

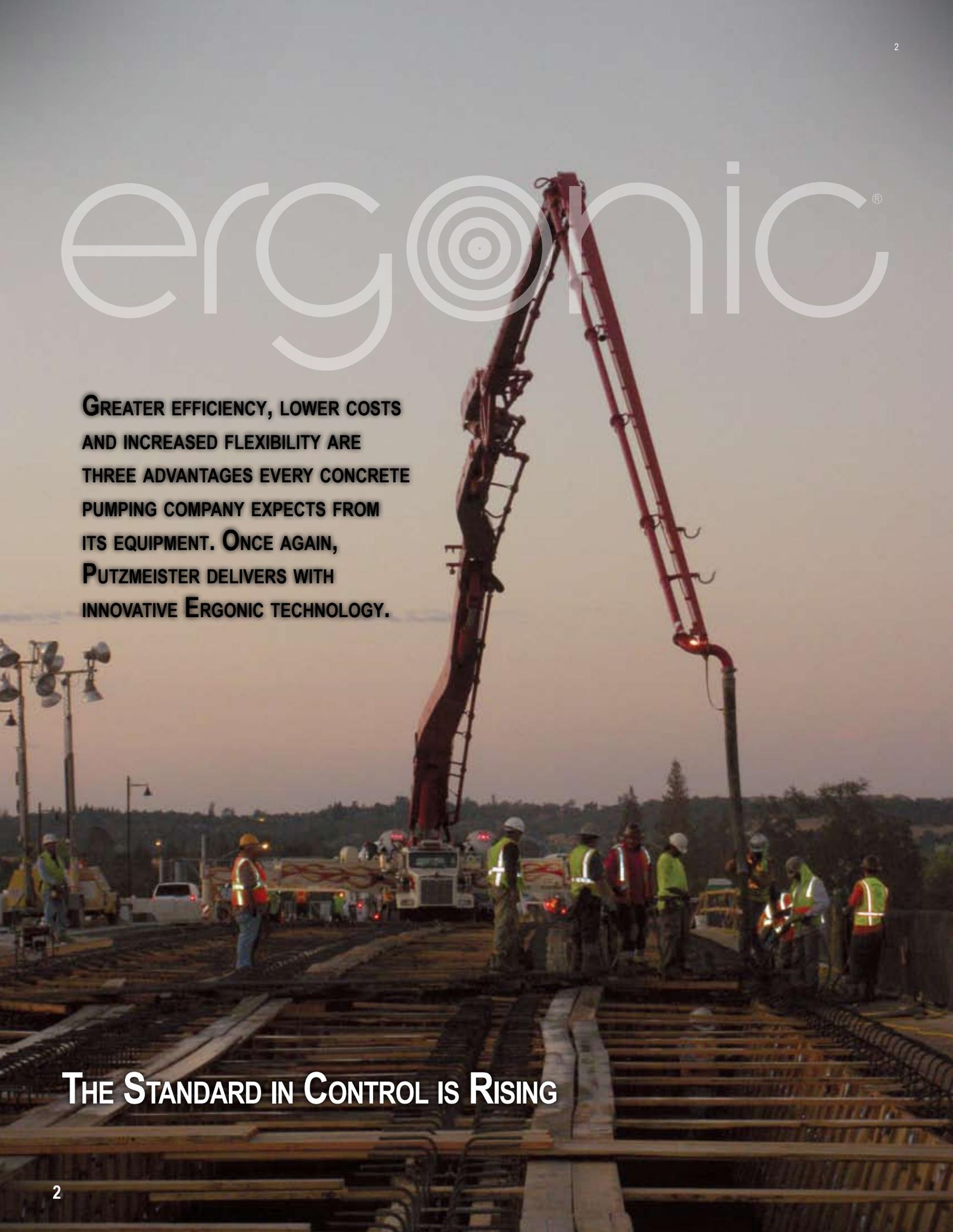
ergonomic®



Putzmeister
TECHNOLOGY THAT PUTS YOU FIRST

ergonomic[®]

GREATER EFFICIENCY, LOWER COSTS AND INCREASED FLEXIBILITY ARE THREE ADVANTAGES EVERY CONCRETE PUMPING COMPANY EXPECTS FROM ITS EQUIPMENT. ONCE AGAIN, PUTZMEISTER DELIVERS WITH INNOVATIVE ERGONIC TECHNOLOGY.



THE STANDARD IN CONTROL IS RISING



**Ergonic Boom Control (EBC)
controls the boom**

ERGONIC TECHNOLOGY HITS THREE KEY OPERATIONAL AREAS

One modular system with multiple benefits

A system of microprocessor supported controls, Ergonic goes beyond monitoring performance. It allows the operator to set parameters that control the boom, the pump and a variety of operational functions. The system is housed in an easily accessible single Modular Control Box (MBC) on models 31Z-Meter and larger.

Operators, owners and construction site managers all agree on the benefits of Ergonic technology:

- Increased reliability
- Increased concrete placement performance
- Reduced wear on equipment components
- Enhanced on-site efficiency



**Ergonic Tele Service (ETS) provides
remote diagnosis of fault codes**



**Ergonic Pump System (EPS)
optimizes the pump and various
other functions**

An investment that lasts a lifetime

What's more, as new innovations become available, Ergonic's modularity will really pay off. Putzmeister continues to develop new systems that can be monitored or changed remotely. Equipment stays in the field, keeping your business up and running.

In addition to EBC, EPS and ETS, Ergonic's modularity keeps your pump poised for the future.



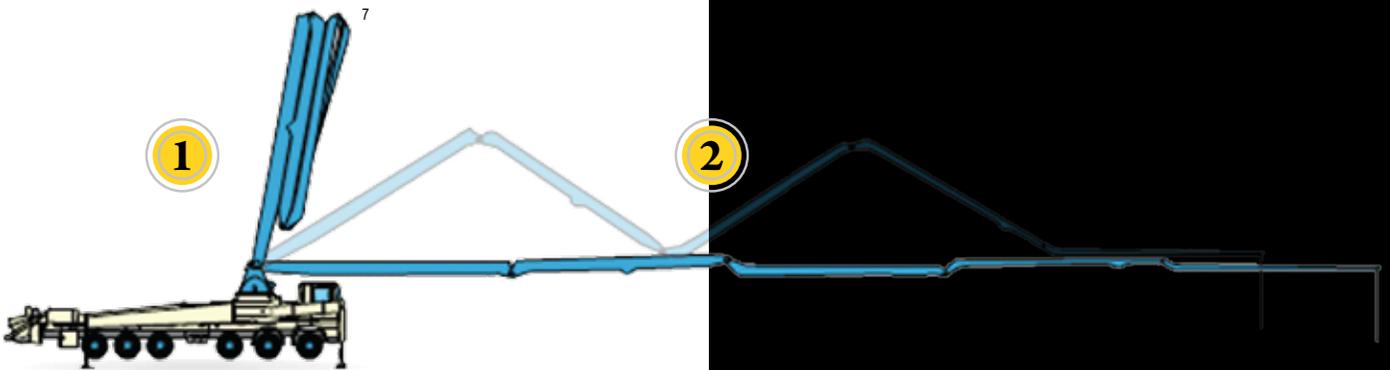
CONVENIENCE & CONTROL

The Power of Ergonic® Boom Control

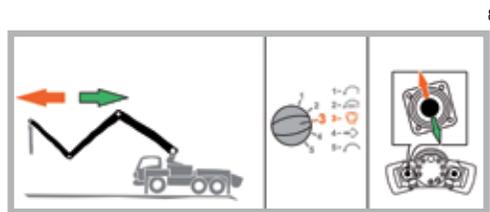
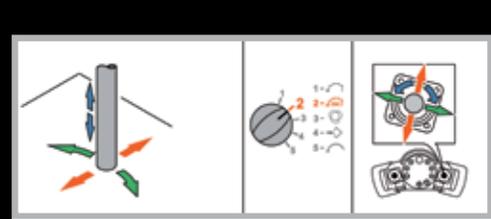
Maneuvering the arms of a truck-mounted concrete boom pump requires skill and experience. Ergonic Boom Control (EBC) helps operators take these qualities to a whole new level of excellence.

Assisted by a computer, EBC allows the boom to be easily and precisely controlled to deliver greater concrete placement performance and promote job site safety. EBC was the first of the Ergonic systems and has a proven record of success on Putzmeister's truck-mounted models. It enables the operator to focus more on the surroundings of a pour and the movement of the end hose.

When the right-hand joystick is turned, the end hose moves proportionally up or down. This flexibility and precision is a significant advantage when placing concrete in formwork or rebar. When large foundations are being concreted in layers, the end hose must be precisely threaded into various positions in the rebar in succession. A concrete pump with EBC is considerably quicker and its concrete placement performance is significantly greater.



- ① Raise and slew the boom manually with the right-hand joystick.
- ② Automatically fold the boom in and out by moving the left-hand joystick forward or backward.



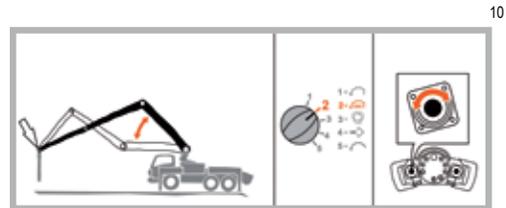
Increasing operational safety, EBC offers semi-automatic folding and unfolding of the boom. The boom is guided horizontally and vertically with simple movements of the joystick on the OneTouch™ radio remote control. The system also prevents the boom from colliding with itself in critical positions.



9

In addition to putting the power of EBC at your fingertips, the OneTouch controller provides accuracy without the need to switch to different boom arms. On five-section booms the positions of the “A” and “B” arms can be locked. Once the position has been saved, the arms remain in their position, regardless of how the other arms are moved. A preferred position can be set for the last arm. This position is maintained during concrete placement.

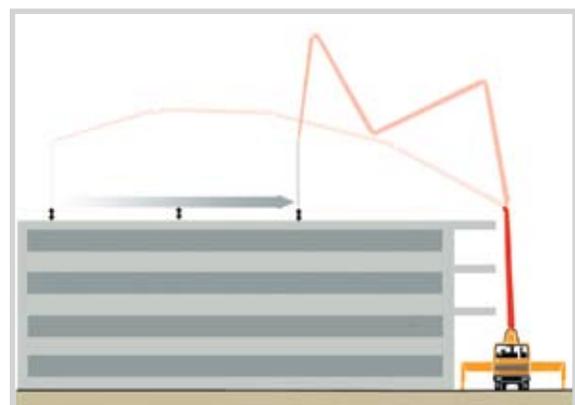
NOTE: While EBC makes concrete placement easier and optimizes processes, it does not have any inherent safety functions. The operator retains responsibility for on-site safety.



10



11



12



EBC ENHANCES THE PUMPING EXPERIENCE

Operate at Full Power with Less Bounce

One of the greatest benefits of EBC is its ability to dampen the boom vibrations commonly encountered when pumping concrete, regardless of delivery rate. While Putzmeister's Free Flow Hydraulics operating in a Closed Loop System already minimizes boom bounce, the addition of EBC makes controlling the movement of the end hose even easier.

When pumping without moving the boom, EBC dampens the vibrations once activated on the left-hand joystick.

Maintain Constant Heights

If the end hose is moved in a horizontal direction only, its height can remain constant during concrete placement – regardless of the angle of the truck (± 3 degrees). EBC even compensates for a changing concrete weight in the delivery line.

Select Maximum Height or Maximum Depth

EBC provides additional safety by enabling working range restrictions. This range will not be exceeded during subsequent concrete placement during a job, giving the operator one less thing to worry about.

Setting the lower limit:

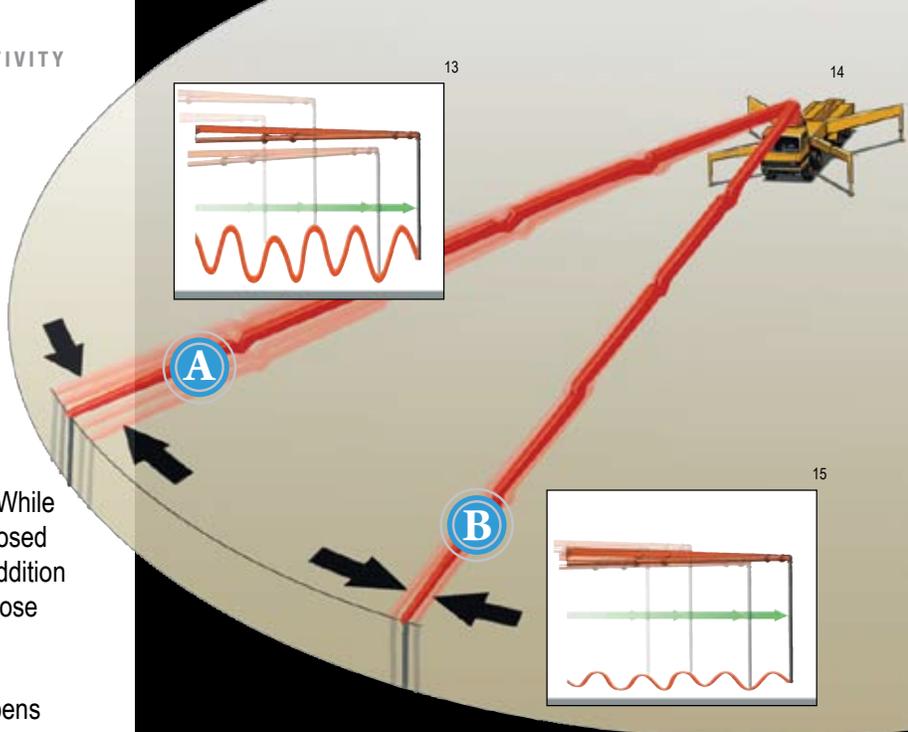
The boom tip is moved to the desired lowest position. Confirmation of the position with the remote control.

Setting the upper limit:

The boom tip is moved to the highest position and also confirmed with the remote control.

Moving in the defined working range:

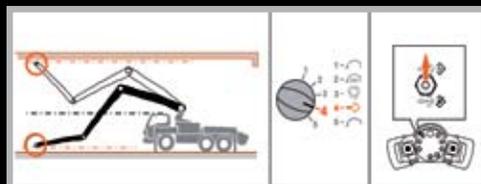
Once the upper and lower limits are defined, the boom always moves within these parameters. This reduces job site risks and prevents equipment damage.



- A Without EBC or dampening:** Stop-start movements when the boom is slewed occur and pump pulsations cause various degrees of deflection in the end hose.
- B With EBC and dampening:** EBC reduces the vertical movement of the boom to about 1/3 and also dampens the deflection of the end hose in all directions. On large booms, EBC also dampens slewing.

The Right Placement in Tight Spaces

Invaluable when placing concrete indoors or on space restrictive job sites, EBC can help an operator navigate the boom exactly where needed to complete the pour in the most effective way possible.





18



A quick plug-in connection activates Extended Range EBC for large roll-and-fold models. Simply moving the plug into the right receptacle returns the boom to routine operation.

19



Sensors on the boom cylinders work with the Ergonic system to control Extended Range EBC.

Extended Range EBC increases the boom articulation envelope from 120 degrees to a full 170 degrees, expanding the capabilities of the "A" section of the boom. This 61-Meter model is shown with both Extended Range EBC and One-Sided Support (OSS) outrigger system deployed.

EXTENDED RANGE EBC

Working Harder to Make Your Job Easier

Another benefit of EBC technology is a greater working range and enhanced job site maneuverability on Putzmeister's large roll-and-fold booms.

Extended Range EBC uses pressure transducers on the boom to monitor the forces on the "A" and "B" hydraulic cylinders, which have been calculated to maintain the machine's stability. The system will not allow the operator to position the boom in an unsafe working envelope. Redundant sensors are employed to prevent operation if a failure or an inconsistent reading occurs.

20



Extended Range EBC also works with our One-Sided Support (OSS) outrigger system. OSS allows the operator to reduce the machine's outrigger extension on one side, while operating within a defined working envelope.



ERGONIC AT YOUR FINGERTIPS

An Up Close Look at Remote Operation

Designed for maximum flexibility and with an ergonomic design and two joysticks, the Putzmeister radio remote control puts the convenience of the Ergonic system in the operator's hands. This includes setting EBC parameters for working range and boom speed, as well as locking the slewing gear and boom arms.

The centrally-located LCD display clearly provides real-time feedback of machine functions, including engine RPM, fluid temperature, hydraulic pressure, delivery rate, concrete pressure and volume limit. Radio remote signal strength and battery status are also shown.

Switching from EBC to conventional boom operation is simple, accommodating operator preferences depending on job site conditions. Putzmeister also provides a fully proportional cable remote if the radio remote cannot be used.

In Touch with an Operator's Needs

When EBC is activated, it is possible to control the boom with only one joystick. Combining Ergonic technology with the benefits of a fully proportional radio remote control, OneTouch™ offers a faster, easier and more convenient way to operate a concrete boom pump while increasing overall job site efficiency.

OneTouch enables the boom operator to automatically move all boom sections and slewing in tandem with a single joystick. In addition, the operator can maintain a consistent end hose level without the need for multiple controls. Simply select a height for the end hose and the system uses these distance parameters throughout the job for a smooth, uninterrupted concrete flow with virtually no boom bounce.

SEMI-AUTOMATIC UNFOLDING

Move the left-hand joystick forward or backward while in EBC mode to "semi-automatically" unfold and refold boom sections both safely and quickly.

Boom control: preferred position for first arm and last arm • Active boom damping • Fold boom in/out



Stop function

Antenna

Switch between boom/support outrigger control

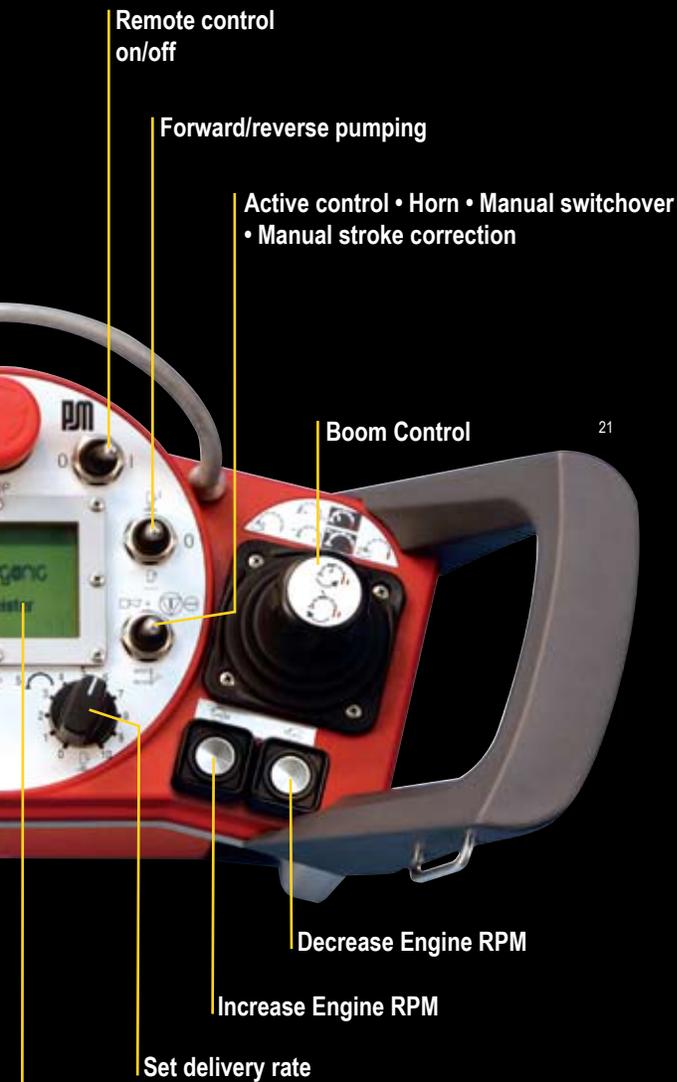
Engine stop

Engine start

Selector switch for EBC (See right column for details.)

Push-button/rotary controller for operating the display

Battery



Display:
View Engine RPM, concrete pressure/concrete pressure limit, delivery rate/delivery rate limit and fluid temperature.

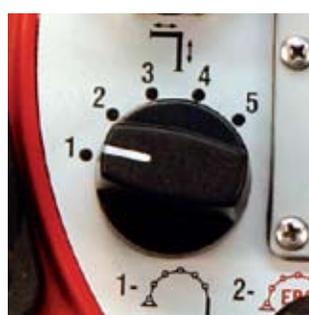
Set boom speed, preferred positions, upper and lower limit and slewing angle. Lock and release slewing gear and boom arms.

Turn on/off: EOC, vibrator, agitator, end hose squeeze valve.

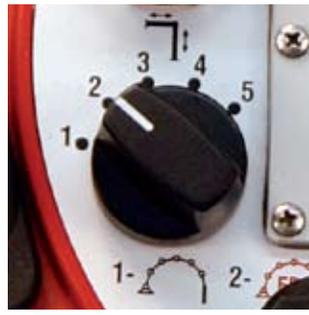
Many additional functions available. However, capabilities vary by model.

SMOOTH CONTROLS, SMOOTH OUTPUT
The right-hand side of the fully proportional joystick moves the boom smoothly and efficiently when placing concrete. Even with increased concrete weight in the delivery line, the end hose follows at a constant height. This minimizes end hose height fluctuations at the start of pumping. EBC also compensates for any vibrations that may occur to minimize boom bounce.

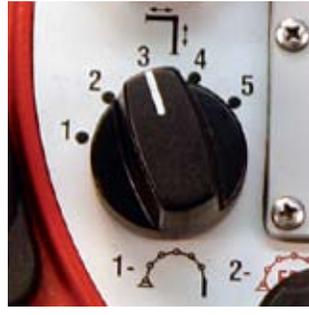
SELECTOR SWITCH POSITIONS AND FUNCTIONS



1 Individual axis operation (computer aided) with sensors



2 EBC operation



3 Semi-automatic folding in/out of the boom



4 Programming operation: working range restriction with EBC



5 Individual axis operation without sensors



EPS MANAGES THE PUMP & MAINTAINS PERFORMANCE

More Control, Less Work

The computer-aided Ergonic® Pump Control System (EPS) constantly monitors and regulates the operation of the concrete pump and the truck engine. This means more productivity and performance with less for the operator to worry about.

27



EPS has considerable advantages over conventional hydraulic controls.

- Electronic regulation of the concrete pump ensures the pump runs at peak performance.
- Delivery pressure, delivery rate of the hydraulic pump, hydraulic pressure and many other signals are perfectly coordinated. Conventional hydraulic control systems do not offer this level of control.
- Greater efficiency can be achieved as a result of fewer hydraulic components. With EPS, a computer handles the role played by valves, throttles and regulators. A limited number of hydraulic components are required, resulting in less energy loss in the system, which reduces wear and provides lower fuel consumption.
- Improved fill level of the concrete pump results in fewer strokes with the same output. This means less wear on the concrete pump and makes the pumping process significantly smoother.

28





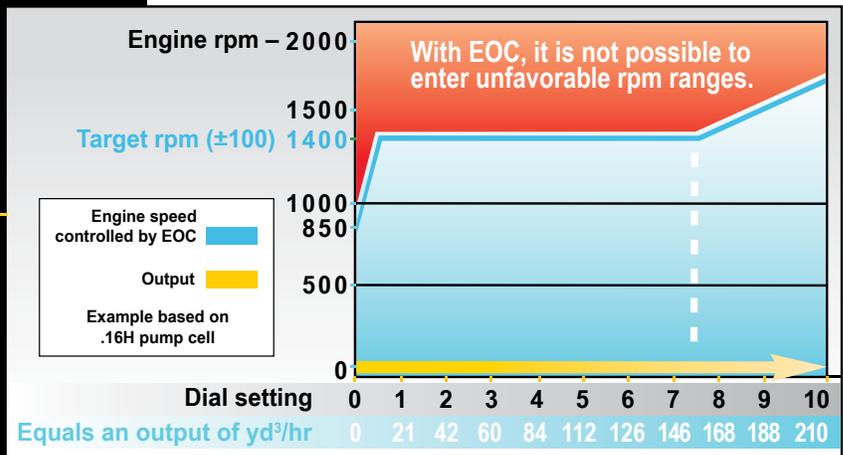
Delivery Rates from Zero to Maximum In One Turn

29



Electronics in the EOC system regulate the speed up to 75 percent of the maximum delivery rate to optimum fuel consumption. If a delivery rate above this level is selected, EOC increases the speed. However, the engine will not operate in a zone that cannot be controlled by EOC. It is not possible to set the full throttle engine speed and minimum delivery rate with EOC at the same time. If the boom is not moved and the pump is off, the speed drops back down to 850 rpm after 10 seconds.

30



Integral to EPS, Ergonic Output Control (EOC) reduces fuel consumption, wear and noise. EOC automatically adjusts the engine speed to the minimum required for the delivery rate specified with the “Delivery Rate” rotary knob on the remote control.

31



If you feel you need additional power for processes such as folding or unfolding the boom, simply increase the engine speed on the remote control using the “Increase Engine RPM button. When you use the “Delivery Rate” rotary knob again, EOC takes over and adjusts to your optimum speed.

In extreme situations, it may be necessary to pump small amounts of concrete with full pressure. EOC can be switched off at the control box or on the remote control.

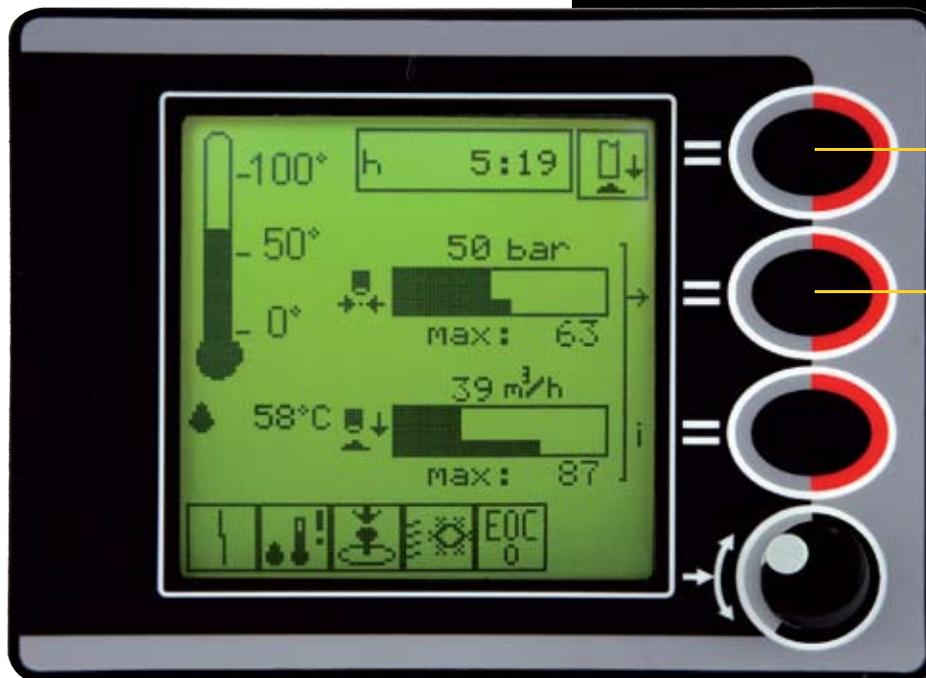


THE WINDOW TO EPS

Ergonic® Graphic Display (EGD)

Putting the operator in control of success, the Ergonic system features the Ergonic Graphic Display (EGD) a three-inch square LCD screen on the modular control box. When the equipment is on, the main menu shows:

- Hydraulic fluid temperature
- Operating hours
- Delivery pressure/delivery pressure limit
- Delivery rate/delivery rate limit



32

Simple to use, the EGD gives the pump operator a quick and clear visual display of important machine information as well as the ability to set individual pumping parameters.

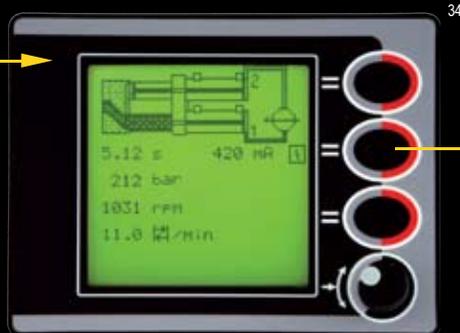
Because the system features the dual protection of electronic and hydraulic controls, the machine can continue to function even if a malfunction occurs. Should there be a need, service and maintenance technicians can access additional information from the EGD.



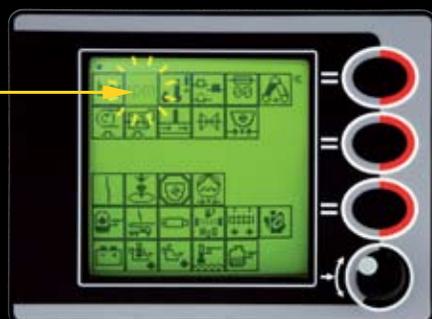
Concrete Pump Information at Your Fingertips

33

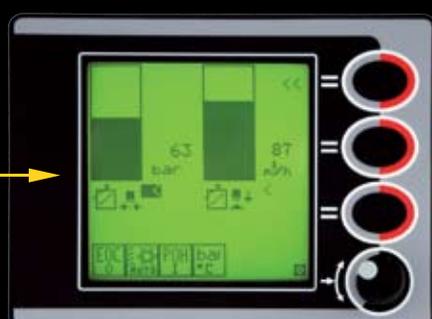
The display incorporates three keys and a rotary selection knob. The keys take you from the main menu to the individual sub-menus. By turning the rotary selection knob, you can highlight the individual symbols in the "Machine Status" menu and then press to select. In the "Pump Settings" menu, the limit and maximum values are set by turning the knob and confirmed by pressing it.



Pump Status



Machine Status



Pump Settings

Pump Status

The Pump Status screen shows an animation of the machine pumping in real time. In addition, operators can view pumping data, including hydraulic pressure, stroke time and engine RPM.

Machine Status

In the event of a fault, the appropriate symbol flashes. Sensors not impacting operational safety can be deselected for continued function in emergency operation mode. Faulty components can be located and replaced after the job is complete.

Pump Settings

The operator can adjust the pump to suit job requirements on the Pump Settings screen. This includes switching EOC on and off, limiting the delivery pressure and rate and adjusting the fan and Push Over Hydraulics (POH).



PUTZMEISTER IS THERE FOR YOU

Ergonic® Tele Service (ETS)

Technology is only as good as its ability to maintain and improve your productivity. This is where Ergonic, once again, offers advantages. If a problem occurs with your machine, the Putzmeister Customer Support Group can wirelessly access and troubleshoot remotely using Ergonic Tele Service (ETS).

ETS can display all Ergonic functions of the machine when the truck is in PTO mode. This includes boom positions and boom operating states on units with EBC, and data such as engine RPM and temperature. This ensures rapid resolution to system faults by a technician who knows your machine. Convenient serviceability keeps your Putzmeister concrete pump working harder and longer with reduced downtime.

37



38



39



While a Putzmeister service technician does not have to be on site to view and interact with your machine's Ergonic system, relevant data can be accessed by connecting the machine directly to a laptop computer. This enables software updates and new Ergonic modules to be installed very quickly.

40



Putzmeister offers several training tools and classes on both equipment and technology. This includes Ergonic Control Tools (ECT) software that facilitates setup and service performed by Putzmeister technicians.

PREPARED FOR PROGRESS

ERGONIC IS DESIGNED TO EMPLOY TECHNOLOGY NOW AND INCORPORATE FUTURE FUNCTIONALITY AS IT BECOMES AVAILABLE. IT MEANS YOUR EQUIPMENT WILL CONTINUE TO TAKE ADVANTAGE OF THE LATEST DEVELOPMENTS FROM PUTZMEISTER AND PROVIDE YEARS OF HIGH PERFORMANCE CONCRETE PUMPING.

Ergonic inside, Putzmeister's modular control box is future-ready for new technologies and software, as they become available. This includes Ergonic Variable Support Control (EVSC), which is currently under development.



Putzmeister

TECHNOLOGY THAT PUTS YOU FIRST

ergonomic SYSTEM ADVANTAGES:

Ergonic Boom Control (EBC)

- Accurate concrete placement with high output
- Reduced boom bounce
- Enhanced job site safety
- Improved ergonomics for the operator
- Precise vertical control of the end hose
- Efficiency and operational safety with semi-automatic folding
- Greater working envelope on roll-and-fold models

Ergonic Pump System (EPS)

- A smoother pumping process
- Reduced component wear
- Low fuel consumption
- Fully electronic control of the concrete pump
- Fewer hydraulic components
- Optimized output for greatest efficiency

Ergonic Tele Service (ETS)

- Fast and accurate system diagnostics
- Remote technical support
- Less boom pump downtime

For more information on the Ergonic system, please call **1-800-884-7210** or visit **www.putzmeister.com**. Operational details are outlined on the Boom Pump Quick Start Series DVD and in the operational manuals for applicable machines.

Putzmeister

Putzmeister America, Inc. Telephone (262) 886-3200
1733 90th Street (800) 884-7210
Sturtevant, WI 53177 USA Facsimile (262) 884-6338
www.putzmeister.com



42 Authorized Distributor

