Micro Motion Study
Micro motion study is the study of fundamental element or subdivision of an operation by means of a motion picture camera and a timing device which accurately indicates the time interval on motion picture film.

Micro motion study provides a valuable technique for making minute analysis of those operation that are short in cycle contain rapid movement and involve high production over a long period of time. For example, Sewing of garment, assembly of small parts.
On analysing the result of several motion studies conducted, Gilbreths concluded that any work can be done by using a combination of some or all of 17 basic motions, called Therbligs (Gilbreth spelled backward). These can be classified as effective therbligs and ineffective therbligs. Effective therbligs take the work progress towards completion. Attempts can be made to shorten them but they cannot be eliminated. Ineffective therbligs do not advance the progress of work and therefore attempts should be made to eliminate them by applying the Principles of Motion Economy. Table gives different therbligs along with their symbols and descriptions.
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Code</th>
<th>Name</th>
<th>Description</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SH</td>
<td>SEARCH</td>
<td>Locate and article</td>
<td>Black</td>
</tr>
<tr>
<td>2.</td>
<td>F</td>
<td>FIND</td>
<td>Mental reaction at end of search</td>
<td>Gray</td>
</tr>
<tr>
<td>3.</td>
<td>ST</td>
<td>SELECT</td>
<td>Selection from a member</td>
<td>Light Gray</td>
</tr>
<tr>
<td>4.</td>
<td>G</td>
<td>GRASP</td>
<td>Taking Hold</td>
<td>Red</td>
</tr>
<tr>
<td>5.</td>
<td>H</td>
<td>HOLD</td>
<td>Prolonged group</td>
<td>Gold Ochre</td>
</tr>
<tr>
<td>6.</td>
<td>TL</td>
<td>TRANSPORTED</td>
<td>Moving an article</td>
<td>Green</td>
</tr>
<tr>
<td>7.</td>
<td>P</td>
<td>POSITION</td>
<td>Placing in a definite location</td>
<td>Blue</td>
</tr>
<tr>
<td>8.</td>
<td>A</td>
<td>ASSEMBLE</td>
<td>Putting parts together</td>
<td>Violet</td>
</tr>
<tr>
<td>9.</td>
<td>U</td>
<td>USE</td>
<td>Causing a device to perform its function</td>
<td>Purple</td>
</tr>
<tr>
<td>10.</td>
<td>DA</td>
<td>DISASSEMBLE</td>
<td>Separating parts</td>
<td>Light Violet</td>
</tr>
<tr>
<td>11.</td>
<td>I</td>
<td>INSPECT</td>
<td>Examine or test</td>
<td>Burnt Ochre</td>
</tr>
<tr>
<td>12.</td>
<td>PP</td>
<td>PREPOSITION</td>
<td>Placing an article ready for use</td>
<td>Pale Blue</td>
</tr>
<tr>
<td>13.</td>
<td>RL</td>
<td>RELEASE LOAD</td>
<td>Release an article</td>
<td>Carmine red</td>
</tr>
<tr>
<td>14.</td>
<td>TE</td>
<td>TRANSPORT</td>
<td>Movement of a body member</td>
<td>Olive Green</td>
</tr>
<tr>
<td>15.</td>
<td>R</td>
<td>REST</td>
<td>Pause to overcome fatigue</td>
<td>Orange</td>
</tr>
<tr>
<td>16.</td>
<td>JD</td>
<td>UNAVOIDABLE</td>
<td>Idle-outside persons control</td>
<td>Yellow</td>
</tr>
<tr>
<td>17.</td>
<td>PN</td>
<td>PLAN</td>
<td>Mental plan for future action</td>
<td>—</td>
</tr>
</tbody>
</table>

- Search
- Find
- Select
- Grasp
- Hold
- Release Load
- Transport Loaded
- Transport Empty
- Position
- Assemble
- Use
- Disassemble
- Inspect
- Preposition
- Release Load
- Unavoidable Delay
- Avoidable Delay
- Plan
- Rest
Micro motion study

- They permit a much more precise and detailed description of the work than any other method described.
- Considerable practice is required in identification of therbligs before they can be used for analysis with confidence.
Main advantages of films over visual methods are:

- Permit greater detailing than eye observation;
- Provide greater accuracy than pencil, paper and stop watch;
- More convenient;
- Provide a positive record;
- Help in the development of the work study person.
EQUIPMENT REQUIRED

1. 16 mm film.

2. Movie Camera.

3. Wink counter.

Exposure meter.

Motion picture projector with screen.
Cyclegraph

- A record of path of movements, usually traced by a continuous source of a light on a photograph.
- The path of movement of a hand, may be recorded on a photograph by putting a ring carrying small light on worker’s hand.
- A path of light resembling a white wire is seen.
- Later it is used with a stereoscopic camera to show the path in three dimensions.
Light (bulb) attached to the hand
A woman demonstrating light tracking hand motions.
Chronocyclegraph of Woman Staking Buttons
Chronocyclograph of golf champion