



The “Intelligent Crownmatic”

“Quality by Design, Satisfaction by Performance”



Incorporating “Soft Stop”

FEATURES:

- **Modular Construction**
Quick, simple installation
- **Microprocessor Based**
Minimum parts, simple design
- **Block Speed Control**
Keeps block velocity versus position within safe operating parameters
- **Eliminates Need For Derrick Mast Extension**
- **Patented Design**

U. S. Patent Number 5,342,020

CROWN PROTECTION

Derrick designs generally incorporate extra space at the crown area to allow for safer operation of the traveling block in an area that is hard for the driller to see, and also to allow for potential traveling block overrun of the upper mechanical stop caused by high block ascending speeds near the crown. Fitting portable top-drives to rigs reduces this extra space increasing the possibility of the traveling block impacting the crown.

By installing the Electronic Crown

Protector, safe and accurate operation of the Traveling Block is maintained to the maximum upper block travel limit.

The Electronic Crown Protector eliminates the problem of overrunning the top stop by monitoring and controlling the block's ascending velocity when the traveling block is being operated near the crown. This allows the traveling block's upper travel limit to be safely moved closer to the crown, eliminating the necessity of adding extra derrick height.

SYSTEM OPERATION

When the traveling block is ascending, the Electronic Crown Protector continually monitors block position and speed. Using this information, the system calculates the distance needed for the block to coast to a stop.

If the traveling block's ascending velocity, versus position toward the crown, is too great, the ECP reduces the block's speed by reducing the signal to the driller's foot throttle control.

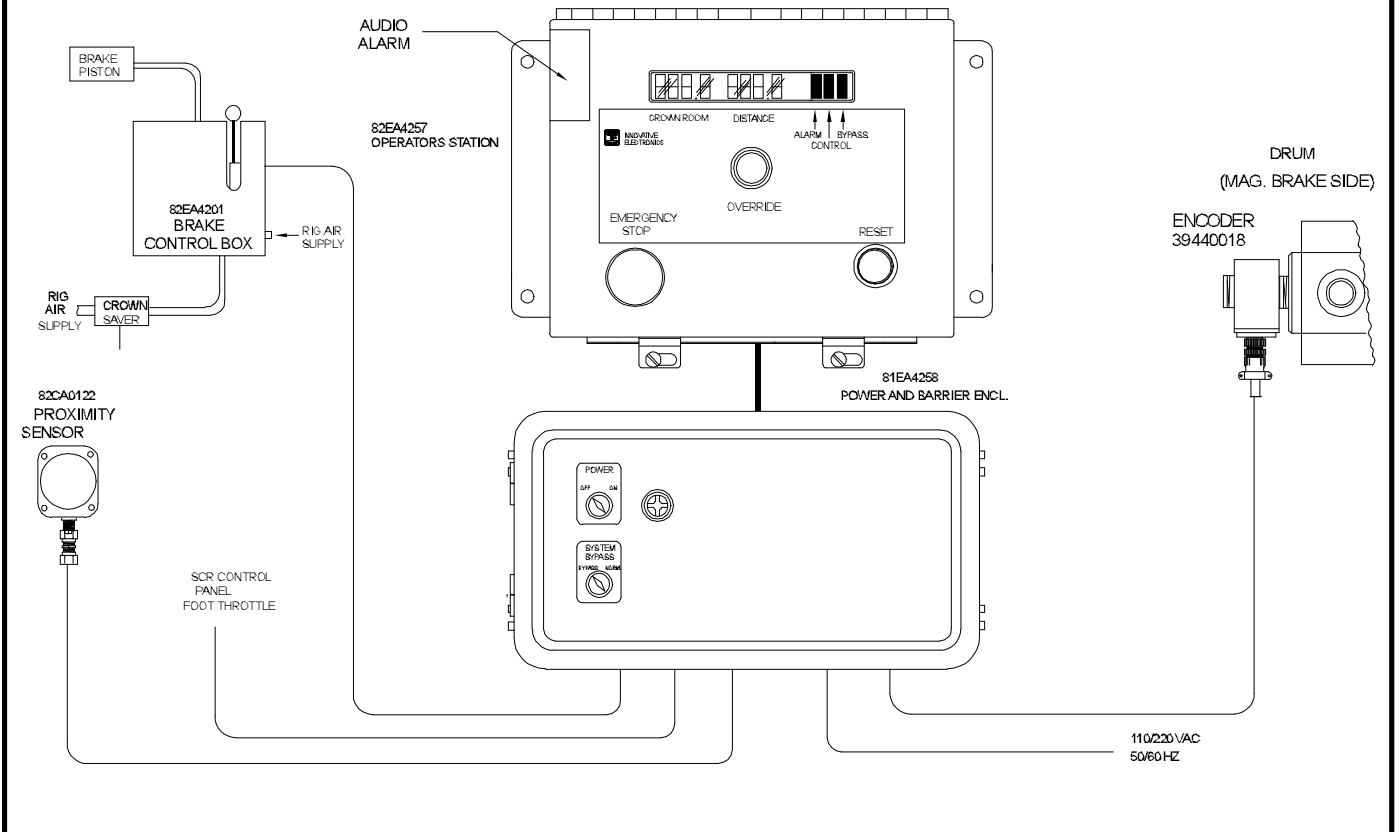
When the block has slowed to the desired speed, the signal to the foot throttle is

returned. If the traveling block reaches the upper travel limit, the ECP sets the drawworks brake, stopping the traveling block.

By providing a controlled slowing, or “Soft Stop”, of the traveling block as it approaches it's upper travel limit, the problem of overrunning the top stop is eliminated.

Similarly eliminated are the potential hazards normally associated with suddenly stopping a fast ascending, lightly loaded, traveling block.

TYPICAL BASIC SYSTEM



POSITION SENSOR

The relationship between the linear movement of the wire line and the angular position of the drawworks drum is predictable, repeatable and can be calculated using the diameter and the length of the drum and the size of the wire line. By adding the number of lines strung, the operating relationship between the angular position of the drawworks drum and the traveling block can be established.

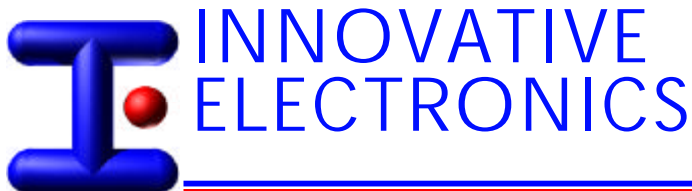
The block position encoder sensor is

directly driven by the main drive shaft of the drawworks drum. It provides, to the computer, a value that represents the angular position of the drawworks drum. A proximity switch mounted in the derrick and actuated by the passing traveling block checks the reliability and accuracy of the position sensor. Failure of the position sensor or the proximity switch activates the alarm horn and warning indicator.

ADDITIONAL INFORMATION

The ECP system does not require a purge system. The ECP can interface with the Innovative Electronics **FIRMS**[®] (Fully Integrated Rig Management System), the crown TV system, rig computer systems, logging computer systems; also can be programmed to provide anti-collision capability for the RBS, automatic pipe racker, or Iron roughneck. An auto-drilling option is also available. The TBC can be supplied in various configurations depending on requirements. Systems are available with or without cables and/or junction boxes, for permanent installation or for moving from site to site. These components can be combined with other Innovative Electronics packages for complete consoles containing both hydraulic and electronic gauges and instruments. This system can be supplied in various configurations depending on requirements.

For Additional Information Contact:



P.O. Box 1367, Stafford, Texas 77497 U.S.A. • Phone: (281) 240-7355 • Fax: (281) 240-7356

www.innelect.com

Email: sales@innelect.com

Div. of Lucere, LLC

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