



ENCARDIO RITE

JACKOUT PRESSURE CELL

MODEL EPS-30V-J-Φ

INTRODUCTION

Total stress measurement in soil can be categorised as follows:

- ✦ measurement within a soil mass.
- ✦ measurement at the face of a structural element.

Encardio-rite jack-out pressure cell falls in the latter category. The name of the cell is derived from the use of a hydraulic jack during installation by activating it to keep the cell in position while the concrete is poured in.

Encardio-rite model EPS-30V-J jack-out pressure cell is used for monitoring changes in stress base slabs and diaphragm/slurry walls etc. It is extensively used:

- ✦ where concrete is cast directly against soil, i.e. cast in place structures.
- ✦ as a safety measure to monitor the earth pressure in excess of designed limits.
- ✦ for verification of design assumptions and to provide data and information for safer and more economical future designs.

The model EPS-30V-J jack-out pressure cell is designed to measure the total stress i.e. the effective stress due to the soil together with the pore water pressure in the voids between soil grains. It is suitable for measuring static or slowly varying stresses only.



FEATURES

- ✦ Accurate, robust and easy to install.
- ✦ Long term stability with high reliability.
- ✦ Low volumetric displacement.
- ✦ Fluid filled for high rigidity, accurate and fast response.
- ✦ All stainless steel construction.
- ✦ Remote digital readout and data logging available.

OVERVIEW

The jack-out total pressure cell basically consists of a circular flat capsule, constructed from two stainless steel discs welded around the periphery. One of the discs is a thin flexible diaphragm of around 3 mm thickness. It is the active face and is installed flush with the soil. The other disc is a thick rigid plate of around 12 mm thickness. It is the inactive face and is installed on the concrete side through another thick support plate.

To prevent uneven stress on the cell, the jack acts on the support plate, rather than directly on the cell.

Care should be taken to have the sensitive surface of the cell absolutely flush with the soil at the concrete/soil interface. This is achieved by activating a hydraulic jack to keep the cell in position while the concrete is poured in. The hydraulic pressure on the jack is maintained somewhat higher than the stress generated by the freshly poured in concrete at the level at which the jack-out pressure cell is mounted. This will prevent the poured concrete from seeping into the soil and cell interface.

The jack-out pressure cell is a robust sensor designed to effectively function under condition of rough handling and concreting.

GENERAL DESCRIPTION

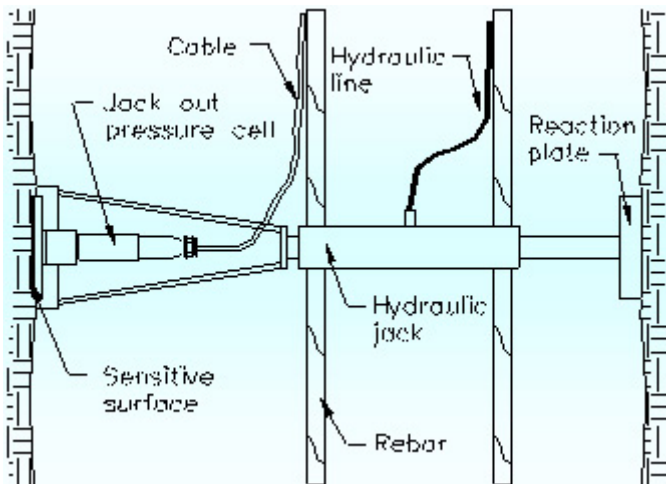
Model EPS-30V-J jack-out total pressure cell consists of a stainless steel round flat diaphragm welded to a back plate around the periphery leaving a narrow space between the two. A vibrating wire pressure transducer is electron beam welded concentric with the back plate. The space between the pressure transducer, the diaphragm and the back plate is completely filled with a de-aired fluid by a special process that guarantees that almost all the air is excluded from the fluid.

The space confining the hydraulic fluid is entirely metal. No 'O' rings are used, the external construction being welded. This helps in increasing the cell stiffness thus materially improving the performance of the cell.

The pressure transducer is of stainless steel construction with size 42 mm ϕ x 176 mm long. It incorporates the latest vibrating wire technology and has an inherently high sensitivity. The transducer converts the fluid pressure into an electrical signal in form of frequency which can be accurately measured by model EDI-51V vibrating wire readout unit or any other conventional vibrating wire readout unit. The signal can also be transmitted over long distances to a remote automatic data acquisition system like Encardio-rite model EDAS-10.

SPECIFICATIONS

Type	Vibrating wire
Model	EPS-30V-J- ϕ ϕ = 125 or 200 mm, specify
Range (MPa)	0.5, 1.0, 2.0, 3.5, 5.0, specify
Accuracy (of pressure transducer)	± 0.5 % fs with our EDI-51V digital readout. ± 0.1 % fs available on request
Temperature limit:	
Operational	-20 to 70°C
Compensated	0 to 55°C
Over range limit	150 % of range
Over range effect	± 0.1 % fs up to 150 %
Overall dimension	125 mm ϕ x 190 mm height 200 mm ϕ x 190 mm height
Enclosure	Stainless steel
Thermistor	YSI 44005 or equivalent (3 kOhms at 25°C)



Specifications are subject to change without prior notice

ENCARDIO-RITE ELECTRONICS PVT. LTD.

A-7 Industrial Estate, Talkatora Road, Lucknow, UP-226011, India
 Tel +91 (522) 2661044 Fax +91 (522) 2661043 E-mail sales@encardio.com
 Visit us at: www.encardio.com

DATA SHEET 1095-06 R0