

### How to Choose a Paddle

Choosing a paddle is a subjective and often a trial-and-error process that can be somewhat frustrating for anyone.

The factors which can determine the paddle you choose may include:

- the viscosity of the fluid
- the power of the stirrer you are using
- the amount of agitation desired
- the volume of fluid to be mixed
- the speeds at which you must mix
- the size and shape of your vessel

Generally speaking, slow speed mixing is more efficient than high speed mixing. High speed mixing can tear a hole in the center of the fluid, generally resulting in high local agitation and lower overall agitation. The volume and shape of your vessel are often overlooked as factors to be considered. Will the paddle you choose fit into the opening in the vessel? Is the volume of your fluid suited to the vessel so that there is sufficient depth to mix properly? Also, you need to consider the volume vs. the power of the stirrer/paddle combination. An outboard motor, for example, has very little effect in a lake or in the ocean; however, if you put that same outboard motor in a fifty-five gallon drum, the agitation is significant.

The power required to drive a given stream of fluid is a function of  $\text{rpm}^3$  and the paddle diameter<sup>5</sup>. Thus you can see that changing from a 2" diameter propeller to a 3-1/2" propeller can produce more than sixteen times the load seen by the stirrer. Also, it has been our experience that adding a second propeller to a shaft can greatly increase agitation while limiting the increase load on the motor.

We suggest that you use your own experience and take the time to experiment a little in order to find the best combination for your particular process.

We offer a complete line of stirrer paddles with various shapes and designs. From our classic propeller design for low viscous fluids, to the zig-zag paddle for paints, pastes, and creams. We offer a stirrer shaft for almost every application. Teflon coating is also available.



### How to select the right stirrer

In many ways, selecting a stirrer is like buying an automobile. What you select depends on how you intend to use it and how much you are prepared to pay for it.

If the stirrer is to be used for general use, we recommend that you select the model offering the greatest versatility that is within your budget. However, if you have a particular stirring problem the selection process is a little more complicated. First, you should select the paddle or accessory which will produce the desired agitation. (See "How to choose a paddle" and the stirrer product descriptions to make the proper selection.) Then select the stirrer which will turn the paddle at the required speed. This can be a trial and error process, particularly if there is a change in load during the stirring operation. You should use your knowledge of your situation and our customer service department or your laboratory supply distributor to help make the appropriate choice.

Do not select a stirrer solely by the horsepower of the motor. Instead, look at the torque ratings, as the torque that is available is a function of horsepower and the speed.

$$\text{HORSEPOWER} = \frac{\text{torque} \times \text{rpm}}{63025}$$

As you can see, for a given horsepower the torque increases as the rated motor speed decreases and vice versa. This statement holds true, however, only if the output speed is changed by mechanical means, such as gear reducers, rather than electronic speed controls. Many speed controls reduce motor speed while they reduce the torque. Transistorized SCR type speed controls, such as the Talboys Transi-Stir Control, will also reduce motor speed; however, generally the torque remains constant. Gear reducers reduce the speed while causing a directly proportional increase in torque, i.e. the horsepower remains constant.

Also, please note that the horsepower rating of a motor is the maximum available horsepower of that motor and not necessarily the horsepower in use at any given time. You can check the running conditions of a stirrer by measuring speed with a tachometer or a probe, and by measuring the motor current with an ammeter.

Generally, the volume of fluid being agitated has little influence on the size of the motor required, but should be considered in selecting the paddle.

## Types of Speed Control

### *Electronic Speed Control*

The Talboys Electronic Speed Control is a compact, low cost speed control chosen for its reliability. This solid-state electronic voltage control varies speed steplessly over the motor range and has been engineered to withstand a 300% overload and produces very little heat.

### *Transi-Stir Speed Control*

The Talboys Transi-stir speed control is a solid-state controller, similar to the electronic speed control. However, this unit uses AC current with full wave rectification and a feedback loop to provide nearly full motor torque over a wide range of speeds. The result is more torque over a wider speed range than with other types of speed control.

## Overload Protection

Several model stirrers have an internal thermal overload protection cut-off. This will be noted in the product descriptions that follow. If the motor should get too hot from overload, the cut-off will shut the motor off until it cools down, then it will restart the motor.

**CAUTION:** If the cut-off stops the motor, be sure to turn the switch to OFF and investigate the reason for the overload.

All model stirrers except the Models 105 and 107 have fuses as an integral part of the circuitry. Any current overload will cause the fuse to blow, shutting off the motor.

**CAUTION:** Any blown fuse should be investigated as to the reason. It is possible to blow a fuse by turning on the power to a unit with the speed control set at any value above zero. Be sure to set the speed at zero prior to flipping the switch. Never use the power cord to start and stop the unit.

## Overseas Voltage-

Several Talboys stirrers are available in 220/240 Volts for use overseas. Models 238 and 429 are available in 220V and ready to ship. Other models are available in 220V on a special order basis only, please contact us for details. All 220V stirrers are sold without power cord plugs.

Additionally, Talboys stirrers are available in several places Internationally where the voltage is slightly lower than the U.S. 110/120V standard. At 100V, for example, the units operate at slightly slower speeds, but usually show no other significant difference.

## Teflon Coating

Many of the accessories manufactured by Talboys are available Teflon coated. The Teflon is impervious to many substances found in the laboratory environment. The Teflon used on these accessories is usually between 0.001" and 0.002" thick.

## Flammables

All T-Line stirrers are electric and not explosion-proof. Talboys overhead stirrers should never be used with flammables.

Use of an electric stirrer in a hazardous location can cause fire and/or explosion resulting in operator injury and damage to facilities. Talboys will not assume liability for such damage.

## Warranty

All T-line stirrers come with a 2 year limited warranty on parts and labor. We do not warranty brushes, springs, gears, etc., because they are considered to be normal maintenance parts.

**T**he 101, 102, and 105 model light duty stirrers are compact, economical, and perfect for stirring low-viscosity liquids like aqueous solutions, plasma, and lightweight oils. Several used together can replace an expensive multiple stirrer. The compact and rugged design allows the stirrer to withstand continuous use under normal load conditions. We recommend the use of these stirrers for light duty stirring only. Each stirrer is supplied with a true-running, stainless steel, precision collet chuck designed to accept an accessory shaft with the same diameter as the motor shaft. Supporting rod with wrench and carriage bolt for mounting are also supplied.

101, 102, & 105 Models

- **Economical**
- **Compact**
- **Durable**
- **Up to 7500 rpm**

*models are pictured with optional stand and paddle.*



**Model 101**

Stirs up to five gallons of aqueous solution at speeds from 500-7500 rpm. Solid state electronic voltage control varies speed steplessly over the full range. Equipped with a single, direct drive shaft, with a diameter of 1/4".

Part Number: 101  
 Horsepower: 1/75  
 Torque:  
     Direct Drive .15 in-lbs.  
 Speed Range:  
     Direct Drive 500-7500 rpm  
 Electrical: 120V  
 Shaft size: 1/4"  
 Chuck Type: Collet

Recommended Accessory Shafts:  
 150, 153A, 155, 165



**Model 102**

Has all the features of the 101 model but adds 10:1 reduction gear head for a second, lower speed range of 50-750 rpm to increase torque to 1 in-lbs. Can stir up to two gallons of medium weight oil at lower speeds.

Part Number: 102  
 Horsepower: 1/75  
 Torque:  
     Direct Drive .15 in-lbs.  
     10:1 1 in-lbs.  
 Speed Range:  
     Direct Drive 500-7500 rpm  
     10:1 50-750 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended Accessory Shafts:  
 151, 153B, 156, 161, 166



**Model 105**

A Constant speed stirrer set at 1550 rpm, mixes 10-15 gallons of aqueous solution. Non-sparking motor has on/off switch (no speed control). Internal thermal overload protection feature shuts off a hot motor. Can be upgraded with a variable-speed controller, Talboys model 115 adusta-speed.

Part Number: 105  
 Horsepower: 1/80  
 Torque:  
     Direct Drive .5 in-lbs.  
 Speed Range:  
     Direct Drive 1550 rpm  
 Electrical: 120V  
 Shaft size: 1/4"  
 Chuck Type: Collet

Recommended Accessory Shafts:  
 150, 153A, 155, 165

- **High Speed**
- **Direct Drive**
- **Compact**
- **Continuous Duty**

103 and 133 Models

**T**he 103 and 133 models are an extremely high speed group of stirrers. Rated at speeds of 1000-7500 rpm, these stirrers can be operated at 12,000 rpm when the motors are not at full load. Because of these high speeds, these motors are actually fairly low in torque. Be sure to check the motor load if operating these stirrers with any fluid whose viscosity is above that of water. Be sure to use only the model 193 Collet chuck. All the 103 family of stirrers use the same 1/12 hp motor, configured with different speed controls. Each stirrer is supplied with a true-running, stainless steel, precision collet chuck designed to fit a 5/16" diameter motor shaft. Supporting rod with wrench and carriage bolt for mounting are also supplied.

*models are pictured with optional stand and paddle.*

### Model 103

The electronic speed control is remotely attached by a 42" cord. This control can be placed on a counter top or shelf nearby the stirring apparatus. This feature is especially useful for working under a fume hood.



Part Number: 103  
 Horsepower: 1/12  
 Torque:  
     Direct Drive .7 in-lbs.  
 Speed Range:  
     Direct Drive 1000-7500 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended  
Accessory Shafts:  
 151, 153B

### Model 103A

Identical in specification to the 103, except this stirrer features our standard configuration of the electronic speed control mounted above the motor. This compact design saves valuable counter space



Part Number: 103A  
 Horsepower: 1/12  
 Torque:  
     Direct Drive .7 in-lbs.  
 Speed Range:  
     Direct Drive 1000-7500 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended  
Accessory Shafts:  
 151, 153B

### Model 103X

This stirrer uses the same motor as the rest of the family; however, it has no speed control. It is equipped with an On/Off switch. This model can be upgraded with the model 115 Adjusta-speed control.

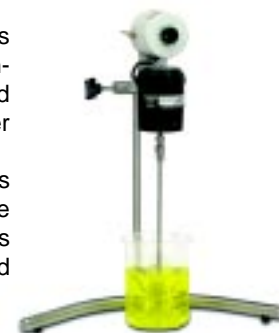


Part Number: 103X  
 Horsepower: 1/12  
 Torque:  
     Direct Drive .7 in-lbs.  
 Speed Range:  
     Direct Drive 1000-7500 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended  
Accessory Shafts:  
 151, 153B

### Model 133

This model combines all the features of the model 103A with the advantages of the Talboys Transi-stir speed control for more torque over a wider range. Ideal for emulsions and suspensions where high speed and torque are required, this unit provides .7 in-lbs of torque throughout its speed range.



Part Number: 133  
 Horsepower: 1/12  
 Torque:  
     Direct Drive .7 in-lbs.  
 Speed Range:  
     Direct Drive 500-7500 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended  
Accessory Shafts:  
 151, 153B

**T**he 104 family of stirrers, consisting of the 104, 104A, 104X, is a multipurpose line of Medium duty stirrers. The speed control equipped with some 104 models is the Adjusta-speed, electronic control. Each model features a direct drive, high speed drive shaft, perfect for water like fluids such as suspensions and emulsions. A 10:1 reduction gear is a low speed, high torque drive shaft that gives these units the power necessary to permit stirring of heavy viscous pastes, glues and oils, making this line more versatile and multipurpose. Each stirrer is supplied with a true-running, stainless steel, precision collet chuck designed to accept an accessory shaft with the same diameter as the motor shaft. Supporting rod with wrench and carriage bolt for mounting are also supplied.

104 Models

- **Multipurpose**
- **Wide range of Speeds**
- **Moderate Torque**
- **Durable and Rugged**

*models are pictured with optional stand and paddle.*



**Model 104**

The electronic control of this unit is remotely attached by a 42" cord. This control can be placed on a counter top or shelf nearby the stirring apparatus. This feature is especially useful for working under a fume hood.

Part Number: 104  
 Horsepower: 1/18  
 Torque:  
     Direct Drive .5 in-lbs.  
     10:1 4.7 in-lbs.  
 Speed Range:  
     Direct Drive 1000-7500 rpm  
     10:1 100-750 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended Accessory Shafts:  
 All 5/16" accessory shafts.



**Model 104A**

Identical in specification to the 104, this stirrer features our standard configuration of the electronic speed control mounted above the motor. This compact design saves valuable counter space.

Part Number: 104A  
 Horsepower: 1/18  
 Torque:  
     Direct Drive .5 in-lbs.  
     10:1 4.7 in-lbs.  
 Speed Range:  
     Direct Drive 1000-7500 rpm  
     10:1 100-750 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended Accessory Shafts:  
 All 5/16" accessory shafts.



**Model 104X**

This stirrer uses the same motor as the rest of the family; however, it is provided without a speed control, resulting in speeds of 7500 or 750 rpm. It is equipped with an On/Off switch. Can be upgraded with a variable-speed controller, Talboys model 115 adjusta-speed.

Part Number: 104X  
 Horsepower: 1/18  
 Torque:  
     Direct Drive .5 in-lbs.  
     10:1 4.7 in-lbs.  
 Speed Range:  
     Direct Drive 7500 rpm  
     10:1 750 rpm  
 Electrical: 120V  
 Shaft size: 5/16"  
 Chuck Type: Collet

Recommended Accessory Shafts:  
 All 5/16" accessory shafts.

- **Direct Drive Only**
- **Non-Sparking**
- **Extremely quiet**
- **Thermal Overload Protection**

107 Models

**T**he 107 family of stirrers feature a non-sparking, shaded pole, brushless motor that has a continuous use rating. Although this is non-sparking, it is not to be considered explosion proof and should not be used with flammables. These stirrers are capable of stirring up to approximately 50 gallons of water when using two model 152 propellers. Each stirrer is supplied with a true-running, stainless steel, precision collet chuck designed to accept an accessory shaft with a diameter of 5/16". Supporting rod with wrench and carriage bolt for mounting are also supplied.

*models are pictured with optional stand and paddle.*



### Model 107

This model is a constant speed stirrer equipped with an On/Off switch. With constant speed of 1600 rpm, it provides significant agitation to water-like fluids. Not recommended for high viscosity materials. Can be upgraded with a variable-speed controller, Talboys model 115 adjusta-speed.

Part Number:	107	Electrical:	120V
Horsepower:	1/30	Shaft size:	5/16"
Torque:		Chuck Type:	Collet
Direct Drive	1.3 in-lbs.		
Speed Range:			
Direct Drive	1600 rpm		

Recommended  
Accessory Shafts:  
151, 152, 153B, 156, 166



### Model 107SC

This model is simply the 107 stirrer permanently wired to the Talboys electronic Adjusta-Speed controller. The electronic speed control on this unit is remotely attached by a 42" cord. This control can be placed on a counter top or shelf nearby the stirring apparatus. This feature is especially useful for working under a fume hood.

Part Number:	107SC	Electrical:	120V
Horsepower:	1/30	Shaft size:	5/16"
Torque:		Chuck Type:	Collet
Direct Drive	1.3 in-lbs.		
Speed Range:			
Direct Drive	100-1600 rpm		

Recommended  
Accessory Shafts:  
151, 152, 153B, 156, 166

**T**he 134 units are our most popular models. They are more versatile than any other stirrer we offer. Equipped with a Transi-Stir speed control which provides nearly full motor torque over a wide speed range. These units feature both a direct drive and reduction gear drive shafts for use over a range of speeds and torque. Use direct-drive for high speed mixing of low viscosity liquids. Utilize the 10:1 reduction gear for lower speed stirring of more viscous oils, light grease, gels, or glues that require a higher torque. In the case of the 134-2, a second reduction gear is added providing 15 in-lbs. of torque at 10-125 rpm. Each stirrer is supplied with an adjustable Jacobs style chuck designed to accept any size accessory shaft. Supporting rod with wrench and carriage bolt for mounting are also supplied.

134 Models

- **Extremely Versatile**
- **Adjustable Chuck**
- **High Torque**
- **Transi-Stir Control**

*models are pictured with optional stand and paddle.*

**Model 134-1**

This model combines all the features of the 104A with the advantages of the Transi-Stir speed control for more torque over a wider speed range.

Ideal for emulsions and suspensions where high speed and torque are required, this unit provides .5 in-lbs of torque throughout its direct drive speed range.

The gear reduction provides 4.7 in-lbs of torque for use with viscous oils and light greases at speeds of 50-750 rpm.

Part Number:	134-1	Electrical:	120V
Horsepower:	1/18	Shaft size:	5/16"
Torque:		Chuck Type:	Adjustable
Direct Drive	.5 in-lbs.		
10:1	4.7 in-lbs.		
Speed Range:			
Direct Drive	500-7500 rpm		
10:1	50-750 rpm		

Recommended  
Accessory Shafts:  
All



**Model 134-2**

The real workhorse of the family, this stirrer is identical to the 134-1, except that we have added a second gear reduction to provide 15 in-lbs. of torque at speeds of approximately 10-125 rpm. This unit is perfect for slow-speed mixing of high viscosity materials such as adhesives in small amounts.

Part Number:	134-2	Electrical:	120V
Horsepower:	1/18	Shaft size:	5/16"
Torque:		Chuck Type:	Adjustable
Direct Drive	.5 in-lbs.		
10:1	4.7 in-lbs.		
60:1	15 in-lbs.		
Speed Range:			
Direct Drive	500-7500 rpm		
10:1	50-750 rpm		
60:1	10-125 rpm		

Recommended  
Accessory Shafts:  
All



- **High Torque**
- **Adjustable Chuck**
- **Durable and Rugged**
- **Transi-Stir Speed Control**

138, 4136 & 409 Models

**T**hese three lines of stirrers are the most powerful laboratory stirrers we offer. All feature greater horsepower and greater torque over the available speed ranges to resolve many difficult mixing jobs, such as higher viscous materials. The solid state Transi-Stir speed control employs full wave rectification and feedback loop to achieve nearly full motor torque over the speed range. Each stirrer is fitted with an adjustable Jacobs style chuck that accepts an accessory shaft. The 138 and 4136 models are supplied with both Jacobs and Collet type chucks. The 429 and 238 stirrer models are available in overseas voltage (220V). Supporting rod with wrench and carriage bolt for mounting are also supplied.

*models are pictured with optional stand and paddle.*



**Model 138 (Model 238 for 220V)**

This dual shaft stirrer offers speed ranges similar to the 134 models while providing greater torque at all speeds. The direct drive shaft provides a high speed range of 500-7500 rpm, while the reduction gear shaft provides low speed of 50-750 rpm with increased torque.

Part Number:	138 for (120V) 238 for (220V)
Horsepower:	1/8
Torque:	
Direct Drive	1.2 in-lbs.
10:1	12 in-lbs.
Speed Range:	
Direct Drive	500-7500 rpm
10:1	50-750 rpm
Electrical:	120V (Model 138) 220V (Model 238)
Shaft size:	5/16"
Chuck Type:	Adjustable and Collet

Recommended  
Accessory Shafts:  
All



**Model 4136**

A dual shaft stirrer which offers multiple speed ranges with excellent torque. The direct drive shaft provides a high speed range of 1000-7500 rpm, while the reduction gear shaft provides low speed of 100-750 rpm with increased torque. Ideal for high viscous materials like oils, grease, and gels.

Part Number:	4136
Horsepower:	1/6
Torque:	
Direct Drive	1.5 in-lbs.
10:1	15 in-lbs.
Speed Range:	
Direct Drive	1000-5000 rpm
10:1	100-500 rpm
Electrical:	120V
Shaft size:	5/16"
Chuck Type:	Adjustable and Collet

Recommended  
Accessory Shafts:  
All



**Model 409 (Model 429 for 220V)**

The most powerful T-Line stirrer available. These single shaft stirrers utilize an in-line gear head to maximize torque. Capable of mixing tar and epoxy like consistencies in the 50,000 to 150,000 cps viscosity range. Stirrer comes complete with a heavy duty Ultra-clamp to secure the unit to a stand or frame work..

Part Number:	409 for (120V) 429 for (220V)
Horsepower:	1/4
Torque:	
Direct Drive	25 in-lbs.
Speed Range:	
Direct Drive	50-500 rpm
Electrical:	120V (Model 409) 220V (Model 429)
Shaft size:	3/4"
Chuck Type:	Adjustable

Recommended  
Accessory Shafts:  
All



**Adjustable Jacobs Style Chuck**

Adjustable chucks should be ordered based upon the diameter of the motor shaft you are using. Each chuck can accommodate accessory shafts from 1/16" to 3/8" diameter. Please note that these chucks are not precision, or vibration free. Our newly designed manufacturing process now makes this chuck one of the best adjustable chucks available on the market. Each chuck is balanced and machined individually to make each one nearly vibration free. However, we strongly recommend that these chucks not be operated at high speeds and it is always a wise precaution to operate any stirring apparatus under supervision.

<u>Part Number</u>	<u>Description</u>
191C	Fits 1/4" diameter motor shafts
191D	Fits 5/16" diameter motor shafts
191L	Fits 3/4" diameter motor shafts



**Glass Rod Chuck**

These aluminum chucks hold glass stirring rods. Designed to eliminate wobbling and vibration problems commonly observed with glass stirring rods. Chuck accepts 6.4, 7.9, 9.5mm (1/4, 5/16, 3/8") diameter motor shafts. Each model comes with nylon inserts needed for 6, 8, and 10 mm (0.24, 0.31, 0.39") diameter stirring rods.

<u>Part Number</u>	<u>Description</u>
199A	Fits 1/4" diameter motor shafts
199B	Fits 5/16" diameter motor shafts
199C	Fits 3/8" diameter motor shafts



**Precision Collet Type Chuck**

The Collet chuck is used when the motor shaft and accessory shaft are the same diameter. The chuck is true-running and is the preferred choice when running at high speeds. Manufactured from stainless steel.

<u>Part Number</u>	<u>Description</u>
192	Fits 1/4" diameter motor shafts
193	Fits 5/16" diameter motor shafts

**Adjusta-Speed Controller, Model 115**

The model 115 Adjusta-Speed is the Talboys standard electronic speed control, package as a separate unit. This is an excellent upgrade for units with no speed control. The solid-state, electronic, voltage control varies speed steplessly over the motor's range. Ideal for use with models 103X, 105, 104X, and 107 which do not come with any speed control.



<u>Part Number</u>	<u>Description</u>
115	Adjusta-Speed Controller

## Heavy Duty Support Stand

This stand is made entirely of stainless steel. It consists of a very heavy base which can accommodate vessels up to 18" in diameter within the "U". The stainless steel support rod (one included with the base) is 5/8" in diameter by approximately 28" high and is fastened to the support stand base with a lock nut.

There are two additional threaded holes in each leg of the base to accommodate extra rods, enabling the stand to support two stirrers. We recommend that the "U" shape of the base be turned away from the mixing apparatus when you are using the two outside rod positions. This helps to balance the weight, making tipovers and accidents less likely to occur.

### Complete Stands

Part Number	Description
110	Support Stand with 28" support rod
110-36	Support Stand with 36" support rod
110-40	Support Stand with 40" support rod
110-48	Support Stand with 48" support rod
110-60	Support Stand with 60" support rod

### Support Rods Only

Part Number	Description
110A	28" support rod only
110A-36	36" support rod only
110A-40	40" support rod only
110A-48	48" support rod only
110A-60	60" support rod only

### Optional Support Stand Stabilizer Knobs

Part Number	Description
110C	Stabilizer Knobs, Two per package



### Standard Support Stand Clamp

Solid stainless steel clamp, with extra large, easy to grip knobs. Accommodates 1/2" diameter shaft of a T-Line motor support rod and 5/8" diameter, stand support rod.

Part Number	Description
110B	Standard Support Rod Clamp



### Ultra Clamp

Extra heavy duty construction, fits all shafts from 1/4" diameter to 1" diameter. Extremely strong aluminium alloy with brushed finish. Large, easy to grip knobs allow extra tightening even by small hands. Rods supported on 4" long surface to avoid vibration and wobble.

Part Number	Description
112	Ultra Clamp

**Propeller-Type Paddles, Shafts, and Blades**

This classic propeller design paddle is available in several sizes and configurations for your mixing needs. Can be used with TALBOYS T-Line stirrers and with other stirrers designed to accept shafts of specified diameter. Manufactured from 303/304 stainless steel and are suitable for stirring many types of liquids without fear of contamination. Three-bladed propeller is also available with Teflon® coating. Choose from a 2" (5cm) or 3 1/2" (8.9cm) diameter blade.

Purchase blades unmounted or mounted on a stainless steel shaft of varying length and diameter. Unmounted blades come on a bushing (for a given shaft diameter) with a stainless hex-head set screw and Allen key for attaching to extension bars.

Use extension shafts to design your own shaft/propeller combination. An extension sleeve (on next page) can join two shafts of the same diameter together to increase the length. Add propeller blades to these shafts. Try multiple blades on a single shaft for increased agitation.

- All Stainless Steel Construction
- Teflon® Coating Available
- Various Sizes and Lengths
- Standard Designs or Customize your own



2" Propeller Shafts				
Part Number	Shaft Diameter in. (mm)	Shaft Length in. (mm)	Blade Diameter in. (mm)	Teflon Coated
150	1/4 (6.4)	12 (304)	2 (5.1)	NO
150T	1/4 (6.4)	12 (304)	2 (5.1)	YES
150L	1/4 (6.4)	18 (457)	2 (5.1)	NO
150LT	1/4 (6.4)	18 (457)	2 (5.1)	YES
150XL	1/4 (6.4)	24 (610)	2 (5.1)	NO
150XLT	1/4 (6.4)	24 (610)	2 (5.1)	YES
150XXL	1/4 (6.4)	30 (762)	2 (5.1)	NO
150XXLT	1/4 (6.4)	30 (762)	2 (5.1)	YES
150XXXL	1/4 (6.4)	36 (914)	2 (5.1)	NO
150XXXLT	1/4 (6.4)	36 (914)	2 (5.1)	YES
151	5/16 (7.9)	12 (304)	2 (5.1)	NO
151T	5/16 (7.9)	12 (304)	2 (5.1)	YES
151L	5/16 (7.9)	18 (457)	2 (5.1)	NO
151LT	5/16 (7.9)	18 (457)	2 (5.1)	YES
151XL	5/16 (7.9)	24 (610)	2 (5.1)	NO
151XLT	5/16 (7.9)	24 (610)	2 (5.1)	YES
151XXL	5/16 (7.9)	30 (762)	2 (5.1)	NO
151XXLT	5/16 (7.9)	30 (762)	2 (5.1)	YES
151XXXL	5/16 (7.9)	36 (914)	2 (5.1)	NO
151XXXLT	5/16 (7.9)	36 (914)	2 (5.1)	YES

3 1/2" Propeller Shafts				
Part Number	Shaft Diameter in. (mm)	Shaft Length in. (mm)	Blade Diameter in. (mm)	Teflon Coated
152	5/16 (7.9)	12 (304)	3 1/2 (88.9)	NO
152T	5/16 (7.9)	12 (304)	3 1/2 (88.9)	YES
152L	5/16 (7.9)	18 (457)	3 1/2 (88.9)	NO
152LT	5/16 (7.9)	18 (457)	3 1/2 (88.9)	YES
152XL	5/16 (7.9)	24 (610)	3 1/2 (88.9)	NO
152XLT	5/16 (7.9)	24 (610)	3 1/2 (88.9)	YES
152XXL	5/16 (7.9)	30 (762)	3 1/2 (88.9)	NO
152XXLT	5/16 (7.9)	30 (762)	3 1/2 (88.9)	YES
152XXXL	5/16 (7.9)	36 (914)	3 1/2 (88.9)	NO
152XXXLT	5/16 (7.9)	36 (914)	3 1/2 (88.9)	YES
154	3/8 (9.5)	12 (304)	3 1/2 (88.9)	NO
154T	3/8 (9.5)	12 (304)	3 1/2 (88.9)	YES
154L	3/8 (9.5)	18 (457)	3 1/2 (88.9)	NO
154LT	3/8 (9.5)	18 (457)	3 1/2 (88.9)	YES
154XL	3/8 (9.5)	24 (610)	3 1/2 (88.9)	NO
154XLT	3/8 (9.5)	24 (610)	3 1/2 (88.9)	YES
154XXL	3/8 (9.5)	30 (762)	3 1/2 (88.9)	NO
154XXLT	3/8 (9.5)	30 (762)	3 1/2 (88.9)	YES
154XXXL	3/8 (9.5)	36 (914)	3 1/2 (88.9)	NO
154XXXLT	3/8 (9.5)	36 (914)	3 1/2 (88.9)	YES

Propeller Blades Only		
Part Number	Shaft Diameter in. (mm)	Blade Diameter in. (mm)
153A	1/4 (6.4)	2 (5.1)
153B	5/16 (7.9)	2 (5.1)
152A	5/16 (7.9)	3 1/2 (88.9)
154	3/8 (9.5)	3 1/2 (88.9)

Shafts Only		
Part Number	Shaft Diameter in. (mm)	Shaft Length in. (mm)
180	1/4 (6.4)	6 (152)
180A	1/4 (6.4)	12 (304)
180L	1/4 (6.4)	18 (457)
180XL	1/4 (6.4)	24 (610)
180XXL	1/4 (6.4)	30 (762)
180XXXL	1/4 (6.4)	36 (914)
181	5/16 (7.9)	6 (152)
181A	5/16 (7.9)	12 (304)
181L	5/16 (7.9)	18 (457)
181XL	5/16 (7.9)	24 (610)
181XXL	5/16 (7.9)	30 (762)
181XXXL	5/16 (7.9)	36 (914)
182	3/8 (9.5)	6 (152)
182A	3/8 (9.5)	12 (304)
182L	3/8 (9.5)	18 (457)
182XL	3/8 (9.5)	24 (610)
182XXL	3/8 (9.5)	30 (762)
182XXXL	3/8 (9.5)	36 (914)

## Extension Sleeves

Use extension sleeves to join shafts of the same diameter. Made from precision bored stainless steel tubing. Each extension sleeve is designed to fit a specific shaft diameter.



Join mixing paddles to extension bars to increase the paddle length. Connect the mixing paddle directly to the motor shaft by using the extension sleeve in place of the chuck.

Part Number	Description
170	Fits 1/4" diameter shafts
171	Fits 5/16" diameter shafts
172	Fits 3/8" diameter shafts

## Beater Paddle

Use with all T-Line Stirrers or other stirrers designed to accept 5/16" (7.9mm) diameter shaft. Recommended for heavy-duty, slow-speed motors.

Mixes high-viscosity fluids well. Paddle design inhibits incorporation of air, making it suitable for stirring shampoos and other foaming liquids. The complete assembly is constructed of stainless steel and is available Teflon coated. Blade size for all shafts approximates 5 1/2" (140mm) long x 4" (101mm) wide.



Part Number	Shaft Diameter in. (mm)	Shaft Length in. (mm)	Teflon® Coated
162	5/16 (7.9)	12 (304)	NO
162T	5/16 (7.9)	12 (304)	YES
162L	5/16 (7.9)	18 (457)	NO
162LT	5/16 (7.9)	18 (457)	YES
162XL	5/16 (7.9)	24 (610)	NO
162XLT	5/16 (7.9)	24 (610)	YES

## Swivel Blade Paddle

Mixes the contents of vessels with narrow mouths. Use with all T-Line Stirrers or other stirrers designed to accept 1/4-5/16" (6.4-7.9mm) diameter shafts.



Made of durable stainless steel, this paddle comes as a swivel blade attached to a shaft. Shaft diameter and length vary. The blade measures 2 x 1/2" (51 x 13mm).

Part Number	Shaft Diameter in. (mm)	Shaft Length in. (mm)
165	1/4 (6.4)	12 (304)
165L	1/4 (6.4)	18 (457)
165XL	1/4 (6.4)	24 (610)
166	5/16 (7.9)	12 (304)
166L	5/16 (7.9)	18 (457)
166XL	5/16 (7.9)	24 (610)
167	3/8 (9.5)	12 (304)
167L	3/8 (9.5)	18 (457)
167XL	3/8 (9.5)	24 (610)

## Zig-Zag Paddles

Use with all T-Line Stirrers or other stirrers designed to accept 1/4-5/16" (6.4-7.9mm) diameter shafts.

Made of stainless steel, this zig-zag shaped stirring rod mixes heavier fluids (i.e. paints, pastes, and creams). The paddle comes in different shaft diameters and lengths. Available with Teflon coating.



Part Number	Shaft Diameter in. (mm)	Shaft Length in. (mm)	Teflon® Coated
160	1/4 (6.4)	12 (304)	NO
160T	1/4 (6.4)	12 (304)	YES
160L	1/4 (6.4)	18 (457)	NO
160LT	1/4 (6.4)	18 (457)	YES
160XL	1/4 (6.4)	24 (610)	NO
160XLT	1/4 (6.4)	24 (610)	YES
161	5/16 (7.9)	12 (304)	NO
161T	5/16 (7.9)	12 (304)	YES
161L	5/16 (7.9)	18 (457)	NO
161LT	5/16 (7.9)	18 (457)	YES
161XL	5/16 (7.9)	24 (610)	NO
161XLT	5/16 (7.9)	24 (610)	YES

## Chain Paddle

Use with all T-Line Stirrers or other stirrers designed to accept 1/4-5/16" (6.4-7.9mm) diameter shafts.

Useful for mixing the contents of narrow-necked containers, this paddle fits openings as small as 5/8" (16mm). Popular for blending suspensions, the chain paddle also stirs both low and high viscosity liquids. Both chain and shaft are made of stainless steel. Shafts vary in diameter and length. Swing diameter of chain is approximately 3" (76mm).



Part Number	Shaft Diameter in. (mm)	Shaft Length in. (mm)
155	1/4 (6.4)	12 (304)
155L	1/4 (6.4)	18 (457)
155XL	1/4 (6.4)	24 (610)
156	5/16 (7.9)	12 (304)
156L	5/16 (7.9)	18 (457)
156XL	5/16 (7.9)	24 (610)
157	3/8 (9.5)	12 (304)
157L	3/8 (9.5)	18 (457)
157XL	3/8 (9.5)	24 (610)