

# SPIROL<sup>®</sup>

## PIN INSTALLATION TECHNOLOGY

### Model DP Drilling and Pinning Machine

This self contained vertical drilling and pinning machine is ideally suited for moderate to high production applications that require accurate drilling and pinning of assemblies. The concept of drilling and pinning with one system eliminates tight tolerance and precision drilling of individual components to ensure proper alignment of holes for assembly. The Model DP machine consists of an automatic high-precision drilling unit, a SPIROL Model CR Pin Insertion Machine and a precision air-powered linear slide unit to move the assembly between the drill unit and installation station.

The Model DP operates as follows: the assembly is loaded into a custom fixture nest, and the machine is activated. The assembly is automatically clamped, advances to the drilling position and the hole is drilled. The assembly then slides back to the loading/pinning position, and the pin is automatically installed. The fixture un-clamps and the completed assembly is manually removed.

#### Design Features/Benefits:

- Precise:**
  - Drill guide bushing to support and guide drill bit during drilling operation
  - Drill pecking feature for straight, accurate holes
  - Fine pin insertion depth adjustment
  - Precision ground machine table
  - Critical components are doweled in place to maintain alignment
- Built to Last:**
  - Recirculating flood coolant in the drilling operation for drill bit life and chip removal
  - Cushioned cylinder return stroke to reduce shock and noise
  - Hardened pin guide bushings and hard coated vibratory feeder bowl
- Versatile:**
  - Allen Bradley Panel View Human Machine Interface for programming and control of all machine functions
  - Can be easily configured to accommodate a variety of applications
  - Capable of both wet and dry drilling operation
  - Hole sizes from 0.8mm (1/32") to 6mm (1/4") diameter
  - Capable of insertion forces up to 1,800 lbs.
- Efficient:**
  - Eliminate the need to handle components multiple times through several different processes
  - Automatic operation of drilling and pinning processes
  - Automatic feed, delivery and insertion of pins
  - Collet style drill chuck, with internal stop for quick no-measurement drill replacement
- Safe:**
  - Full perimeter guarding with electrically interlocked access door for operator safety
  - Infrared light curtain option readily available





### Application: Gear to Shaft Assembly for Hydraulic Pump

A leading manufacturer of hydraulic pumps required a method to permanently affix various sized gears to shafts. The gears were bronze, and the shafts were 400 series stainless steel. After press fitting the gears into position, they would drill a hole partially through the assembly, install a heavy duty **SPIROL® Coiled Spring Pin**, and stake the entrance point for maximum security. Prior to SPIROL's involvement, this process was done manually using 3 different stations. SPIROL offered to consolidate all operations into one complete installation machine. Since the customer offered many different gear/shaft assembly sizes, the machine needed to be versatile enough to accommodate the 11 existing assemblies, as well as be able to handle new variations as designed. Tooling changeover had to be quick and simple, with little to no machine adjustment. The cycle time had to be less than a minute, and drill bits were expected to last at least 500 cycles.

The **SPIROL Model DP** machine consists of a standard **Model CR** Pin Insertion machine, an automatic, production quality, high-precision drilling unit, and a precision air-powered linear slide unit to move the assemblies between the drill unit and installation/staking station.

SPIROL's solution provides a machine cycle time of 45 seconds, drill bits yield 600 plus parts, and tooling change-over takes less than 15 minutes between assemblies. This machine doubled the previous production output, and provided a payback of less than 12 months.

**SPIROL** offers complimentary Application Engineering support. We will assist on new designs as well as help resolve issues, and recommend cost savings on existing designs. Let us help by visiting **Application Engineering Services** on SPIROL.com.

## Technical Centers

### Americas

**SPIROL International Corporation**  
30 Rock Avenue  
Danielson, Connecticut 06239 U.S.A.  
Tel. +1 860 774 8571  
Fax. +1 860 774 2048

**SPIROL Shim Division**  
321 Remington Road  
Stow, Ohio 44224 U.S.A.  
Tel. +1 330 920 3655  
Fax. +1 330 920 3659

**SPIROL Canada**  
3103 St. Etienne Boulevard  
Windsor, Ontario N8W 5B1 Canada  
Tel. +1 519 974 3334  
Fax. +1 519 974 6550

**SPIROL Mexico**  
Avenida Avante #250  
Parque Industrial Avante Apodaca  
Apodaca, N.L. 66607 Mexico  
Tel. +52 81 8385 4390  
Fax. +52 81 8385 4391

**SPIROL Brazil**  
Rua Mafalda Barnabé Soliane, 134  
Comercial Vitória Martini, Distrito Industrial  
CEP 13347-610, Indaiatuba, SP, Brazil  
Tel. +55 19 3936 2701  
Fax. +55 19 3936 7121

### Europe

**SPIROL France**  
Cité de l'Automobile ZAC Croix Blandin  
18 Rue Léna Bernstein  
51100 Reims, France  
Tel. +33 3 26 36 31 42  
Fax. +33 3 26 09 19 76

**SPIROL United Kingdom**  
17 Princewood Road  
Corby, Northants  
NN17 4ET United Kingdom  
Tel. +44 1536 444800  
Fax. +44 1536 203415

**SPIROL Germany**  
Ottostr. 4  
80333 Munich, Germany  
Tel. +49 89 4 111 905 71  
Fax. +49 89 4 111 905 72

**SPIROL Spain**  
08940 Cornellà de Llobregat  
Barcelona, Spain  
Tel. +34 93 669 31 78  
Fax. +34 93 193 25 43

**SPIROL Czech Republic**  
Pražská1847  
274 01 Slaný  
Czech Republic  
Tel. +420 313 562 283

**SPIROL Poland**  
Aleja 3 Maja 12  
00-391 Warszawa, Poland  
Tel. +48 510 039 345

### Asia Pacific

**SPIROL Asia Headquarters**  
1st Floor, Building 22, Plot D9, District D  
No. 122 HeDan Road  
Wai Gao Qiao Free Trade Zone  
Shanghai, China 200131  
Tel. +86 21 5046 1451  
Fax. +86 21 5046 1540

**SPIROL Korea**  
160-5 Seokchon-Dong  
Songpa-gu, Seoul, 138-844, Korea  
Tel. +86 (0) 21 5046-1451  
Fax. +86 (0) 21 5046-1540

e-mail: [info@spirol.com](mailto:info@spirol.com)