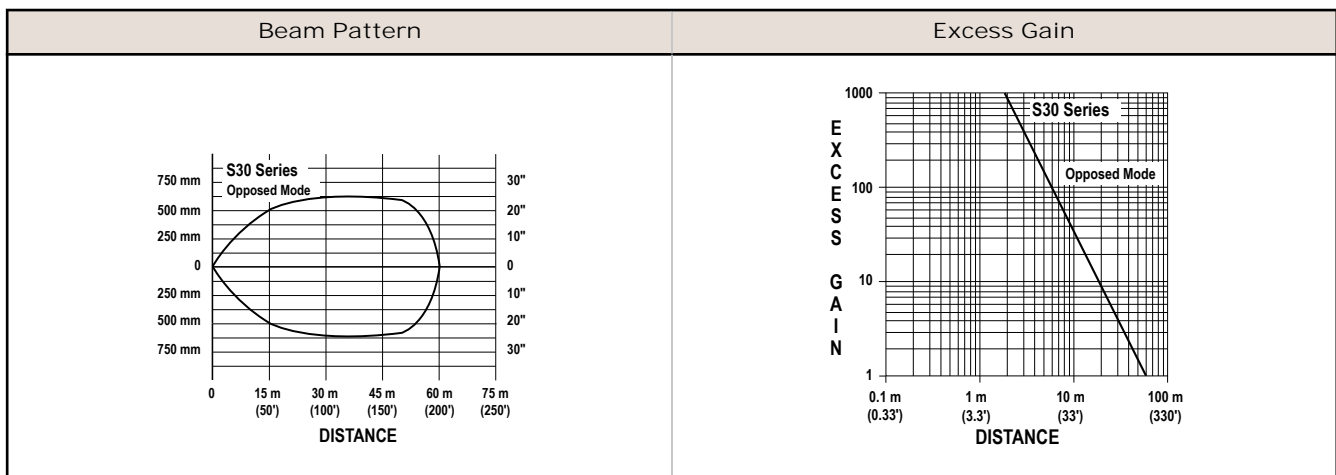
All models meet Mil. Std. 202F requirements. Method 201A (Vibration; frequency 10 Hz to 60 Hz, max., double amplitude 0.06 inch acceleration 10G). Method 213B conditions H&I. (Shock: 75G with unit operating; 100G for non-operation)

### Certifications

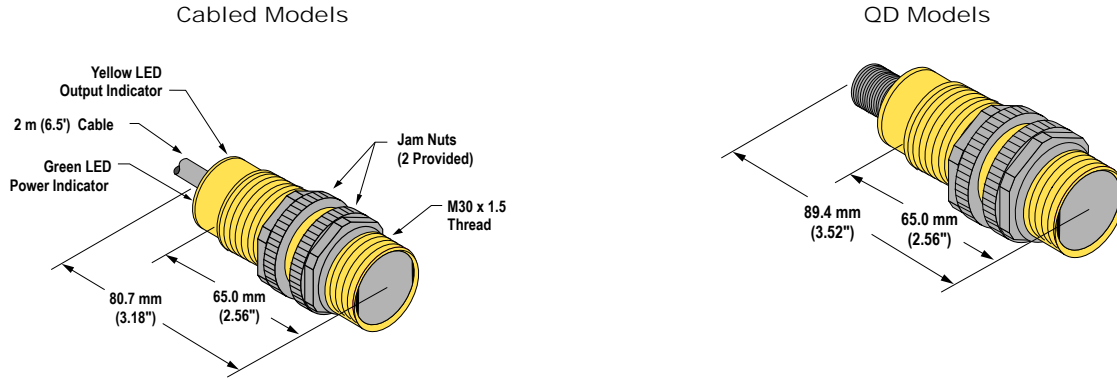


## Performance Curves

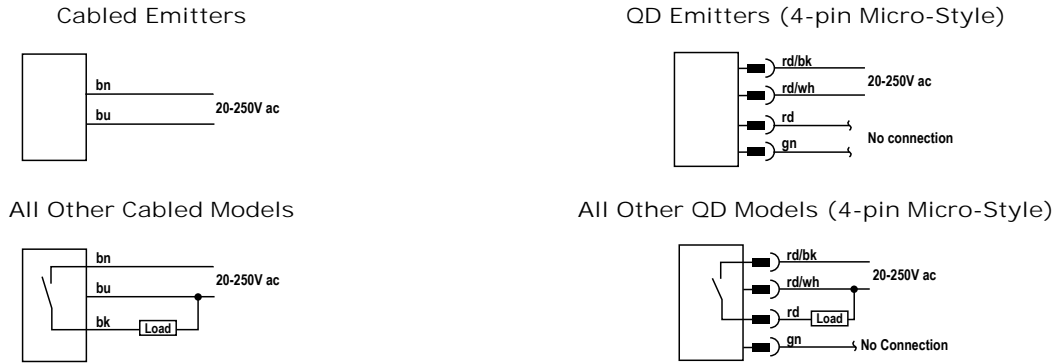
Table 1: Opposed Mode Sensors



## Dimensions



## Wiring Diagrams



## Cordsets

All measurements are listed in millimeters (inches), unless noted otherwise.

4-Pin Micro-Style Cordsets				
Model	Length	Style	Dimensions	Pinout (Female)
MQAC-406	1.83 m (6 ft)	Straight		<p>1 = Red/Black                      2 = Red/White                      3 = Red                      4 = Green</p>
MQAC-415	4.57 m (15 ft)			
MQAC-430	9.14 m (30 ft)			
MQAC-406RA	1.83 m (6 ft)	Right-Angle		
MQAC-415RA	4.57 m (15 ft)			
<b>MQAC-430RA</b>	<b>9.14 m (30 ft)</b>			



# V Series AC & AC/DC Inductive Proximity Sensors



## M30 (30mm)

- Ten models available
- Low cost/high performance
- LED status indicators are visible at a wide angle
- Axial cable and 1/2 in. micro AC quick-disconnect models
- Purchase cable separately (for quick-disconnect models)
- Lifetime warranty



V Series M30 AC & AC/DC Inductive Prox Selection Chart								
Part Number	Price	Sensing Range <sup>1</sup>	Housing	Output State	Voltage	Connection	Wiring	Dimensions
<b>Standard</b>								
<b>VT1-A0-1B</b>	\$38.00	10mm (0.394 in)	Shielded	NO	20–253 VAC	2m (6.5 ft) axial cable	Diagram 2	Figure 1
<b>VT1-A0-2B</b>	\$38.00	15mm (0.590 in)	Unshielded					
<b>Extended</b>								
<b>V3T1-R0-3A8F</b>	\$40.00	12mm (0.472 in)	Shielded	N.O. (VAC) or N.O./N.C. (VDC)	20–250 VAC/VDC	2m (6.5 ft) axial cable	Diagram 1	Figure 2
<b>V3T1-S0-3A8F</b>	\$40.00			N.C. (VAC) or N.O./N.C. (VDC)			Diagram 3	Figure 2
<b>V3T1-R0-3Q</b>	\$40.00			N.O. (VAC) or N.O./N.C. (VDC)		1/2"-20 UNF, micro AC quick-disconnect	Diagram 4	Figure 3
<b>V3T1-S0-3Q</b>	\$40.00			N.C. (VAC) or N.O./N.C. (VDC)			Diagram 5	Figure 3
<b>V3T1-R0-4A8F</b>	\$40.00	18mm (0.708 in)	Unshielded	N.O. (VAC) or N.O./N.C. (VDC)	20–250 VAC/VDC	2m (6.5 ft) axial cable	Diagram 1	Figure 2
<b>V3T1-S0-4A8F</b>	\$40.00			N.C. (VAC) or N.O./N.C. (VDC)			Diagram 3	Figure 2
<b>V3T1-R0-4Q</b>	\$40.00			N.O. (VAC) or N.O./N.C. (VDC)		1/2"-20 UNF, micro AC quick-disconnect	Diagram 4	Figure 3
<b>V3T1-S0-4Q</b>	\$40.00			N.C. (VAC) or N.O./N.C. (VDC)			Diagram 5	Figure 3

<sup>1</sup>With 30mm x 30mm Fe360 target

## Wiring Diagrams

Diagram 1

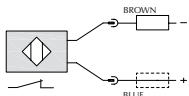
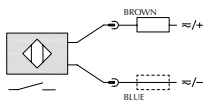


Diagram 3

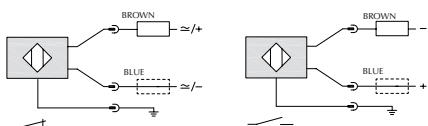


Diagram 2

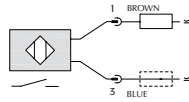
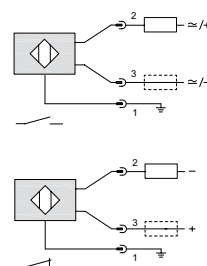


Diagram 4



## Connector

1/2 in. micro AC

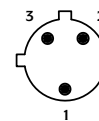
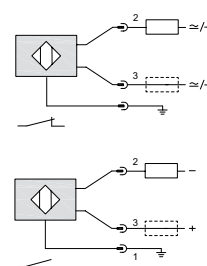


Diagram 5



# V Series AC & AC/DC Inductive Proximity Sensors

## M30 (30mm)

Specifications	VT1 Models		V3T1 Models	
<b>Mounting Type</b>	Shielded	Unshielded	Shielded	Unshielded
<b>Nominal Sensing Distance (mm)</b>	5	8	12	18
<b>Operating Distance</b>	NA		0-9.7 mm	0-14.6 mm
<b>Material Correction Factors</b>	See <a href="#">Material Influence Table</a>			
<b>Output Type</b>	Triac/NO/2-wire		NO or NC (VAC) NO/NC (VDC)	
<b>Operating Voltage</b>	20-253 VAC, 50/60 Hz		20-250 VAC/VDC	
<b>No-load Supply Current</b>	NA			
<b>Operating (Load) Current</b>	DC		200mA	
	AC		140mA	
<b>Off-state Leakage Current</b>	DC		0.70 mA	
	AC		1mA	
<b>Voltage Drop</b>	≤ 8.8 VAC		≤ 7.5 VAC / ≤ 8VDC	
<b>Switching Frequency</b>	25Hz		250Hz	190Hz
<b>Differential Travel (% of Nominal Distance)</b>	2-10%		1-20%	
<b>Repeat Accuracy</b>	5%		≤ 5%	
<b>Peak Current</b>	NA		600mA/150ms Max.	
<b>Time Delay Before Availability (tv)</b>	200ms		100ms	
<b>Reverse Polarity Protection</b>	NA		Yes	
<b>Short Circuit Protection:</b>	No		Overload	
			Overvoltage	
<b>Operating Temperature</b>	-25° to +70°C (-13° to 158°F)		-25° to +70°C (-13° to 158°F)	
<b>Protection Degree (DIN 40 050)</b>	IEC IP67		IP67	
<b>LED Indicators</b>	Yellow (output energized)			
<b>Housing Material</b>	Nickel-plated brass			
<b>Sensing Face Material</b>	Polybutylene Terephthalate (PBT)		PA4T	
<b>Shock/Vibration</b>	IEC 60947-5-2			
<b>Tightening Torque</b>	25 N·m (18.44 lb·ft)		50 N·m (37 lb·ft)	
<b>Weight</b>	120g (4.23 oz)		120g Plug; 170g Cable	
<b>Connection</b>	2m (6.5 ft) axial cable		2m (6.5 ft) axial cable or 1/2"-20 UNF, micro AC quick-disconnect	
<b>Agency Approvals</b>	CE, UL Recognized file E130644		CE, UL E187310	

## Dimensions

mm [inches]

Figure 1

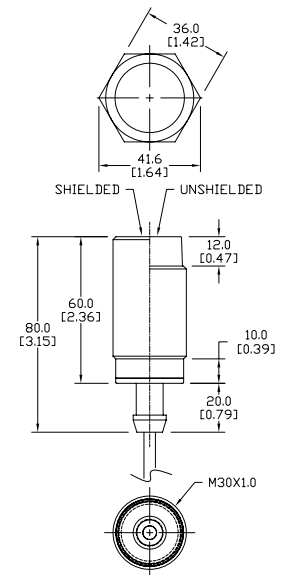


Figure 2

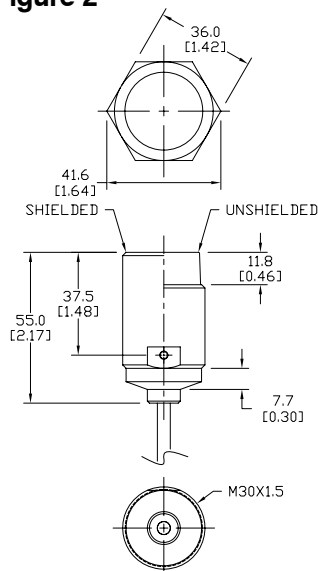
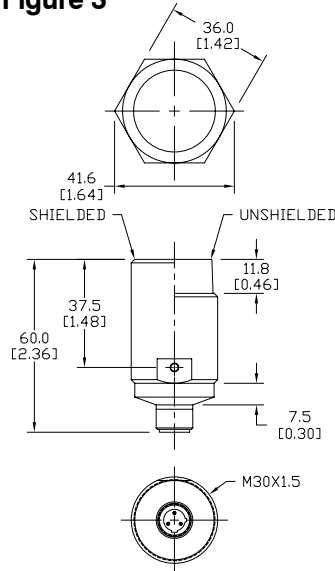


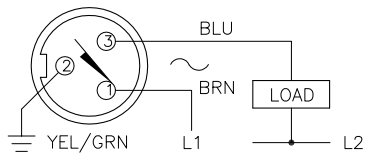
Figure 3



NOTE: Each sensor ships with jam nuts.

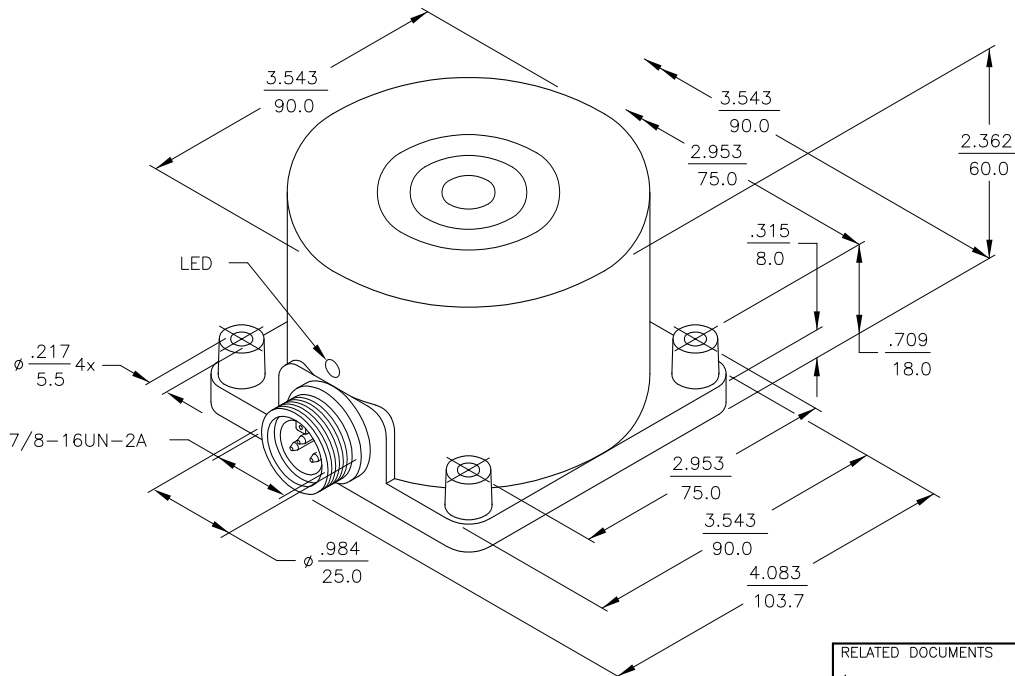


### WIRING DIAGRAMS



OUTPUT: AZ3X

WARNING: NO SHORT-CIRCUIT PROTECTION  
ALWAYS WIRE A LOAD IN SERIES WITH THE SENSOR.



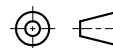
### SPECIFICATIONS

OPERATING VOLTAGE	20-250 VAC/DC
LINE FREQUENCY	40-60 Hz
HYSTERESIS (DIFFERENTIAL TRAVEL)	3-15% (5% TYPICAL)
VOLTAGE DROP ACROSS CONDUCTING SENSOR	≤ 7.0 V
OUTPUT FUNCTION -AZ	NORMALLY OPEN 2-WIRE AC SELF CONTAINED
SHORT-CIRCUIT PROTECTED	NO
CONTINUOUS LOAD CURRENT	≤ 500 mA
LEAKAGE (OFF-STATE) CURRENT	≤ 1.7 mA
MINIMUM LOAD CURRENT	5.0 mA
INRUSH CURRENT	≤ 8.0 A (≤ 10 ms/5 Hz)
TIME DELAY BEFORE AVAILABILITY	≤ 80 ms
POWER-ON EFFECT PROTECTION	INCORPORATED
PROTECTION AGAINST TRANSIENTS	5 kV, 10 ms, 10 kΩ
OPERATING TEMPERATURE	-25°C to +70°C (-13°F to +158°F)
ENCLOSURE	MEETS NEMA 1, 3, 4, 6, 13 AND IEC IP67
SHOCK	30 g, 11 ms
VIBRATION	55 Hz, 1 mm AMPLITUDE (IN ALL 3 PLANES)
LED FUNCTION	RED: OUTPUT ENERGIZED
SENSING RANGE	60 mm = 2.362" (NOMINAL)
SWITCHING FREQUENCY	20 Hz
REPEATABILITY	≤ 2%
SHIELDED	NO
MATING PLUGS/CABLES	3-PIN "MINIFAST" CONSTRUCTION

#### RELATED DOCUMENTS

- 1.
- 2.
- 3.
- 4.

#### 3RD ANGLE PROJECTION



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**TURCK INC**  
High Technology Sensors and Automation Controls

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(763) 553-7300  
(763) 553-0708 fax  
turck.com

#### MATERIAL

#### FINISH

ALL DIMENSIONS DISPLAYED ON THIS DRAWING ARE FOR REFERENCE ONLY

CONTACT TURCK FOR MORE INFORMATION

DRFT GMB

DSGN

UNIT OF MEASUREMENT

**INCH [ MILLIMETER ]**

DO NOT SCALE THIS DRAWING

DATE 4/30/90

SCALE NONE

#### DESCRIPTION

Ni60-K90-AZ3X-B2131

#### IDENTIFICATION NO.

M1354200

#### REV

C

C	UPDATE OPERATING VOLTAGE, SEE ECO	RWC	08/09/07	18320
REV	DESCRIPTION	BY	DATE	ECO NO.

FILE: M1354200

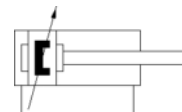
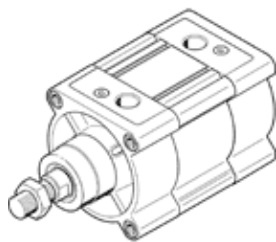
SHEET 1 OF 1

# Standard cylinder DSBC-100-250-PPVA-N3

Part number: 1384812

FESTO

With adjustable cushioning at both ends.



## Data sheet

Feature	values
Stroke	250 mm
Piston diameter	100 mm
Piston rod thread	M20x1,5
Cushioning	PPV: Pneumatic cushioning adjustable at both ends
Assembly position	Any
Conforms to standard	ISO 15552
Piston-rod end	Male thread
Design structure	Piston Piston rod Profile barrel
Position detection	For proximity sensor
Variants	Single-ended piston rod
Working pressure	0.4 ... 12 bar
Mode of operation	double-acting
Operating medium	Compressed air in accordance with ISO8573-1:2010 [7:4:4]
Note on operating and pilot medium	Lubricated operation possible (subsequently required for further operation)
Corrosion resistance classification CRC	2
Ambient temperature	-20 ... 80 °C
Impact energy in end positions	2.5 J
Cushioning length	31 mm
Theoretical force at 6 bar, return stroke	4,418 N
Theoretical force at 6 bar, advance stroke	4,712 N
Moving mass with 0 mm stroke	1,000 g
Additional weight per 10 mm stroke	101 g
Basic weight for 0 mm stroke	3,665 g
Additional mass factor per 10 mm of stroke	39 g
Mounting type	Optional with internal (female) thread with accessories
Pneumatic connection	G1/2
Materials note	Conforms to RoHS
Materials information for cover	Aluminum die cast coated
Materials information for seals	TPE-U(PU)
Materials information for piston rod	High alloy steel
Materials information for cylinder barrel	Wrought Aluminum alloy Smooth anodized

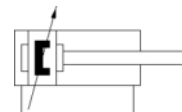
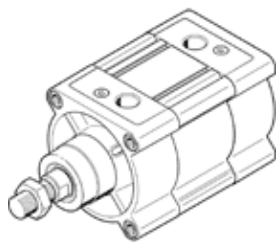
# Standard cylinder

## DSBC-100-400-PPVA-N3

Part number: 1384814

FESTO

With adjustable cushioning at both ends.



### Data sheet

Feature	values
Stroke	400 mm
Piston diameter	100 mm
Piston rod thread	M20x1,5
Cushioning	PPV: Pneumatic cushioning adjustable at both ends
Assembly position	Any
Conforms to standard	ISO 15552
Piston-rod end	Male thread
Design structure	Piston Piston rod Profile barrel
Position detection	For proximity sensor
Variants	Single-ended piston rod
Working pressure	0.4 ... 12 bar
Mode of operation	double-acting
Operating medium	Compressed air in accordance with ISO8573-1:2010 [7:4:4]
Note on operating and pilot medium	Lubricated operation possible (subsequently required for further operation)
Corrosion resistance classification CRC	2
Ambient temperature	-20 ... 80 °C
Impact energy in end positions	2.5 J
Cushioning length	31 mm
Theoretical force at 6 bar, return stroke	4,418 N
Theoretical force at 6 bar, advance stroke	4,712 N
Moving mass with 0 mm stroke	1,000 g
Additional weight per 10 mm stroke	101 g
Basic weight for 0 mm stroke	3,665 g
Additional mass factor per 10 mm of stroke	39 g
Mounting type	Optional with internal (female) thread with accessories
Pneumatic connection	G1/2
Materials note	Conforms to RoHS
Materials information for cover	Aluminum die cast coated
Materials information for seals	TPE-U(PU)
Materials information for piston rod	High alloy steel
Materials information for cylinder barrel	Wrought Aluminum alloy Smooth anodized



# 125882

SC 2 Bolt Flange Bearings -(Normal Duty)

## Technical Data

SERIES (Series)	210
SS (Shaft Size / mm)	50
PN (Part No.)	125882
DESCRIPTION (Description)	F2B-SC-50M
W (Weight / kg)	2.5
LF (Lubrication Feature)	RE-LUBE
A (A / mm)	49.3
B (B / mm)	189
C (C / mm)	51.3
D (D / mm)	157.2
F (Bolt Diameter)	M16
H (H / mm)	16
J (J / mm)	14
L (L / mm)	61.7
M (M / mm)	115.8
N (N / mm)	51.6

033278

SOLIDLUBE



## Technical Data

SERIES (Series)	215
SS (Shaft Size / INCH)	3
PN (Part Number)	033278
DESCRIPTION (Description)	F4B-LT7-300
WEIGHT (Weight / lbs)	17.7
A (A / INCH)	2-23/32
B (B / INCH)	7-3/4
C (C / INCH)	2-3/4
D (D / INCH)	6
F (Bolt Diameter / INCH)	3/4
H (H / INCH)	1
J (J / INCH)	17/32
L (L / INCH)	3-15/16



# 125892

SC 4 Bolt Flange Bearings -(Normal Duty)

## Technical Data

SERIES (Series)	210
SS (Shaft Size / mm)	50
PN (Part No.)	125892
DESCRIPTION (Description)	F4B-SC-50M
WEIGHT (Weight / kg)	3
LF (Lubrication Feature)	RE-LUBE
A (A / mm)	49.3
B (B / mm)	143
C (C / mm)	51.3
D (D / mm)	111.3
F (Bolt Diameter)	M16
H (H / mm)	16
J (J / mm)	14
L (L / mm)	61.7
N (N / mm)	73.2



# 125858

SC Pillow Block Bearings -(Normal Duty)

## Technical Data

SERIES (Series)	210
SS (Shaft Size / mm)	50
PN (Part No.)	125858
DESCRIPTION (Description)	P2B-SC-50M
WEIGHT (Weight / kg)	2.6
LF (Lubrication Feature)	RE-LUBE
A (A / mm)	49.3
B (B / mm)	206.2
C (C / mm)	57.2
DMIN (Dmin / mm)	152.4
DMAX (Dmax / mm)	169.7
F (Bolt Diameter)	M16
G (G / mm)	25.9
H (H / mm)	19.1
J (J / mm)	115.1
L (L / mm)	61.7
M (M / mm)	57.2
R (R / mm)	19.1
S (S / mm)	30.2
U (U / mm)	93.7
V (V / mm)	187.5
W (W / mm)	20.6
X (X / mm)	3



# 125860

SC Pillow Block Bearings -(Normal Duty)

## Technical Data

SERIES (Series)	212
SS (Shaft Size / mm)	60
PN (Part No.)	125860
DESCRIPTION (Description)	P2B-SC-60M
WEIGHT (Weight / kg)	4.2
LF (Lubrication Feature)	RE-LUBE
A (A / mm)	58.7
B (B / mm)	241.3
C (C / mm)	60.2
DMIN (Dmin / mm)	174.8
DMAX (Dmax / mm)	201.7
F (Bolt Diameter)	M16
G (G / mm)	30.7
H (H / mm)	22.4
J (J / mm)	137.2
L (L / mm)	75.4
M (M / mm)	69.9
R (R / mm)	22.9
S (S / mm)	35.8
U (U / mm)	108
V (V / mm)	215.9
W (W / mm)	22.4
X (X / mm)	3



# JE-2000 Series

## Pillow Blocks (4-Bolt)

# Jones

....Since 1890



SHAFT DIA	PART #	WEIGHT (LBS)	INTERCHANGE				
			REX	LINKBELT	DODGE	SKF	QM/TIMKEN
2 7/16	JE2207F	18	ZEP2207F	EPB22439FH	P4B-E-207R	FSYE 2 7/16	QAPR13A207ST
2 1/2	JE2208F	17	ZEP2208F	EPB22440FH	P4B-E-208R	FSYE 2 1/2	QAPR13A208ST
2 11/16	JE2211F	24	ZEP2211F	EPB22443FH	P4B-E-211R	FSYE 2 11/16	QAPR15A211ST
2 3/4	JE2212F	24	ZEP2212F	EPB22444FH	P4B-E-212R	FSYE 2 3/4	QAPR15A212ST
2 15/16	JE2215F	22	ZEP2215F	EPB22447FH	P4B-E-215R	FSYE 2 15/16	QAPR15A215ST
3	JE2300F	22	ZEP2300F	EPB22448FH	P4B-E-300R	FSYE 3	QAPR15A300ST
3 7/16	JE2307F	34	ZEP2307F	EPB22455FH	P4B-E-307R	FSYE 3 7/16	QAPR18A307ST
3 1/2	JE2308F	33.8	ZEP2308F	EPB22456FH	P4B-E-308R	FSYE 3 1/2	QAPR18A308ST
3 11/16	JE2311F	49.8	ZEP2311F	EPB22459FH	P4B-E-311R	FSYE 3 11/16	
3 15/16	JE2315F	48	ZEP2315F	EPB22463FH	P4B-E-315R	FSYE 3 15/16	QAPF20A315ST
4	JE2400F	48	ZEP2400F	EPB22464FH	P4B-E-400R	FSYE 4	QAPF20A400ST
4 7/16	JE5407F	75		EPB22571YFH	P4B-E-407R		QAPF22A407ST
4 15/16	JE5415F	106		EPB22579YFH	P4B-E-415R		QAPF26A415ST

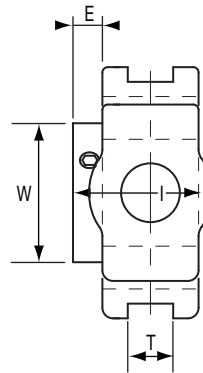
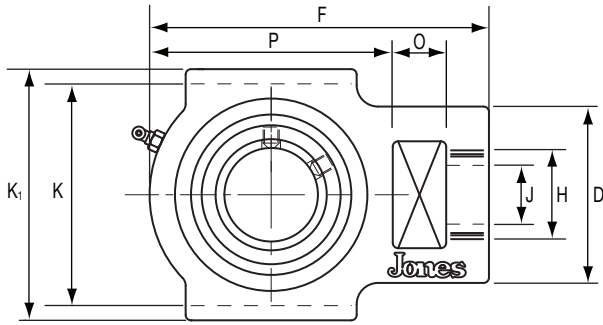
\*\*Bearings come standard as non-expansion (NXP) for an expansion unit please specify EXP at the end of the part # (i.e. JE2207F-EXP)

# Takeup Blocks -Normal & Heavy Duty

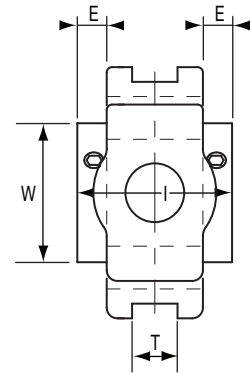
## JT-2000 / JT-5000

Jones

- Takeup blocks on this page may be used with JHT, JFT, JAT, JGT or CU frame
- Fixed and expansion units



2000 Series



5000 Series

SHAFT SIZE	2000 SERIES	5000 SERIES	WORKING LOAD †	SIZE CODE	I		D	E	F	H	I	J	K +0.005 -0.015	K1	O	P	T +0.005 -0.015	W	WEIGHT 2000	WEIGHT 5000
					2000 SERIES	5000 SERIES														
1 7/16	JT4-2107	JT4-5107	7,600	4	2 13/16	—	2 7/16	1 1/16	5 3/8	1 7/16		7/8	3 1/2	4 1/8	5/8	4	1 7/32	2 3/8	6.4	6.6
1 1/2	JT4-2108	JT4-5108			6.3	6.5														
1 11/16	JT5-2111	—	12,300	5	2 15/16	—	3 5/16	5/8	6 1/8	1 15/16		1 1/8	4	4 3/4	3/4	4 5/8	1 1/16	2 5/8	9.8	10.0
1 3/4	JT5-2112				9.7	10.0														
1 15/16	JT6-2115	JT6-5115	12,300	6	3 1/16	—	3 5/16	5/8	6 1/8	1 15/16		1 1/8	4	4 3/4	3/4	4 5/8	1 1/16	2 7/8	10.1	10.3
2	JT6-2200	JT6-5200			9.9	10.1														
2 3/16	JT7-2203	JT6-5203	13,500	7	3 3/16	—	3 3/4	3/4	7 1/8	2 1/4		1 1/4	4 1/2	5 1/4	1	5 1/4	1 3/16	3 1/4	13.6	13.6
2 7/16	JT8-2207	JT8-5207	20,900	8	3 7/16	—	4 1/8	7/8	7 31/32	2 1/2		1 3/8	5 1/8	5 7/8	1 1/4	5 25/32	1 1/16	4	18.2	19.0
2 1/2	JT8-2208	JT8-5208			17.9	18.5														
2 11/16	JT9-2211	—	26,800	9	3 11/16	—	4 3/4	7/8	8 15/16	2 3/4		1 5/8	5 15/16	6 11/16	1 1/4	6 1/2	1 13/16	4 1/2	28.8	29.0
2 3/4	JT9-2212				28.4															
2 15/16	JT9-2215				JT9-5215	27.6														
3	JT9-2300				27.0															
3 7/16	JT10-2307	JT10-5307	27,300	10	4 3/32	—	4 7/8	7/8	10 1/4	2 7/8		1 7/8	6 13/16	7 13/16	1 5/8	7 9/16	1 13/16	5 1/8	40.5	42.0
3 1/2	JT10-2308	—			40.0															
3 11/16	JT11-2311	—	45,400	11	4 21/32	—	5 3/8	1	12 1/8	3 3/8		2 1/8	8 5/8	9 7/16	2 1/8	8 13/16	2 1/16	6	59.0	60.0
3 15/16	JT11-2315				JT11-5315	58.0														
4	JT11-2400				57.0															
4 7/16	—	JT12-5407	53,700	12	—	6 1/8	6 3/8	1	13 7/16	3 3/8		2 1/8	9 1/2	10 3/8	2 1/8	9 13/16	2 1/16	6 1/8	—	91.1
4 1/2		JT12-5408																	90.0	
4 15/16	—	JT13-5415	68,000	13	—	6 5/8	7	1	15 1/8	3 3/4		2 3/8	10 1/4	11 1/4	2 1/2	10 7/8	2 1/16	6 7/8	—	130
5 7/16	—	JT14-5507	140,900	14	—	8	8	1 1/32	20 5/8	5		3 1/8	14 1/8	16	3 1/2	15 3/8	2 9/16	8 3/16	—	417
5 15/16	—	JT15-5515	140,900	15	—	8 1/8	8	1 5/32	20 5/8	5		3 1/8	14 1/8	16	3 1/2	15 3/8	2 9/16	8 11/16	—	426
6		JT15-5600																	424	
6 7/16	—	JT16-5607	165,300	16	—	8 3/4	8	1 9/32	20 5/8	5		3 1/8	14 1/8	16	3 1/2	15 3/8	2 9/16	9 3/4	—	433
6 15/16		JT16-5615																	428	
7		JT16-5700																	426	

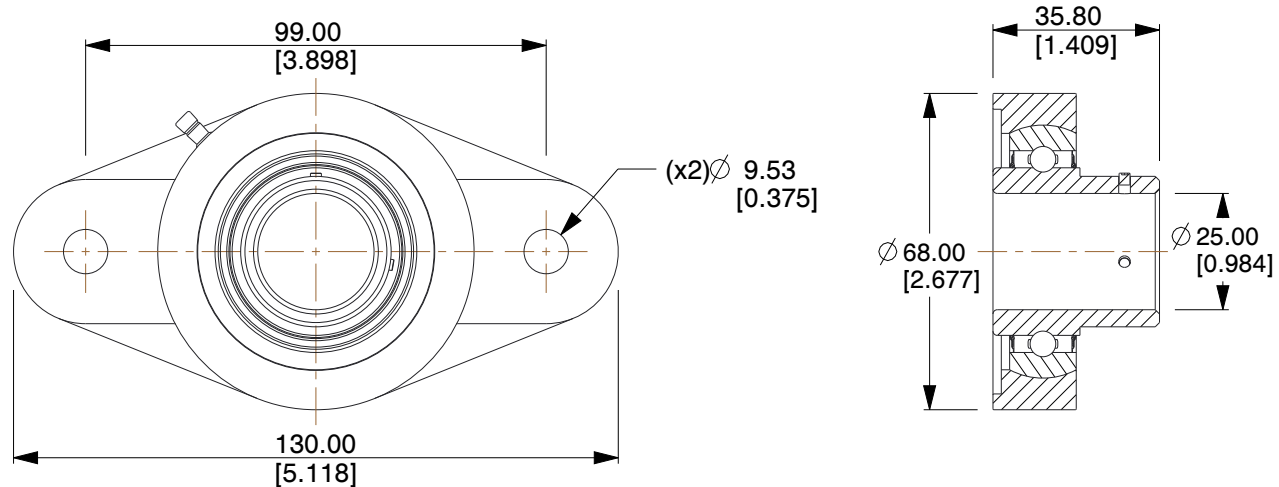
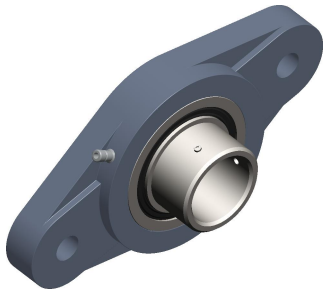
- NOTES: 1) Dimensions subject to change. Certified dimensions of ordered material furnished on request.  
2) 2000 series has single set collar. 5000 series has double set collar.

† Allowable working load is 2/3 yield strength.

Jones Bearing Company

P.O. Box 274 Highway 72 East • Pelham, Alabama 35124 • USA

Phone: 205-663-3002 • Fax: 205-664-3351



**NOTES:**

1. BEARING INSERT TYPE: Ball
2. ITEM: 2-Bolt Flange Bearing
3. TEMP. RANGE: -40°F to 250°F
4. SHAFT LOCKING TYPE: Set Screw
5. STATIC LOAD CAPACITY: 1765Lb.
6. DYNAMIC LOAD CAPACITY: 3147Lb.
7. BEARING INSERT MATERIAL: 52100 Chrome Steel
8. BEARING HOUSING MATERIAL TYPE: Cast Iron
9. BEARING LUBRICATION: Shell Alvania RL2 or NLGI #2 Equivalent

COMPONENT	2-Bolt Flange Bearing
-----------	-----------------------



100 Grainger Parkway, Lake Forest, Illinois 60045-5201  
 1-(800) GRAINGER, 1-(800) 472-4643, (847) 535-1000  
 www.grainger.com

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**SCALE** 0.75

<h1 style="margin: 0;">36UY70</h1> <p style="margin: 0;">Flange Bearing, 2-Bolt, Ball, 25mm Bore</p>
--

UNIT
MM
SHEET
1 of 1



## McGill CCFH 4 SB



Crowned Cam Follower - Heavy Stud Type - Heavy Stud CAMROL Series, Sealed, 4.0000 in Roller Dia, 2.2500 in Roller Width, 2.0000 in Stud Dia, 3.5000 in Stud Length, Chrome Steel Material

Mi Item #: 00098964

Mfr Description: 2401512000



Print



Share

Please Note: Photo may not represent actual item, please refer to title and product specifications for all details.

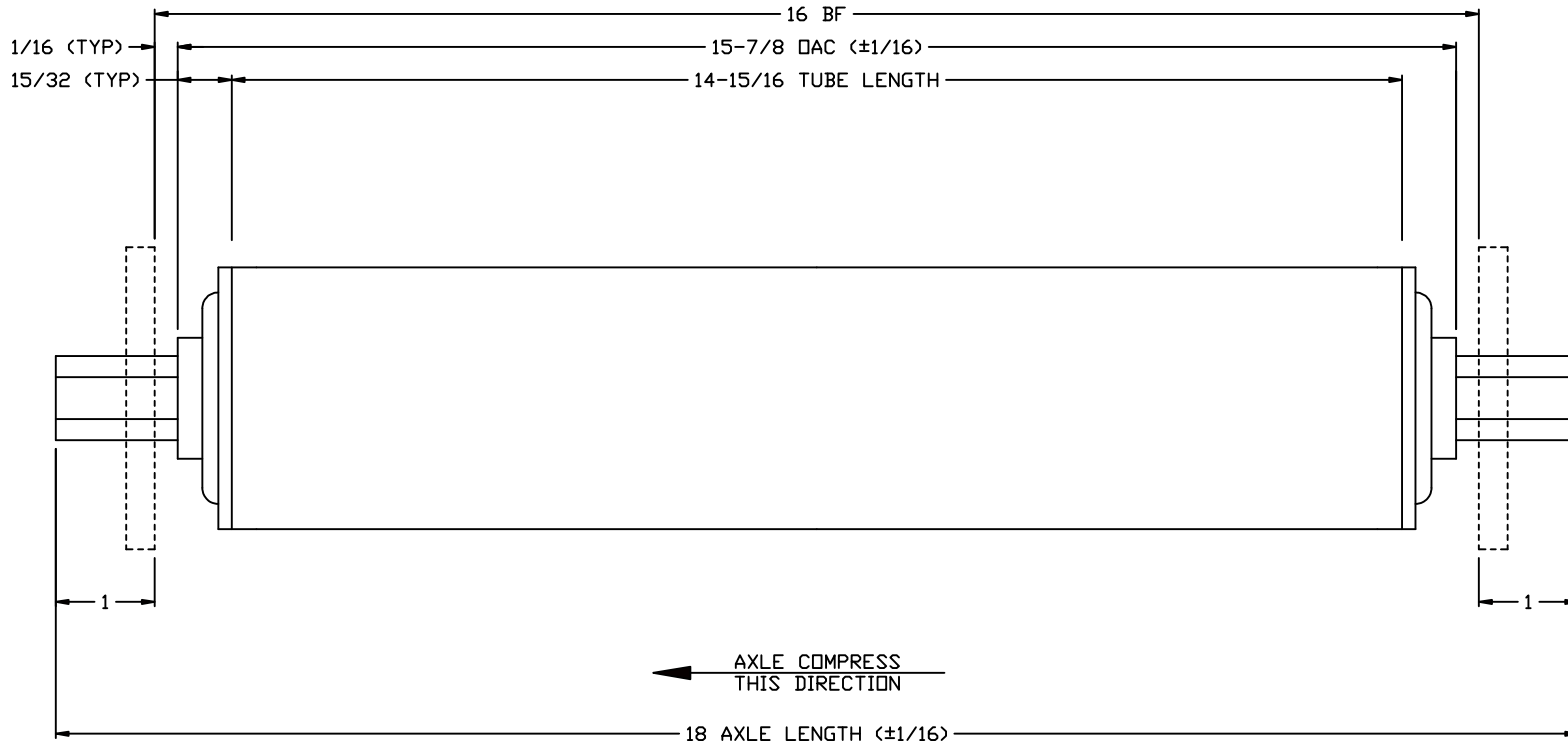
[Product Content Feedback](#)

★★★★★ 0 Reviews - Be the first to review this item.

- Manufactured from bearing quality steel
- Heavy-sectioned outer race design to help withstand shock loading of cam follower operation
- Inner studs are induction heat-treated in the roller path and flange surfaces only. The remainder of the stud is not hardened resulting in a ductile stem that provides toughness
- Black oxide finish on all external surfaces inhibits corrosion
- Threads manufactured to Class 2 tolerances
- Bearings pre-lubricated with lithium soap thickened grease
- Sealed
- Applications include conveying, mixing equipment, material handling, automotive and packaging

## Specifications

Roller diameter:	4.0000 in	Head type:	Hex
Roller width:	2.2500 in	Thread size:	2-12
Stud diameter:	2.0000 in	Radial dynamic load capacity:	29985 lbs
Stud length:	3.5000 in	Radial static load capacity:	62200 lbs
Roller shape:	Crowned	Maximum rpm:	700 rpm
Roller material:	Chrome Steel	Lubrication hole location:	Head, Stud Side
Bearing element:	Needle Rollers	Finish/coating:	Uncoated
Stud type:	Heavy Stud	Series:	Heavy Stud CAMROL
Closure type:	Sealed	Manufacturer catalog number:	2401512000



NOTES:  
 \* ROLLER CAPACITY = 700 LBS.

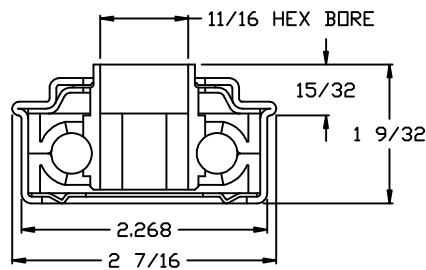
(4) REQ'D

QTY	DESCRIPTION
1	TUBE: 2-1/2' OD X 11 GA. MILD STEEL
1	AXLE: 11/16" HEX MILD STEEL - SPRING RETAINED
2	BEARING: 102041-GP UNGROUND PRESS FIT

Please verify all information is correct, then sign and return. Ship date is quoted in number of business days after receipt of signed approval drawing. Changes may require additional time. All orders are subject to prior sale.

\_\_\_\_\_  
 SIGNATURE

\_\_\_\_\_  
 DATE



102041-GP  
 \* UNGROUND PRESS FIT  
 \* Load Capacity = 425 lbs  
 \* Temp. Range = -40°F to 250°F  
 \* Grease Packed  
 \* Non-precision  
 \* Stamped Metal Construction  
 \* Zinc Plated Mild Steel  
 \* Front Polymer Seal  
 \* Front & Rear Shields  
 \* Replaceable

**OmniMetalcraft Corp.** ALPENA, MI U.S.A.  
 (989) 358-7000

STANDARD ROLLER NUMBER: 15678-16

LABELED AS:

DRAWN BY: phyllis  
 DATE: 5/23/2019  
 REF#: 2364948

DWG NO.  
 Q36165-1

### Clydesdale: Carbon Steel and Stainless Steel Floor Scale Features and Specifications

- **NTEP COC:** 94-092A1
- **Type:** Above ground or pit
- **End Load Capacity:** 80% for 2.5K capacity and 100% for 5K to 20K capacities
- **Scale Height:** 4-3/8" nominal (2.5K - 10K-SE) adjustable or 5-3/8" nominal (10K-LE - 20K) adjustable

#### Scale Capacity for Carbon Steel

- 2,500 - 20,000 lbs. - NTEP Approved Capacities

#### Scale Capacity for Stainless Steel

- 2,500 - 10,000 - NTEP Approved Capacities

#### Available Sizes for Carbon Steel

- 2' x 2' - 8' x 10' - NTEP Approved Sizes and any custom size platform available from 18" x 18" to 10' x 12'

#### Available Sizes for Stainless Steel

- 2' x 2' - 5' x 7' and custom sizes upon request

#### Deck for Carbon Steel

- Top access junction box, threading lifting eye bolt holes

#### Deck for Stainless Steel

- Side access junction box, threading lifting eye bolt holes

#### Leveling Foot

- B-TEK stainless steel ball encapsulated foot - 2.5" diameter base

#### Weighbridge for Carbon Steel

- Laser cut 1/4" carbon steel tread plate with formed channel sub-structure and 3/16" carbon steel tread plate with structural channel sub-structure

#### Weighbridge for Stainless Steel

- Laser cut 1/4" 304 stainless steel SMOOTH plate with formed channel sub-structure

#### Finish for Carbon Steel

- Two-component Polyamide Epoxy paint for carbon steel

#### Finish for Stainless Steel

- All exposed surfaces are media blasted to a clean, consistent appearance

### Clydesdale: Carbon Steel and Stainless Steel Scale Electrical, Warranty and Options

#### Junction Box

- NEMA 4 fiberglass reinforced plastic (FRP) box with signal trim summing board

#### Load Cell for Both

- 2.5K capacity: (4) 1,000 lb. cells
- 5K capacity: (4) 2,500 lb. cells by request in Clydesdale
- 5K capacity: (4) 4,000 lb. cells standard in Clydesdale
- 10K capacity: (4) 5,000 lb. cells
- 20K capacity: (4) 10,000 lb. cells (carbon weighbridge only)
- Optional hermetically sealed (IP68) cells are available for any capacity listed above

#### Load Cell for Carbon Steel

- Plated alloy steel, 350 Ohms, 3.0 mV/V, FM Approved

#### Load Cell for Stainless Steel

- Stainless steel (IP67), 350 Ohms, 3.0 mV/V, FM Approved

#### Warranty

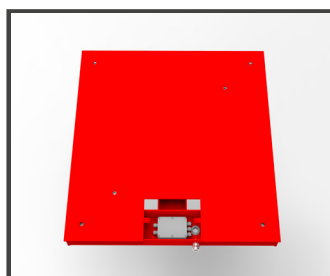
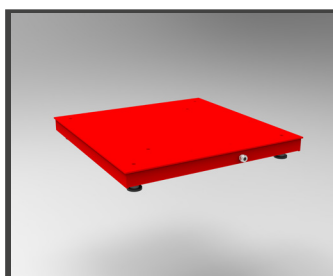
- 3-Years on weighbridge steel structure
- 2-Years on load cells, junction box and summing board

#### Options and Accessories

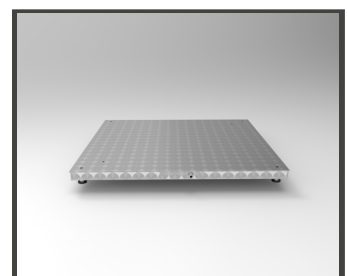
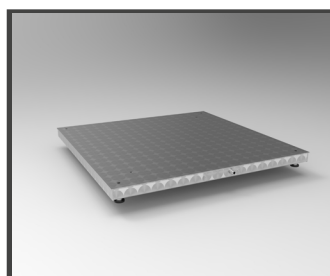
- Ramps and bump-guard with foot retainer plates
- Pit frames and columns, and portability frames with fork channels
- Riser frames
- Indicator columns
- Calibration options
- Floor scale foot retaining plate
- Load cell foot assemblies
- Weld seal and hermetic load cell options
- Quick disconnect cable

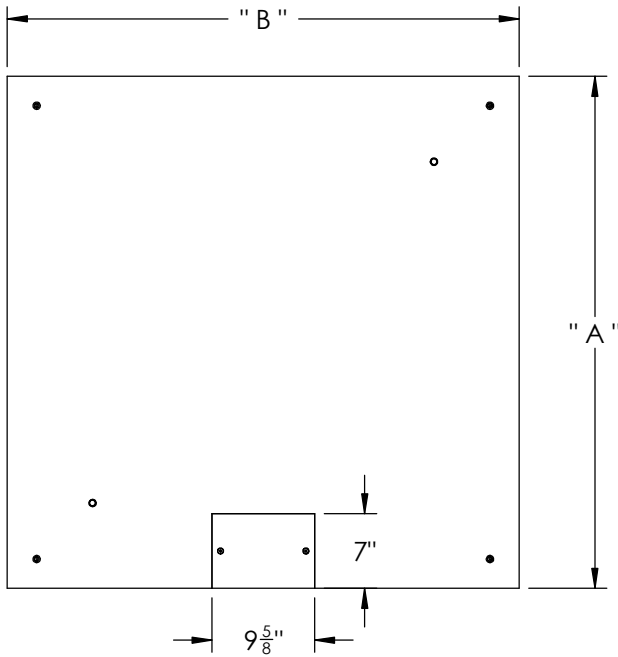


Clydesdale Carbon Steel Floor Scale

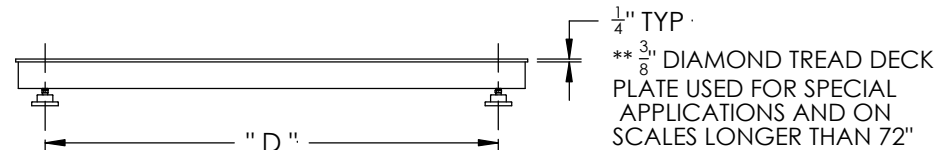
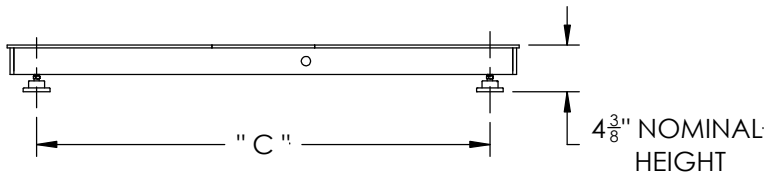
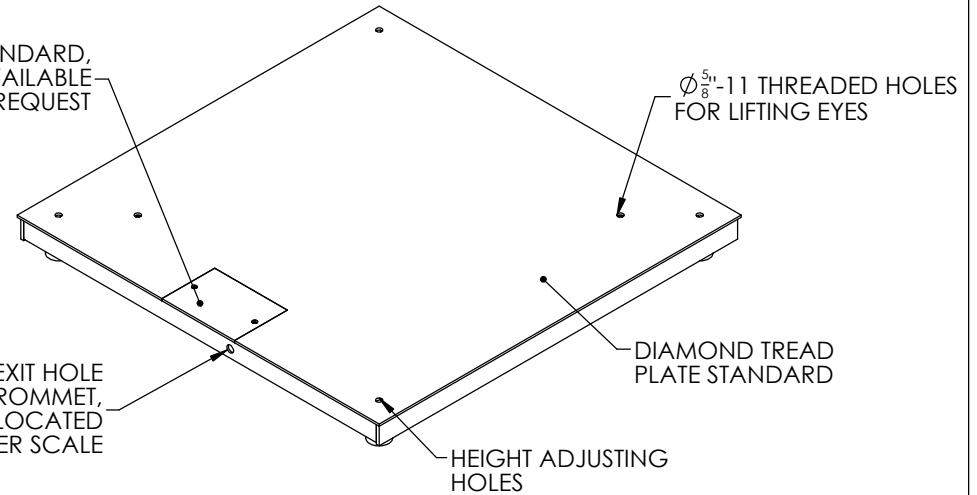


Clydesdale Stainless Steel Floor Scale





TOP ACCESS J-BOX IS STANDARD,  
SIDE ACCESS IS AVAILABLE  
BY REQUEST



SCALE DECK SIZE	"A"	"B"	"C"	"D"
24" x 24"	24"	24"	18.5"	18.5"
30" x 30"	30"	30"	24.5"	24.5"
36" x 36"	36"	36"	30.5"	30.5"
48" x 36"	48"	36"	42.5"	30.5"
48" x 48"	48"	48"	42.5"	42.5"
60" x 48"	48"	60"	54.5"	42.5"
60" x 60"	60"	60"	54.5"	54.5"
72" x 48"	48"	72"	66.5"	42.5"
72" x 72"	72"	72"	66.5"	66.5"
84" x 60"	60"	84"	78.5"	54.5"
96" x 48"	48"	96"	90.5"	42.5"
96" x 72"	72"	96"	90.5"	66.5"
96" x 96"	96"	96"	90.5"	90.5"
108" x 72"	72"	108"	102.5"	66.5"
120" x 48"	48"	120"	114.5"	42.5"

**NOTES:**

\*SCALE CAPACITIES LESS THAN 2.5K MAY RESULT IN A REDUCED NOMINAL HEIGHT.\*

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UNLESS OTHERWISE SPECIFIED:  
DIMENSIONS ARE IN INCHES  
TOLERANCES ARE AS FOLLOWS:

MACHINED - FRACTIONAL: ±1/32"  
FABRICATED - FRACTIONAL: ±1/8"  
FLATNESS: ±1/8"  
SQUARENESS: ±1/8"

ALL WELDS TO BE 1/4" FILLET CONTINUOUS UNLESS OTHERWISE SPECIFIED.

BREAK / ROUND ALL SHARP EDGES AND DE-BURR ALL DRILLED HOLES

	NAME	DATE
DRAWN	JPW	7/29/11
CHECKED		
B-TEK CERTIFIED		



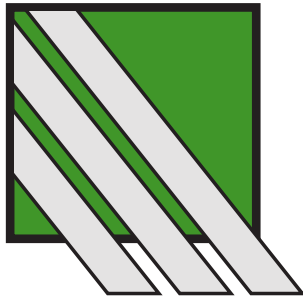
1510 Metric Avenue S.W.  
Canton, OH 44706-3081

TITLE:

**BT-Series FEFS  
1K-5K & 10K SE**

SIZE	DWG. NO.	REV
<b>A</b>	<b>S-1000</b>	
ELECTRONIC DWG. FILE NO MANUAL REVISIONS	DO NOT SCALE DRAWING	SHEET 1 OF 1





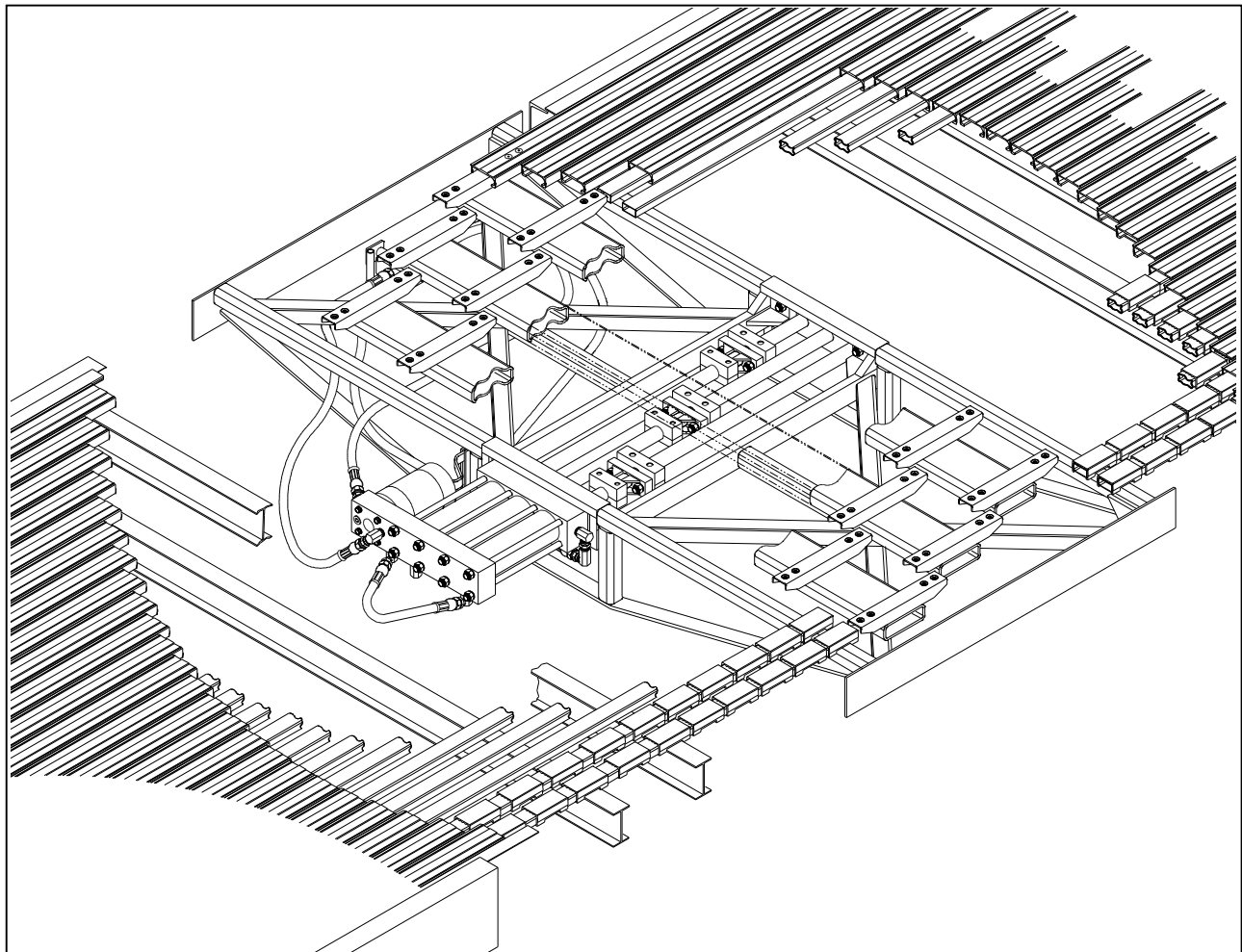
# HALLCO<sup>TM</sup>

## INDUSTRIES, INC.

### Owner's Manual:

## i-3000 SERIES LIVE FLOOR<sup>TM</sup> CONVEYING SYSTEMS

One-Way (i-3100) and Two-Way (i-3200)



#### West Coast USA

6605 Ammunition Road  
P.O. Box 505  
Tillamook, OR 97141  
Ph. 800-542-5526  
Ph. 503-842-8886  
Fax: 503-842-4866

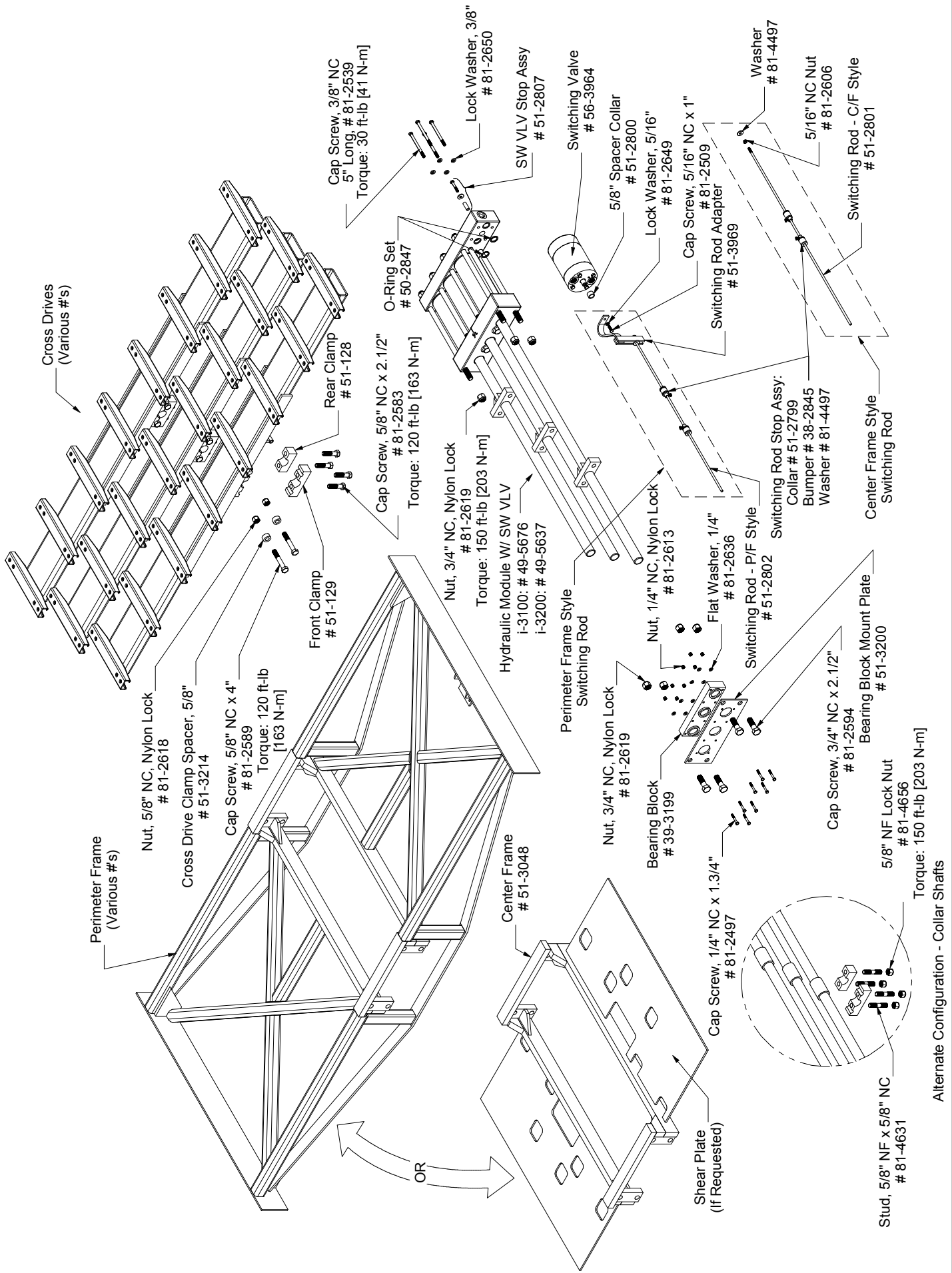
#### Central USA

8276 Hwy. 16 North  
Poteet, TX 78065  
Ph. 877-425-5261  
Ph. 830-742-8441  
Fax: 830-742-8682

#### East Coast USA

480 Millrun Rd.  
Salisbury, NC 28144  
Ph. 800-230-0190  
Ph. 704-636-4122  
Fax: 704-636-1644





**-Figure 4-  
Drive Unit--Exploded View**

## **HYDRAULIC SYSTEM REQUIREMENTS**

### **Hydraulic**

**Pump:** This floor is rated to 3000 psi [207 Bar] operating pressure. Installing a pump which provides lower output pressure may result in poor operation. Maximum flow rate is 30 gallons [114 liters] per minute.

### **Hydraulic**

**Reservoir:** 30 gallons [114 liters] minimum capacity. The hydraulic reservoir must have facilities to mount the relief valve and a return line filter. Both of these items must dump the oil into the reservoir below the low level line. Hallco suggests a down draft be installed in the reservoir on the return line to limit the turbulence. The pump supply oil should be taken from 1" to 2" [25 to 51 mm] above the bottom of the reservoir. This outlet should be screened or baffled to prevent whirlpool. The whirlpool could introduce air into the system. A sight gauge or other means of visually checking oil level should be installed.

### **Hydraulic**

**Oil:** Select a petroleum or mineral base anti-wear (AW) hydraulic fluid in ISO viscosity grade 46 or 68. Most synthetic and vegetable based biodegradable hydraulic fluids are also compatible provided the moisture content in the fluid is kept below 1%. Hydraulic fluid temperatures must always be kept below 200° F (93° C).

### **Relief**

**Valve:** The relief valve must be external, relieved directly to tank, and set at 3000 psi [207 Bar] maximum. The relief valve must be able to handle the maximum system flow rate.

**Filler Cap:** Filler cap must have a fill filter and a breather cap (unless already provided separately).

### **Hydraulic Plumbing:**

Early systems were plumbed with 3/4" NPT fittings into the manifolds. Later system changed to 3/4" o-ring fittings (ORB). Do not install pipe thread fittings into o-ring style ports and vice versa.

1" [25 mm] size hydraulic hoses are recommended for the supply and return lines which connect to the switching valve ports labeled "P" for pressure and "T" for tank/return. See [Figure 7 \(page 11\)](#).

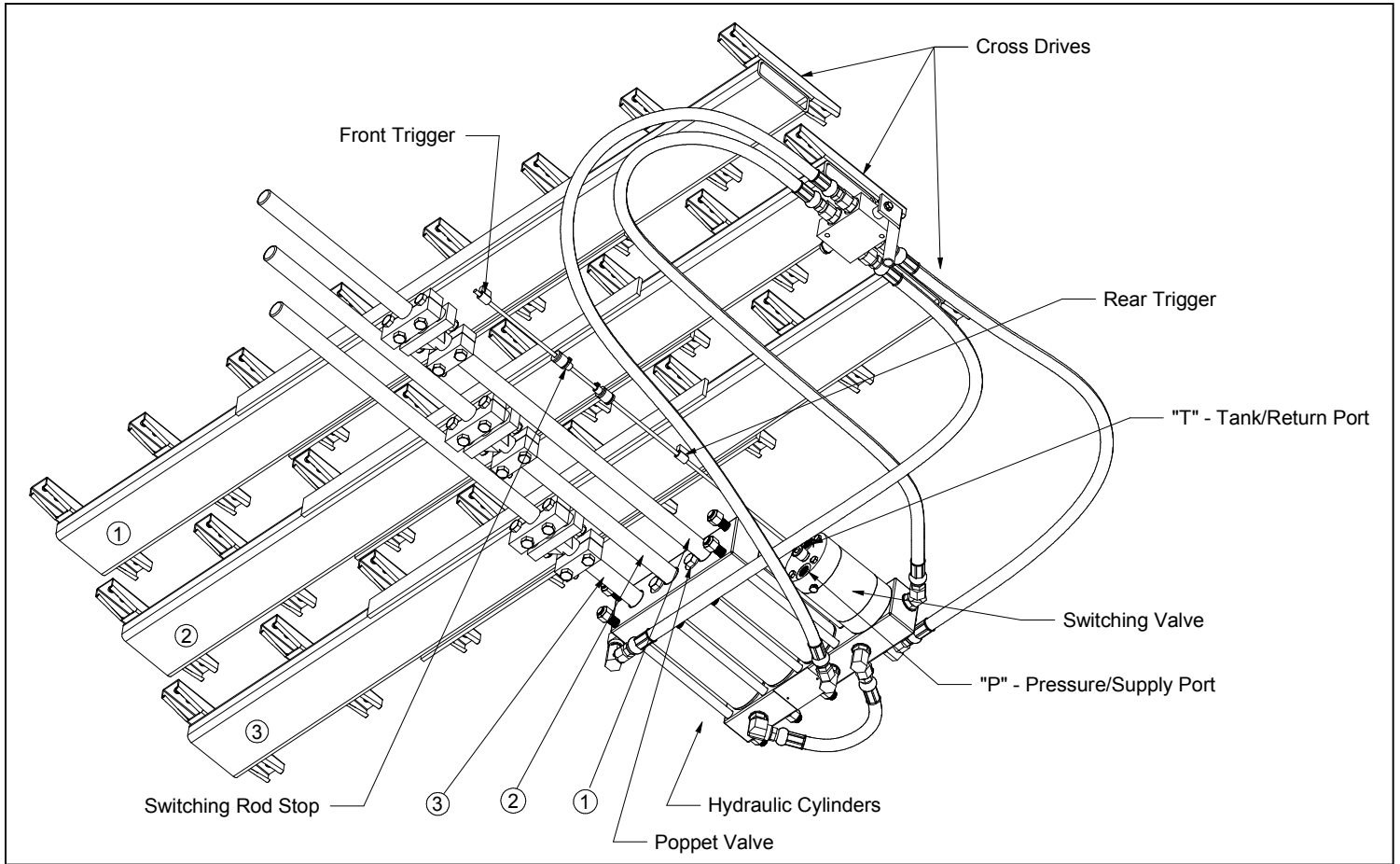
### **Quick**

**Connects:** Mating quick connects must be of the same type and must be rated above the maximum system flow.

**Filter:** A 25 micron (or finer) filter rated above the maximum flow rate of the system must be installed on the return line. A good filter is essential to assure clean oil for a long system life. For units where quick connects are frequently connected and disconnected (where contaminants may be introduced) a pressure line filter is recommended between the quick connect and the hydraulic module.

### **Pressure**

**Gage:** 0 to 5000 PSI [0 to 350 Bar] range, glycerin filled.



**-Figure 7-  
Underside of Drive Unit**