

## **DESIGN AND FABRICATION OF BLUE TOOTH CONTROLLED AUTOMATIC TWO AXIS DRILLING MACHINE**

**K.RAJAN**

Lecturer Senior Grade,

Department of Mechanical Engineering, Murugappa Polytechnic College,  
Sathya Murthy Nagar, Avadi, Chennai -600062.

### **Abstract**

To build the productivity and to conquer gifted work lack, the vast majority of the assembling ventures are going for automation. we utilized standards of Mechatronics in fostering the sliding mechanism. it is accomplished by the lead screw and nut mechanism which is driven by a 12VDC engine. The arrangement comprises of two arrangements of lead screw and nut for moving the object in horizontal direction work table (x-axis) and taking care of the drill spindle unit in vertical direction(y-axis) .Both the slides are driven by DC engines controlled through the Arduino miniature regulator unit. Here the drill spindle moved descending to make drill in the work utilizing cellphone through blue tooth module. A Bluetooth APP is introduced in the mobile phone which conveys the command message through the Bluetooth wireless communication and this sign is gotten by the Arduino regulator through the Bluetooth module.

Keywords: Drilling machine, Arduino, Bluetooth, Wireless

### **1. Introduction**

The chassis is fabricated from M.S square pipes. This is accomplished for ease of fabrication, and to minimize the ordinary weight. The chassis used to be designed to take a static load of 20kg [1,2]. An electric powered motor is a machine which converts electric powered electricity into mechanical energy. Its action is based totally on the principle that when a modern-day carrying conductor is positioned in magnetic field, it experiences a mechanical pressure whose direction is given Fleming's Left-Hand Rule [3,4]. This motor area at the rear wheel for drive. It is an electric motor is predominant supply of the unit [5].

The strength from the motor is transmitted to the leadscrew as in figure 1 and nut slide mechanism thru the coupler is shown in figure 2 Leadscrew & coupler is held between the core of two M.S. plates is shown in figure 3 [6]. The end is coupled to the motor and the coupler as in parent three This leadscrew and Nut slide mechanism is used to transmit the rotary electricity of the electric powered motor into linear movement of the welding rod holder. This leadscrew is arranged between the two holding plate.

The Uno is a microcontroller board primarily based on the ATmega328P. It has 14 digital input/output pins for motor manipulate [7].



Figure 1: lead screw.

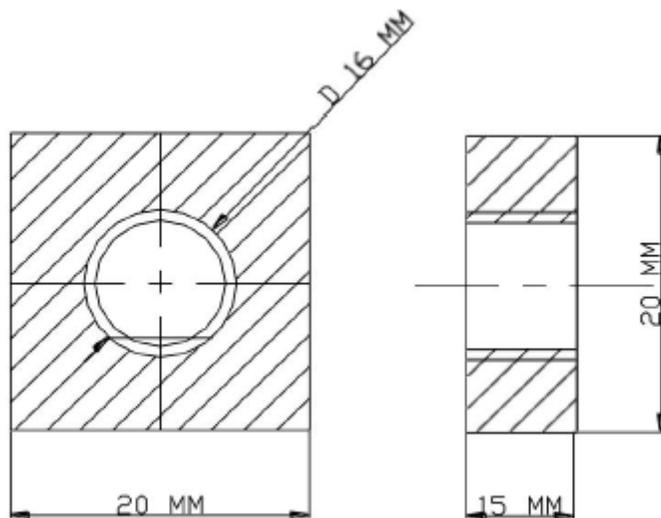


Figure 2: Nut assembly.

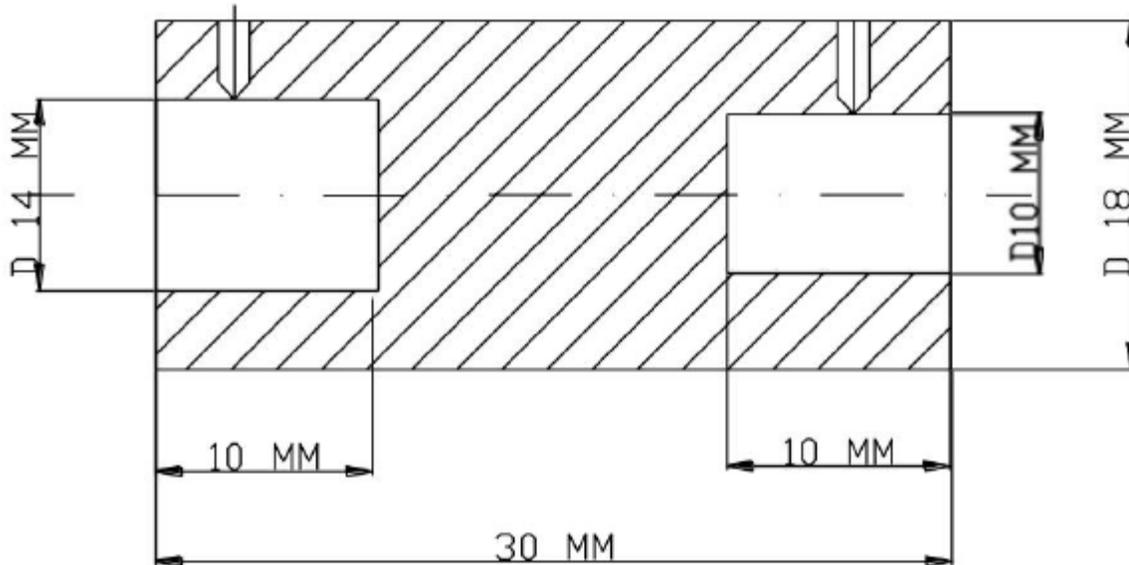


Figure 3: Motor coupling.

#### Electric relay:

Seven electrical relays are used to manage the forward and reverse movement of the holder. This is carried out by control the direction of rotation of DC motor. A relay is an electrically operated switch. Many relays use an electromagnet to function a switching mechanism mechanically, but different working concepts are also used. Relays are used the place it is essential to manipulate a circuit by using a low-power sign (with complete electrical isolation between manage and managed circuits), or the place quite a few circuits ought to be managed by using one signal. The first relays have been used in long distance telegraph circuits, repeating the sign coming in from one circuit and re-transmitting it to another. Relays have been used extensively in phone exchanges and early computers to perform logical operations.

#### Bluetooth module hc05 board:

Bluetooth is one of the most in many instances used wireless science requirements for changing records from constant and cell devices over short distances. Bluetooth based totally personal region networks (PANs) approves statistics trade with excessive ranges of security. Using Bluetooth technology, exclusive with every different wirelessly. Bluetooth is a free to use wireless communication protocol that can be used to ship and get hold of date between two devices. The vary of transmission of Bluetooth science is commonly much less than that of Wi-Fi and Zig Bee. But nonetheless many low vary gadgets like audio players, mobile telephones etc. use Bluetooth as the fundamental communication. Also, the vary of frequency for Bluetooth is 2.41 GHz.

## 2. Methodology

This venture package operated through the Bluetooth manage using android mobile phone. A distinct app installed in a android mobile smartphone for ARDUINO Bluetooth control. When we press ON mode in the mobile APP keypad in the display. This Bluetooth manipulate app sends the signal to the Arduino controller via the Bluetooth module. after receiving the command from the mobile, the arduino controller change on the grant to the electrical relays through the 5vdc to 12vdc driver module. This consists of two 12V DC motors which are used for using two axes motion and are controlled via the Microcontroller primarily based manipulate system.

Rotary motion from the motor is converted to linear movement with the lead screw and nut mechanism. The each axis movement. One slide is used for moving the job in longitudinal and the second slide is for transferring the drill spindle in vertical movement. Both the slides are pushed by DC motors managed via the Arduino microcontroller unit. Here the drill spindle moved downward to make drill in the job the use of telephone phone through blue enamel module. A Bluetooth APP is mounted in the cell phone which sends the command signal through the Bluetooth wi-fi conversation and this signal is acquired with the aid of the Arduino controller via the Bluetooth module of HC05. The figure 4 shows implementation of automatic drilling machine.



Figure 4: Automatic drilling machine.

### **3. Conclusion**

The Bluetooth controlled two axis drilling computing device is accomplished with economic and positive considerations. It is managed with the aid of Bluetooth with the assist of Arduino microcontroller. The operation of drilling and the components has been appreciably tested and the required corrective measures have been taken. Hence the goal of Bluetooth controlled two axis drilling computer at low value used to be profitable and affordable.

### **REFERENCES**

- 1) International journal Advanced Manufacturing Technology (1995), N.K.Mehia, R. Varma
- 2) Arduino programming 2014, Christine Bresnahan
- 3) Electronics for you Projects , Volume 1 to 15 (2008), Mark Torvalts
- 4) Sensors (2012), Keyence Manual
- 5) Micro controller and its application (2009), Kenneth Ayala
- 6) [www.microchip.com](http://www.microchip.com)
- 7) [www.8051.com](http://www.8051.com)