L&W AUTOLINE

L&W Autoline Profiler

OPERATING INSTRUCTIONS
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SAFETY INFORMATION

All personnel that use and maintain this system must have the necessary knowledge and training to minimize risk of injury and damage.

All adjustments, settings, calibration routines and service not described in this manual must be performed by ABB specialist-trained personnel.

All covers must be in place during normal operation. The equipment has moving parts that are operated pneumatically and/or electrically. Incorrect handling can cause serious injury by pinching and cutting.

Always read the instructions carefully before operating the equipment. Any use other than described in this manual is to be considered as misuse. The following notations are used to emphasize important and critical instructions:

<table>
<thead>
<tr>
<th>NOTE</th>
<th>This label is used for instructions that are important but not related to hazards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING</td>
<td>This label is used to indicate potential risk of severe injury or damage if the warning is ignored.</td>
</tr>
</tbody>
</table>

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1 Introduction

L&W Autoline is a complete system for fast and accurate paper quality measurements. It is mainly used in paper mills, but also at pulp mills, R&D centers, converting and more. Several testing modules are available and L&W Autoline is configured to suit the paper grades produced. L&W Autoline is mainly designed to test cross-direction profiles, but testing machine direction profiles and smaller sheets is also possible. The operator simply inserts the sample and the system swiftly performs everything, from sample preparation to final reel report. Sample cutting, measurements, data storage, compiling reports and information distribution are accomplished without operator involvement. Each module that can be included in L&W Autoline has its own operating instructions.

The operating instructions in this manual apply to L&W Autoline Profiler (601), which is the base unit for automatic measurement of profile strips, performed by measuring modules in the system.

A variety of modules can be inserted into the unit to obtain the desired functionality for different customers.

L&W Autoline Profiler feeds the sample throughout the system, and supplies electrical power and compressed air to the measuring modules mounted in the system. The Autoline PC software communicates with the respective module’s control board. The Autoline PC software controls the feed mechanism for the sample, the various modules, and collects and processes the measurement results.

1.1 Measurement method

L&W Autoline Profiler measures various properties of profile test strips, taken across the machine direction. The test strips should be prepared with one of the recommended devices, such as L&W Profile Sample Cutter (Code 148) or L&W Sample Trimmer (Code 149) with the following measurements:

<table>
<thead>
<tr>
<th>Sample type</th>
<th>Width</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip</td>
<td>297–302 mm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

A test is performed as follows:

1. The sample strip is put in the sample holder on the left side of L&W Autoline Profiler.
2. The sample strip is put in parallel with a paper straightener and fastened with a clamp.
3. The clamp feeds the front edge of the sample strip into the system. When a measurement is started, the clamp feeds the strip to the first measurement position.
4. Measurement and feeding of the sample strip are done automatically, in accordance with the selected measuring program.
5. When all measurements on the strip are completed, the strip is discharged from the system.

A second sample strip can be queued during measurement. During a measurement of a strip, the next strip can be prepared.
2 System description

Front view

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sample holder</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Touch-screen on adjustable arm</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Top hood, for ABB certified service</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>Transparent front cover</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>Doors</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>Adjustable foot (total of two)</td>
<td>14</td>
</tr>
<tr>
<td>7</td>
<td>Lockable wheel (total of four)</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>Air nozzle (not shown in the illustration)</td>
<td></td>
</tr>
</tbody>
</table>
Side view

1  LAN – Service
2  LAN – Instrument
3  Air inlet
4  Power supply
### 3 Installation

L&W Autoline Profiler must be installed in an air conditioned laboratory and must be connected to compressed air and electric power supplies. The system can also be connected to an external network to transmit measurement data, and to download grade and measurement series definitions.

### 3.1 Connections

Connections for AC power and compressed air are located at the left side of L&W Autoline Profiler. For more information, see 3.2 Connecting the AC power and 3.3 Connecting the compressed air supply.

### 3.2 Connecting the AC power

**NOTE**
This must be prepared according to local regulations.

Connect L&W Autoline Profiler to the AC power supply at a central socket. Ensure that the following conditions are met before connections are made:

- The power supply voltage is in accordance with the rating plate on the equipment.
- The power supply is connected to a residual-current device.
- The power supply cable is sufficiently long to enable the system to be rolled out at least 1 meter away from the nearest wall.
- The power supply is well stabilized and transient-free with protective earth.

### 3.3 Connecting the compressed air supply

Connect the system to a supply of filtered and dry compressed air at a pressure of 0.6–1.0 MPa. The rated air consumption is 1000 Nl/min. Ensure that the supply hose is sufficiently long to enable the system to be rolled out to a distance of at least 1 meter from the nearest wall.

To ensure reliability and proper system functions, the recommended air quality should correspond to ISO 8573-1 Class 2-4-3.

Regulators with pressure gauges, filter and compressed air main valve are located on the inside of the door at the far left of the system.

#### 3.3.1 Main valve

From the main valve, the compressed air flows to a regulator with the filter and water collector. The regulator is to be preset to approximately 0.6 MPa.

The compressed air supply can be shut off from the main valve. When the valve is closed (OFF), the air system in L&W Autoline Profiler is not pressurized.

#### 3.3.2 Paper feed pressure

The air that actuates the paper feed pressure roller is controlled by a separate regulator. For thin paper grades, set the pressure to a minimum of 0.2 MPa. The end feeding wheel contact pressure is adjusted by the air pressure regulator. For thicker grades, increase the pressure until reliable feed is obtained.
### 3.3.3 Measurement air

The compressed air is used as measurement air in the system to measure the roughness and air permeance is filtered in an additional fine filter.
4  Operating the system

4.1 Using the main ON/OFF switch

When the system is turned OFF, the whole system is shut down.
To turn the system on or off, use the ON/OFF switch.

4.2 Using the emergency stop

NOTE
The emergency stop must only be used to prevent injury.

The emergency stop shuts off the power supply to L&W Autoline Profiler, together with the compressed air supply to some of the instruments.
To use the emergency stop, push the red knob.
To reset the emergency stop:
1. Turn the red knob so that the middle part becomes green.
2. Wait a while until the system is ready.

4.3 Software

All operator interactions with the instruments are done from the touch-screen.
All measurements are automatic.

The touch-screen is divided into three parts (from top to bottom):

- **Advanced functions and system configuration**, see 4.3.1 Advanced functions and system configuration
- **Quality data manager** – Displays the submenus and measurement results
- **Testing field** – Displays the ongoing and prepared tests. This field includes two symbols:
  - +  is used to create a measurement profile and start measurements, see 4.4 Testing.
  - -  is used to apply filters for the measurements, see 4.5 Preparing a test.
4.3.1 Advanced functions and system configuration

The following is included:

<table>
<thead>
<tr>
<th>Menu</th>
<th>Submenu</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Views</td>
<td></td>
<td>To display a nomenclature summary and various types of reports:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CD numeric</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CD graphs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Trends, numeric</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Trends, graphs</td>
</tr>
<tr>
<td>Manage</td>
<td>Accounts</td>
<td>To add, change or remove users, and to change passwords</td>
</tr>
<tr>
<td></td>
<td>Instruments</td>
<td>To display all instruments and to add, edit, disable and remove instruments</td>
</tr>
<tr>
<td></td>
<td>Instrument types</td>
<td>To display all included instruments and to edit or remove commands</td>
</tr>
<tr>
<td></td>
<td>Programs</td>
<td>To display all programs and to add, edit, disable and remove programs</td>
</tr>
<tr>
<td></td>
<td>Paper machines</td>
<td>To display all paper machines and to add, edit, disable and remove paper machines</td>
</tr>
<tr>
<td></td>
<td>Properties</td>
<td>To display all properties and their values for the included instruments</td>
</tr>
<tr>
<td></td>
<td>Import properties</td>
<td>To display properties for the included instruments</td>
</tr>
</tbody>
</table>

4.3.2 Accessing an instrument

To access an instrument:

1. Select
2. Select the applicable instrument name, for example Autoline Tensile.
   The main menus for the instrument are displayed:

<table>
<thead>
<tr>
<th>Menu</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument info</td>
<td>To display information for the instrument</td>
</tr>
<tr>
<td>Check</td>
<td>To display instrument-specific options for the instrument</td>
</tr>
<tr>
<td>Notes</td>
<td>To display notes made for the instrument</td>
</tr>
<tr>
<td>Status log</td>
<td>To display status log for the instrument</td>
</tr>
</tbody>
</table>

3. Select Check.
   The transparent front cover goes up and the instrument-specific options are displayed.

4.4 Testing

NOTE
To avoid that the paper gets stuck, ensure that strips of heavier grades have no excessive curl.

The universal sample holder, on the left side of L&W Autoline Profiler, can be configured in several ways to work with many different paper grades.
4.4.1 Testing a profile strip

To test a profile strip:

1. Place the rolled-up sample strip (297–302 mm wide) in the sample holder, so that the top side of the strip faces upwards when the front edge is fed into the system.

2. Put the strip between the edges of the feeding table.

3. Align the sample against the front edge towards you and fasten it in the clamp. Ensure that the strip is straight and securely fastened in the clamp, otherwise the paper can get stuck during the test.

4. Select \[ + \] on the touch-screen to create a measurement profile.

5. Enter information for the paper machine, the reel number, and the measuring program.

6. Select \textbf{Create} when ready.

   Information about the measurement profile is displayed.

7. Select \[ \text{Start measuring} \] to start the test.

   The clamp feeds the strip to the first measurement to be done in accordance with the selected measuring program. The front edge of the strip is then drawn by the clamp, between the instruments through the system.

   When the test is completed, the strip is discharged from the system. It is recommended to place a collecting container at the right-hand end of the bench to collect the tested strips.

4.5 Preparing one or more tests

Several tests can be prepared or transferred to the PC and displayed in the Testing field.

To prepare one or more tests:
1. Select on the touch-screen to create a measurement profile.
2. Enter information for the paper machine, the reel number, and the measuring program to be used for the test.
3. Select Create when ready.
   Information about the measurement profile is displayed.
4. Repeat steps 1–3 for each other test you want to prepare.

### 4.5.1 Example with available options

The following illustration shows an example of the Testing field when one test is in progress, while three other tests have been prepared in the software.

The available options are as follows:

<table>
<thead>
<tr>
<th>Option</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the Queue function.</td>
<td>See 4.5.2 Using the Queue function.</td>
</tr>
<tr>
<td>Use the Pause function.</td>
<td>See 4.5.3 Using the Pause function.</td>
</tr>
<tr>
<td>Use the Filter function.</td>
<td>See 4.5.4 Using the Filter function.</td>
</tr>
<tr>
<td>Prepare one or more tests in the software.</td>
<td>See steps 1–3 above.</td>
</tr>
<tr>
<td>Wait until the ongoing test is completed.</td>
<td></td>
</tr>
</tbody>
</table>

### 4.5.2 Using the Queue function

You can in advance prepare a test and start it before an ongoing test is completed. You can also remove a test that has been prepared.

To use the Queue function:

1. Prepare a test, see steps 1–3 above.
2. During an ongoing test, prepare a new sample strip according to step 1 in 4.4.1 Testing a profile strip.
3. Wait until the ongoing test is almost completed and the clamp is moved to the feeding table.
4. Feed the strip under the clamp.
5. Select for the new test.

To remove a test that has been prepared in the software, select Remove from queue.

### 4.5.3 Using the Pause function

You can always pause or stop an ongoing test.

To use the Pause function:
1. Select \( \text{II} \) to pause the ongoing test. The transparent hood goes up.

2. In the new window that is displayed, select Continue to continue the test or Cancel to stop the test.
   If you select Cancel, the sample strip is fed through the system and then discharged from the system.

### 4.5.4 Using the Filter function

You can filter which paper machine and/or measuring program to use for a prepared test. You can also remove a filter for a test.

To use the Filter function:

1. Select \( \downarrow \)
   The symbol becomes blue, indicating that the filter is activated.

   **Start measuring** symbols disappear from the Testing field if the corresponding tests do not fulfil the filter criteria.

To remove a filter, select \( \uparrow \) > Clear filter.
5 Maintenance

During normal operation, all modules in the system are covered by a transparent front cover, which is locked for safety reasons. When opened, the automatic instrument air supply to the instrument is shut off.

NOTE
Carefully read the SAFETY INFORMATION in the beginning of this manual.

5.1 Maintenance intervals

It is recommended to check the instrument regularly. The maintenance interval depends on environmental conditions and usage. For specific recommendations, contact your local ABB support for Lorentzen & Wettre products.

<table>
<thead>
<tr>
<th>Recommended interval</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>When necessary</td>
<td>Clean the transparent front cover with a damped microfiber cloth. Do not use any solvent or alcohol.</td>
</tr>
<tr>
<td></td>
<td>See 5.2 Raising and lowering the transparent front cover.</td>
</tr>
<tr>
<td></td>
<td>See 5.3.1 Using the air nozzle.</td>
</tr>
<tr>
<td></td>
<td>See 5.3.2 Cleaning the clamp</td>
</tr>
</tbody>
</table>

5.2 Raising and lowering the transparent front cover

All control of the transparent front cover over the measuring modules must be done using the touch-screen.

5.3 Cleaning the system

5.3.1 Using the air nozzle

A cleaning air nozzle is connected on the left side behind the front doors. The nozzle is provided to clean the optical sensors of the system, PPS measuring heads, reference films, and so on.

To open the nozzle, bend the tip down. To close it, release the tip.
5.3.2 Cleaning the clamp

Some paper grades can result in deposits accumulating on the belt, causing the samples to slip. If this occurs, use the air nozzle to clean the clamp.

5.4 Moving the system

If the system needs to move a short distance, use the wheels.

**NOTE**
Use the wheels only for short distances on a smooth surface.

L&W Autoline Profiler has four wheels and two feet. To gain access to the rear of the system, for example, raise the two adjustable feet at the front and then move the system a short distance if needed. A 17 mm wrench is included in the case.

During measurements the system must stand on its two feet. After the system is moved, check that it is level. If necessary, adjust the feet.
## 6 Troubleshooting

<table>
<thead>
<tr>
<th>Issue</th>
<th>Possible cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit does not respond (or similar)</td>
<td>Communication problem or software-related issue</td>
<td>Most faults can be solved by rebooting the complete unit, by switching it off and on with the power button.</td>
</tr>
<tr>
<td>System is down</td>
<td>Emergency stop is not reset</td>
<td>Check the emergency stop.</td>
</tr>
<tr>
<td>System is down</td>
<td>Fuses are faulty</td>
<td>Contact a certified ABB Lorenzen &amp; Wettre service technician.</td>
</tr>
<tr>
<td>Paper jam</td>
<td>Paper is stuck in the system</td>
<td>Remove or adjust the paper.</td>
</tr>
<tr>
<td>Transparent front cover moves too fast or too slow</td>
<td>Setting of the front cover speed is incorrect</td>
<td>Adjust the speed with the four knobs on the panel behind the left door.</td>
</tr>
<tr>
<td>End wheel does not work as expected</td>
<td>End wheel is dirty</td>
<td>Clean the end wheel and adjust the pressure.</td>
</tr>
<tr>
<td>Middle part of the emergency stop does not become green when the knob is turned</td>
<td>System is not ready yet</td>
<td>Wait until the system is ready.</td>
</tr>
<tr>
<td></td>
<td>Knob is faulty</td>
<td>Contact a certified ABB Lorenzen &amp; Wettre service technician.</td>
</tr>
</tbody>
</table>
# Technical specification

<table>
<thead>
<tr>
<th>L&amp;W Autoline Profiler – Code 601</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
</tr>
<tr>
<td>Inclusive</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Rated voltage</td>
</tr>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Rated power</td>
</tr>
<tr>
<td>Instrument air</td>
</tr>
<tr>
<td>Rated air consumption</td>
</tr>
<tr>
<td>IP rating</td>
</tr>
</tbody>
</table>
8 Accessories

Case with accessories for L&W Autoline Profiler:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adapter ½&quot; to 10 mm</td>
</tr>
<tr>
<td>2</td>
<td>Wrench 17 mm</td>
</tr>
<tr>
<td>3</td>
<td>Glass fuses 2A and 5A</td>
</tr>
<tr>
<td>4</td>
<td>O-rings</td>
</tr>
<tr>
<td>5</td>
<td>Fuse for PF4 2A</td>
</tr>
<tr>
<td>6</td>
<td>Allen key set</td>
</tr>
<tr>
<td>7</td>
<td>Bits holder</td>
</tr>
</tbody>
</table>
Waste Electronics and Electrical Equipment (WEEE)

This product is labelled with this symbol in accordance with European Directive 2012/19/EU, to indicate that it must not be disposed with your other household waste. Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

In the European Union
Please contact your local ABB representative who will inform you about the take-back of the product. Small products (and small amounts) might be taken back by your local collection facilities.

In countries outside the European Union
Please contact your local authorities and ask for the correct method of disposal.

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