

## 6A SERIES 6-AXIS LOAD CELLS (Fx Fy Fz Mx My Mz) (U.S. & METRIC)

### FEATURES & BENEFITS

- 6-Axis – force and torque in all six axes
- Capacities: Force N(lbf) / Torque Nm(lbf-in) – 50(11.2)/1(8.85) to 500K(112K)/20K(177K)
- Compact size
- Force and moment values MUST be calculated using supplied 36-term coefficient matrix
- Low crosstalk
- Temperature compensated
- Optional BX8 amplifier and software can be used for force and moment value calculation

Interface's 6-axis load cell measures forces simultaneously in three mutually perpendicular axes and three simultaneous torques about those same axes. Six full bridges provide mV/V output on six independent channels.

Interface's 6-axis load cell is ideally suited to many industrial and scientific applications, such as aerospace, robotics, automotive and medical research (orthopedics and biomechanical).

A 36-term coefficient matrix is included for calculating the load and torque values in each axis.

An 8-channel amplifier with USB PC interface is also available which simplifies data analysis.

### STANDARD CONFIGURATION



Model 6A154 (Shown)

### SPECIFICATIONS

ACCURACY – (MAX ERROR)		
Nonlinearity – %FS		± 0.1
Hysteresis – %FS		± 0.1
Nonrepeatability – %RO		± 0.5
Creep, in 20 min – %		± 0.1
TEMPERATURE		
Effect on Zero – %RO / °C MAX		± 0.01
Effect on Output – % / °C MAX		± 0.05
Compensated Range	°C	-10 to +70*
	°F	+14 to +158*
Operating Range	°C	-10 to +85
	°F	+14 to +185
ELECTRICAL		
Rated Output – mV/V (Nominal)		±0.4
Excitation Voltage – V MAX		5
Crosstalk – %		±1
Zero Balance – mV/V		< 2
Input Resistance (6A27) – Ω		1K ±10
Output Resistance (6A27) – Ω		1K ±10
Input Resistance – Ω		350 ±10
Output Resistance – Ω		350 ±10
MECHANICAL		
Safe Overload – %CAP		150
Ultimate Overload – %RO		300
Cable Length	m	5
	ft	16.4

\* Temperature compensation not available on Models 6A27 and 6A40

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## 6A SERIES 6-AXIS LOAD CELLS (Fx Fy Fz Mx My Mz) (U.S. & METRIC)

### CHARACTERISTICS

See Drawing	MODEL											
	6A27	6A40			6A68					6A80		
	A	A	B	C	A	B	C	D	E	A	B	C
Fx (N)	50	200	500	50	1K	2K	5K	10K	10K	1K	2K	5K
Fy (N)	50	200	500	50	1K	2K	5K	10K	10K	1K	2K	5K
Fz (N)	200	500	2K	200	2K	4K	10K	20K	20K	2.5K	5K	15K
Mx (Nm)	1	5	20	5	20	50	50	100	500	50	100	250
My (Nm)	1	5	20	5	20	50	50	100	500	50	100	250
Mz (Nm)	1	10	40	10	20	50	50	100	500	50	100	250
Diameter (mm)	27	60		∅40	83					80		
Height (mm)	25	40		60	64					50		
Weight (g)	25	250	400	160	830		1050			450		1000
Material	SS	AL	SS		AL		SS			AL		SS
Deflection (mm)	0.01	0.03	0.03	0.03	0.04					0.02		
Deflection (rad)	0.01	0.01	0.003	0.01	0.001					0.001		
Protection (IP)	65	65			65					65		

See Drawing	MODEL													
	6A110		6A130		6A154				6A175			6A225		
	A	B	A	B	A	B	C	D	A	B	C	A	B	C
Fx (N)	4K	10K	5K	15K	50	100	200	500	10K	20K	50K	50K	100K	200K
Fy (N)	4K	10K	5K	15K	50	100	200	500	10K	20K	50K	50K	100K	200K
Fz (N)	10K	25K	15K	50K	100	200	500	1K	20K	50K	100K	100K	250K	500K
Mx (Nm)	250	750	500	1.2K	5	10	20	50	1K	2K	5K	10K	15K	20K
My (Nm)	250	750	500	1.2K	5	10	20	50	1K	2K	5K	10K	15K	20K
Mz (Nm)	250	750	500	1.2K	5	10	20	50	1K	2K	10K	10K	15K	20K
Diameter (mm)	110		130		154				175			225		
Height (mm)	60		80		120				116			140		
Weight (g)	880	1800	1500	3200	800				11,000			24000		
Material	AL	SS	AL	SS	AL				SS			SS		
Deflection (mm)	0.03		0.05		0.08			0.1	0.1			0.1		
Deflection (rad)	0.001		0.002		0.001				0.01			0.01		
Protection (IP)	65		65		65				65			65		

**Note:**  
Higher capacities available upon request

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## 6A27 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A27 (Shown)

### DIMENSIONS

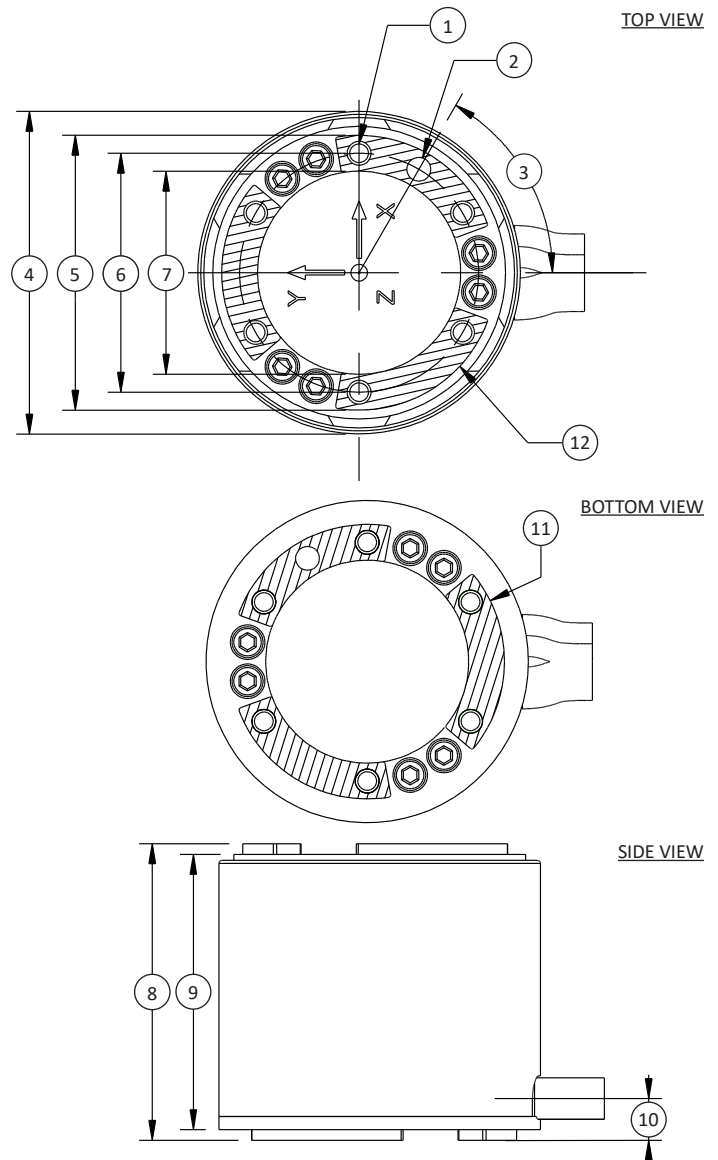
See Drawing	Metric	U.S.
	mm	in
(1)	6 x (M2x0.4) $\downarrow$ 4 $\sphericalangle$ 118°	6 x (M2x0.4) $\downarrow$ 0.2 $\sphericalangle$ 118°
(2)	$\varnothing$ 2 E7 $\downarrow$ 4	$\varnothing$ (0.0797/0.0793) $\downarrow$ 0.2
(3)	60°	
(4)	$\varnothing$ 27	$\varnothing$ 1.1
(5)	$\varnothing$ 23 (+0.000/-0.025)	$\varnothing$ 0.9 (+0.0000/-0.0010)
(6)	$\varnothing$ 20	$\varnothing$ 0.8
(7)	$\varnothing$ 17 (+0.10/+0.05)	$\varnothing$ 0.7 (+0.004/+0.002)
(8)	25	1.0
(9)	23	0.9
(10)	3.5	0.14
(11)	Bolting Surface / Measuring Platform	
(12)	Bolting Surface	

### APPLICATIONS

- Integration into wind tunnel models
- Integration into handles of medical tools
- Sports medicine
- Biomechanics
- Control of assembly and handling processes in micromechanics

### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub



## 6A40 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A40 (Shown)

### DIMENSIONS

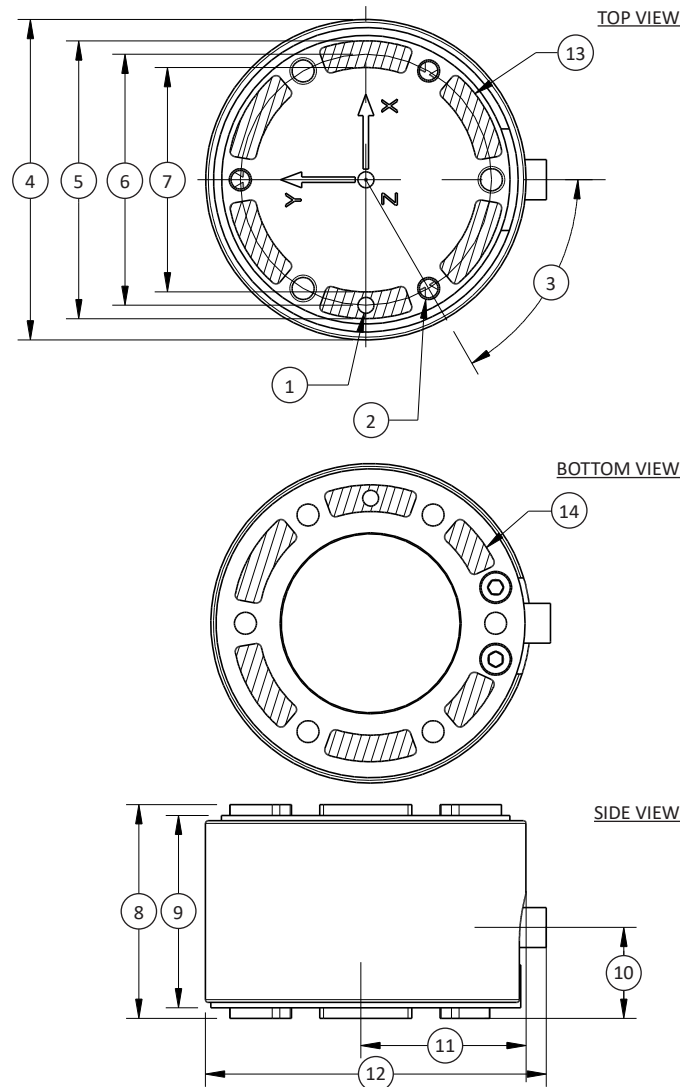
See Drawing	Metric	U.S.
	mm	in
(1)	$\varnothing 3 \text{ E7 } \downarrow 7$	$\varnothing(0.1192/0.1187) \downarrow 0.3$
(2)	6 x (M5x0.8) $\downarrow 6$	6 x (M5x0.8) $\downarrow 0.2$
(3)	60°	
(4)	$\varnothing 60$	$\varnothing 2.4$
(5)	$\varnothing 52 (+0.000/-0.050)$	$\varnothing 2.0 (+0.0000/-0.0020)$
(6)	$\varnothing 47$	$\varnothing 1.9$
(7)	$\varnothing 42$	$\varnothing 1.7$
(8)	40	1.6
(9)	36	1.4
(10)	17	0.7
(11)	30	1.2
(12)	64	2.5
(13)	Bolting Surface / Measuring Platform	
(14)	Bolting Surface	

### APPLICATIONS

- Collision detection
- "Teach-In"
- Presence or error detection
- Medical / prosthetics / orthopedics
- Gait analysis
- Sports medicine
- Comfort / ergonomics

### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub



## 6A68 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A68 (Shown)

### DIMENSIONS

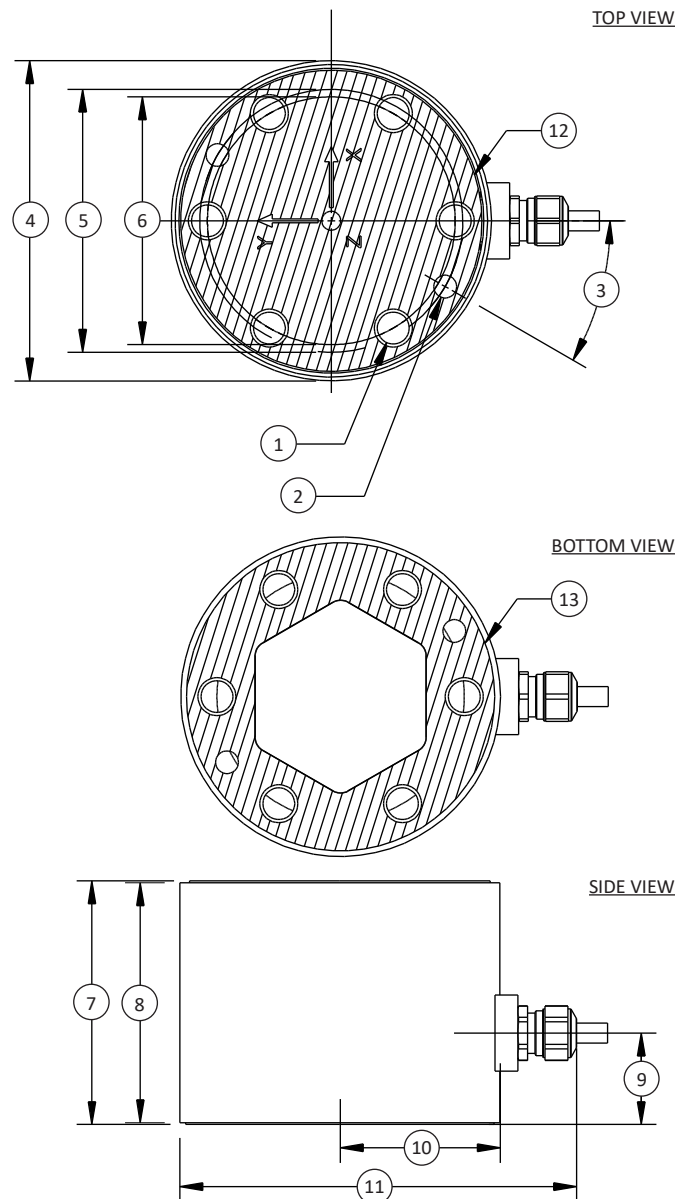
See Drawing	Metric	U.S.
	mm	in
(1)	6 x (M10x1.5) ↓ 12	6 x (M10x1.5) ↓ 0.5
(2)	2 x Ø6 H7 ↓ 12	2 x Ø(0.2367/0.2362) ↓ 0.5
(3)	30°	
(4)	Ø84	Ø3.3
(5)	Ø69	Ø2.7
(6)	Ø65	Ø2.6
(7)	64	2.5
(8)	63	2.5
(9)	24	0.9
(10)	42	1.7
(11)	105 (+5)	4.1 (+0.2)
(12)	Bolting Surface / Measuring Platform	
(13)	Bolting Surface	

### APPLICATIONS

- Collision detection
- "Teach-In"
- Presence or error detection
- Medical / prosthetics / orthopedics
- Gait analysis
- Sports medicine
- Comfort / ergonomics

### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub



See adapter plates for 6A68 on the next page

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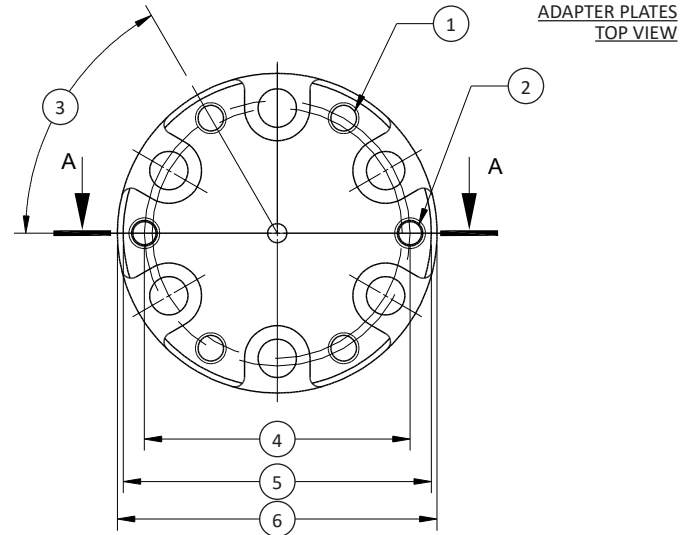
## 6A68 6-AXIS LOAD CELL (U.S. & METRIC)

### ADAPTER PLATES

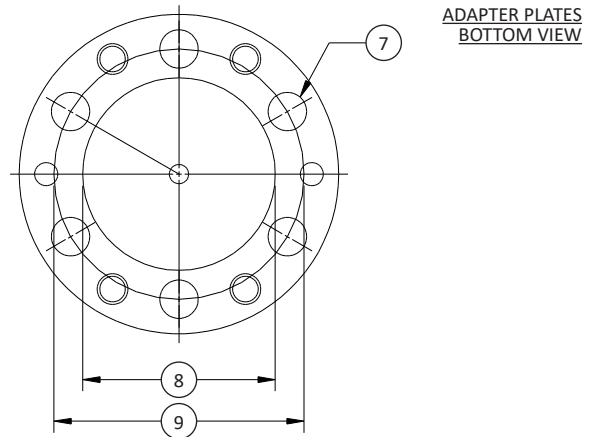
- Two required per sensor
- Aluminum or stainless steel depending on capacity
- 6A68 only

### DIMENSIONS

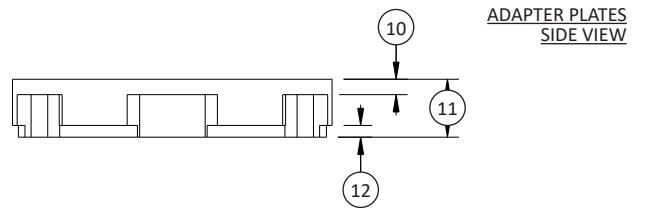
See Drawing	Metric	U.S.
	mm	in
(1)	4 x (M8x1.25) THRU	4 x (M8x1.25) THRU
(2)	2 x $\varnothing 6$ H7 THRU, (M8x1.25) $\downarrow 12 \vee 118^\circ$	2 x $\varnothing(0.2367/0.2362)$ THRU, (M8x1.25) $\downarrow 0.5 \vee 118^\circ$
(3)	6 x $60^\circ$	
(4)	$\varnothing 69$	$\varnothing 2.7$
(5)	$\varnothing 80$ h7	$\varnothing(3.1496/3.1484)$
(6)	$\varnothing 83$	$\varnothing 3.3$
(7)	6 x $\varnothing 10$ THRU	6 x $\varnothing 0.4$ THRU
(8)	$\varnothing 50$	2.0
(9)	$\varnothing 65$	2.6
(10)	4	0.2
(11)	15	0.6
(12)	3	0.1
(13)	2	0.08
(14)	$\varnothing 6$ H7	$\varnothing(0.2367/0.2362)$
(15)	12	0.5
(16)	$\varnothing 5$ h7	$\varnothing(0.1968/0.1964)$
(17)	M8x1.25	$\frac{3}{16}$ -24



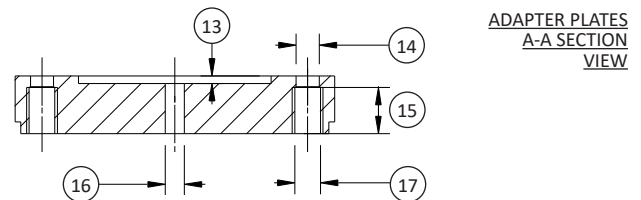
ADAPTER PLATES  
TOP VIEW



ADAPTER PLATES  
BOTTOM VIEW



ADAPTER PLATES  
SIDE VIEW



ADAPTER PLATES  
A-A SECTION  
VIEW

**Adapter Plates (Shown)**

## 6A80 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A80 (Shown)

### DIMENSIONS

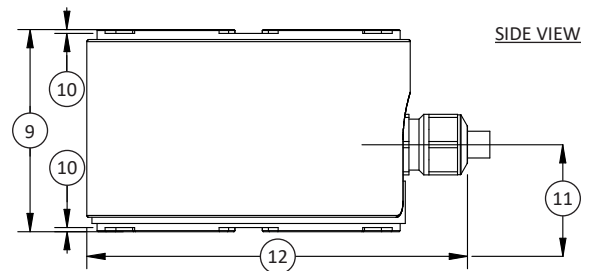
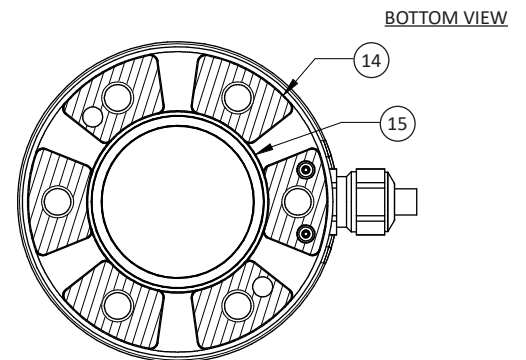
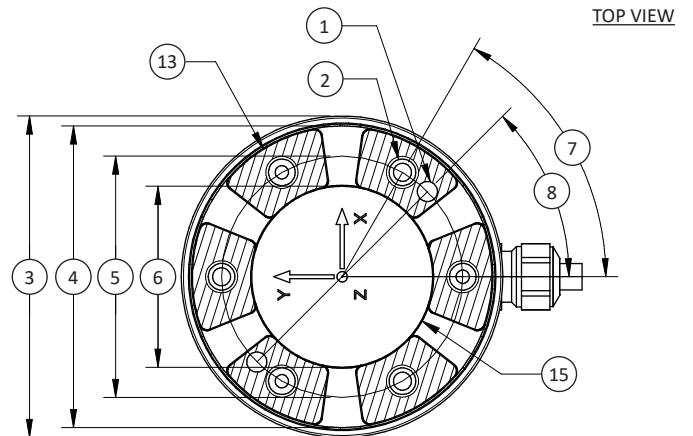
See Drawing	Metric	U.S.
	mm	in
(1)	2 x $\varnothing 5$ E7 $\downarrow$ 6	2 x $\varnothing(0.1981/0.1976)$ $\downarrow$ 0.2
(2)	6 x (M8x1.25) $\downarrow$ 9	6 x (M8x1.25) $\downarrow$ 0.4
(3)	$\varnothing 80$	$\varnothing 3.1$
(4)	$\varnothing 75$	$\varnothing 3.0$
(5)	$\varnothing 60$	$\varnothing 2.4$
(6)	$\varnothing 45$ H8 $\downarrow$ 3	$\varnothing(1.7732/1.7716)$ $\downarrow$ 0.1
(7)		60°
(8)		45°
(9)	50	2.0
(10)	1	0.04
(11)	21.5	0.85
(12)	94 (+1)	3.7 (+0.04)
(13)	Bolting Surface / Measuring Platform	
(14)	Bolting Surface	
(15)	$\varnothing 45$ H8 – Spigot	$\varnothing(1.7732/1.7716)$ – Spigot

### APPLICATIONS

- Collision detection
- “Teach-In”
- Presence or error detection
- Medical / prosthetics / orthopedics
- Force or torque-controlled operation
- Sports medicine
- Comfort / ergonomics

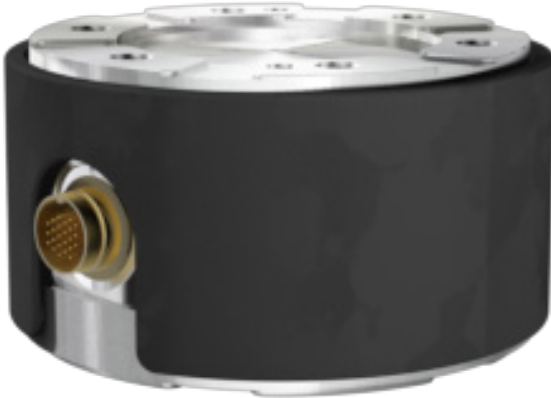
### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub



## 6A110 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A110 (Shown)

### DIMENSIONS

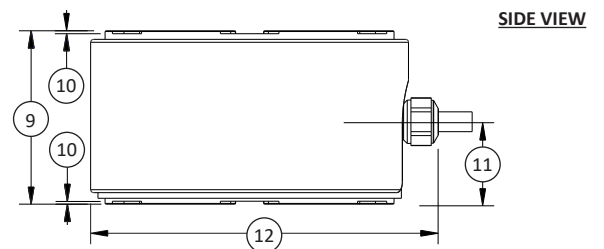
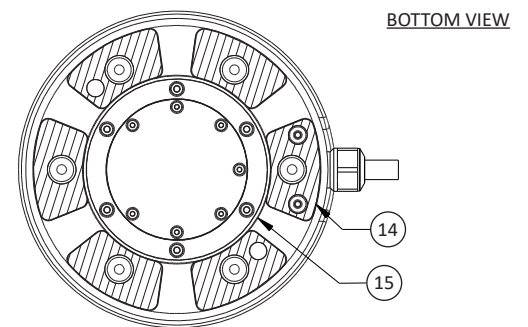
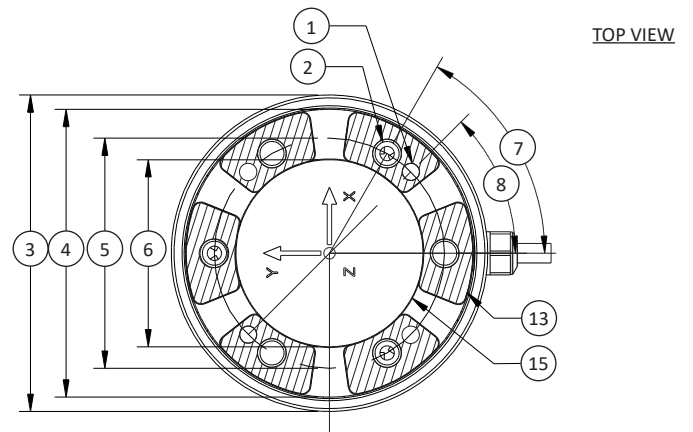
See Drawing	Metric	U.S.
	mm	in
(1)	2 x $\varnothing 6$ E7 $\downarrow$ 10	2 x $\varnothing$ (0.2375/0.2370) $\downarrow$ 0.4
(2)	6 x (M10x1.5) $\downarrow$ 10	6 x (M10x1.5) $\downarrow$ 0.4
(3)	$\varnothing 110$	$\varnothing 4.3$
(4)	$\varnothing 100$	$\varnothing 3.9$
(5)	$\varnothing 80$	$\varnothing 3.1$
(6)	$\varnothing 65$ H8 $\downarrow$ 3	$\varnothing$ (2.5609/2.5590) $\downarrow$ 0.1
(7)	60°	
(8)	45°	
(9)	60	2.4
(10)	1	0.04
(11)	28.5	1.12
(12)	120 ( $\pm 1$ )	4.7 ( $\pm 0.04$ )
(13)	Bolting Surface / Measuring Platform	
(14)	Bolting Surface	
(15)	$\varnothing 65$ H8 – Spigot	$\varnothing$ (2.5609/2.5590) – Spigot

### APPLICATIONS

- Collision detection
- “Teach-In”
- Presence or error detection
- Medical / prosthetics / orthopedics
- Force or torque-controlled operation
- Sports medicine
- Comfort / ergonomics

### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub





## 6A130 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A130 (Shown)

### DIMENSIONS

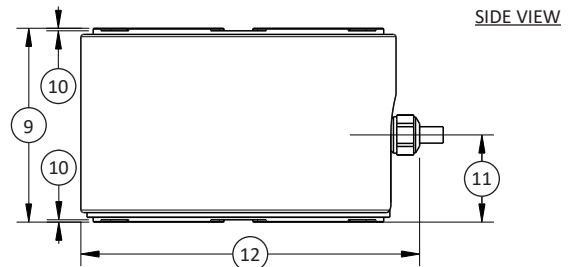
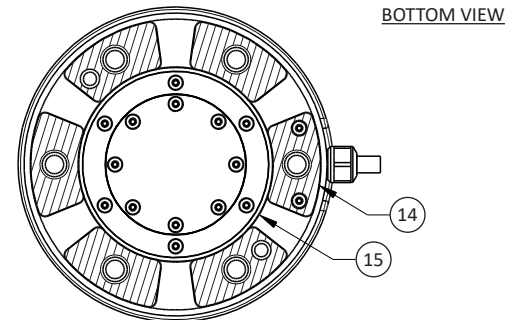
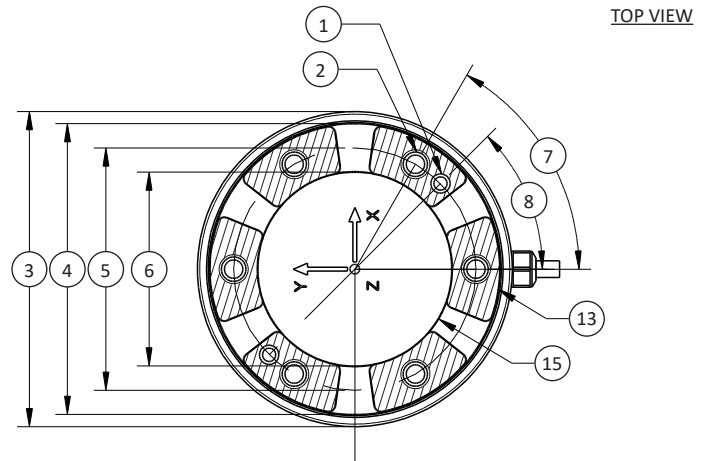
See Drawing	Metric	U.S.
	mm	in
(1)	2 x $\varnothing 8$ E7 $\downarrow$ 15	2 x $\varnothing$ (0.3165/0.3159) $\downarrow$ 0.6
(2)	6 x (M12x1.75) $\downarrow$ 15	6 x (M12x1.75) $\downarrow$ 0.6
(3)	$\varnothing 130$	$\varnothing 5.1$
(4)	$\varnothing 120$	$\varnothing 4.7$
(5)	$\varnothing 100$	$\varnothing 3.9$
(6)	$\varnothing 80$ H8 $\downarrow$ 3	$\varnothing$ (3.1514/3.1496) $\downarrow$ 0.1
(7)	60°	
(8)	45°	
(9)	80	3.1
(10)	1	0.04
(11)	36	1.4
(12)	140 ( $\pm 1$ )	5.5 ( $\pm 0.04$ )
(13)	Bolting Surface / Measuring Platform	
(14)	Bolting Surface	
(15)	$\varnothing 80$ H8 – Spigot	$\varnothing$ (3.1514/3.1496) – Spigot

### APPLICATIONS

- Collision detection
- “Teach-In”
- Presence or error detection
- Medical / prosthetics / orthopedics
- Force or torque-controlled operation
- Sports medicine
- Comfort / ergonomics

### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub



## 6A154 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A154 (Shown)

### DIMENSIONS

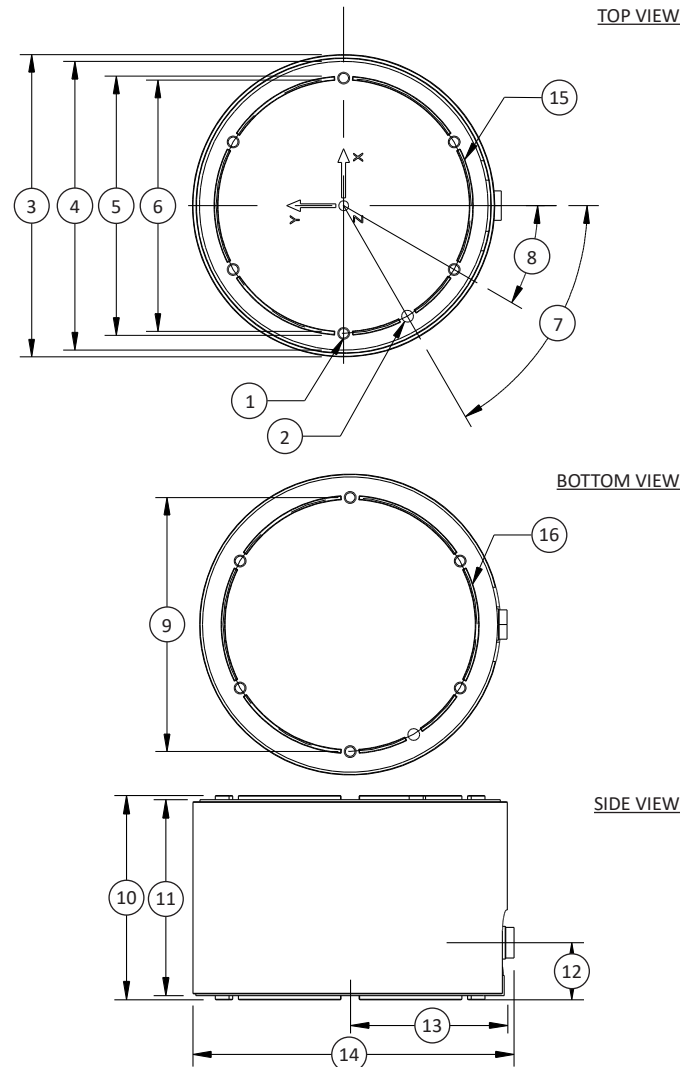
See Drawing	Metric	U.S.
	mm	in
(1)	6 x (M6x1) ↓ 8	6 x (M6x1) ↓ 0.3
(2)	∅6 E7 ↓ 8	∅(0.2375/0.2370) ↓ 0.3
(3)	∅154	∅6.1
(4)	∅147	∅5.8
(5)	∅132 (+0.000/-0.025)	∅5.2 (+0.0000/-0.0010)
(6)	∅128	∅5.0
(7)		60°
(8)		30°
(9)	∅130	∅5.1
(10)	100	3.9
(11)	96	3.8
(12)	28	1.1
(13)	77	3.0
(14)	158 (+4)	6.2 (+0.2)
(15)	Bolting Surface / Measuring Platform	
(16)	Bolting Surface	

### APPLICATIONS

- Wind tunnel balances
- Combines low force with high moment capacity

### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub



## 6A175 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A175 (Shown)

### DIMENSIONS

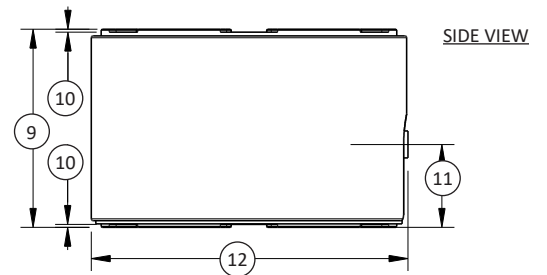
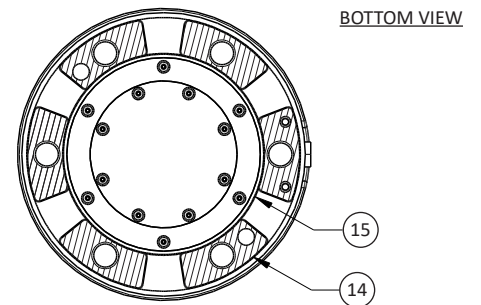
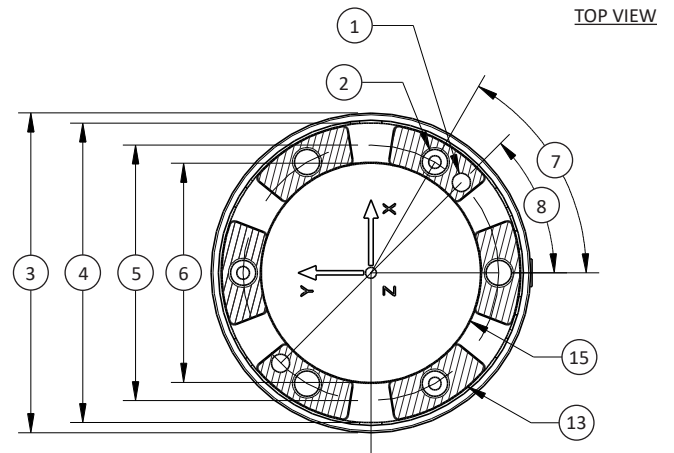
See Drawing	Metric	U.S.
	mm	in
(1)	2 x $\varnothing 10$ E7 $\downarrow$ 25	2 x $\varnothing(0.3953/0.3947)$ $\downarrow$ 1.0
(2)	6 x (M16x2) $\downarrow$ 25	6 x (M16x2) $\downarrow$ 1.0
(3)	$\varnothing 175$	$\varnothing 6.9$
(4)	$\varnothing 164$	$\varnothing 6.5$
(5)	$\varnothing 140$	$\varnothing 5.5$
(6)	$\varnothing 10$ H8 $\downarrow$ 4	$\varnothing(4.7265/4.7244)$ $\downarrow$ 0.2
(7)	60°	
(8)	45°	
(9)	110	4.3
(10)	1.7	0.07
(11)	46	1.8
(12)	176 (+3)	6.9 (+0.1)
(13)	Bolting Surface / Measuring Platform	
(14)	Bolting Surface	
(15)	$\varnothing 120$ H8 – Spigot	$\varnothing(4.7265/4.7244)$ – Spigot

### APPLICATIONS

- Automation and robotics
- Press force
- Seismic studies

### CONNECTOR OPTIONS

- 24-Pin M16
- 44-Pin High Density D-Sub



## 6A225 6-AXIS LOAD CELL (U.S. & METRIC)

### STANDARD CONFIGURATION



Model 6A225 (Shown)

### DIMENSIONS

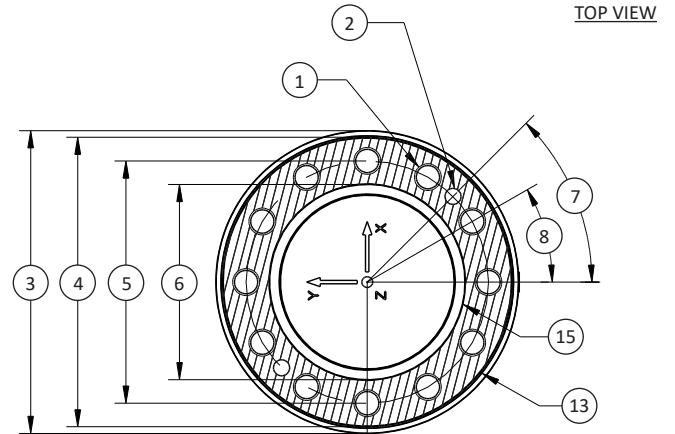
See Drawing	Metric	U.S.
	mm	in
(1)	12 x $\varnothing$ M20x2.5 $\downarrow$ 25 $\vee$ 118°	12 x $\varnothing$ M20x2.5 $\downarrow$ 1.0 $\vee$ 118°
(2)	2 x $\varnothing$ 12 E7 $\downarrow$ 18	2 x $\varnothing$ (0.4744/0.4737)
(3)	$\varnothing$ 225	$\varnothing$ 8.9
(4)	$\varnothing$ 215	$\varnothing$ 8.5
(5)	$\varnothing$ 180	$\varnothing$ 7.1
(6)	$\varnothing$ 145 H8 $\downarrow$ 4	$\varnothing$ (5.7111/5.7086) $\downarrow$ 0.2
(7)	45°	
(8)	30°	
(9)	140	5.5
(10)	5	0.2
(11)	69.48	2.735
(12)	225.5 (+3)	8.88 (+0.1)
(13)	Bolting Surface / Measuring Platform	
(14)	Bolting Surface	
(15)	Centering $\downarrow$ 3.5	Centering $\downarrow$ 0.14

### APPLICATIONS

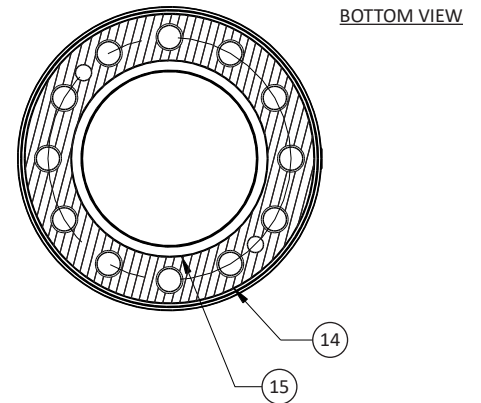
- Automation and robotics

### CONNECTOR OPTIONS

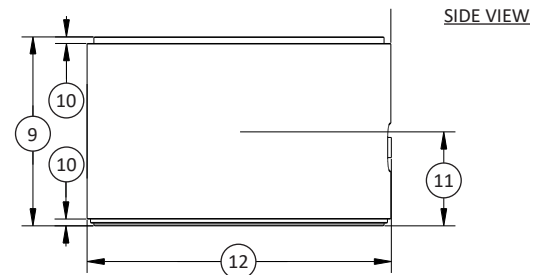
- 24-Pin M16
- 44-Pin High Density D-Sub



TOP VIEW



BOTTOM VIEW



SIDE VIEW