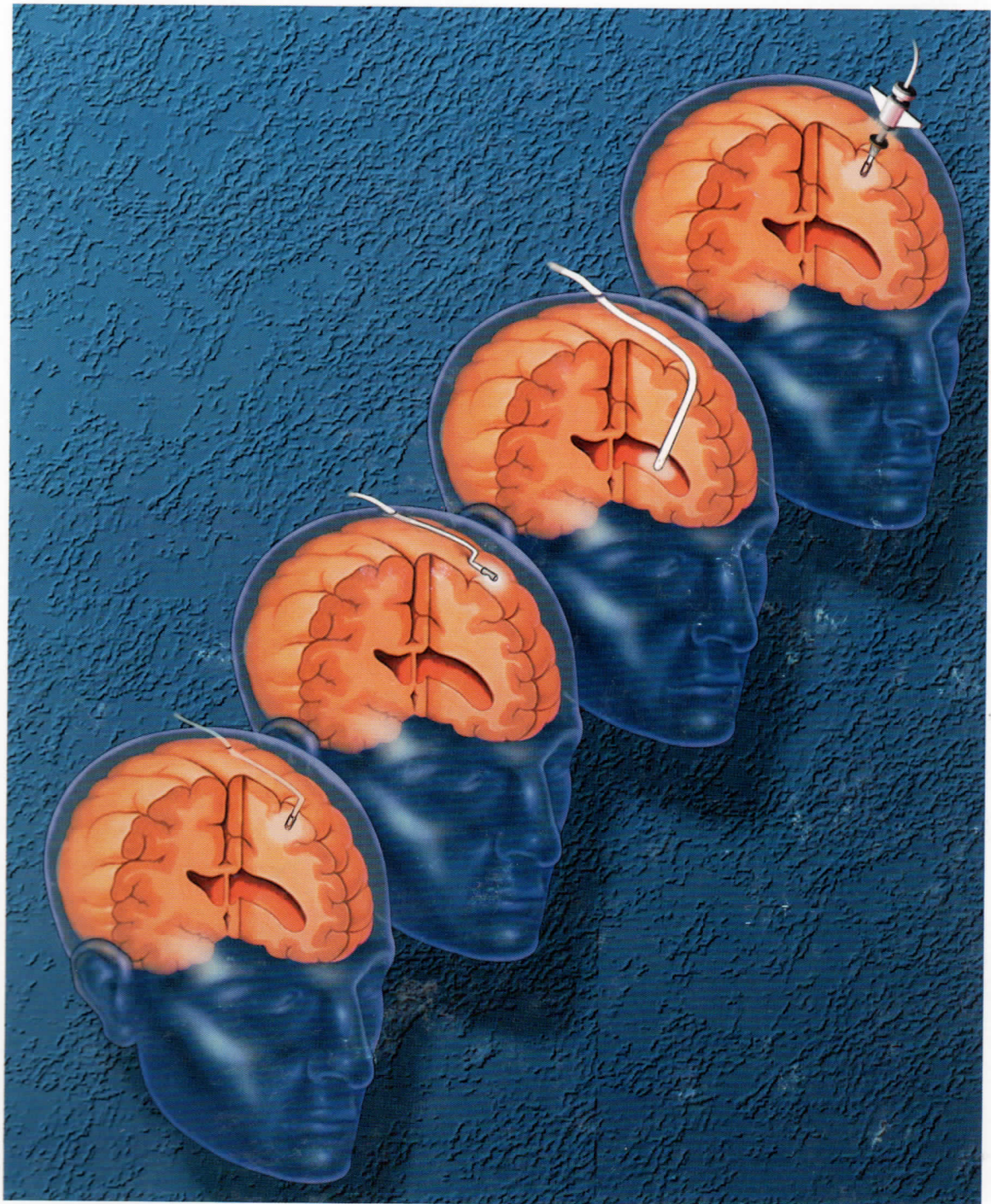


CODMAN[®] ICP MONITORING SYSTEM



Codman

BETTER DATA, BETTER DECISIONS...

THE CODMAN MICROSENSOR[®] ICP TRANSDUCER

The CODMAN MICROSENSOR ICP Transducer consists of a miniature strain gauge pressure sensor mounted in a titanium case at the tip of a 100cm flexible nylon tube. The MICROSENSOR monitors intracranial pressure directly at the source - subdural, parenchymal or intraventricular.

Information is relayed electronically rather than through a hydrostatic column or fiberoptics. The many features of the MICROSENSOR include:

ACCURACY

Various studies have been performed on the MICROSENSOR^{1,2,3}, demonstrating a high degree of accuracy in subdural, parenchymal and intraventricular ICP monitoring. The graphs in Figure 1 summarize the results from one of these studies³ and demonstrate a high correlation between the MICROSENSOR subdural, parenchymal and ventricular pressure versus standard ventricular fluid pressure as measured with an external transducer.

MINIMAL DRIFT

The stability of the MICROSENSOR has been tested in a variety of studies^{1,2,3}.

Stability Tests	
Time	Drift
4 Days	avg. $0.2 \pm .5$ mmHg
6 Days	avg. 0.75mmHg
9 Days	max. 1.0mmHg

One study showed a maximum drift of 1mmHg total over nine days of monitoring, with the majority of the sensors exhibiting no drift during the entire monitoring period¹.

HIGH FIDELITY

The fidelity of the MICROSENSOR is greater than 10,000Hz, allowing for excellent ICP waveform analysis. The MICROSENSOR fidelity was evaluated in a study demonstrating pulsatile characteristics of high fidelity and greater magnitude than corresponding ventricular pressure pulse³. The graphs in Figure 2 illustrate these results.

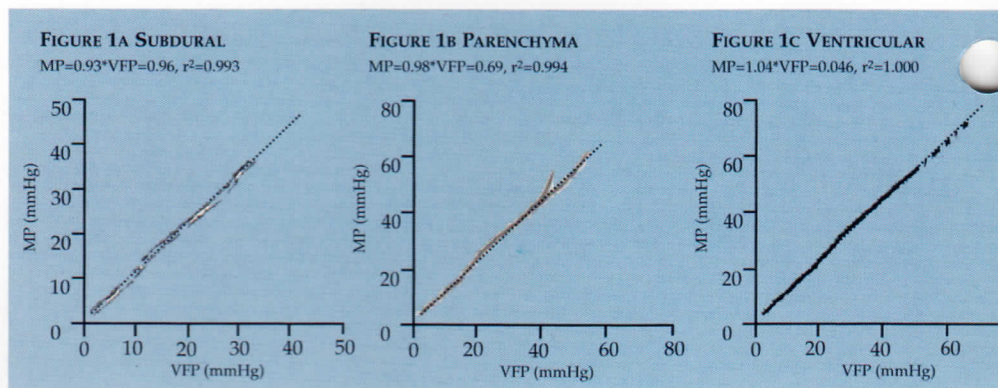


Figure 1: Comparison of MICROSENSOR pressure placed in the (a) subdural space, (b) parenchyma and (c) ventricular fluid pressure versus standard ventricular pressure as measured with an external transducer.

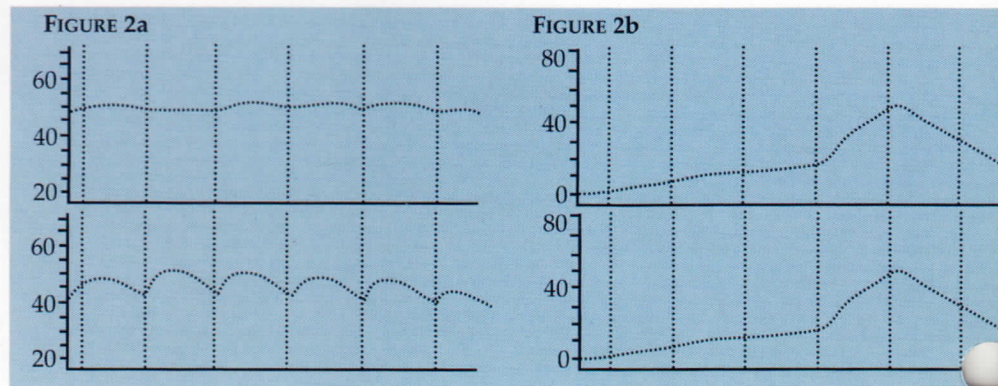
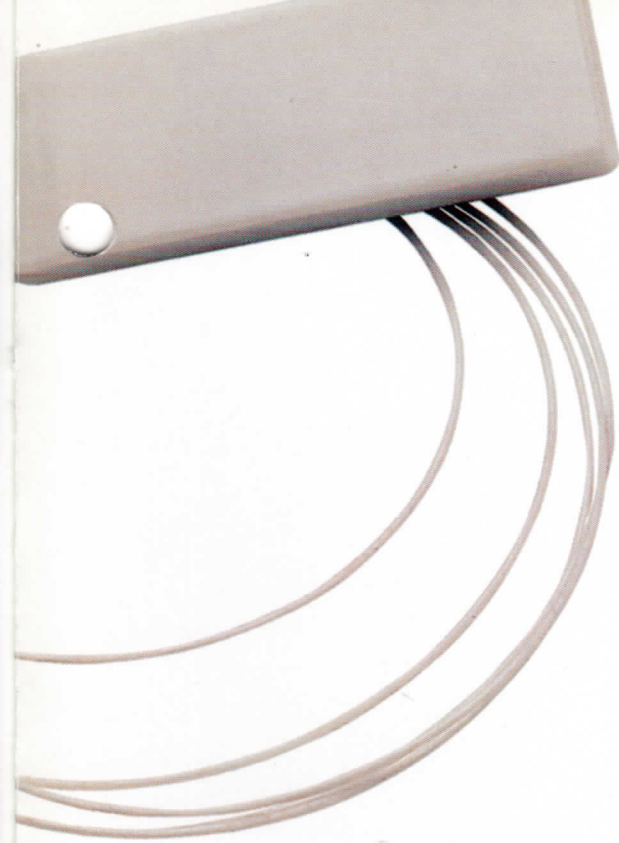


Figure 2: Pulsatile characteristics of the MICROSENSOR (MP) placed in brain tissue demonstrated high fidelity and greater magnitude than corresponding ventricular fluid pressure (VFP) pulse, indicating a wide dynamic range (Figure 2a). The similarity between VFP and pressure during a typical pressure cycle is shown above.



IN ADDITION, THE MICROSENSOR OFFERS:

DIRECT PRESSURE MONITORING AT THE SOURCE

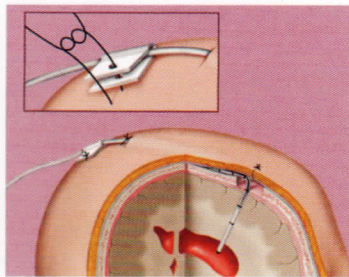
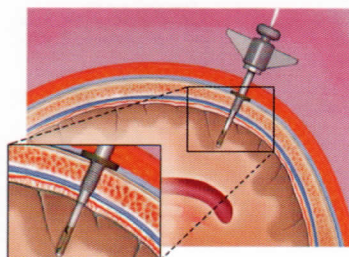
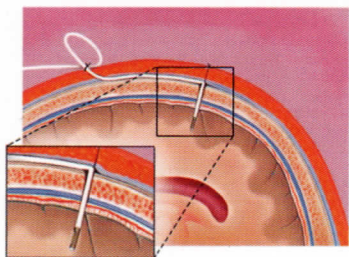
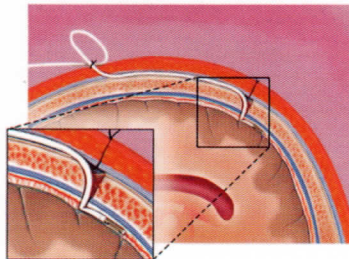
Several procedural kits are available, each offering direct monitoring at the source - subdural, parenchymal or intraventricular.

SMALL, FLEXIBLE AND LOW-PROFILE

The small size and flexibility of the MICROSENSOR nylon tubing allows for low-profile tunneling under the scalp and kinking of the nylon catheter without breakage or monitoring disturbance.

ELIMINATION OF MAINTENANCE REQUIREMENTS ASSOCIATED WITH FLUID COUPLED SYSTEMS

The MICROSENSOR eliminates the need for constant alignment of the transducer to the patient's head and periodic rezeroing. False readings associated with obstructions, air bubbles or movement of the patient fluid lines are no longer a concern.



COST-EFFECTIVENESS

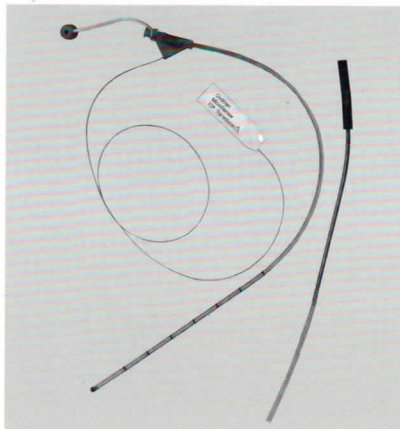
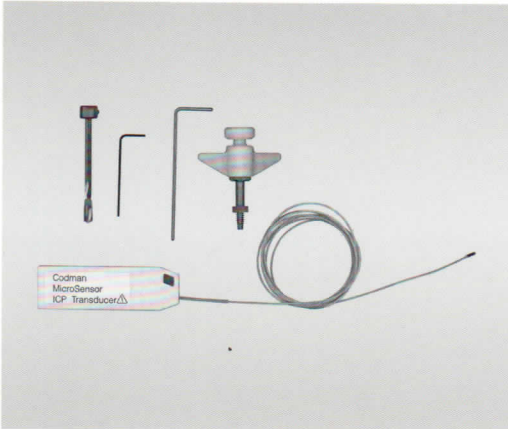
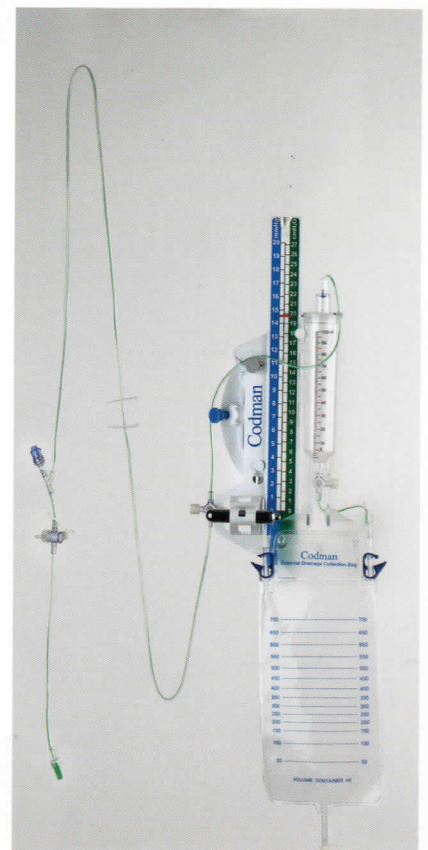
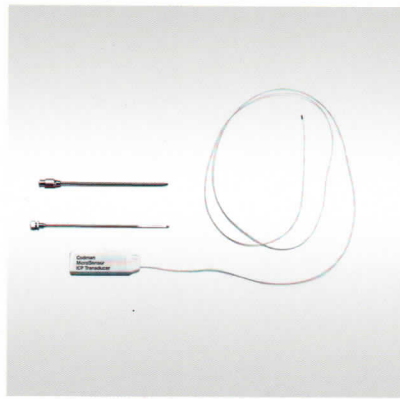
- Long-term accuracy and stability eliminates the need for system replacement due to drift.
- There is no costly system replacement due to breakage.
- Without fluid lines, the time required in the maintenance and troubleshooting of a fluid system is eliminated.

VERSATILITY

- The ICP EXPRESS[®] is a digital intracranial pressure monitor that also serves as an interface between the MICROSENSOR and patient monitors. Its one-touch key operation permits quick equipment setup for monitoring ICP.
- The ICP EXPRESS allows the MICROSENSOR to interface with a wide variety of patient monitors permitting movement of patients throughout the hospital.

ICP EXPRESS



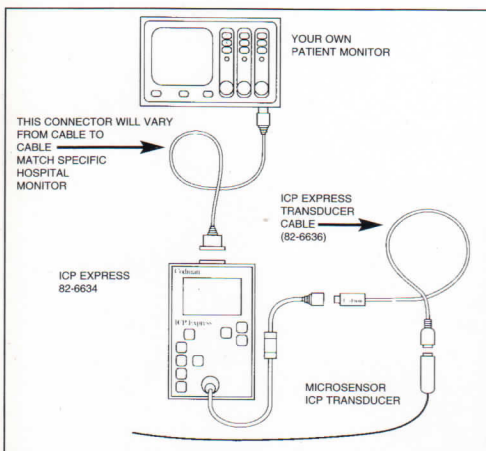


ORDERING INFORMATION

Installation programs are available through your sales representative

- | | | | |
|---------|--|---------|--|
| 82-6631 | CODMAN MICROSENSOR Basic Kit | 82-6614 | Codman Cranial Access Kit |
| 82-6638 | CODMAN MICROSENSOR Skull Bolt Kit | 82-6616 | Codman Cranial Access Kit (without drugs) |
| 82-6653 | CODMAN MICROSENSOR Ventricular Catheter Kit | 82-1731 | CODMAN EDS 3™ CSF Drainage System |
| 82-6634 | ICP EXPRESS 117v – includes one ICP EXPRESS with pole clamp and one ICP EXPRESS Transducer Cable | 82-1732 | CODMAN CSF Drainage System Replacement Collection Bags |
| 82-6635 | ICP EXPRESS I.E.C 230v – includes one ICP EXPRESS with pole clamp and one ICP EXPRESS Transducer Cable | 82-1733 | CODMAN EDS 3 Laser Leveling Device |
| 82-6636 | ICP EXPRESS Transducer Cable | | |

PATIENT MONITOR INTERFACE CABLES
To order cables for connection with your patient bedside monitors, contact your Codman Neuro Specialist sales representative.



Codman

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For more information, contact your Codman Sales Representative
325 PARAMOUNT DRIVE • RAYNHAM, MA 02767 • 508-880-
FOR PRODUCT INFORMATION, CALL: (800) 225-0460