

Australia's Quality Load Cell Manufacturer

DELPHI

Measurement Pty Ltd

For over 20 years Delphi has been a reliable source
of tension load measurement solutions...



What is the secret to our success?

www.delphimeasurement.com

TENSION CELLS

Delphi Measurement manufactures a variety of bespoke tension measuring sensors to fit our customers equipment. Over the years a popular design of the “plate cell” has evolved. These cells are used in many industries, where measurement of a pulling or tension force is required. Our simple, rugged design makes them suitable for the harshest environments. These load cells are manufactured from a variety of materials including 630 (17-4PH) Stainless Steel, Aircraft Grade Aluminium or Alloy Steel.

The load cells are available in cabled or wireless versions. The cabled versions are used in permanent mount installations and the wireless versions are typically used in portable applications.

The combination of wireless technology and high strength materials make the TW 103 series a lightweight, highly versatile and portable load measuring solution.

100T SERIES

The Delphi 100T Tension Cell range; made from 630 Stainless Steel (17-4PH) are used in cable lifting, strength testing, winching and tensioning applications. IP67 rated, with integral connector and removable cable.



Model No.	Range (t)	L (mm)	W (mm)	D (mm)	S (mm)	Ø (mm)
100T-0.5#	0.5	62	22	11	44	9
100T-0.75#	0.75	70	23	12	46	11
100T-1#	1	80	29	15	52	13
100T-1.5#	1.5	90	32	16	58	15
100T-2#	2	100	36	18	64	18
100T-5S	5	151	50.8	30	100	23
100T-2.5	2.5	220	78	20	150	23
100T-5	5	240	78	25	158	28
100T-10	10	260	78	25	158	42
100T-15	15	260	78	25	158	42
100T-20	20	260	78	25	158	42
100T-25	25	324	100	50	204	53
100T-35	35	324	110	60	204	60
100T-50	50	364	122	70	222	72

Accuracy*	Better than 0.5% of range Typically $\pm 0.1\%$ BSL
Overload	200% (no damage) 600% (ultimate)
Thermal Temperature	0.005%/°C on output or zero shift 10°C to +60°C (compensated) -10°C to +80°C (operating)
Excitation	<12V DC
Output	mV/V or optional amplified current or voltage

*Accuracy includes linearity, hysteresis and creep.

#Available with wireless option

103TWK WIRELESS SERIES

The Delphi 103TWK Wireless Series includes a load cell with integral transmitter, hand held readout, battery charger, carry case with foam cut out to suit, making it ideal for portable applications.



Model No.	Range (t)	L (mm)	W (mm)	D (mm)	S (mm)	Ø (mm)	Kit (kg)
103TWK-6.5	6.5	278	100	35	200	28	5
103TWK-12	12	320	124	50	220	38	6
103TWK-17	17	325	129	58	220	44	7
103TWK-25	25	370	140	70	230	57	8
103TWK-35	35	425	146	78	260	62	11
103TWK-55	55	490	175	85	292	76	15
103TWK-85	85	630	210	100	380	90	30
103TWK-120	120	630	230	135	380	100	35**
103TWK-150	150^	688	250	148	388	113	40**
103TWK-200	200^	890	290	173	510	130	80**
103TWK-250	250^	890	295	198	555	145	90**

Accuracy	Better than 0.5% of range Typically $\pm 0.1\%$ BSL
Overload	150% (no damage) 500% (ultimate)
Thermal Temperature	0.005%/°C on output or zero shift 10°C to +60°C (compensated) -10°C to +80°C (operating)
Excitation	<12V DC
Output	Wireless (up to 200m)

“S” Shackle Pin Centres

Ø Shackle Pin size

^ Grade T shackles (all other sizes, Grade S shackles)

*Accuracy includes linearity, hysteresis and creep

**Excludes carry case, can be supplied as an option

All sizes available as cabled versions with mating cabled handset

LOAD PINS

Delphi Measurement manufactures high quality load pins to suit a variety of applications. Measurement ranges of 100kg up to a massive 500t have been designed, machined, assembled and tested in our manufacturing facility on Queensland's Gold Coast. Our load pins are well known within the crane, lifting and winch industries – thanks largely to the safety factor of our designs – which typically exceeds 6:1, in line with safety factors in the lifting industry. Many of our load pins are used to replace existing pins or are engineered at the design phase of new equipment - often as part of a wedge socket, sheave or shackle. Our custom build capability and short lead times are critical to our success.

GENERAL SPECIFICATIONS

Load Range	0.1 > 100 Tonnes
Accuracy	+/-0.5% of range*
Repeatability	+/-0.15% of range*
Excitation	<10V DC
Output	1.00mV/V nominal
Pin Dia. tolerance	g6 (-0.02mm - 0.04mm)**
Overload	>300% (No damage) >600% (Ultimate)
Thermal effects	+/-0.005%/°C on output or zero*
Termination	3106A 14S 6S 300**

*Typical

**Standard unless otherwise stated

ELECTRICAL

Sensing	Full bridge strain gauge, (dual bridge optional). 4-wire standard, (6-wire optional).
Bridge Resistance	350 Ohms Standard** Others available on request
Connection	Delphi 6 pin connector

Wiring

	Pin	Cable	Description
4 Wire	A	Red	+ Excitation
	C	Black	- Excitation
	E	White	- Signal
	F	Green	+ Sense
Opt 6 Wire	B	Yellow	+ Sense
	D	Blue	- Sense

MECHANICAL

Material	630 Grade Stainless Steel
Hardness	38HRC minimum

**Standard unless otherwise stated

Industry Examples

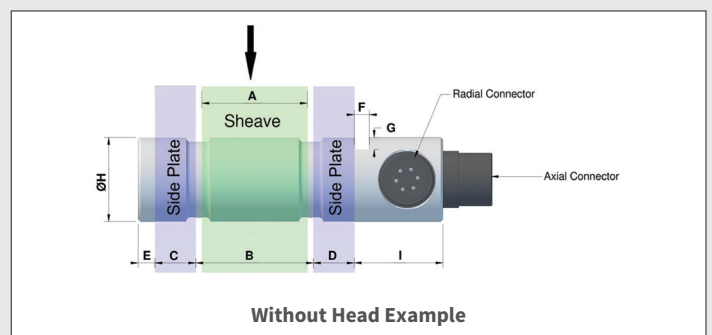
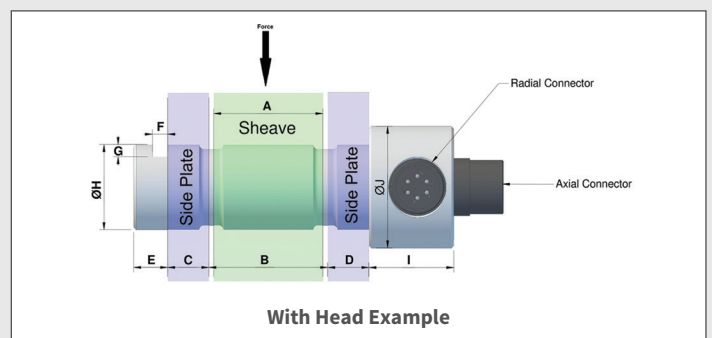
- ▶ Crane lifting & overload
- ▶ Mining & manufacturing
- ▶ Material Handling
- ▶ Offshore oil & gas
- ▶ Food & processing

Application Examples

- ▶ Sheave pin replacement
- ▶ Wedge sockets
- ▶ Shackle Pins and load monitoring
- ▶ Conveyor tensioning & load monitoring
- ▶ Anchor tensioning (Dynamometers)
- ▶ Winch load & brake monitoring

The Delphi Advantage

- ▶ Safety - 300% safe overload, 600% ultimate
- ▶ Robust - Internally gauged, IP67 rated (IP68 available)
- ▶ Short lead-time
- ▶ One off, custom pins
- ▶ Custom design – design assistance & recommendation
- ▶ Output variety– load cell, amplified (4-20mA or V) and wireless options
- ▶ Anti-Rotation – solutions provided to retain the pin, including key slot/s, anti-rotation bars, locking nuts/bolts etc.



PRESSURE TRANSDUCERS

Delphi UB series Pressure Transducers are an integral component in many hydraulic applications including forklift weighing, excavating machinery, mining equipment and general hydraulics.

Pressure transducers convert a force (pressure) into an analog electrical signal. Although there are various types of pressure transducers, one of the most common is the strain-gauge base transducer. The conversion of pressure into an electrical signal is achieved by the physical deformation of strain gauges which are bonded into the diaphragm of the pressure transducer and wired into a wheatstone bridge configuration. Pressure is applied to the diaphragm, introducing strain to the gauges. The strain produces an electrical signal proportional to the pressure. This simple design and robust diaphragm makes the UB suitable for high pressure applications.

The UB series is used extensively in hydraulic systems and is not affected by the pressure spikes typically generated by solenoids and other control components.

SPECIFICATIONS

Capacities	1000, 2000, 3000, 5000, 10,000 psi
Output	2 mv/v at FS
Bridge Input Output	400 ohms \pm 30 ohms Nominally 350 ohms
Thermal Effect on Zero Effect on Span	0.004% / deg c 0.05% / deg c
Connection	Nylon plug and socket
Fitting	Standard 9/16 UNO hydraulic adapter
Material	Sensor - 17-4 PH stainless steel (AISI 630) Body - 304 stainless steel



Pressure Transducer

ACCESSORIES

Delphi manufactures & provides a wide range of accessories including: indicators, display HMI's, alarm lights & sounders, handheld readers and much more. All accessories can be configured to match new or existing sensors. We also provide software services to automate, log, display & control many industrial applications.



Handheld Display

(Available in both wired and wireless versions)



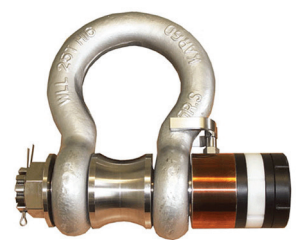
Large Digit Display



3 Light Alarm



Cables



Shackle Pin

COMPRESSION CELLS

Delphi Measurement manufactures Compression Load Cells for custom applications across many industries, these vary from small free standing button cells with integral cable through to larger fixed position cells in a variety of shapes. Fixing accessories can be designed and manufactured to integrate the cells with customer equipment. As with all other Delphi product, battery power, wireless or amplified outputs are available making the compression cells simple to connect to existing control or monitoring systems.

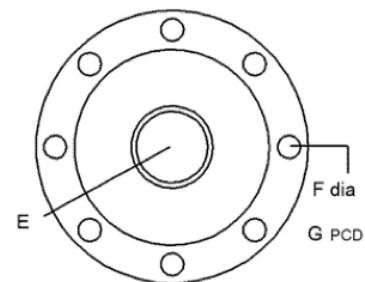
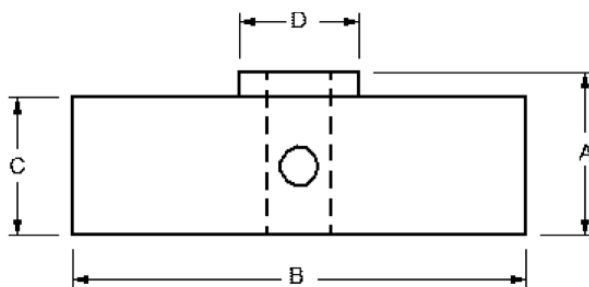


LOW PROFILE LOAD CELL

One of the standard load cells manufactured by Delphi Measurement is the Stainless steel, high accuracy, low profile compression load cell. These are used where height is restricted and/or eccentric or side loads are encountered. They can be used without tie rods or stays. Place under machinery or structures to record weight/force. Can be used indoors or outdoors for all industrial weighing applications.



All cells are fitted with IP68 Mil Spec equivalent plug and socket.



Tonnes	A	B	C	D	E	F	G
2.5, 5, 10	35	106	32	28	M 20	9	90
25 & 50	56	140	50	50	M 24	11	116
50 & 100	80	225	75	62	M 36	17	190
250	155	320	140	145	M 100	16 & 21	270

LOW PROFILE LOAD CELL SPECIFICATIONS

Capacities (t)	2.5, 5, 10, 25, 50, 100, 250
Overload	150% no effect; 400% ultimate
Excitation	20VDC max
Rated Output	2 mV/V normal
Zero Balance	+/-1%
Accuracy	Typically 0.15%
Operating Temperature	-10 to 80°C
Compensated Temperature	10 to 60°C
Bridge Resistance	700 Ω nominal

THE DELPHI SOLUTION

Delphi Measurement designs products suited to harsh environments that provide many years of reliable service. Our strength lies in the fact that we routinely customise solutions for our clients. This experience enables Delphi to consistently deliver bespoke products in competitive manufacturing lead times.

Our team works with customers around the world providing simple cost effective solutions for many force measurement applications in lifting, mining, manufacturing, marine, oil and gas, food and many other industries. If you are seeking uncompromised quality, flexibility and value, look no further than Delphi Measurement.



SAFETY

Delphi's wide range of products are designed to meet stringent safety criteria with a minimum safety factor of 3:1 or higher. Most products have an ultimate safety factor above of 5:1 of measured load. Custom designs with higher overload ratings are also available.



ROBUST BY DESIGN

Choosing the finest materials and components and combining these with proven manufacturing methods means that quality is in the DNA of all our products, allowing us to retain a minimum IP67 rating. Our experience in product design ensures integration of all our products with standard components (such as shackles, sheaves etc.).



AUSTRALIAN MADE

Delphi products are designed, manufactured, assembled and calibrated in our Queensland facility from the highest quality materials and components.



OUR GUARANTEE

All Delphi products are backed with our 24 month warranty. Our ISO 9001 accredited manufacturing facility provides all levels of repair and calibration services.

CONTACT US

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