

# REFERENCE MANUAL



## Reference Manual and User's Guide





# Welcome

Thank you for purchasing Hurco's Spin Doctor Hydraulic Valve Exerciser. The concept of a boom operated valve exerciser was developed by Hurco back in 2002. This new generation of valve exercisers allowed the user to reach a valve in hard to reach areas while taking the effort out of valve exercising. Safety was first in mind when developing the Spin Doctor. The Spin Doctor uses gas assisted shocks making it virtually finger tip light and the unique design of the boom absorbs the torque from operating those tough valves. This product is so unique; it is covered by several US Patents and other Patents Pending.

Spin Doctor will:

- Operate any size valve from 4" to 60".
- Depending on model, capable of up to 950 ft. lbs. torque.
- Reach multiple valves in close proximity so the vehicle does not need to be repositioned.
- Reach valves in hard to reach areas.

Hurco Technologies, Inc. would like to take this opportunity to welcome you as a new customer and user of the Spin Doctor Hydraulic Valve Exerciser. You have just purchased the best valve exercising system available. The Spin Doctor is simple to use and will provide you with years of service.

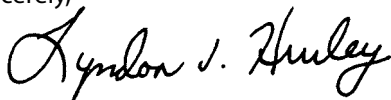
This manual will take you through the step by step procedures for using the Spin Doctor. We use simple to understand instructions and photos to assist you in learning how to get the best results from your Spin Doctor. Please follow each step completely to insure maximum performance from your Spin Doctor.

Your Spin Doctor will give you many years of service if you take care of it as you would any expensive piece of equipment. The Spin Doctor is rugged and built to last. It will withstand the demands of your jobsite; however, is not abuse proof! Be sure to assign the use of your Spin Doctor to a competent worker who will take care of it.

In this manual, we will be giving you suggestions on basic valve exercising activities. As a general rule, these suggestions are based on the recommendations of the American Water Works Association, (AWWA). It will be your responsibility to read and understand these recommendations. Hurco Technologies, Inc. will not be responsible for the incorrect use of the Spin Doctor or for the failure to follow AWWA recommendations. Assign a competent worker with knowledge on proper valve exercising procedures. You can purchase a copy of the AWWA recommendations at their website, [www.awwa.org](http://www.awwa.org). To watch videos on valve exercising, go to Hurco's website at [www.hurcotech.com](http://www.hurcotech.com).

If you have any questions regarding this manual or valve exercising in general, please call and ask for customer support at 1-800-888-1436.

Sincerely,



Lyndon J. Hurley  
President, Hurco Technologies, Inc.



**WARNING:** Failure to follow the American Water Works Associations recommendations for valve exercising, can potentially cause damage to water mains and possible injury to the operator.

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**WARNING!**  
**READ ALL OPERATING MANUALS**  
**BEFORE OPERATION OF EQUIPMENT**

**GENERAL SAFETY INFORMATION**

**SAFETY FIRST!**

Valve exercising is a technical activity that requires knowledge in water distributions systems. This activity should never be assigned to a person that has not been properly trained. Failure to follow proper procedure can cause damage to the water main, the valve and potentially injure the operator:

**Machine Operation**

- Always wear protective clothing and safety glasses when operating machinery.
- Whenever you are fueling the power pac or hydraulic source, shut off engine and do not smoke.
- Do not run any combustion engine in an enclosed area. Be sure there is adequate ventilation.
- Never service or repair the Spin Doctor while running. Allow all components to cool.
- Relieve pressure from all hydraulic components before servicing.
- Periodically inspect system components, gauges and indicators. Perform routine maintenance and add fluids as required.
- Be sure the hydraulic system you are connected to meet the requirements of the Spin Doctor. For a copy of the Spin Doctor specifications, go to [www.hurcotech.com](http://www.hurcotech.com) or call Hurco.
- Check daily to be sure all connections on the Spin Doctor are secure and tight. This will include all bolts or fittings. **NEVER** check for hydraulic leaks with your hands. Hydraulic pressure can be significant enough to penetrate the skin causing serious injury or death.
- Check daily for any worn or damaged hydraulic lines or hoses. Damaged or worn lines can be dangerous, bursting and causing injury or death.
- Always follow the American Water Works Association, (AWWA) or the valve manufacturers' recommendations for exercising a valve.
- Know the maximum torque to apply to the valve and do not exceed this recommendation. Failure to follow these recommendations can cause damage to the valve and can be dangerous to the operator causing injury or death.
- Use traffic control whenever working in a street. Follow your city or state recommendations for traffic control.

# Basic Valve Exercising

Preparing for your valve exercising activities will require some planning. You will need to assemble maps that will give you the location of each valve, type of valve and the size of the valve. You will need to know the type of access to the valve so you come prepared with the right tools to open the access point. If you are working in a street, especially a busy main street, you will need traffic control. Refer to your local and state requirements for traffic control.



## Operating Instructions



**Situations may vary; it is impossible to list all Hazards. Stay alert. Be aware. YOU can help or prevent accidents**

- Before any operation of Spin Doctor, be familiar with the locations and functions of the unit's instruments and controls. Being familiar with the machine and its controls will increase efficiency and reduce the possibility of personal injury or damage to the unit. The operator should work slowly and carefully until he or she feels comfortable with the machine. Speed and skill will be attained much easier if the necessary time is spent to familiarize the operator with the machine and its operations.
- Always check engine oil level and hydraulic oil level in reservoir prior to starting engine.
- Attach hydraulic boom hoses to the power pack, making sure they are correctly connected and coupler is locked.
- Remove position lock pins from boom to allow boom to extend and swivel.
- Start power pac engine. (See engine owner's manual for operating instructions)
- Insert extension key attaching to valve nut. (Valve manufacturers recommend the first and last turn be done by hand).
- Insert hydraulic motor drive into valve extension wrench.

### AMERICAN WATER WORKS RECOMMENDED VALVE MAINTENANCE PROCEDURES:

Operation and maintenance procedures for various types of valves are detailed in manufacturer's operation manuals and in the appropriate product standards. The following paragraphs provide the guidelines for most situations.

A valve that has not been operated for a number of years needs to be closed by using a series of up and down motions. Crews attempting to close a difficult valve should never use a T-handle and cheater bar to force the valve closed. Exceeding manufacturers recommended torque values to obtain a positive shutoff can cause damage to the valve. Torque-limiting devices are available. Crews should follow these guidelines to close a valve properly:

1. Begin with a steady amount of torque in the direction necessary to close the valve, moving through 5 to 10 rotations.
2. Reverse for two or three rotations.
3. Reverse again and rotate 5 to 10 more turns in the closing direction.
4. Repeat this procedure until full closure is attained.
5. Once the valve is fully closed, it should be opened a few turns so that high-velocity water flowing under the gates can move the remainder of the sediment downstream with more force and clear the bottom part of the valve body for seating.
6. Fully close the valve again.

The reason for this cautious approach is that debris and sediment often build up on the gates, stem, and slides. If this material is compacted while the valve is being closed, the torque required to close the valve continues to build as the material is loaded. If the procedure described above is used, the stem and other parts are "scrubbed" by the series of back-and-forth motions, and water in the system can flush the debris that has broken loose away from the stem gate and slides or guides.

- Slowly operate valve lever to begin operation in the required direction to open or close valve.

- Utilizing the revolution counter, completely open (or close) the valve slowing at the required number of revolutions. **DO NOT OVER-TORQUE VALVE!**
- Reverse valve direction to complete exercise stopping prior to the last complete turn.
- Remove hydraulic motor drive from key and complete the last turn of the operation by hand.
- **CAUTION!** Opening or closing a valve too fast can damage the valve or break the water main.
- Retract boom and **insert locking pins** for transport.



**WARNING!** NEVER MOVE UNIT WITHOUT FIRST INSERTING LOCKING PINS SECURING THE BOOM!

**Special Note:** The Spin Doctor was engineered to be safe to operate and to meet the torque requirements of most valve manufactures. The Spin Doctor boom has been tested at over 2000 ft lbs of torque, and carries a limited life time warranty against bending caused by torque. Since operating a valve with excessive torque can be dangerous and damage the valve, you are encouraged to follow the valve manufactures recommendations. However, if your choice is to “bully” the valve, we would recommend the use of our Slick Stick with special penetrating fluid with silicone. This will usually do the trick. If this does not work and you still want to apply excessive torque, then the use of an optional impact torque wrench will increase your odds of success. Hurco offers two torque wrench options that will give you up to 3000 ft lbs of torque in short impact bursts. To learn more and to **see a video about dealing with difficult valves, go to our website at [www.hurcotech.com](http://www.hurcotech.com)**



# Control Operation of Head Assembly

## Spin Doctor® 400™

The Spin Doctor 400 head utilizes very basic functions.

- 1 Remove travel security pins.
- 2 Lift up on the Latch Handle to release the boom from the travel position.

- 3 To place the head on the valve wrench, simply pull the Spin Doctor boom towards the valve wrench, then loosen the head pivot handle. The head also pivots side to side. This will allow the head to easily drop into the valve wrench drive coupler even if the valve wrench is not perfectly perpendicular. By feathering the drive control lever, the Spin Doctor head assembly will drop into the valve wrench socket.



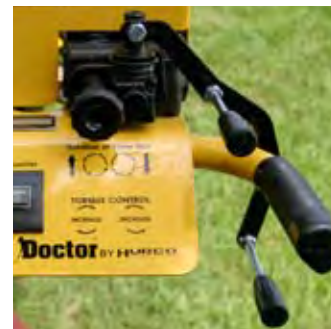
Drive control lever

- 4 To adjust the torque, simply turn the torque control knob clockwise to increase torque and counter clockwise to reduce torque. The gauge on the Spin Doctor 400 head reads in ft. lbs of torque.



Torque control knob

- 5 To operate the valve wrench clockwise, push down on the drive control lever, pull up to operate in a counter clockwise direction.

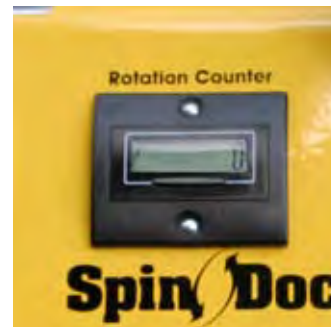


Drive control lever

### Note

You can control the speed of the valve wrench by slowing the engine speed, feather the drive control lever or a combination of both.

- 6 Push the reset button to zero out the counter prior to valve exercising.
- 7 When you are done valve exercising, park the Spin Doctor in the park position and replace all travel security pins.



Rotation counter

### Note

Always start with your torque low. As the demand for torque increases while you are valve exercising, then increase the torque gradually until the valve manufacturers torque requirements are met.



# Control Operation of Head Assembly



- 1 Remove travel security pins.
- 2 Lift up on the Latch Handle to release the boom from the travel position.

- 3 To place the head on the valve wrench, simply pull the Spin Doctor boom towards the valve wrench, then loosen the head pivot handle. The head also pivots side to side. This will allow the head to easily drop into the valve wrench drive coupler even if the valve wrench is not perfectly perpendicular. By feathering the drive control lever, the Spin Doctor head assembly will drop into the valve wrench socket.



*Drive control lever*

- 4 To adjust the torque, press the Torque Control button on the front panel of the Spin Doctor head. The button will illuminate red when activated. With the engine speed set and the hydraulics engaged, pull up on the drive control lever. Now simply turn the torque control knob clockwise to increase torque or counterclockwise to reduce torque. The torque will be displayed on the torque gauge. Once the appropriate torque is reached, release the drive control lever and turn the Torque Control to off. The red light will turn off.



*Torque control button*



*Torque control knob*

- 5 To operate the valve wrench clockwise, push down on the drive control lever, pull up to operate in a counter clockwise direction. Note, you can control the speed of the valve wrench by slowing the engine speed, feather the drive control lever or turning the Speed Control dial or a combination of all three. Turning the Speed Control dial clockwise will slow the wrench speed and counter clockwise will increase the wrench speed.

- 6 Push the reset button to zero out the counter prior to valve exercising.

- 7 When you are done valve exercising, park the Spin Doctor in the park position and replace all travel security pins.



*Rotation counter*

# Control Operation of Head Assembly

## Spin Doctor® ERB-800™

- 1 Remove travel security pins.
- 2 To place the head on the valve wrench, simply pull the Spin Doctor boom towards the valve wrench by releasing both brakes. Push the top of the brake buttons to deactivate the front and rear brakes. A red light will illuminate to indicate that the brakes are released. Activate the boom lift by pushing the top of the Boom Lift button. A red light will illuminate to indicate that the boom lift is activated. Pull up on the drive control lever to raise the boom and push down to lower the boom. Then loosen the head pivot handle. The head will pivot forward and back, and side to side. This will allow the head to easily drop into the valve wrench even if the valve wrench is not perfectly perpendicular. By feathering the drive control lever, the Spin Doctor head assembly will drop into the valve wrench socket. Turn off all switches prior to valve exercising.



Release brakes



Activate boom



Drive control lever



Pivoting head

- 3 To adjust the torque, press the Torque Control button on the front panel of the Spin Doctor head. The button will illuminate red when activated. With the engine speed set and the hydraulics engaged, pull up on the drive control lever. Now simply turn the torque control

knob clockwise to increase torque or counterclockwise to reduce torque. The torque will be displayed on the torque gauge. Once the appropriate torque is reached, release the drive control lever and turn the Torque Control to off. The red light will turn off.



Torque control button



Torque control knob

- 4 To operate the valve wrench clockwise, push down on the drive control lever, pull up to operate in a counter clockwise direction. Note, you can control the speed of the valve wrench by slowing the engine speed, feather the drive control lever or turning the Speed Control dial or a combination of all three. Turning the Speed Control dial clockwise will slow the wrench speed and counter clockwise will increase the wrench speed.

- 5 Push the reset button to zero out the counter prior to valve exercising.

- 6 When you are done valve exercising, park the Spin Doctor in the park position and replace all travel security pins. You will need to deactivate the brakes and engage the boom lift in order to park the ERB800 Spin Doctor.



Rotation counter

# Dealing with a Problem Valve

Dealing with a problem valve requires a certain amount of thought and care. The manufacturer of a valve will have a specific torque requirement for each valve stem. To exceed that torque amount will most assuredly damage the valve or valve stem. If you encounter a problem valve that cannot be opened within the manufacturers torque limit and you want to try and free the valve, follow this procedure to improve your chance of success. Note: This procedure is not a guarantee that you will save every valve. However, by following these steps you will likely save a good number of your problem valves.



## Step 1

Use the Hurco Slick Stick with special penetrating fluid. You can find the instructions for the Slick Stick on page 10 of this manual.



## Step 2

If using the Slick Stick did not help to loosen the valve but you still want to try and free the valve, use an impact wrench. An impact wrench will apply short-fast bursts of high torque to help break loose corrosion in the valve and

valve stem. This is the same principal that is used in a tire shop when they use an impact wrench to remove rusted and stuck lug nuts. Saving one valve will more than likely pay for the impact wrench.

## Step 3

If Steps 1 and 2 did not loosen the stuck valve, you must repair or replace the valve. Do not apply excessive torque. This can be dangerous and should the valve break in the closed position, it can disrupt your water supply. In a fire emergency or in the event of a critical care customer relying on this water supply, the consequences could be costly and life threatening.

## Where to purchase a impact wrench.

Hurco can provide you with quality impact torque wrenches manufactured by Stanley. Call Hurco for pricing and availability or contact your local Stanley dealer.





The Slick Stick is used to loosen and lubricate a valve stem on a valve that is stuck. This Slick Stick wand is a painted wand that will apply lubricant to the valve stem without wasting or spilling the fluid. The tip of the Slick Stick is indexed to spray at a 90 degree angle to make lubricating the valve stem easier. You can rotate the position of the tip so it is indexed to the handle grip. This way you will always know what direction the spray nozzle is spraying.

To use the Slick Stick, first familiarize yourself with operation and safety precautions.

### Safety Precautions

1. The fluid used with the slick stick can be dangerous if not used properly. Read all instructions on the fluid container and read the Safety Data Sheet (SDS) provided with the fluid. You should keep a copy of this SDS sheet with you at all times in case of an emergency. If you do not have a copy of the SDS sheet, please contact Hurco immediately or go to our website at [www.hurcotech.com](http://www.hurcotech.com) and download a copy of this sheet.
2. DO NOT aim Slick Stick at any person or part of the body. Fluids can be dangerous.
3. Check all fittings and nozzles to be sure they are secure and in good operating condition.
4. Use in a well ventilated area.
5. DO NOT use around electrical connections or wires.

### Operation

1. Put special penetrating fluid into the Slick Stick pressure container. Do not fill container over half. Approximately one US Gallon.
2. Connect the hose from the pressure container to the Slick Stick with the quick disconnect.
3. Pump the pressure container approximately 10 pumps. Do not over pressurize as this can damage the plunger. To use the plunger, push down and turn the lever slightly counter clockwise. This should release the plunger handle. After pressurizing the tank, push the plunger down and turn slightly clockwise to lock.  
Note: To relieve the pressure in the tank, carefully and slowly turn the plunger counter clockwise. Wear eye protection!
4. Lower the Slick Stick to just below the drive nut on the valve.
5. Turn the knob located at the handle end of the wand Counter-clockwise to release the handle grip.
6. Squeeze the handle grip to apply a small amount of the special penetrating fluid.
7. Re-apply if necessary.
8. Operate the valve as described in Basic Valve Exercising on page 9.
9. Relieve the pressure on the pressure container and store away.



### Maintenance

1. Keep the Slick Stick spray tip and the pressure tank clean and free of dirt.
2. With the exception of replacing the spray tip, the Slick Stick is not field repairable. If you are having trouble with your Slick Stick, call Hurco and ask for Service.

# Troubleshooting

**PROBLEM:**

Power pac won't start.

**SOLUTION:**

1. Spin Doctor hoses must be connected to the power pac for the engine to start. Connect hoses from Spin Doctor to power pac making sure connectors are locked together and start engine.
2. Check battery and connections.
3. Check engine oil.
4. Check fuel.

**PROBLEM:**

Excessive Hydraulic oil heat build up.

**SOLUTION:**

1. Check hydraulic oil level in the reservoir. Refill if necessary.
2. Check hydraulic pressure gauge and adjust pressure if necessary.

**PROBLEM:**

Counter quit working.

**SOLUTION:**

1. Check wiring for loose or disconnected wire.
2. Check that power is supplied to the head. If the counter doesn't light up, power may not be getting to the counter.
3. Replace counter if required.

# Maintenance

**SPIN DOCTOR:**

- Grease pivot point where the Spin Doctor head connects to the boom using a grease gun weekly or as needed.
- Visually inspect all connections and bolts daily. Physically check bolts and connections weekly.
- Grease all pivot points on ER using a grease gun weekly or as needed.
- Counter is water resistant NOT waterproof. Do not pressure wash, and keep covered when not in use.
- Check all hydraulic hose and tube connections after 8 hours of operation for leaks.

**POWER PAC:**

- Check engine oil level daily. Refill as needed. Change according to engine manufacturer’s recommendations.
- Visually check hydraulic tank sight glass level daily. Replenish if necessary.
- At the end of the first 50 hours of service, replace the in-tank hydraulic fluid filter. Thereafter, replace every 500 hours or yearly.
- Follow engine maintenance requirements as noted in manufacturer’s manual provided with your new power pac.
- Visually inspect all connections and bolts daily. Physically check bolts and connections weekly.

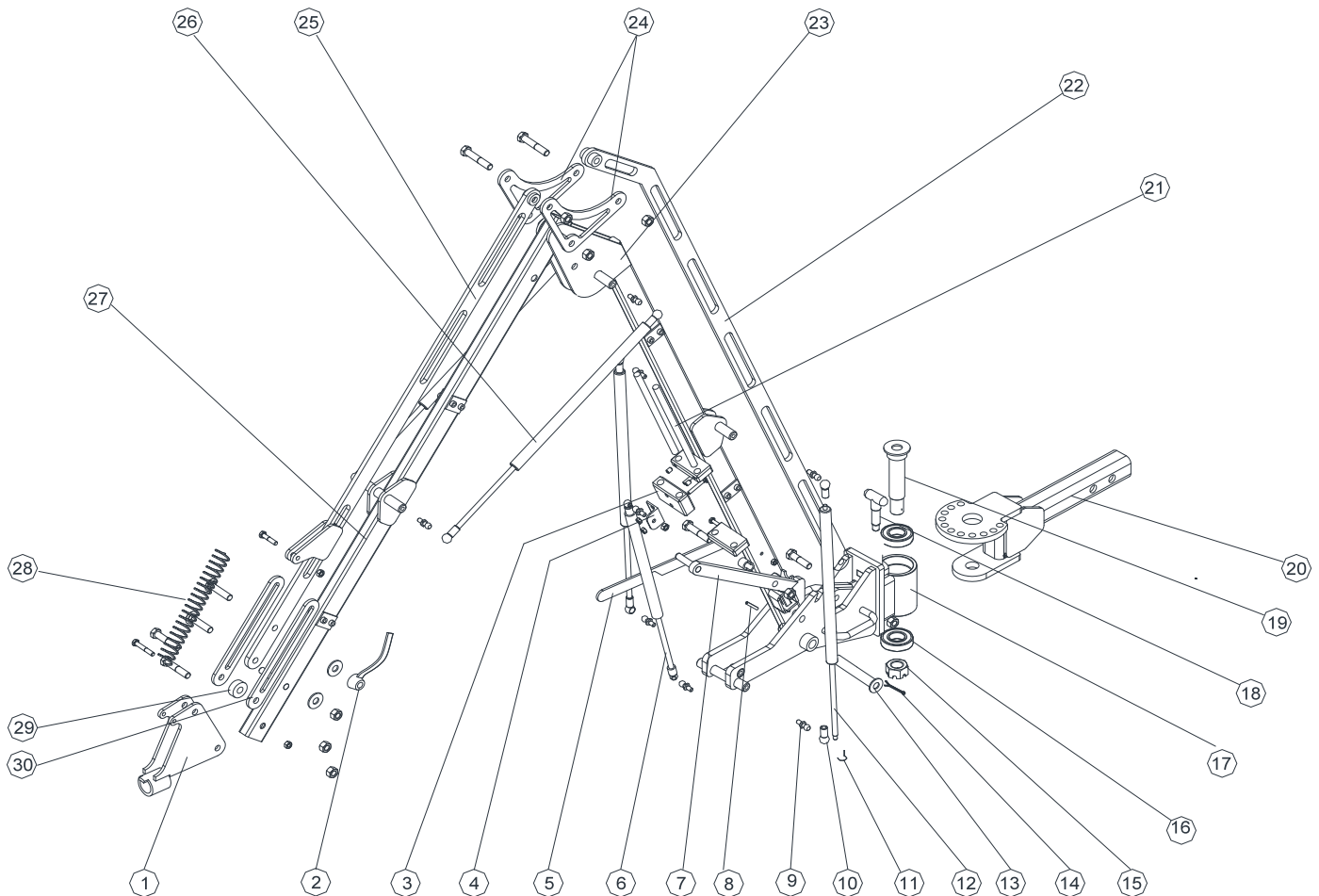
**HYDRAULIC FLUID RECOMMENDATIONS**

MANUFACTURER	UNIVERSAL TRACTOR FLUID
ARCO.....	ARCO TRACTOR FLUID
AMOCO.....	1000 Fluid
CHEVRON.....	Tractor Hydraulic Fluid
CITGO .....	AW/32
MOBIL.....	Mobilfluid 423
SHELL .....	Donax TD
SUN .....	TH Fluid
TEXACO .....	THD Fluid

If ‘RED’ Dexron transmission fluid is used, replace with same type. Do not mix types of fluid.



# SD400 Boom Mechanical Parts



ITEM	QTY	DESCRIPTION	PART NO.	ITEM	QTY	DESCRIPTION	PART NO.
1	1	HEAD PIVOT BRKT, CM BOOM	2201-011	16	2	SD/ER SEALED BEARING	2105-214
2	1	HANDLE NUT 1/2"	990-150	17	1	SWIVEL BASE COMPLETE SD400/ERG3	2201-002
3	1	PLASTIC SLIDE BLOCK	2201-021	18	1	T PIN - SD400/800/ERG3	2105-202-16T
4	1	CYLINDER ANCHOR ANGLE	2201-022	19	1	HITCH MOUNTING PIN, SD400/ERG3	2105-206
5	1	SD400 LATCH HANDLE	2201-017	20	1	ER HITCH MOUNT, ERG3	2105-201
6	1	GAS CYLINDER 225#	2201-222*	21	2	SD ALUMINUM SLIDE ROD	2201-020
7	1	SD LATCH ARM	2201-015	22	1	PRIMARY LINKAGE ARM	2201-012
8	1	SPRING PIN 3/8x2"	990-130	23	1	SD400 PRIMARY BOOM	2201-003
9	10	BALL STUD (YELLOW or SILVER)	2201-203**	24	2	SD LINKAGE DOG LEG	2201-014
10	10	GAS CYL. SOCKET	2201-201	25	1	SD400 SECONDARY LINKAGE ARM	2201-013
11	10	CYL. SOCKET CLIP	2201-204	26	2	GAS CYLINDER 175#	2201-220****
12	2	GAS CYL. 200#	2201-221***	27	1	SD400 SECONDARY BOOM ARM	2201-004
13	1	SD400 SWIVEL BOOM PIN	2201-303	28	1	SD 8" SPRING DOUBLE LOOP	2201-031
14	1	COTTER KEY 1/8 X 1 1/2	990-119	29	3	SPACER .375	2201-019
15	1	CASTLE JAM NUT	910-117	30	2	SLIDE LINK	2201-016

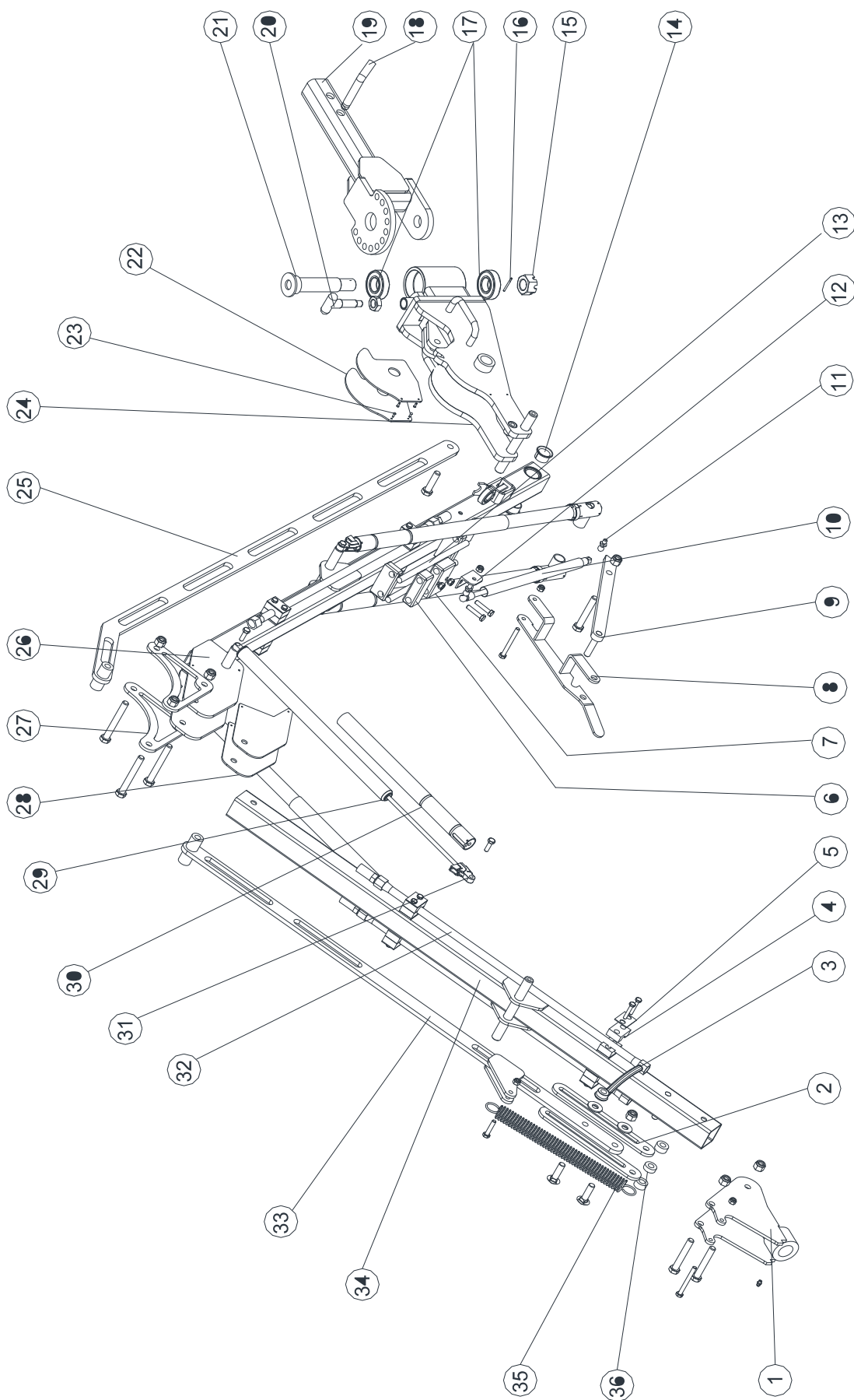
\*2201-222A - SD400 225# assembled includes 6, 10x2 & 11x2

\*\*2201-203Y - Yellow - 2201-203S- Silver

\*\*\*2201-221A - SD400 200# assembled includes 12, 10x2 & 11x2

\*\*\*\*2201-220A SD400 175# assembled includes 26, 10x2 & 11x2

# SD 800 Chrome Moly Boom Mechanical Parts

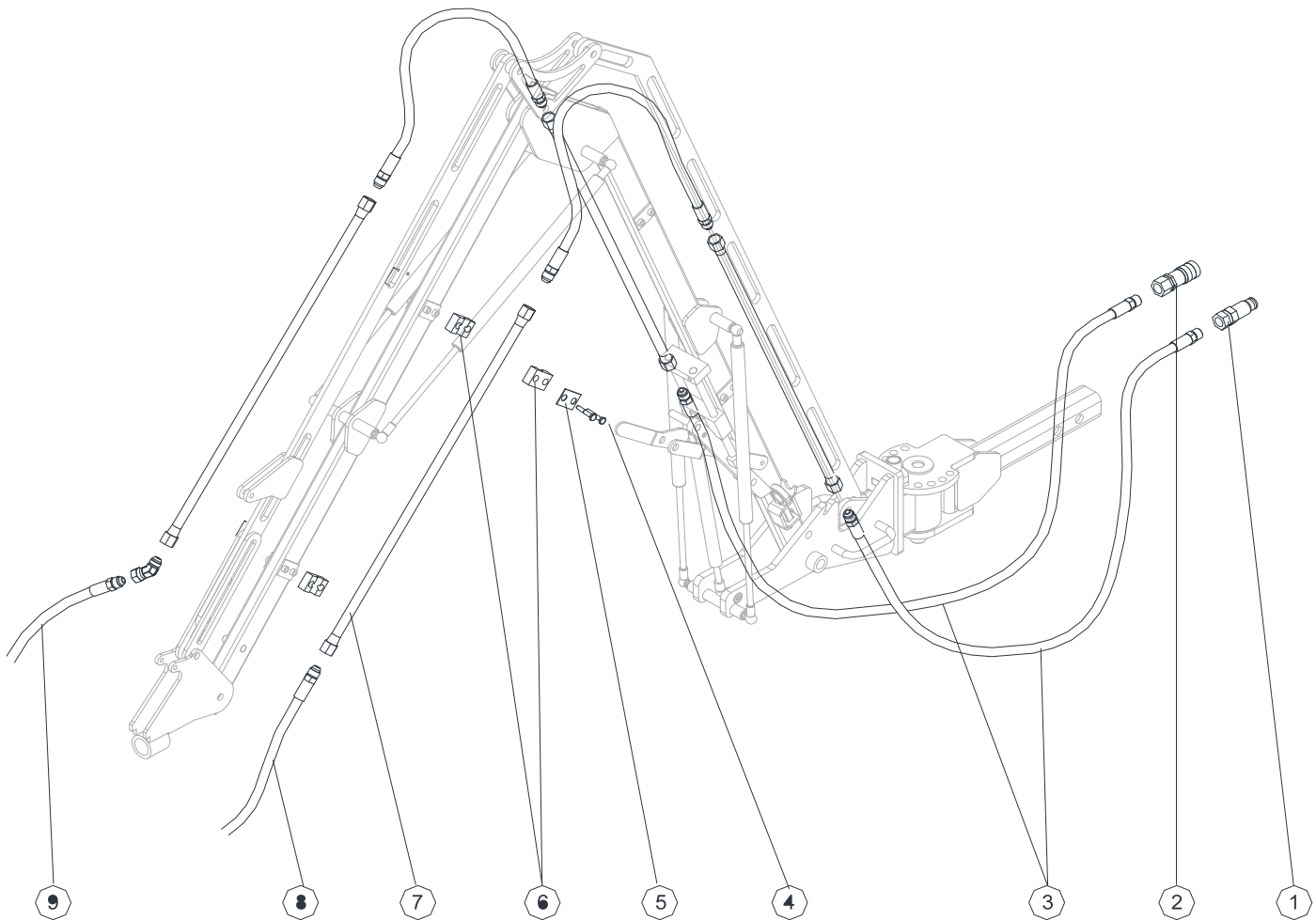


# SD 800 Chrome Moly Boom Mechanical Listing

ITEM	QTY	DESCRIPTION	PART NO.	ITEM	QTY	DESCRIPTION	PART NO.
1	1	HEAD PIVOT BRKT, CM BOOM	2301-011	19	1	HITCH MOUNT, ERG3	2105-201
2	2	SLIDE LINK	2201-016	20	1	1/2 STEEL TL/O HANDLE	2105-202-16T
3	1	HANDLE NUT	990-150	21	1	HITCH PIN, ERG3	2105-206
4	8	CLAMP BODY	2101-122	22	2	WEAR PLATE, SWIVEL	2301-002-25
5	8	CLAMP COVER PLATE	2101-123	23	4	1/8" DRIVE PIN	990-505
6	1	PLASTIC SLIDE SPACER	2201-023	24	1	SWIVEL, SD800, ERG3	2301-202
7	1	PLASTIC SLIDE BLOCK	2201-021	25	1	PRIMARY LINKAGE ARM	2201-012
8	1	SECONDARY LATCH HANDLE	2301-017	26	1	CM PRIMARY BOOM	2301-003
9	1	PRIMARY LATCH HANDLE	2201-015	27	2	DOG LEG	2201-014
10	1	GAS CYLINDER 225#	2201-222	28	2	PRIMARY BOOM WEAR PLATE	2301-002-25
11	10	BALL STUD (YELLOW)	2201-203Y	29	4	LOCKING GAS CYLINDER 200#	2201-224*
12	1	CYLINDER ANCHOR ANGLE	2201-022	30	4	LOCKING CYL. SLEEVE	2201-228
13	2	SLIDE ROD	2201-020	31	4	CABLE RELEASE	2201-225
14	2	GARLOCK BUSHING	2201-052	32	4	HYDRAULIC STEEL TUBE	2101-118
15	1	CASTLE NUT	910-117	33	1	CM SECONDARY LINKAGE ARM	2301-013
16	1	COTTER KEY 1/8 X 1 1/2	990-119	34	1	CM SECONDARY BOOM ARM	2301-004
17	2	SEALED BEARING	2105-214	35	1	HEAD SPRING	2201-031
18	1	RECEIVER HITCH PIN	2110-100	36	3	SPACER .375	2201-018

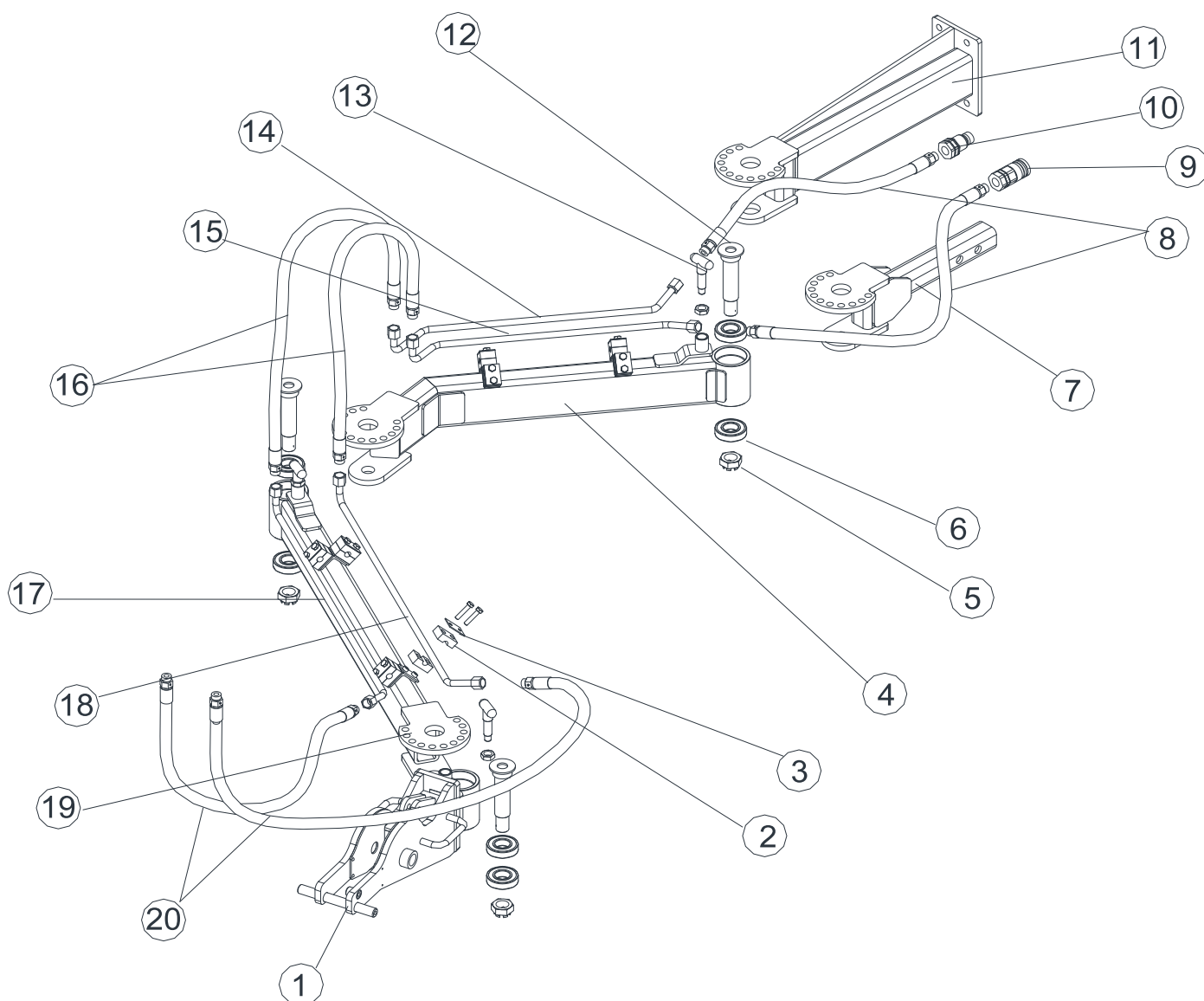
\*29, 30 & 31 2201-224A

# SD400/800 Chrome Moly Boom Hydraulics Parts



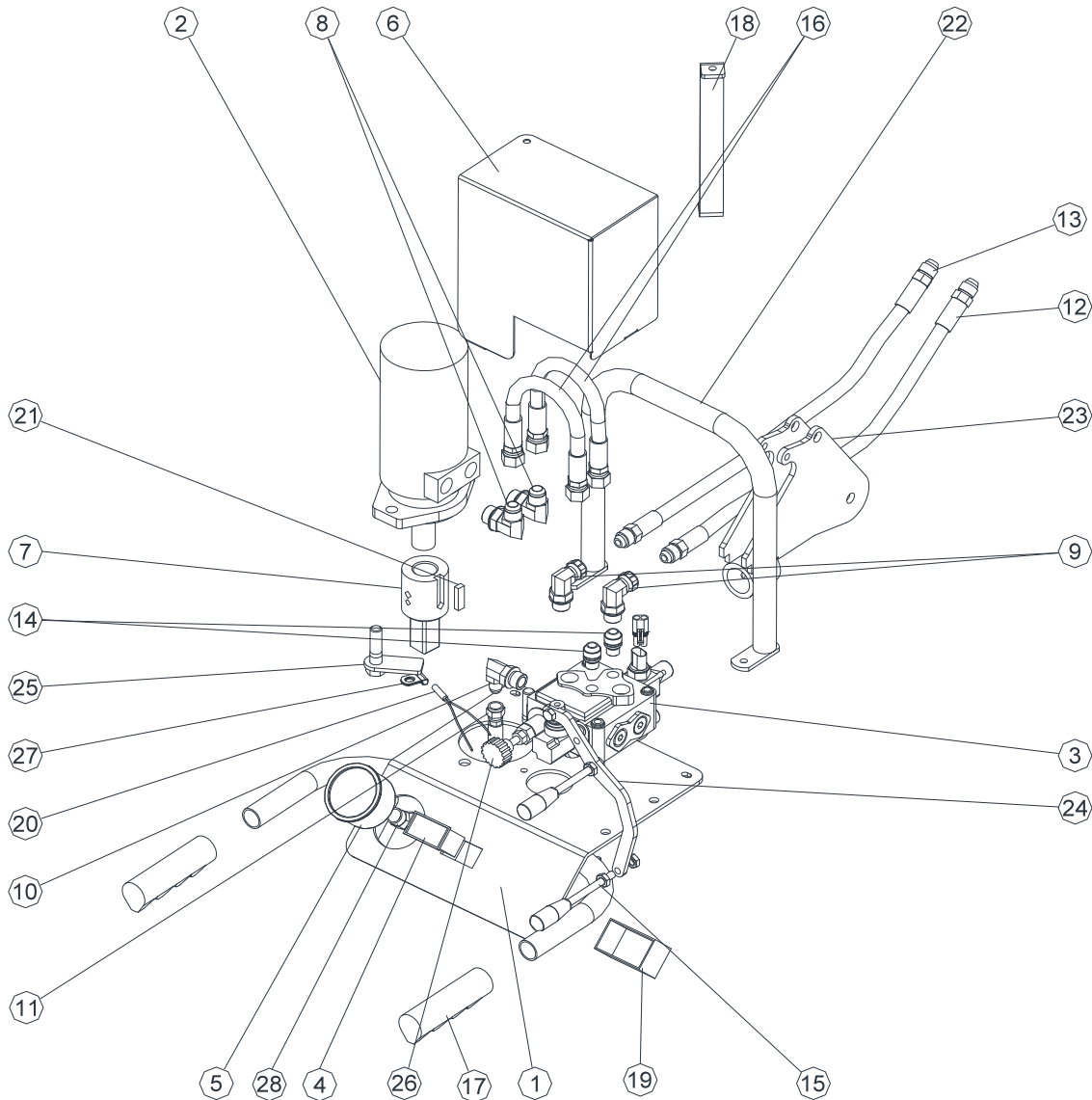
ITEM	QTY	DESCRIPTION	PART NO.
1	1	MALE FLAT FACE CONNECTOR	2101-120
2	1	FEMALE FLAT FACE CONNECTOR	2101-121
3	2	HOSE 3/8" X 74"	962-110
4	16	CAPSCREW 1/4 X 1 1/2 NC	901-105
5	8	CLAMP COVER PLATE	2101-123
6	8	TUBE CLAMP BODY	2101-122
7	4	TUBE	2101-118
8	1	HOSE 3/8" X 23"	962-105
9	1	HOSE 3/8" X 21"	962-106
10	1	FITTING	2201-101
11	2	HOSE 3/8" X 31.5" SLEEVED	962-103

# ER (Extended Reach) Parts Listing



ITEM	QTY	DESCRIPTION	PART NO.		ITEM	QTY	DESCRIPTION	PART NO.
1A	1	SD800 SWIVEL, ERG3	2301-202		11	1	HITCH MOUNT, SD800, VAC250	2250-152
1B	1	SWIVEL SD400	2201-202		12	1	HITCH PIN, ERG3	2105-206
2	8	CLAMP BODY	2101-122		13	1	1/2 STEEL TL/O HANDLE	2105-202-16T
3	8	CLAMP COVER PLATE	2101-123		14	1	HYD. TUBE, PRIMARY LEFT	2105-212
4	1	PRIMARY ARM, ERG3	2105-202		15	1	HYD. TUBE, PRIMARY RIGHT	2105-213
5	3	CASTLE NUT	910-117		16	2	HOSE 1/2 X 31 1/2" MJ-MJ	962-103
6	6	BEARING	2105-214		17	1	HYD. TUBE, SECONDARY, LEFT	2105-210
7	1	HITCH MOUNT, ERG3	2105-201		18	1	HYD. TUBE, SECONDARY, RIGHT	2105-211
8	2	HOSE 1/2 X 40" MJ-MP	962-102		19	1	SECONDARY ARM, ERG3	2105-203
9	1	FEMALE FF COUPLER	961-FEM501-8FP		20	2	HOSE 1/2 X 40" MJ-MJ	962-104
10	1	MALE FF COUPLER	961-FEM502-8FP					

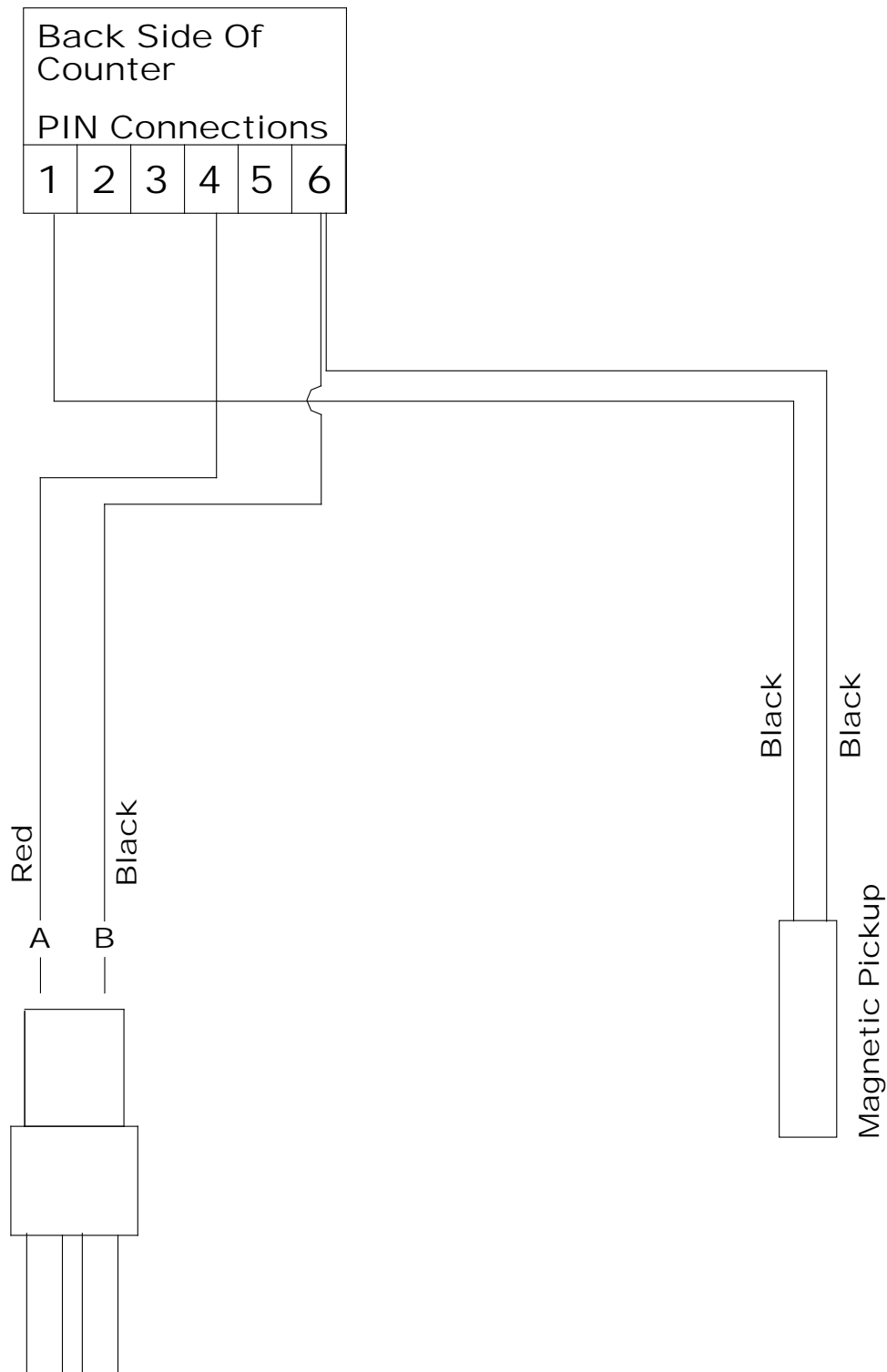
# SD400 Standard Head Parts Listing



ITEM	QTY	DESCRIPTION	PART NO.	ITEM	QTY	DESCRIPTION	PART NO.
1	1	MOTOR BRACKET	2102-005	15	2	VALVE LEVER HANDLE	2102-111
2	1	HYRAULIC MOTOR	2102-113	16	2	HOSE 1/2" X 12"	962-108
3	1	VALVE	2102-110	17	2	RUBBER HANDLE	2101-143
4	1	COUNTER (with harness)	2102-101	18	1	SHIELD BRACE	2102-006-12
5	1	TORQUE GAUGE	2102-155	19	1	COUNTER PROTECTOR	2102-166
6	1	SD400 HEAD SHIELD	2102-006	20	1	COUNTER PICKUP "firecracker"	2102-102
7	1	MOTOR DRIVE ADAPTER	2101-006	21	1	MAGNET	2102-173
8	2	FITTING	961-6809-8-8	22	1	PULL BAR	2102-007
9	2	FITTING	961-6801-8-10	23	1	SD400 PIVOT BRACKET	2201-011
10	1	FITTING	961-6801-NOW-8-8	24	1	DRIVE CONTROL LEVER U-BRACKET	2102-009
11	1	HOSE 1/4" X 8"	962-130	25	1	SENDING UNIT BRACKET	2102-023
12	1	HOSE 1/2" X 21"	962-106	26	1	PRESSURE CONTROL KNOB	2102-112
13	1	HOSE 1/2" X 23"	962-105	27	1	METAL CABLE CLAMP 1/4 X 1/2	980-010-25104
14	2	FITTING	961-6400-8-6	28	1	FITTING	4200-108



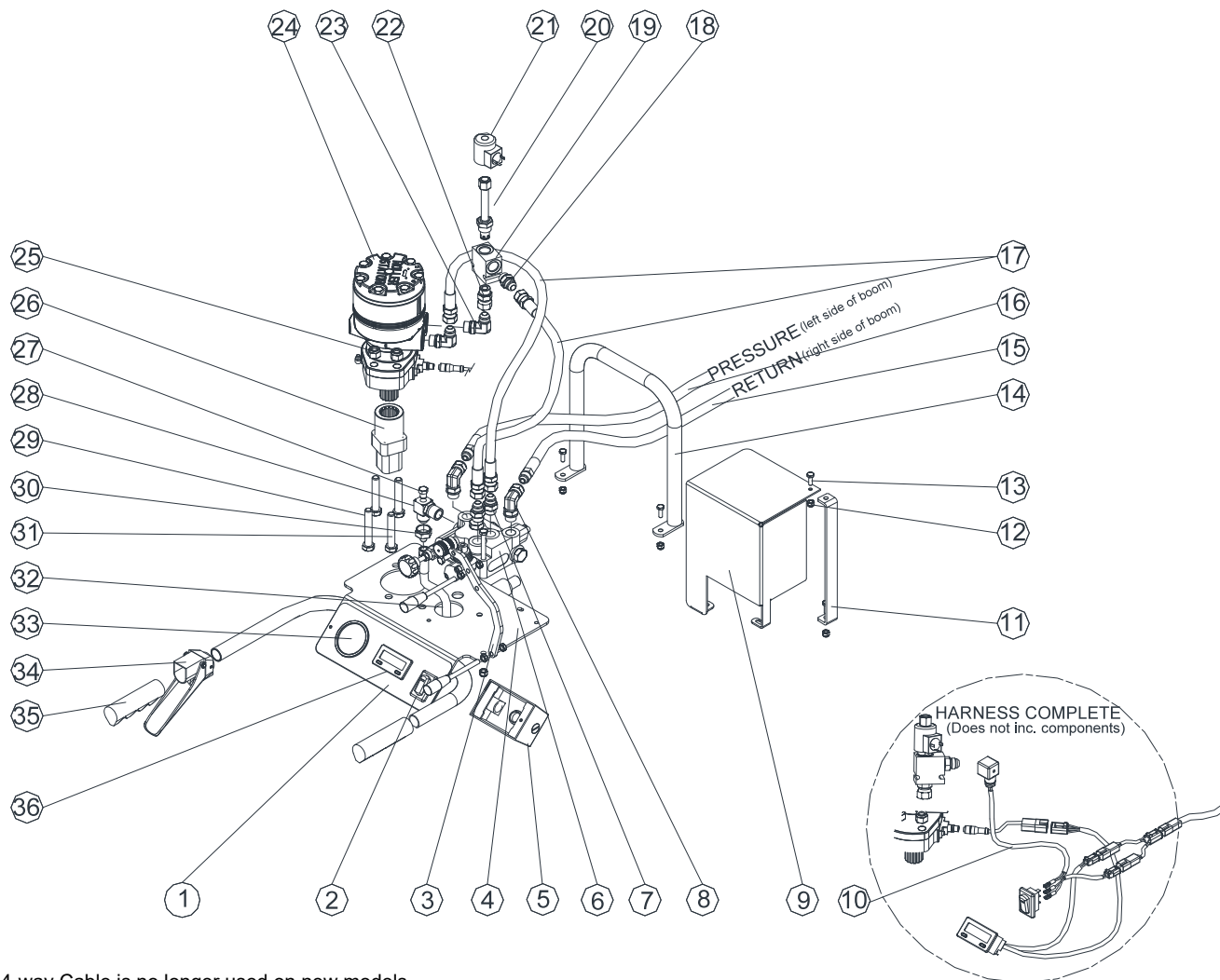
# SD 400 Counter Wiring Schematic



## NOTES:

- Above is the schematic for counter with black 'zero' button on front of counter.
- Magnetic pickup must be adjusted to 1/16" to 1/8" from end of pickup sensor to magnet in motor adapter shaft for signal to be received.

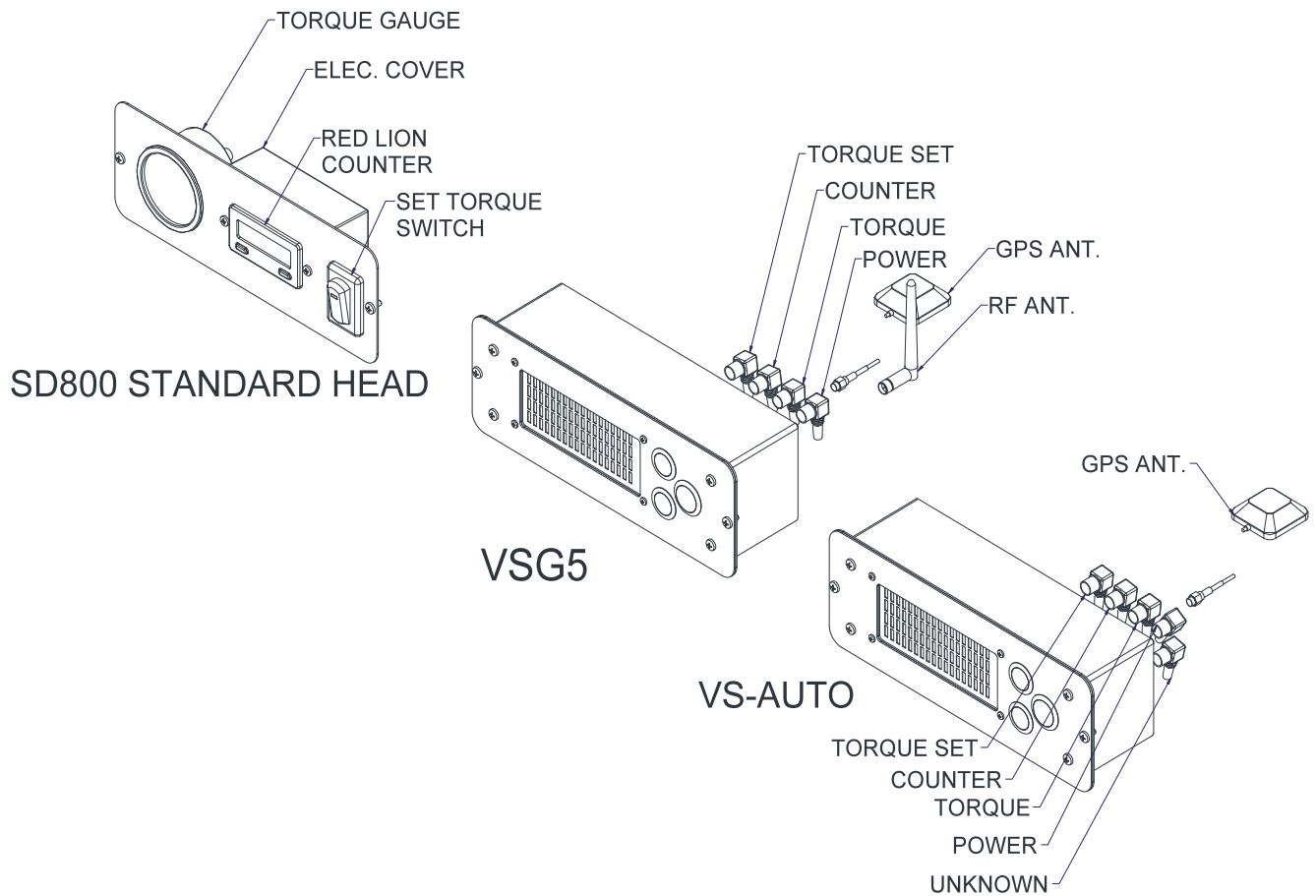
# SD800/ERB800 Standard Head With LED



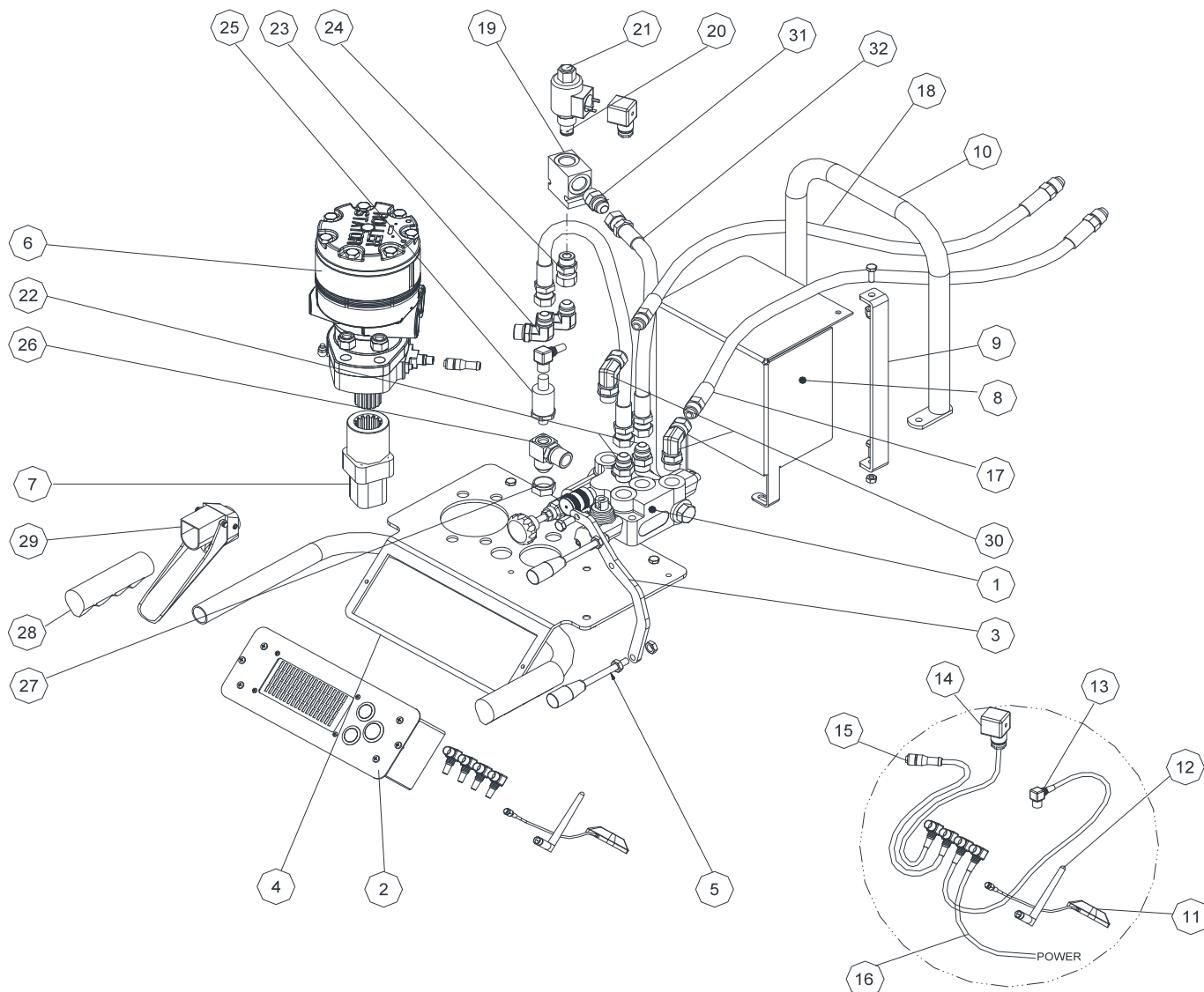
\* 4-way Cable is no longer used on new models

ITEM	QTY	DESCRIPTION	PART NO.	ITEM	QTY	DESCRIPTION	PART NO.
1	1	SD800 LED FACE PLATE	2302-003	19	2	SD800 TORQUE SET BODY	2302-110-11
2	1	TORQUE SET SWITCH COMPLETE	2302-112	20	1	SD800 TORQUE SET VALVE	2302-110-12
3	1	SD VALVE CONTORL LEVER BRKT	2102-009	21	1	SD800 TORQUE SET COIL	2302-110-13
4	1	LED SD800 HEAD PLATE	2302-005	22	1	FITTING 8MORB-8FJX-STR	961-6900-8-8
5	1	ELECTRICAL BOX	2302-104	23	1	FITTING 8MJ-10AOR-90	961-6801-NWO-8-10
6	1	BLB VALVE	2302-100	24	1	SD800/ERB800 HYDRAULIC MOTOR	2302-102
7	2	FITTING 8MJ-8MORB-STR.	961-6400-8-8	25	2	NYLOC NUT 1/2-13	905-001
8	2	FITTING 8AOR-8FJX-90	961-6809-8-8	26	1	SD800 DRIVE ADAPTER	2301-006
9	1	VSG5 HEAD SHIELD	2302-006-VS5	27	4	6409-HHP-4 PLUG	2302-102-12
10	1	SD800 HARNESS – TORQ SET	2302-117	28	1	FITTING GAUGE PORT, SPECIAL	2302-102-11
11	1	HEAD SHIELD BRACE	2302-008	29	1	BOLT 1/2"X3 1/2"	905-113
12	1	BRACE, SD800 HEAD SHIELD	901-001	30	1	FITTING 10FJ-6MJ STR. RED	961-2406-10-6
13	1	NYLOCK NUT 1/4-20	901-102	31	1	CS 1/2-13 X 3"	905-111
14	4	SD400 PULL BAR	2102-007	32	1	HOSE 1/4" X 9"	962-130
15	4	HOSE 1/2" X 19"	962-105	33	3	SD800 PRESSURE/TORQ GAUGE	2302-105
16	1	HOSE 1/2" X 21"	962-106	34	1	RELEASE CABLE 4-WAY (complete)	2201-229*
17	1	HOSE 1/2" X 14"	962-107	35	1	HANDLE GRIP - BLACK	2101-143
18	1	FITTING 8MJ-8MORB STR.	961-6400-8-8	36	1	SD800 RED LION COUNTER	2302-101-10

# Spin Doctor Module Configurations



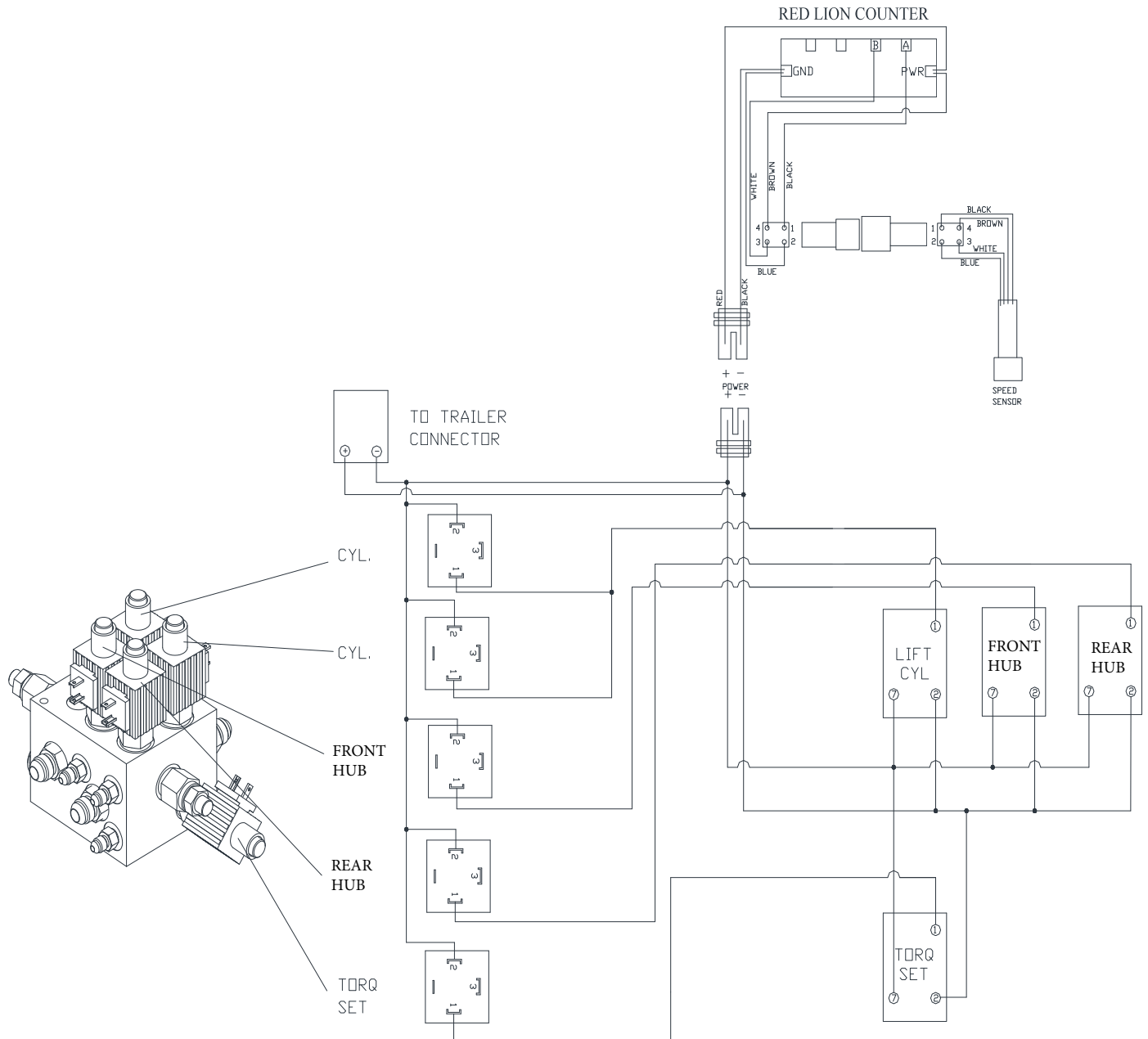
# SD800/ERB800 ValveSTAR G5 Head



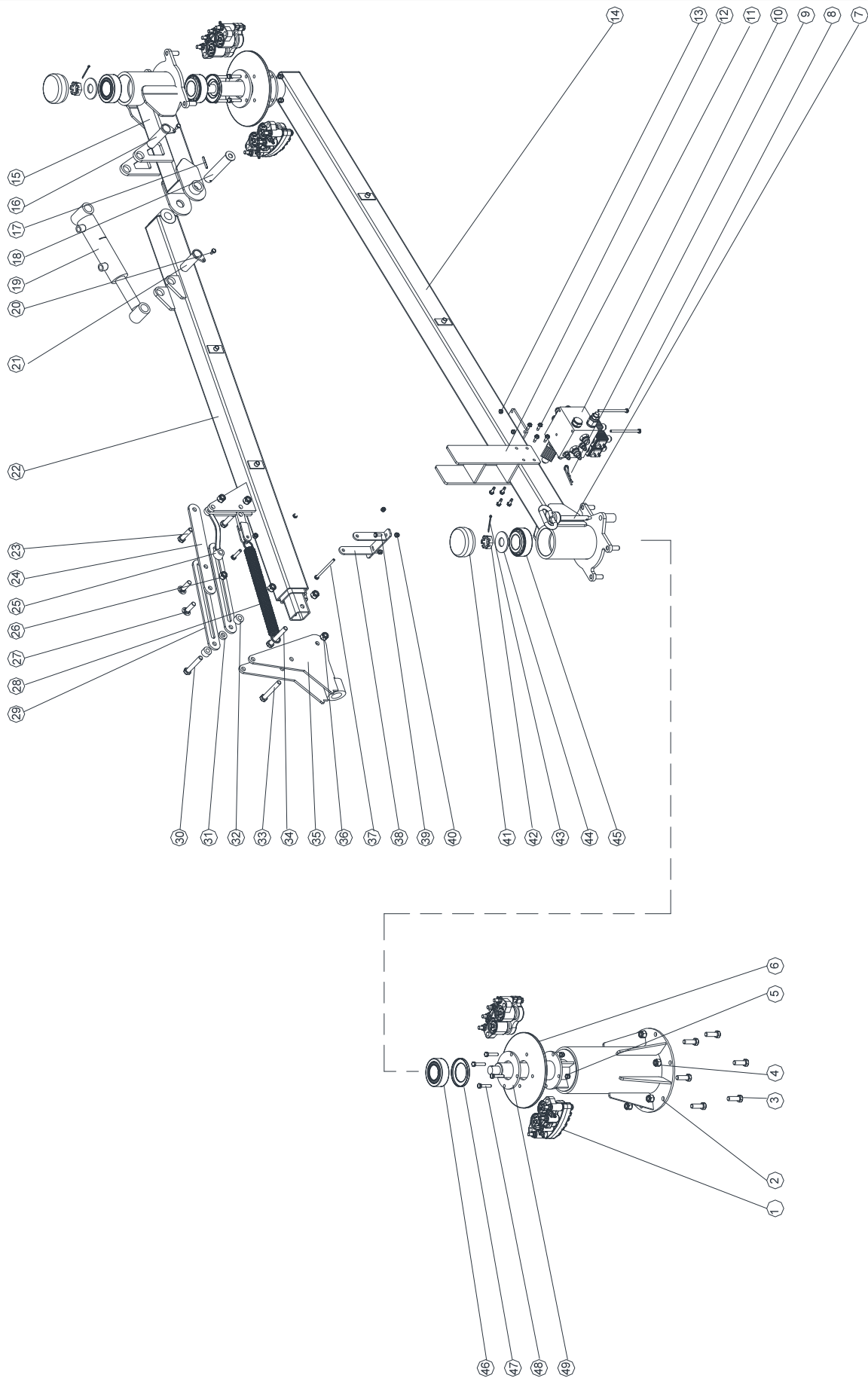
\* 4-way Cable is no longer used on new models

ITEM	QTY	DESCRIPTION	PART NO.	ITEM	QTY	DESCRIPTION	PART NO.
1	1	BLB VALVE	2302-100	17	1	HOSE 1/2" X 19"	962-105
2	1	VSG5 LED CONTROL BOX	2207-001	18	1	HOSE 1/2" X 21"	962-106
3	1	SPIN DOCTOR VALVE LEVER BRKT	2102-009	19	2	SD800 TORQUE SET BODY	2302-110-11
4	1	LED SD800 MOTOR PLATE	2207-005	20	1	SD800 TORQUE SET VALVE	2302-110-12
5	2	CONTROL HANDLE	2102-009-12	21	1	SD800 TORQUE SET COIL	2302-110-13
6	1	WHITE MOTOR	2203-013-11	22	2	FITTING 8MJ-8MORB-STR.	961-6400-8-8
7	1	SD800 DRIVE ADAPTER	2301-006	23	2	FITTING 8MJ-10AOR-90	961-6801-NWO-8-10
8	1	VSG5 HEAD SHIELD	2302-006-VS5	24	1	FITTING 8MORB-8FJX	961-6402-8-8
9	1	HEAD SHIELD BRACE	2302-008	25	1	PRESSURE SENSOR	2207-003
10	1	SD400 PULL BAR	2102-007	26	1	FITTING 8MORB-8MJ-90	961-6801-NOW-8-8
11	1	GPS ANTENNAE	2303-111	27	1	PLUG 8FJ	961-304-C-8
12	1	RF ANTENNAE	2207-101	28	1	BLACK HANDLE GRIP	2101-143
13	1	TORQUE SENSOR CABLE	2207-004-01	29	1	4-WAY CABLE COMPLETE	2201-229*
14	1	TORQUE SET CABLE	2207-004-02	30	2	FITTING 10AOR-8FJX-90	961-6809-NOW-10-8
15	1	SPEED SENSOR CABLE	2207-004-04	31	1	FITTING 8MJ-8MORB-STR.	961-6400-8-8
16	1	16 POWER CABLE	2207-004-03	32	1	HOSE 1/2" X 14"	962-107

# Wiring Diagram ERB-800 Standard Head (Without ValveSTAR)



# ERB-800 Mechanical Parts Breakdown

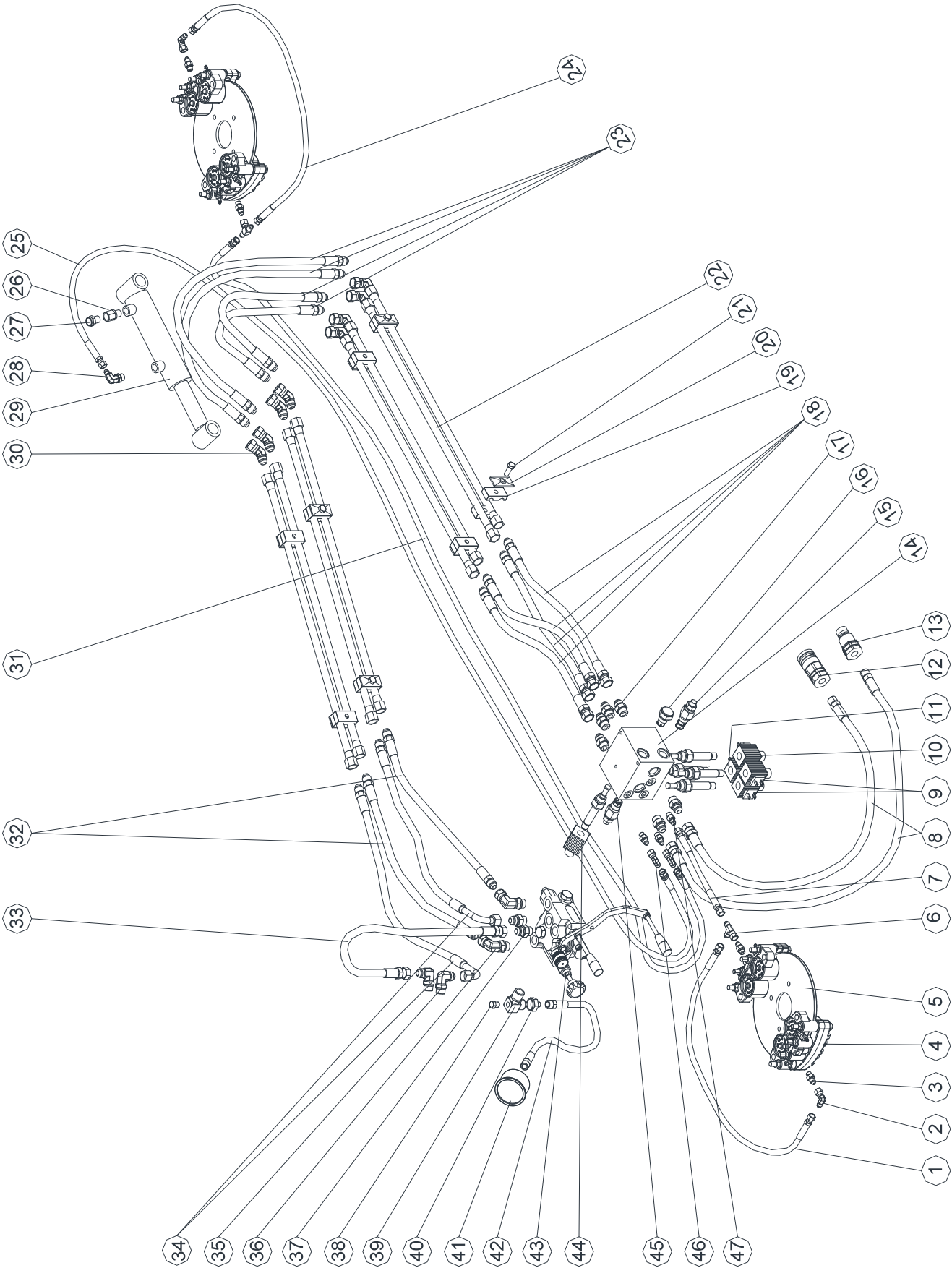




# ERB-800 Mechanical Parts Listing

ITEM	QTY	DESCRIPTION	PART NO.	ITEM	QTY	DESCRIPTION	PART NO.
1	4	CALIPER	2501-101	26	1	NYLOCK NUT 1/2-13	905-001
2	1	PEDESTAL BASE	2501-001	27	2	CARRIAGE BOLT 1/2-13 X 2	915-507
3	6	CAPSCREW 1/2-13 X 1 1/2	905-105	28	1	HEAD SPRING	2101-126
4	6	NYLOCK NUT 1/2-13	905-001	29	2	SLIDE LINK, ERB	2501-016
5	6	NYLOCK NUT 5/16-18	902-001	30	1	CAPSCREW 1/2-13 X 3	905-111
6	2	BRAKE ROTOR	2501-103	31	1	SPACER, INNER	2501-011-12
7	1	HD HITCH PIN 1/2 X 4	2101-150	32	2	SPACER, OUTER	2501-011-13
8	2	CAPSCREW 1/4-20 X 4	901-115	33	1	CAPSCREW 1/2-13 X 3 1/2	905-113
9	1	R-CLIP 1/2"	990-116	34	1	CAPSCREW 1/2-13 X 3	905-111
10	1	SOLENOID BLOCK (complete)	2501-502	35	1	PIVOT BRKT, ERB	2501-011
11	8	ST BOLT 1/4" X 3/4"	901-202	36	1	NYLOCK NUT 1/2-13	905-001
12	1	HEAD REST BRKT	2501-108	37	2	CAPSCREW 1/4-20 X 4	901-115
13	2	LOCKNUT 1/4-20	901-005	38	2	DIGSY MOUNTING BRKT	2302-011
14	1	PRIMARY ARM	2501-002	39	4	CAPSCREW 1/4-20 X 3/4	901-102
15	1	SECONDARY ARM	2501-003	40	4	NYLOCK NUT 1/4-20	901-001
16	1	CYLINDER PIN 1 X 3 1/2	2501-105	41	2	CAP, HUB	2501-125
17	1	SPRING PIN 3/16 X 1 1/2	990-100	42	2	CASTLE JAM NUT 1-14	910-117
18	1	SWIVEL PIN	2101-150	43	2	COTTERKEY 1/8 X 1 1/2	990-119
19	1	HYD. CYLINDER 2 X 4	2501-504	44	2	FLAT WASHER 1"	910-020
20	2	ST BOLT 1/4" X 1/2"	901-200	45	4	BEARING CONE	2501-115
21	1	CYLINDER PIN 1 X 3	2501-104	46	4	BEARING CUP	2501-116
22	1	SECONDARY LIFT ARM	2501-004	47	2	SEAL	2501-117
23	2	CAPSCREW 1/2-13 X 2	905-107	48	8	CAPSCREW 5/16-18 X 1 1/2	902-105
24	1	LOCKING LINK, ERB	2501-017	49	2	MOUNTING PLATE, ROTOR	2501-001-15
25	1	HANDLE NUT 1/2-13	990-150				

# ERB-800 Hydraulic Parts Breakdown



# ERB-800 Hydraulic Parts Listing

ITEM	QTY	DESCRIPTION	PART NO.	ITEM	QTY	DESCRIPTION	PART NO.
1	1	HOSE 1/4 X 24" 4FJ-4FJ	962-120	25	1	HOSE 1/4 X 128" 4FJ-4FJ	962-122
2	4	FITTING 4MJ-4FJ-X-90	961-6500-4-4	26	1	FITTING 6MORB-6FP-STR.	961-6405-6-6
3	4	FITTING 4MJ-2MP	961-2404-4-2	27	1	BREATHER 6MP	961-300-003
4	4	CALIPER	2501-120	28	1	FITTING 4MJ-8AOR-90	961-6801-NWO-4-8
5	2	ROTOR	2501-103	29	1	HYD. CYLINDER 2 X 4	2501-504
6	1	TEE FITTING 8MJ-8FJ-X-8MJ	961-6602-4-4-4	30	4	FITTING 8MJ-8FJ-X-45	961-6502-8-8
7	1	HOSE 1/4 X 7" 4FJ-4FJ	962-119	31	1	HOSE 1/4 X 106" 4FJ-4FJ	962-121
8	2	HOSE 1/2 X 70" 8FJ-8MP	962-113	32	2	HOSE 1/2 X 32" 8MJ-8MJ	962-116
9	2	DA 3/2 SOLENOID VALVE	2501-502-16	33	1	HOSE 1/2 X 14" 8FJ-X-8FJX	962-107
10	1	DA NC 2/2 SOLENOID VALVE	2501-502-18	34	2	HOSE 1/2 X 32" 8MJ-8FJ 90	961-117
11	1	DA 3/2 SOLENOID VALVE	2501-502-13	35	2	FITTING 8MJ-10AOR-90	961-6801-NWO-8-10
12	1	FEMALE FF QUICK COUPLER	961-FEM-501	36	2	FITTING 8AOR-8FJX-90	961-6809-8-8
13	1	MALE FF QUICK COUPLER	961-FEM-502	37	2	FITTING 8MJ-8MORB STR.	961-6400-8-8
14	1	CUSTOM MANIFOLD	2501-502-11	38	1	HHP-4 MORB PLUG	2302-102-12
15	1	PRESSURE REDUCING VALVE	2501-502-17	39	1	FITTING SPECIAL 90	2302-102-11
16	1	CHECK VALVE 5PSI	2501-502-15	40	1	FITTING 10FJ-5MJ STR. RED.	961-2406-10-6
17	6	FITTING 8MJ-8MORB-STR.	961-6400-8-8	41	1	GAUGE	2102-155
18	4	HOSE 1/2 X 16" 8FJ-8MJ	962-114	42	1	HOSE 1/4 X 9" 4FP-6FJX	2102-119
19	8	DOUBLE TUBE BODY CLAMP	2501-122	43	1	BLB VALVE	2302-100
20	8	DOUBLE CLAMP PLATE - TOP	2501-123	44	1	DA N.O. 2/2 SOLENOID VALVE	2501-502-14
21	8	CS 5/16-18 X 1 1/2"	905-105	45	1	FLOW CONTROL VALVE	2501-502-12
22	8	STEEL TUBE 1/2 X 25"	2101-118	46	2	FITTING 4MJ-4FJX-90	961-6500-4-4
23	4	HOSE 1/2 X 70" 8MJ-8MJ	962-115	47	3	FITTING 4MJ-4MORB-STR.	961-6400-4-4
24	1	HOSE 1/4 X 24" 4FJ-4FJ	962-120				

### Included Accessories:

- 3 piece valve wrench, adjustable to 8 ft. Optional sections are available to increase the length.

### Optional Accessories:

- Standard fire hydrant wrench adapter. Hydrant wrenches can be manufactured to meet any specification.
- HydroFlow Hose Monster Fire Hydrant Flow Diffuser/Flow Tester.
- Stanley Hydraulic power tools.

#### Limited Warranty

When used in accordance with instructions, HURCO Technologies, Inc. will replace to the original purchasers, free of charge, any part or parts of the Spin Doctor unit, excluding the engine, found to be defective in material or workmanship or both; this is the exclusive remedy. All transportation charges on parts submitted for replacement under this Warranty must be borne by the purchaser. The engine is warranted as outlined by the engine manufacturer's separate, limited warranty only. This warranty does not cover damage or loss to the Spin Doctor unit from operating negligence, or due to accident or other casualty. **THERE IS NO OTHER EXPRESS WARRANTY OR IMPLIED WARRANTIES. THIS WARRANTY IS LIMITED TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED, TO THE EXTENT PERMITTED BY LAW. IN NO EVENT SHALL WARRANTOR BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL AND CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE GOODS, TO THE EXTENT SUCH AVOIDANCE IS PERMITTED BY APPLICABLE LAW.**

#### Limited Spin Doctor Boom Lifetime Warranty

When used in accordance with instructions, HURCO Technologies, Inc. will replace to the original purchasers, free of charge, the boom sections of the Spin Doctor unit, excluding hydraulic, electrical or gas shocks, found to have failed due to a torque related incident while exercising a water main valve; this is the exclusive remedy. This warranty is for life and extends to the original purchaser only. All transportation charges on parts submitted for replacement under this Warranty must be borne by the purchaser. This warranty does not cover damage or loss to the Spin Doctor unit from operating negligence, or due to accident or other casualty. **THERE IS NO OTHER EXPRESS WARRANTY OR IMPLIED WARRANTIES. THIS WARRANTY IS LIMITED TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE AND TO THE EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED, TO THE EXTENT PERMITTED BY LAW. IN NO EVENT SHALL WARRANTOR BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL AND CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE GOODS, TO THE EXTENT SUCH AVOIDANCE IS PERMITTED BY APPLICABLE LAW.**





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