MECHANICS OF THE ARM

**Axis 1**

This axis, located at the robot base, allows the robot to rotate from left to right. This sweeping motion extends the work area to include the area on either side and behind the arm. This axis allows the robot to spin up to a full 180 degree range from the center point. This axis is also known as the Motoman: S and Fanuc: J1.

**Axis 2**

This axis allows the lower arm of the robot to extend forward and backward. It is the axis powering the movement of the entire lower arm. This axis is also known as the Motoman: L and Fanuc: J2.

**Axis 3**

The axis extends the robot's vertical reach. It allows the upper arm to raise and lower. On some articulated models, it allows the upper arm to reach behind the body, further expanding the work envelope. This axis gives the upper arm the better part access. This axis is also known as the Motoman: U and Fanuc: J3.

**Axis 4**

Working in conjunction with the axis 5, this axis aids in the positioning of the end effector and manipulation of the part. Known as the wrist roll, it rotates the upper arm in a circular motion moving parts between horizontal to vertical orientations. This axis is also known as the Motoman: R and Fanuc: J4.

**Axis 5**

This axis allows the wrist of the robot arm to tilt up and down. This axis is responsible for the pitch and yaw motion. The pitch, or bend, motion is up and down, much like opening and closing a box lid. Yaw moves left and right, like a door on hinges. This axis is also known as the Motoman: B and Fanuc: J5.

**Axis 6**

This is the wrist of the robot arm. It is responsible for a twisting motion, allowing it to rotate freely in a circular motion, both to position end effectors and to manipulate parts. It is usually capable of more than a 360 degree rotation in either a clockwise or counterclockwise direction. This axis is also known as the Motoman: T and Fanuc: J6.

We have also included a mechanisms to attach different heads for the various process that have to be carried out .The different heads are placed on the edge of a circular disc which will rotate and attach to the arm.

### **Washing**

Shipyard personnel use (fresh water) high-pressure washers to remove marine growth and chlorides from the ship side.

### **Blasting**

Blasting is done primarily to remove rust or defective paint from the ship side. Depending on the need of each vessel, blasting may be localized or carried out along the entire side of the vessel. In this process, old paint in the defective areas is removed entirely to expose the bare steel.

### **Painting**

Once the blasting is completed, the entire vessel is cleaned and painted to protect the integrity of the steel and prevent future corrosion. The underwater side is painted with anti-fouling paint to prevent marine growth and ensures vessel operates close to its original design speed and fuel consumption.