

# Carestream INDUSTREX M37 *Plus* and M43ic Processors for Non-Destructive Testing

HIGH-PERFORMANCE PROCESSORS FOR NON-DESTRUCTIVE TESTING



Quality images, efficient output, energy and water savings.

**MEET TWO POWERFUL INNOVATIONS FOR PRODUCING HIGH-QUALITY NDT RADIOGRAPHS. CHOOSE THE INDUSTREX M43ic FOR HIGH-VOLUME OUTPUT OR THE INDUSTREX M37 PLUS FOR SPACE-SAVING DESIGN AND MID- VOLUME OUTPUT.**

These feature-rich processors include state-of-the-art microprocessor control, to automatically monitor and regulate:

- Developer temperature
- Drying temperature
- Developing time
- Replenishment rates

#### **FEATURES INCLUDE**

- Automatic stand-by mode for low water and power consumption, environmental friendly
- Filtered developer processing solutions
- High Capacity, ranging from 33-58 35cm x 43cm sheets/hour based on model
- Automatic tank solution replenishment. Microprocessor calculates amount of film entering processor based on the input of sensors; it then uses the data to precision-measure the replenishment fluid needed.
- Anti-oxidation standby mode. This function prevents oxidation and chemical breakdown by automatically injecting developer solution into the tank when unit is not in use.
- Superior film-drying system. Processors dry film thoroughly without the use of damaging infra-red technology.
- Specialized transport rollers protect film. Eliminate crystallization of chemicals on rollers, and minimize dirt and debris deposited on film. Processor rollers remain submerged in solution when not in use—keeping them clean and running smoothly.

## INDUSTREX M37 Plus Processor

The tabletop INDUSTREX M37 PLUS is ideal for automatic processing in mid-volume facilities. While compact, it offers the output you need and the excellent image quality and reliability you demand.

The new INDUSTREX M37 Plus film processor incorporates all the experience and features you've come to expect from the INDUSTREX line of products for NDT applications. The processor ensures totally automatic film handling and supports nine programmable-controlled processing channels that allows for flexibility in your day-to-day NDT film production.



#### **THE INDUSTREX M37 PLUS PROCESSOR FEATURE SET INCLUDES:**

- Ease of operation with nine programmable-controlled processing channels
- 43cm processing width
- Economical medium-range processor with capacity of 33 sheets/hour (35cm x 43cm) in the recommended processing cycle
- Compact design for smaller labs or environments
- Filtered developer solution that reduces film artifacts
- Intermediate rinse rack bath system
- Can be used in stand-alone darkroom or through-the-wall installations
- Automatic film-in detection utilizing a pulsed infra-red sensor bar
- Automatic replenishment system for developer and fixer
- Automatic heating for developer and fixer
- Automatic anti-oxidation and anti-crystallization cycles
- Separate drainage for developer, fixer and wash chemicals
- Factory fitted replenisher tank level control assemblies with a plug connection into the processor
- Incoming water temperature sensor - beeper alarm when wash water temperature is outside the programmed range
- Enhanced cold water cooling system
- Unit pre-configured with connection fittings to simplify installation of optional external chiller
- Automatic wash water top off at start-up

#### **STANDARD ACCESSORIES INCLUDE:**

- Two 30-liter replenisher storage tanks
- Light tight feed-tray cover
- Table stand
- Re-locatable controller unit for operator convenience
- Spare part kit

# INDUSTREX M43ic Processor

Designed for the needs of high-volume Non-Destructive Testing customers, the INDUSTREX M43ic provides multiple processing cycles and dry-to-dry processing in as little as five minutes.

This processor also comes standard with an integrated closed-loop chiller to ensure consistent temperature in hot environments or when water supply is not temperature controlled to further enhance capability and image quality in harsh NDT environments.

## THE INDUSTREX M43ic PROCESSOR HAS A ROBUST FEATURE SET THAT INCLUDES:

- Up to nine programmable-controlled processing channels for maintaining preferred settings such as processing speed, developer temperature, fixer temperature, dryer temperature and replenishment rates
- High processing capacity of up to 58 sheets/hour (35cm x 43cm) in the recommended processing cycle for improved productivity
- An intermediate fix rinse system that enhances process uniformity to both sides of the film
- Feed-tray cover that allows for room light operation
- Filtered developer solution that reduces film artifacts
- Integrated chiller unit that maintains developer temperature uniformity in hot environments
- Two 50-liter replenisher storage tanks
- Low level monitoring of all tank solutions
- Automatic tank solution “Top-Up” control that maintains correct solution levels upon processor start up
- Work-in-progress monitoring
- Integrated connectors to an external exhaust air system



### INTERFACE DISPLAY

The units' intuitive keypad interface simplifies operation, and allows new users to become experts in a hurry. Touch a few buttons, and you can preprogram up to nine different settings to automatically accommodate your most frequent applications. Install these processors for free-standing operation in darkroom or for convenient through-the-wall feeding—load exposed film in darkroom, collect processed films in normal room light.

# INDUSTREX M37 Plus and M43ic Processors Specifications

| Category Group              | Standard Specifications                         | M37 Plus<br>(Material no. 5314620)  | M43ic<br>(Material no. 5147814)   |
|-----------------------------|---|---|---|
| <b>Application</b>          | Unit Description                                | Table-top, medium capacity general NDT radiography  | Floor-standing, high capacity general NDT radiography   |
|                             | Site application                                | Intended for fixed laboratory installation<br>(Not recommended for mobile lab applications)   | Intended for fixed laboratory installation<br>(Not recommended for mobile lab applications)   |
| <b>Film</b>                 | Film format types                               | Rolls & Cut sheets of NDT x-ray films   | Rolls & Cut sheets of NDT x-ray films   |
|                             | Recommended development time & temperature      | 110 sec development time (22 cm/min) @ 28° C  | 100 sec development time (39cm/min) @ 26°C  |
|                             | Film sheets processing capacity/hour (35x43 cm) | 33 sheets/hr @ 110 sec recommended development time   | 58 sheets/hr @ 100 sec recommended development time   |
|                             | Film thickness                                  | 0.10 mm-0.18 mm   | 0.10 mm-0.18 mm   |
|                             | Material length (minimum)                       | 10 cm minimum   | 10 cm minimum   |
|                             | Material width                                  | 7.0 cm-43.0 cm Note: For multi-loading of narrow width films, feed tray loading guides are required for film widths 70mm-100mm and are available from the OEM as an accessory | 7.0 cm-43.0 cm Note: For multi-loading of narrow width films, feed tray loading guides are required for film widths 70mm-100mm and are available from the OEM as an accessory |
| <b>Time/speed</b>           | Cycle time (dry to dry) (min)                   | 3.9-11 min (7 min @ 110 sec. recommended development time)  | 2.1-12.6 min (8 min @ 100 sec recommended development time)   |
|                             | Intake speed (cm/min)                           | 39.6-14 cm/min (22 cm/min @ 110 sec. recommended development time)  | 128-22 cm/min (39 cm/min @ 100 sec recommended development time)  |
|                             | Time in developer (sec)                         | Range: 60-170 sec (22 cm/min @ 110 sec recommended dev time)  | Range: 60-184 sec (39 cm/min @ 100 sec recommended dev time)  |
| <b>Transport</b>            | Developer to Fixer crossover style              | Water rinsed crossover rollers to minimize carryover of developer into fixer  | Fixer spray bar style crossover   |
| <b>Processing Solutions</b> | Adjustable Replenishment rates                  | Yes, set in ml/m <sup>2</sup> of film processed   | Yes, set in ml/m <sup>2</sup> of film processed   |
|                             | Cooling liquid                                  | Incoming cold water supply  | 2.5 L chiller fluid   |
|                             | Cooling system                                  | Enhanced incoming cold water cooling system Note: Requires incoming water supply with temperature range of 7°C-15°C. ★  | Integrated internal chiller with closed loop cooling system (Included accessory)  |
|                             | Chiller connectivity                            | Unit is adapted with double cooling system for ease of use with external chiller accessory (not included) ★   | N/A (chiller built in)  |
|                             | Replenisher tanks                               | 2x30 liter w/dust cover lids and floating lid for developer tank  | 2x50 liter/dust cover lids and floating lid for developer tank  |
|                             | Low Replenisher tank solution alarm             | Yes ★   | Optional accessory ordered from OEM   |
|                             | Replenishment type                              | Automatic IR scanning sensor based on film area   | Automatic IR scanning sensor based on film area   |
|                             | Solution filter elements                        | Developer filter  | Developer filter  |
|                             | Solution Heating (developer and fixer)          | Adjustable in a range of 18°C-43°C (separate in-line 350W heaters)  | Adjustable in a range of 18°C-43°C (separate in-line 350W heaters)  |
|                             | Solution level monitoring                       | Yes, wash tank standard on M37 Plus unit  | Yes, with automatic top off at start up of developer, fixer and wash tanks  |
| <b>Developer</b>            | Developer tank size                             | 7.5 L (including developer filter system)   | 13.4 L (including developer filter system)  |
|                             | Developer tank recirculation pump               | Yes   | Yes   |
| <b>Fixer</b>                | Fixer tank size                                 | 6.7 L   | 13.3 L  |
|                             | Fixer tank recirculation pump                   | Yes   | Yes   |
| <b>Wash</b>                 | Wash tank feature                               | Enhanced high-power wash rack water injection system for improved archival capability ★   | Deep-tank design for enhanced washing and archival keeping capability   |
|                             | Wash temperature sensor                         | Incoming water temperature sensor ★   | No  |
|                             | Wash tank level sensor                          | Low level wash tank monitoring sensor ★   | Low level wash tank monitoring sensor   |
|                             | Wash tank recirculation pump                    | Yes ★   | No  |
|                             | Wash Water tank size                            | 6.6 L   | 11.5 L  |
|                             | Wash water reduction system                     | Water used only on demand. 2.5 L/min during process cycle   | Water used only on demand. 2.5 L/min during process cycle   |
| <b>Dryer</b>                | Incoming water supply                           | Incoming water supply must be filtered. Supplied by user at installation.   | Incoming water supply must be filtered. Supplied by user at installation.   |
|                             | Dryer range                                     | Adjustable in a range 18°C-60°C   | Adjustable in a range 18°C-60°C   |
|                             | Dryer type                                      | Warm air  | Warm air  |
|                             | Integral warm air exhaust port                  | Yes. Note: A ventilation duct exhaust booster fan (not included) is necessary to ensure proper air flow through the unit. Supplied by user at installation                    | Yes. Note: A ventilation duct exhaust booster fan (not included) is necessary to ensure proper air flow through the unit. Supplied by user at installation                    |
| <b>Operation</b>            | Number of programming channels available        | 9 Operating Channels (Channels 1-4 pre programmed with standard processing parameter values)  | 9 Channels (Channel 1 is pre programmed with standard process cycle recommendations)  |
|                             | Automatic cleaning cycle                        | Yes   | Yes   |
|                             | Feed tray cover                                 | Included  | Included  |
|                             | Film feed signal                                | Yes   | Yes   |
|                             | Rack drip tray                                  | Included as standard  | Included as standard  |
|                             | Relocatable control panel unit                  | Yes   | Yes   |
|                             | Spare parts kit                                 | Small parts kit included as standard  | Small parts kit included as standard  |
| <b>Electrical</b>           | Power requirements                              | 230VAC +/-10%, 50-60hz single Phase, 13A, 2.0kW   | 230VAC +/-10%, 50-60hz single Phase, 16A, 3.6KW   |
| <b>Environmental</b>        | Automatic standby                               | Yes, power and wash water savings   | Yes, power and wash water savings   |
| <b>Installation*</b>        | Installation configuration options              | Free-standing with included table stand or through-the-wall   | Free-standing floor model or through-the-wall   |
|                             | Processor stand                                 | Included as standard  | N/A   |
| <b>Weight</b>               |   | Empty: 154kg, with solution: 174kg  | Empty: 177 kg, with solution: 215 kg  |
| <b>Safety</b>               | Emergency shut off switches                     | Yes, mainframe mounted with remote interlockwith top cover safety switches  | Yes, mainframe mounted safety switch with top cover safety switches   |
| <b>Other Features</b>       | Anti-oxidation/cleaning programming             | Yes   | Yes   |
|                             | Precision speed control                         | Yes, motor tachometer pulse regulation  | Yes, motor tachometer pulse regulation  |
|                             | Developer Filter change prompt                  | Yes   | Yes   |
|                             | Processor Monitoring                            | Yes, operator displays w/ audible alerts  | Yes, operator displays w/ audible alerts  |

 \* (Note: recommended that only factory trained Service Engineer install unit.) ★ Unique feature to Carestream