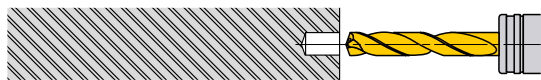


## HOW TO USE LONG TYPE DRILLS

### FLAT FACE DRILLING ● Drilling a blind hole

#### 1. Drilling a pilot hole



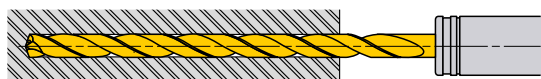
- ① Use a drill with a larger (flatter) point angle than the super long type. Use the shortest flute possible.
- ② Ensure a high precision hole is drilled for the guide.
- ③ Drill depth : Approx 1DC or deeper.  
(Adjust the pilot hole depth according to the length of the super long type drill.)

#### 2. Initial cutting with the long type drill



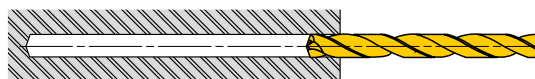
- ① Penetrate the pilot hole at low revolution. (Revolution  $1000\text{min}^{-1}$ , feed rate  $0.2\text{--}0.3\text{mm/rev}$ )
- ② Stop the long type drill  $0.5\text{--}1\text{mm}$  short of the pilot hole bottom.

#### 3. Drill the deep hole



- ① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.

#### 4. Drill retraction



- ① After drilling, lower the cutting revolution about  $0.5\text{--}1\text{mm}$  short of the hole end. (Revolution of around  $1000\text{min}^{-1}$ )
- ② Retract the drill to the pilot hole depth starting point at a feed rate of  $3000\text{mm/min}$ .
- ③ Finally, clear the hole at a cutting speed of  $20\text{--}30\text{m/min}$  and feed rate of  $0.2\text{--}0.3\text{mm/rev}$ .

### INTERRUPTED DRILLING ● Drilling and breaking through on irregular faces or angles

#### 1. Spot facing



- ① Machine a flat or the irregular face by using an end mill or slot drill capable of spot facing. Make the spot face diameter the same size as the required deep hole diameter.

#### 2. Drilling a pilot hole



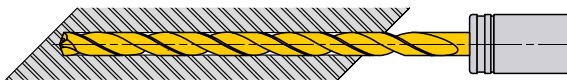
- ① Use a drill with a larger (flatter) point angle than the super long type. Use the shortest flute possible.
- ② Ensure a high precision hole is drilled for the guide.
- ③ Drill depth : Approx 1DC or deeper.  
(Adjust the pilot hole depth according to the length of the super long type drill.)

#### 3. Initial cutting with the long type drill



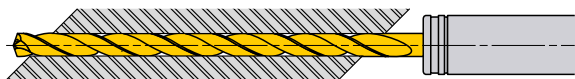
- ① Penetrate the guide hole at a low revolution. (Revolution  $1000\text{min}^{-1}$ , feed rate  $0.2\text{--}0.3\text{mm/rev}$ )
- ② Stop the long type drill  $0.5\text{--}1\text{mm}$  short of the pilot hole bottom.

#### 4. Drill the deep hole



- ① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.

#### 5. Breaking through



- ① When breaking through, the cutting edge can be damaged.
- ② Lower the feed rate when penetrating.

#### 6. Drill retraction



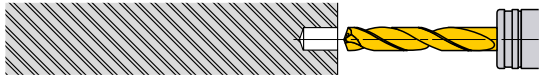
- ① Finally clear the hole at a cutting speed of  $20\text{--}30\text{m/min}$  and feed rate of  $0.2\text{--}0.3\text{mm/rev}$ .
- ② Retract the drill to the pilot hole depth starting point at a feed rate of  $3000\text{mm/min}$ .

## MPS/MSL

### HOW TO USE MPS/MSL LONG TYPE DRILLS

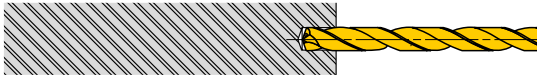
#### FLAT FACE DRILLING ●Drilling a blind hole

##### 1. Drilling a pilot hole



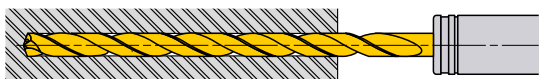
- ① Use a drill with a larger (flatter) point angle than the super long type. Use the shortest flute possible.
- ② Ensure a high precision hole is drilled for the guide.
- ③ Drill depth : Approx 1DC or deeper.  
(Adjust the pilot hole depth according to the length of the super long type drill.)

##### 2. Initial cutting with the long type drill



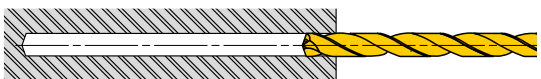
- ① Penetrate the pilot hole at low revolution.  
(Revolution  $1000\text{min}^{-1}$ , feed rate  $0.2\text{--}0.3\text{mm/rev}$ )
- ② Stop the long type drill  $0.5\text{--}1\text{mm}$  short of the pilot hole bottom.

##### 3. Drill the deep hole



- ① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.


##### 4. Drill retraction



- ① After drilling, lower the cutting revolution about  $0.5\text{--}1\text{mm}$  short of the hole end. (Revolution of around  $1000\text{min}^{-1}$ )
- ② Retract the drill to the pilot hole depth starting point at a feed rate of  $3000\text{mm/min}$ .
- ③ Finally, clear the hole at a cutting speed of  $20\text{--}30\text{m/min}$  and feed rate of  $0.2\text{--}0.3\text{mm/rev}$ .


#### INTERRUPTED DRILLING ●Drilling and breaking through on irregular faces or angles

##### 1. Spot facing



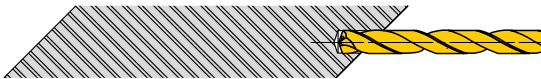
- ① Machine a flat or the irregular face by using an end mill or slot drill capable of spot facing. Make the spot face diameter the same size as the required deep hole diameter.

##### 2. Drilling a pilot hole



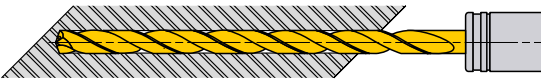
- ① Use a drill with a larger (flatter) point angle than the super long type. Use the shortest flute possible.
- ② Ensure a high precision hole is drilled for the guide.
- ③ Drill depth : Approx 1DC or deeper.  
(Adjust the pilot hole depth according to the length of the super long type drill.)

##### 3. Initial cutting with the long type drill



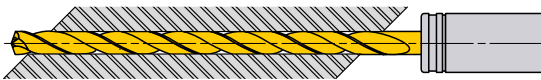
- ① Penetrate the guide hole at a low revolution. (Revolution  $1000\text{min}^{-1}$ , feed rate  $0.2\text{--}0.3\text{mm/rev}$ )
- ② Stop the long type drill  $0.5\text{--}1\text{mm}$  short of the pilot hole bottom.

##### 4. Drill the deep hole



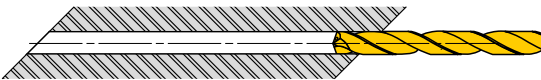
- ① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.

##### 5. Breaking through



- ① When breaking through, the cutting edge can be damaged.
- ② Lower the feed rate when penetrating.

##### 6. Drill retraction



- ① Finally clear the hole at a cutting speed of  $20\text{--}30\text{m/min}$  and feed rate of  $0.2\text{--}0.3\text{mm/rev}$ .
- ② Retract the drill to the pilot hole depth starting point at a feed rate of  $3000\text{mm/min}$ .



With immediate effect, please change all future orders of the items marked in grey (MPS, MSL) to the MPS1 series. This is because production will gradually be discontinued and will cease in March 2023.