

1996

# Tube-Line 500

Parts and Service  
Manual and Automatic

## Notes

Electric Solenoid valves can be manually operated by pushing a small punch into end of spool and holding it in .

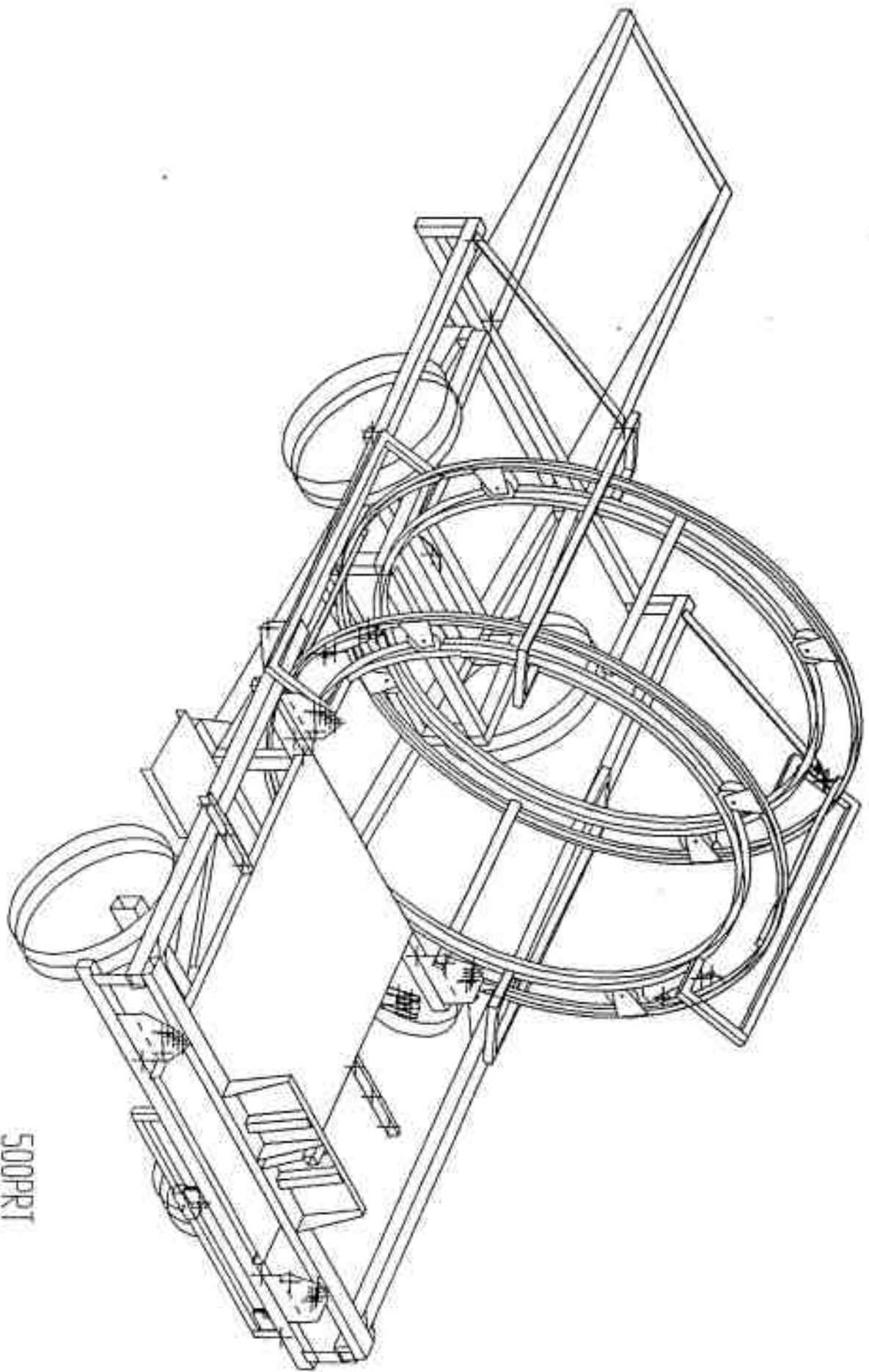
### **CAUTION STAY AWAY FROM WRAP HOOP WHEN ENGINE IS RUNNING.**

Inside Control Panel, control relays are numbered CR1 to CR5 from left to right relay CR1 is wired to table trigger . CR1 will activate solenoid valve to extend ram cylinder and CR5 . CR5 controls throttle solenoid. CR2 and CR3 are wired to motion sensor switch at rear roller, when switch arm is between teeth on sprocket, CR3 is energized, as roller turns switch arm it will be pushed to top of tooth on sprocket energizing CR2 and vice-versa . After both relays CR2 and CR3 are activated, wrap solenoid is energized causing wrap motor to turn . When ram cylinder is extended to the limit switch by the engine CR1,CR2 and CR3 will turn off and CR4 turns on. Wrap motor will stop and ram cylinder will retract until ram cylinder trips limit switch at front end of table . All control relays will turn off .

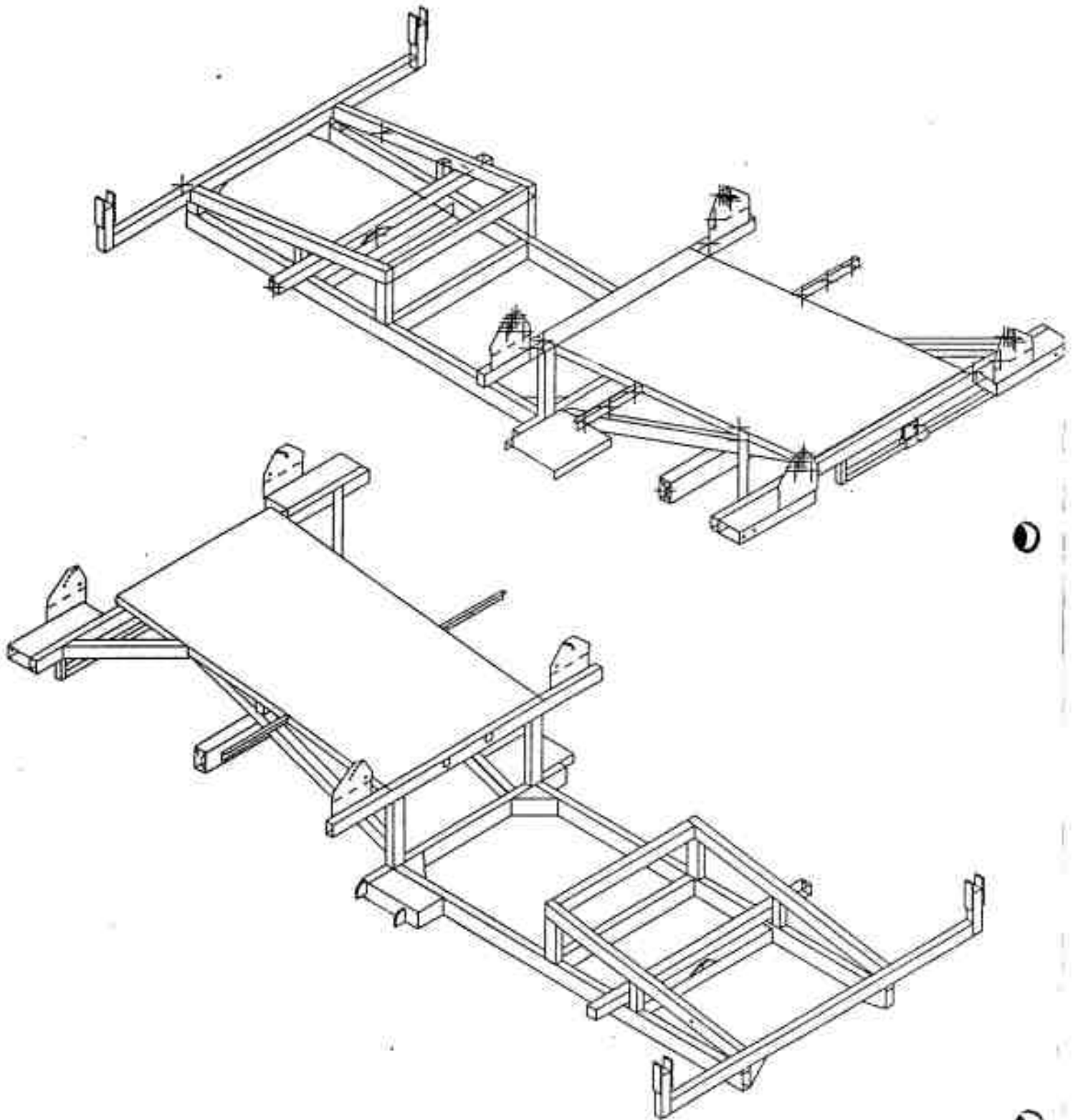
Testing can be done by pushing trigger plate then going to the back and turning roller with sprocket, then waiting until machine goes through the cycle . Or, you can push the small square button on end of control relay 1, then push button on control relay 2 or 3, whichever is not activated. Then waiting until machine goes through the cycle .

When running machine through the cycle and wrapper motor or the cylinders do not work, check flow control valve to see if flow is going to both motor and cylinder .

Engine is stopped by grounding ignition, in case of ignition failure, make sure that stop switch wire is not shorting to frame and engine stop switch is not in closed position.



500PRT



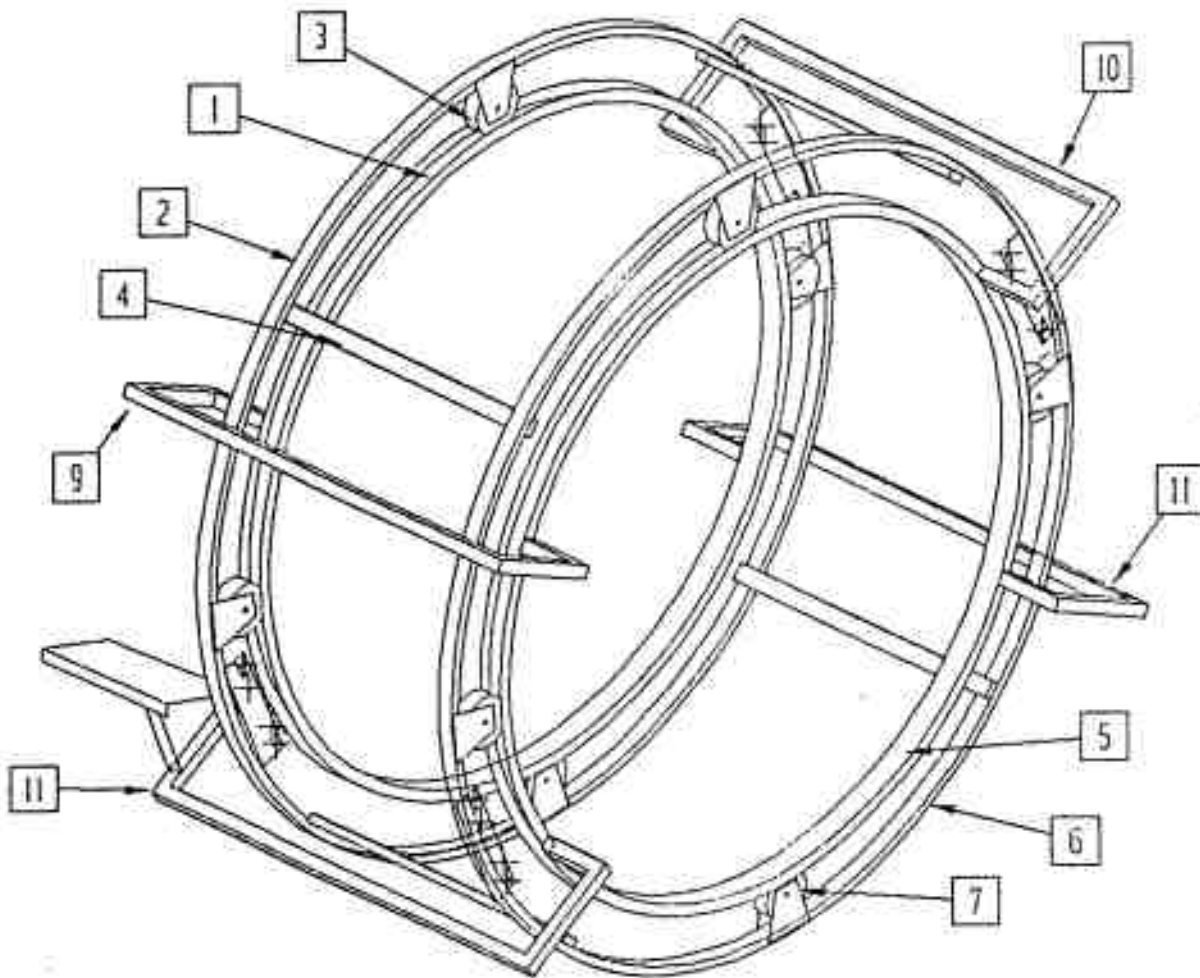
t50nodr1

Tube-Line 500  
Parts Manual  
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# Tube-Line 500

## Wrap Chamber



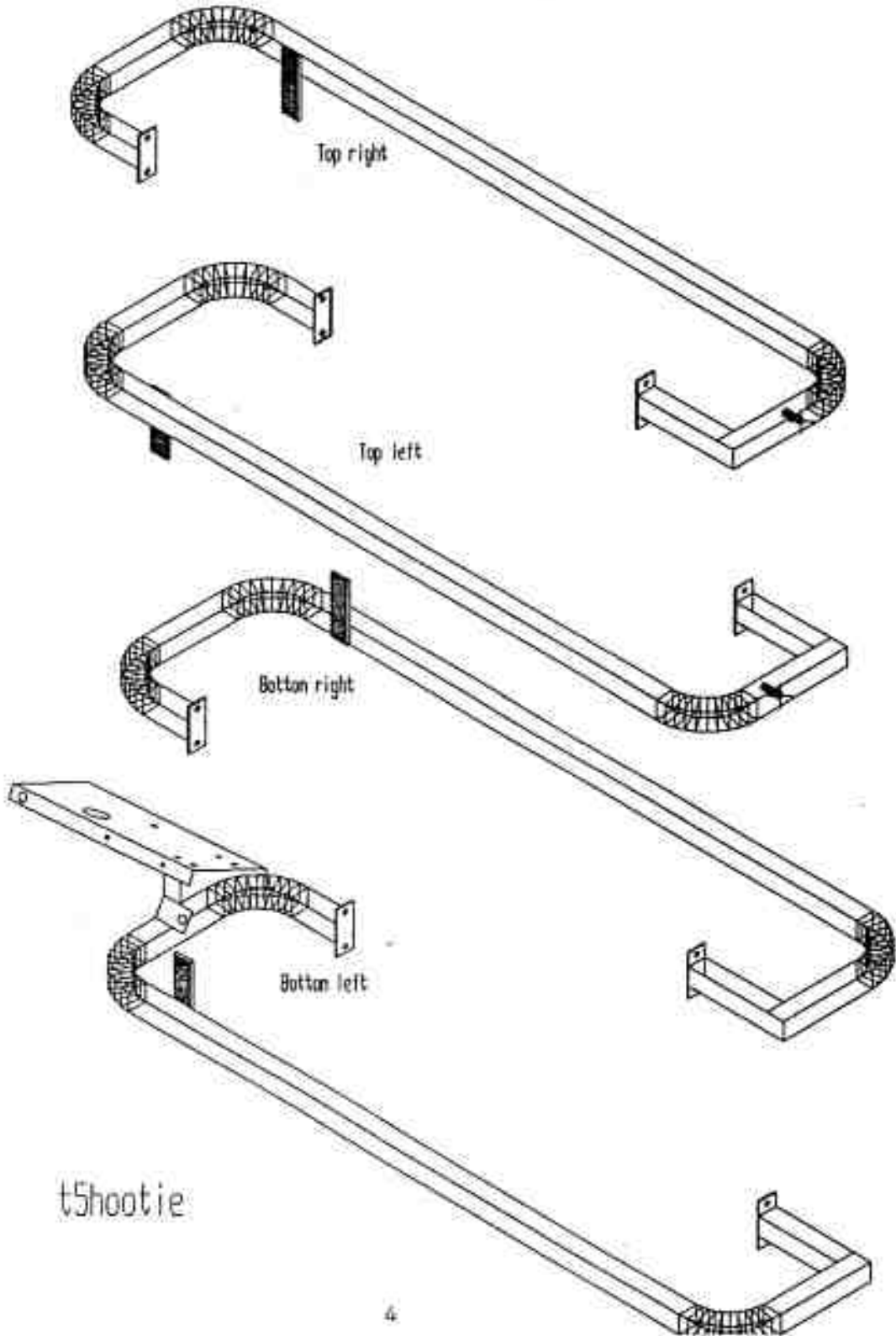
- |   |                    |
|---|--------------------|
| 1 | Front channel ring |
| 2 | Front Tube ring    |
| 3 | Front Wheel 6 in   |
| 4 | Ring Tie           |
| 5 | Rear Channel ring  |
| 6 | Rear Tube ring     |

- |    |  |
|----|--|
| 7  | Rear Wheel 4 in                          |
| 8  | Mounting Bolt 1/2 X 2 / nut / lockwasher |
| 9  | Top Left Hoop tie                        |
| 10 | Top Right Hoop tie                       |
| 11 | Bottom Right Hoop tie                    |
| 12 | Bottom Left Hoop tie                     |

WCH

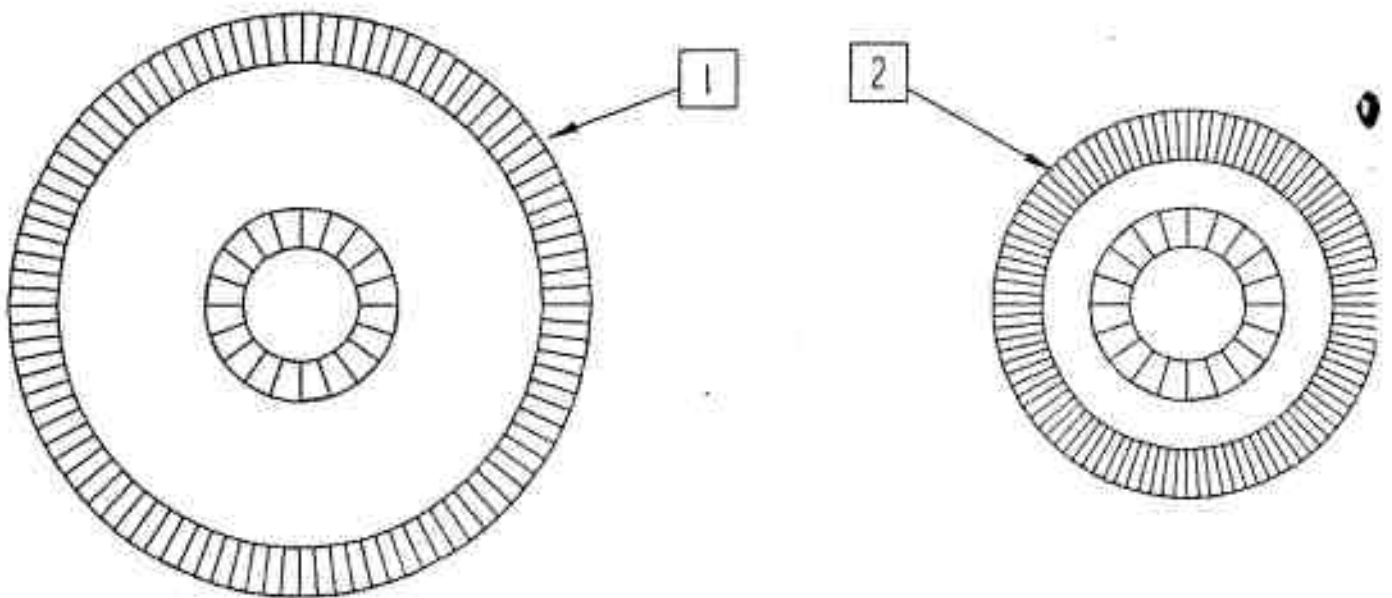
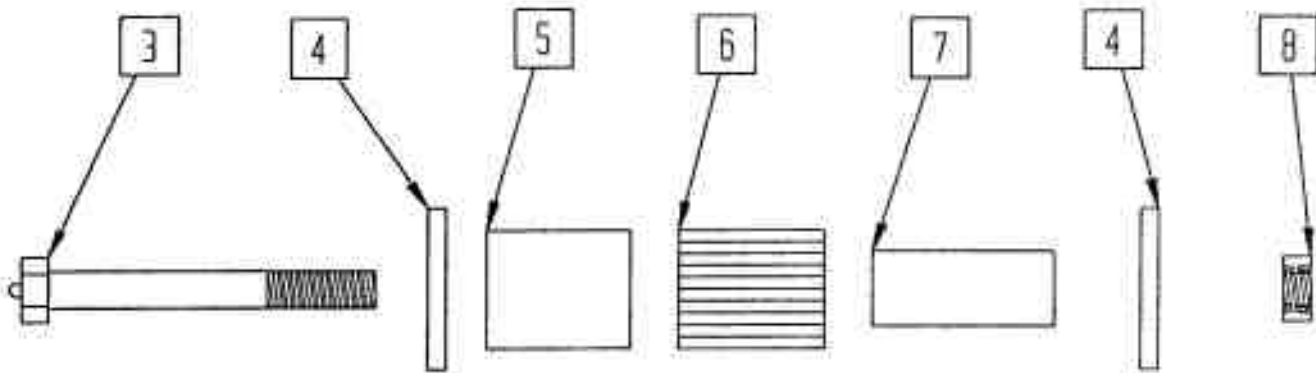
# Tube-Line 500

Hoop tie



# Tube-Line 500

## Hoop wheels



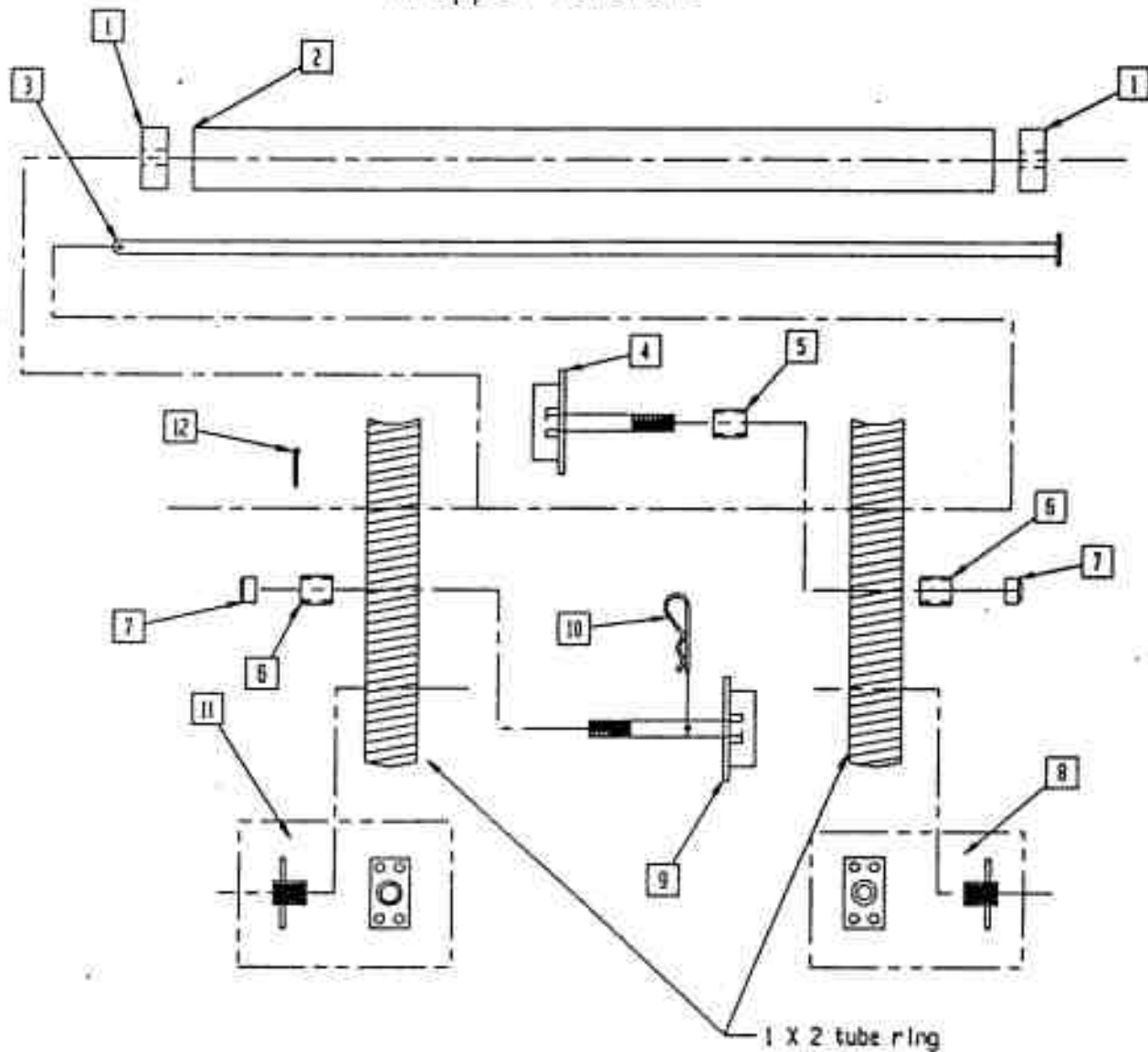
- |   |                |
|---|----------------|
| 1 | 6 in wheel     |
| 2 | 4 in wheel     |
| 3 | axle bolt      |
| 4 | bearing seal   |
| 5 | outer race     |
| 6 | roller bearing |
| 7 | inner race     |
| 8 | locknut        |

HWEE



# Tube-Line 500

wrapper hardware

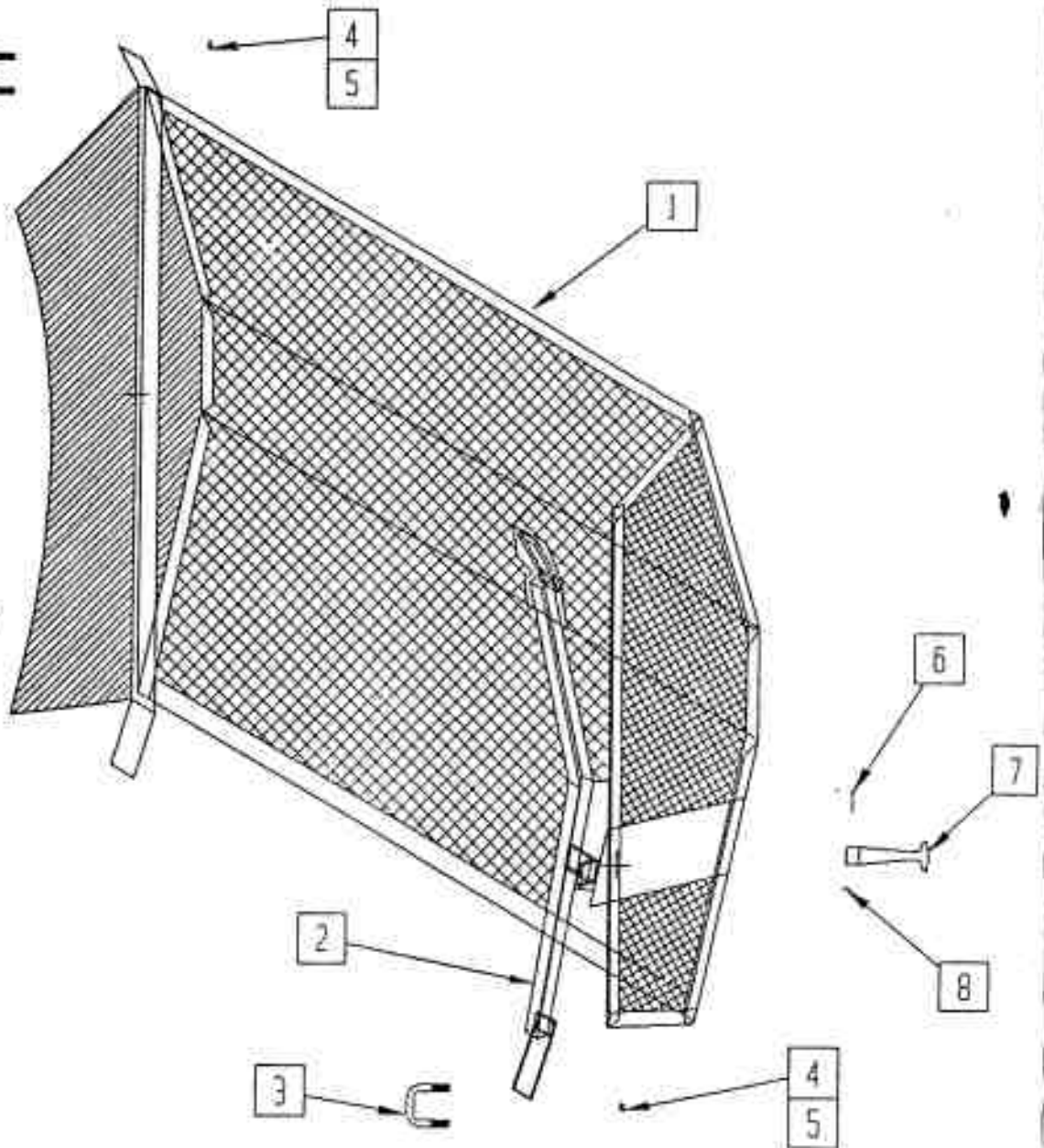


- |    |                               |
|----|-------------------------------|
| 1  | 2 in od X 9/16 id X 1 HMWPC   |
| 2  | 2 in ABS pipe                 |
| 3  | plastic roller pin            |
| 4  | plastic wrap spool            |
| 5  | spacer                        |
| 6  | Oilite bearing                |
| 7  | Nylon locknut                 |
| 8  | stretch wrap holder small end |
| 9  | plastic wrap spool            |
| 10 | hair pin                      |
| 11 | stretch wrap holder large end |
| 12 | cotter pin                    |

# Tube-Line 500

Safety nesh

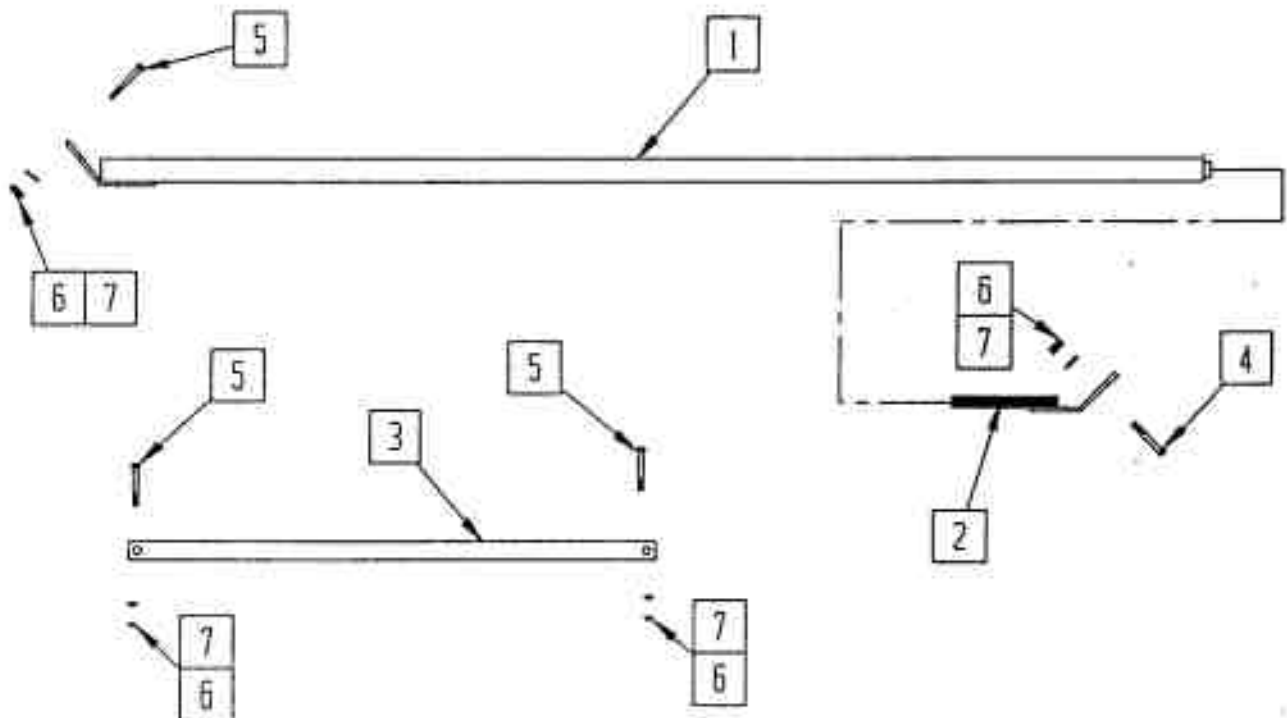
- |     |                     |
|-----|---------------------|
| 1 L | Left safety nesh    |
| 1 R | Right safety nesh   |
| 2 L | Left latch post     |
| 2 R | Right latch post    |
| 3   | 4 pc U bolt         |
| 4   | 4 pc 3/8 lockwasher |
| 5   | 8 pc 3/8 nut        |
| 6   | Latch pin           |
| 7   | Rubber latch        |
| 8   | cotter pin          |



Soft

# Tube-Line 500

Wrap brace & valve brace

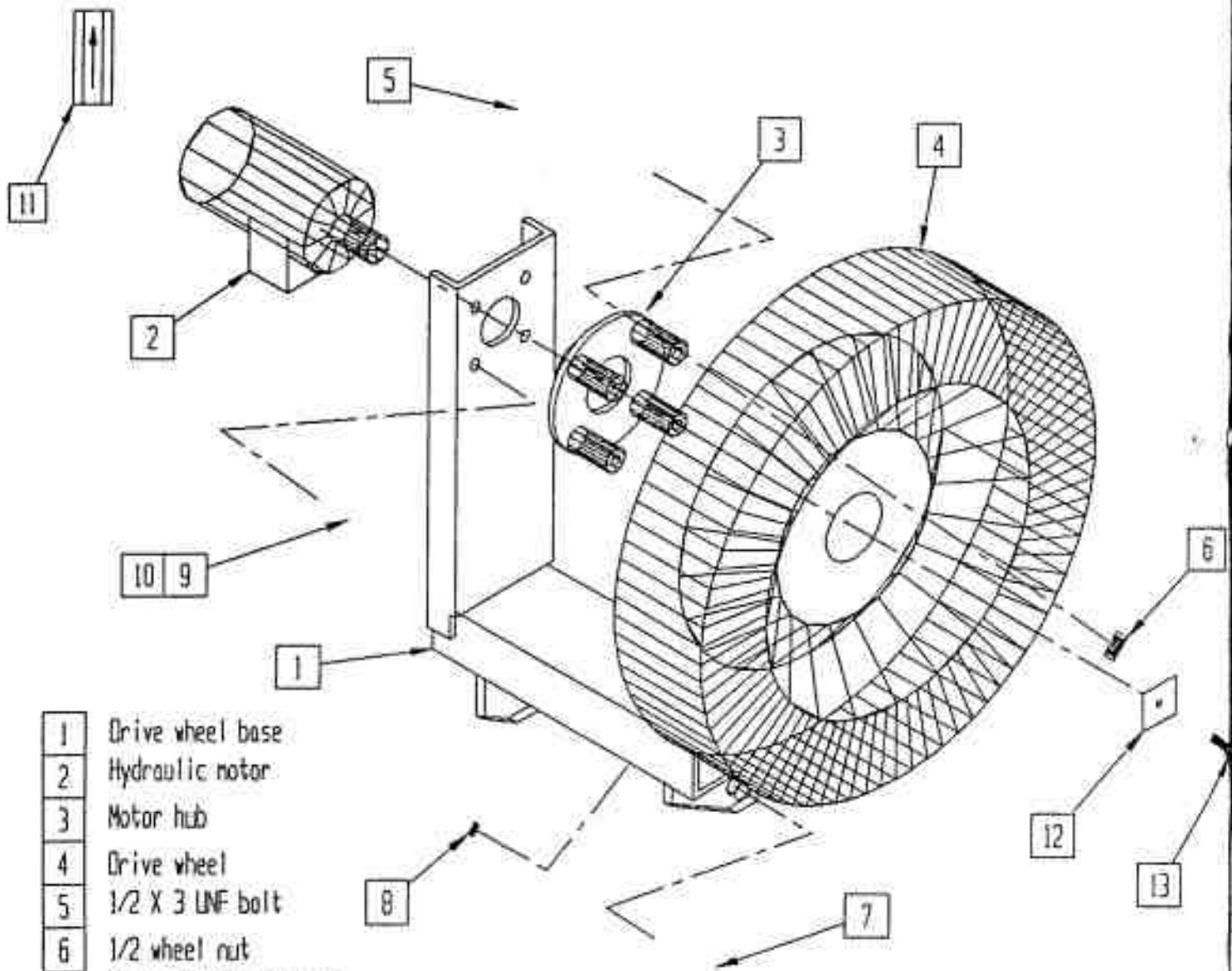


- |   |                   |
|---|-------------------|
| 1 | Bottom brace part |
| 2 | Top brace part    |
| 3 | Valve brace       |
| 4 | 3/8 X 2 bolt      |
| 5 | 3/8 X 1 bolt      |
| 6 | 3/8 nut           |
| 7 | 3/8 lockwasher    |

braceW

# Tube-Line 500

## Drive wheel

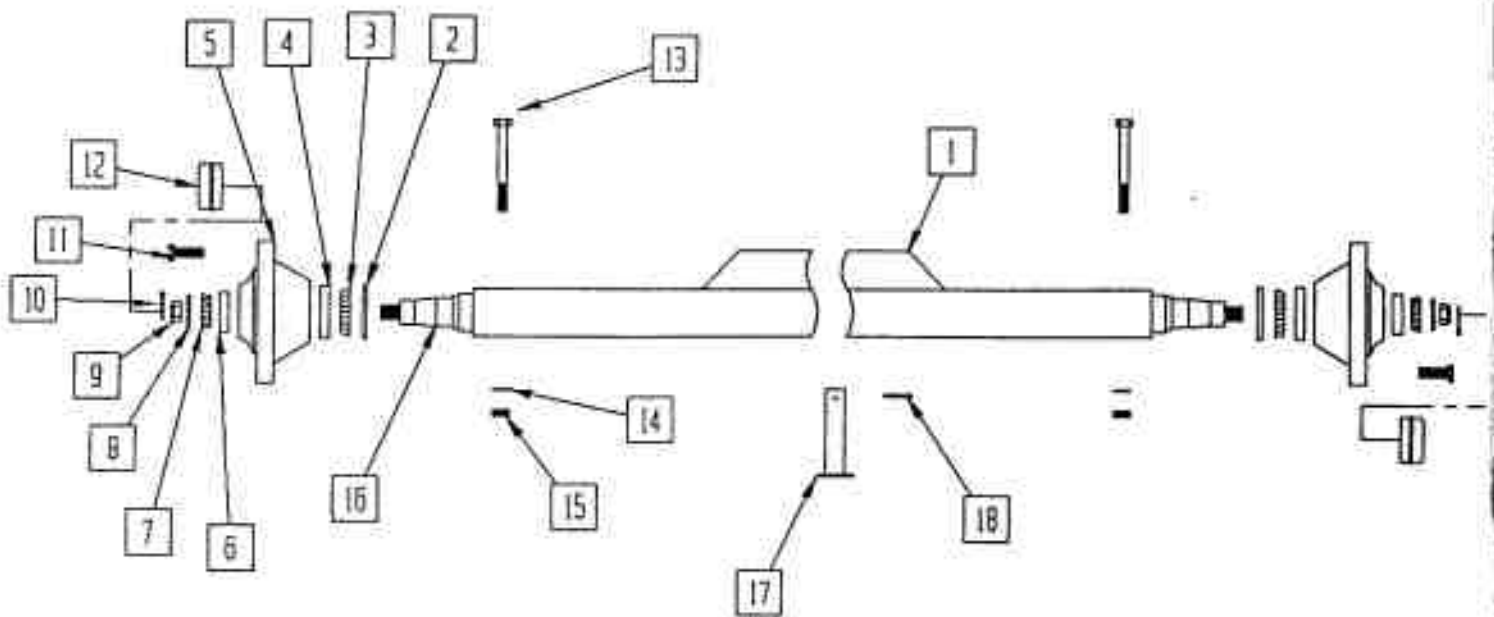


- |    |                                   |
|----|-----------------------------------|
| 1  | Drive wheel base                  |
| 2  | Hydraulic motor                   |
| 3  | Motor hub                         |
| 4  | Drive wheel                       |
| 5  | 1/2 X 3 UNF bolt                  |
| 6  | 1/2 wheel nut                     |
| 7  | 2 pc 5/8 X 1 1/2 bolt             |
| 8  | 2 pc 5/8 locknut                  |
| 9  | 4 pc 3/8 X 3/4 bolt               |
| 10 | 4 pc 3/8 lockwasher               |
| 11 | Check Valve ( manual model only ) |
| 12 | washer                            |
| 13 | 1/4 - 20 X 1 bolt / lockwasher    |

drwhl,

# Tube-Line 500

## Axle/spindle/hub



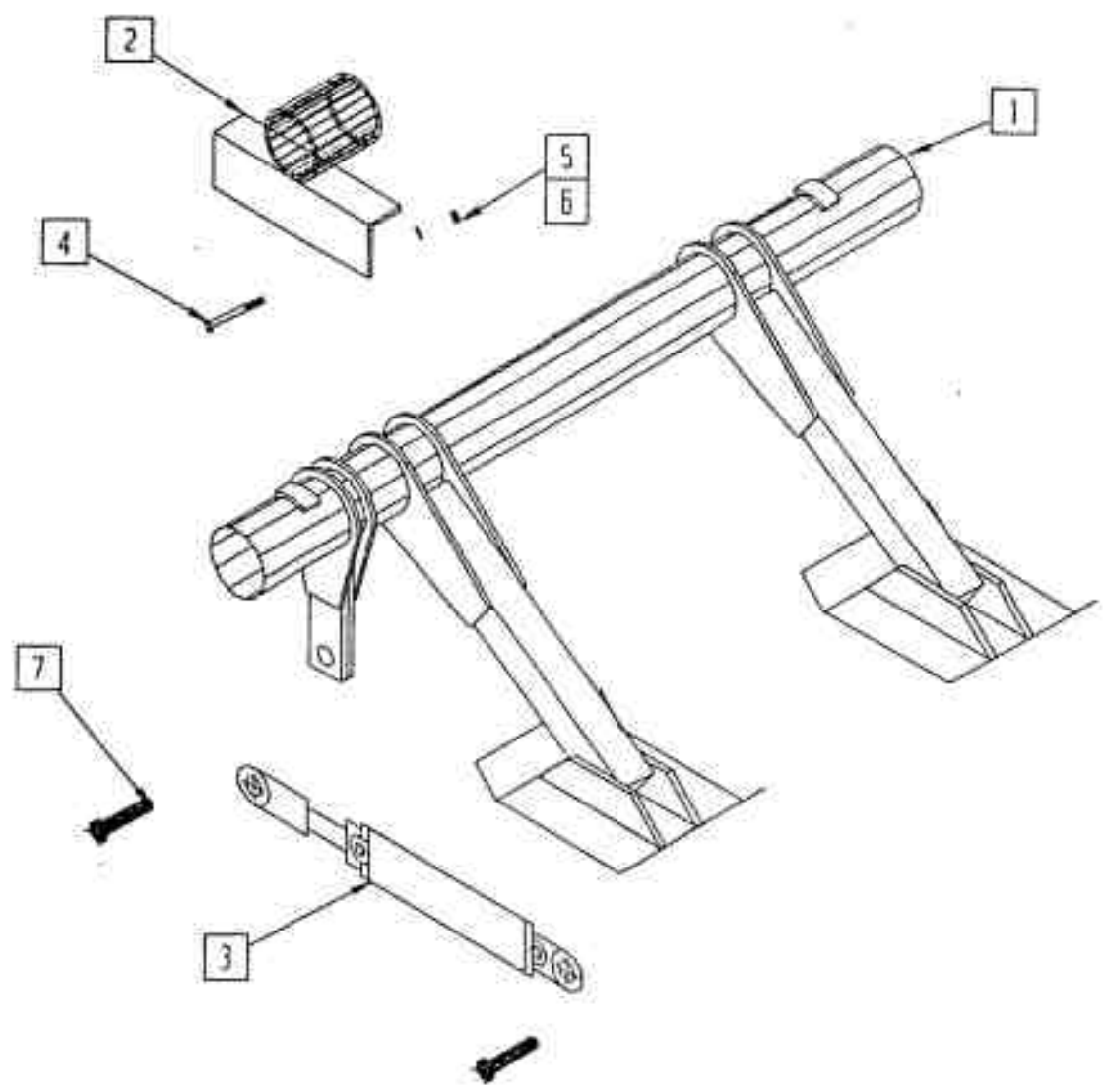
1	Axle
2	seal
3	inner bearing
4	inner bearing race
5	hub
6	outer bearing race
7	outer bearing
8	flat washer
9	wheel nut
10	cotter pin

11	wheel stud
12	dust cap
13	spindle bolt
14	1/2 lockwasher
15	1/2 nut
16	spindle
17	axle pin
18	cotter pin

Axle

# Tube-Line 500

## Brake

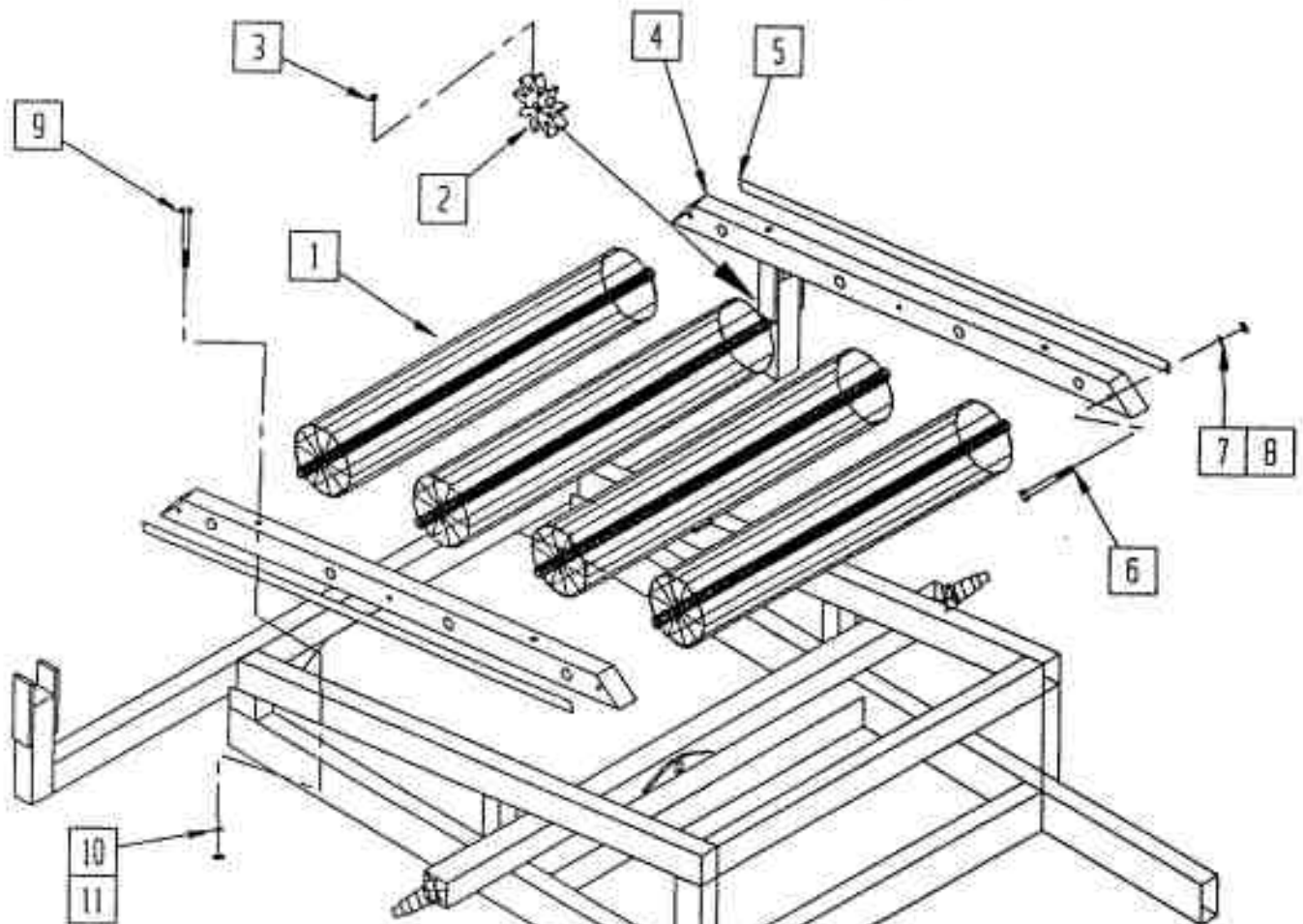


- |   |                     |
|---|---------------------|
| 1 | Brake racker        |
| 2 | Bearing             |
| 3 | 2 1/2 X 8 cylinder  |
| 4 | 1/2 X 3 1/2 bolt    |
| 5 | 4 pc 1/2 nut        |
| 6 | 4 pc 1/2 lockwasher |
| 7 | 2 pc cylinder pin   |

Brake

# Tube-Line 500

rear roller

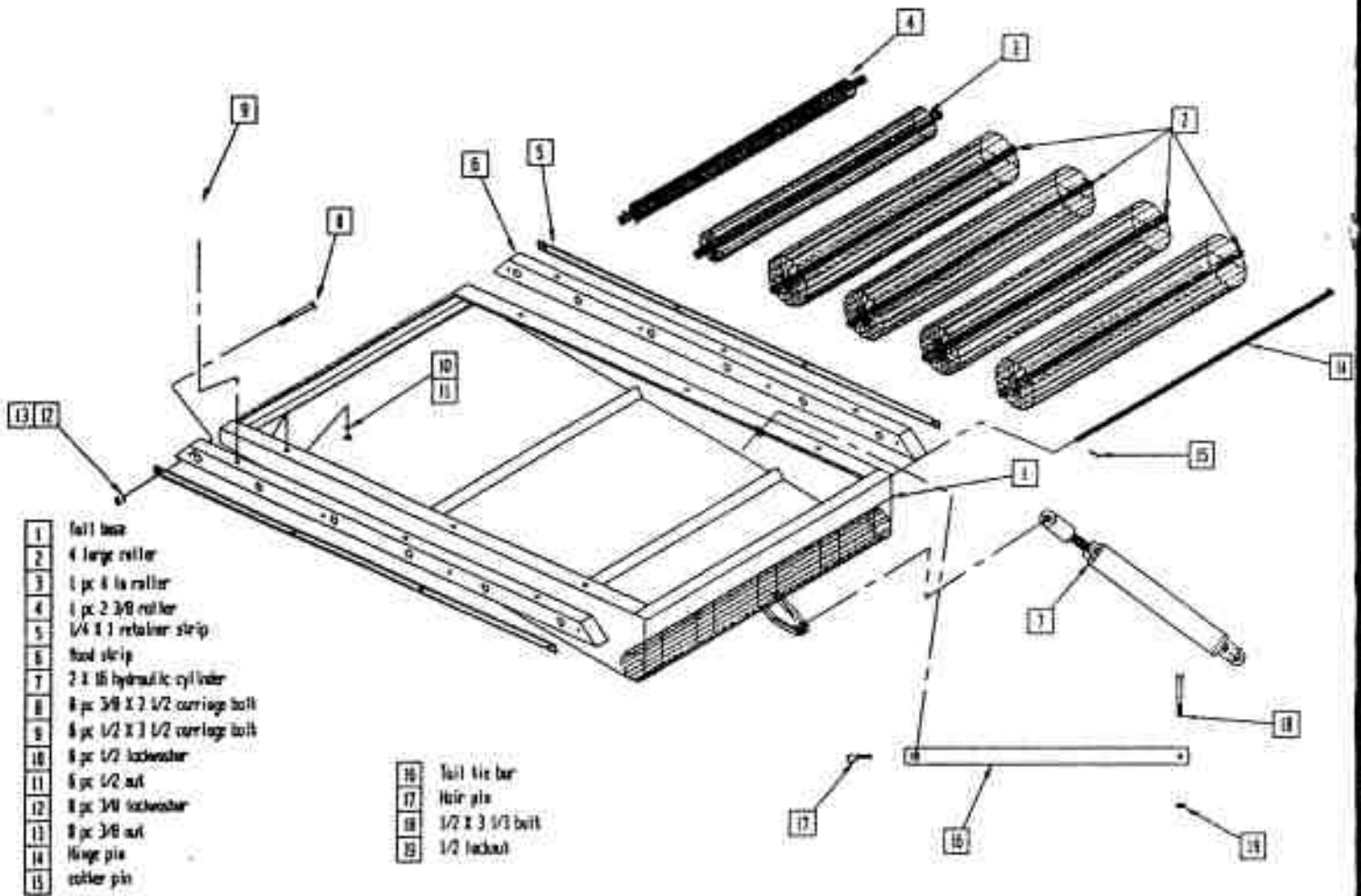


- |    |                                    |
|----|------------------------------------|
| 1  | 4 large roller                     |
| 2  | sprocket motion control (electric) |
| 3  | 2 pc 3/8 set screw                 |
| 4  | 2 pc short wood strip              |
| 5  | 1/4 X 1 retainer strip             |
| 6  | 6 pc 3/8 X 2 1/2 carriage bolt     |
| 7  | 6 pc 3/8 lockwasher                |
| 8  | 6 pc 3/8 nut                       |
| 9  | 4 pc 1/2 X 6 carriage bolt         |
| 10 | 4 pc 1/2 lockwasher                |
| 11 | 4 pc 1/2 nut                       |

rol

# Tube-Line 500

## Tail



- 1 tail base
- 2 4 large roller
- 3 1 pc 8 in roller
- 4 1 pc 2 3/8 roller
- 5 1/4 x 1 rebar strip
- 6 hood strip
- 7 2 x 16 hydraulic cylinder
- 8 8 pc 3/8 x 2 1/2 carriage bolt
- 9 8 pc 1/2 x 3 1/2 carriage bolt
- 10 8 pc 1/2 lockwasher
- 11 8 pc 1/2 nut
- 12 8 pc 3/8 lockwasher
- 13 8 pc 3/8 nut
- 14 Hinge pin
- 15 roller pin

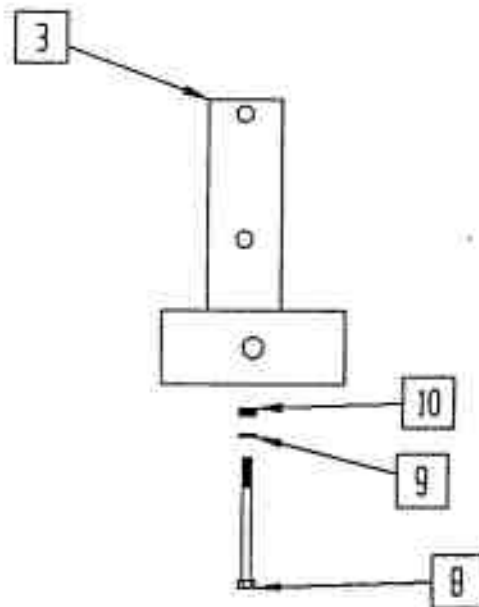
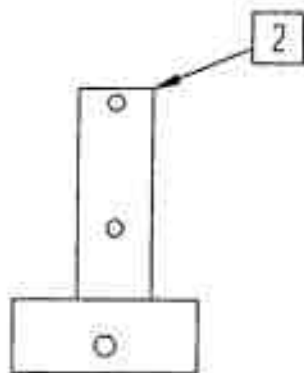
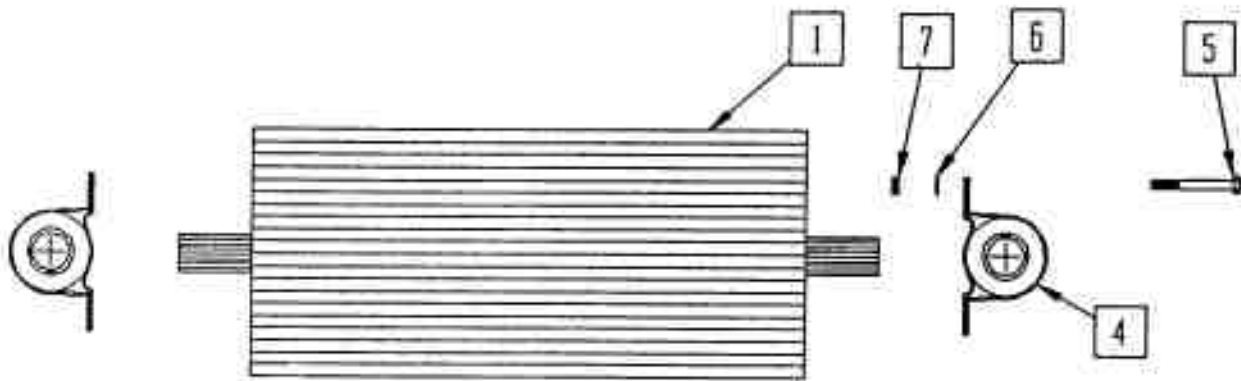
- 16 Tail tie bar
- 17 Hair pin
- 18 1/2 x 3 1/3 bolt
- 19 1/2 lockout

ET



# Tube-Line 500

Short roller & bearing

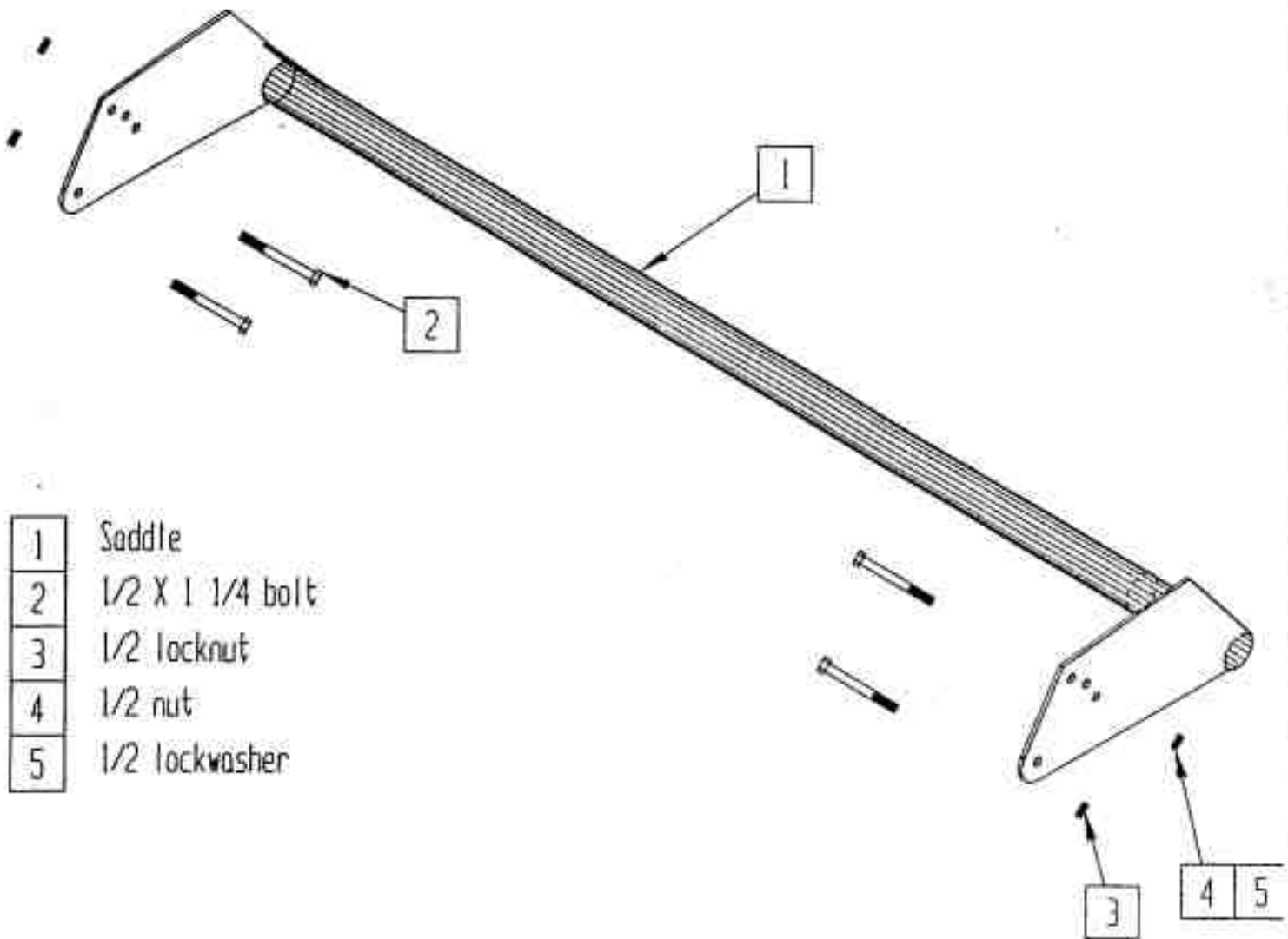


1	Short roller
2	Left bearing bracket
3	Right bearing bracket
4	Bearing
5	3/8 X 1 1/4 bolt
6	3/8 lockwasher
7	3/8 nut
8	1/2 X 4 bolt
9	1/2 lockwasher
10	1/2 nut

SHROL

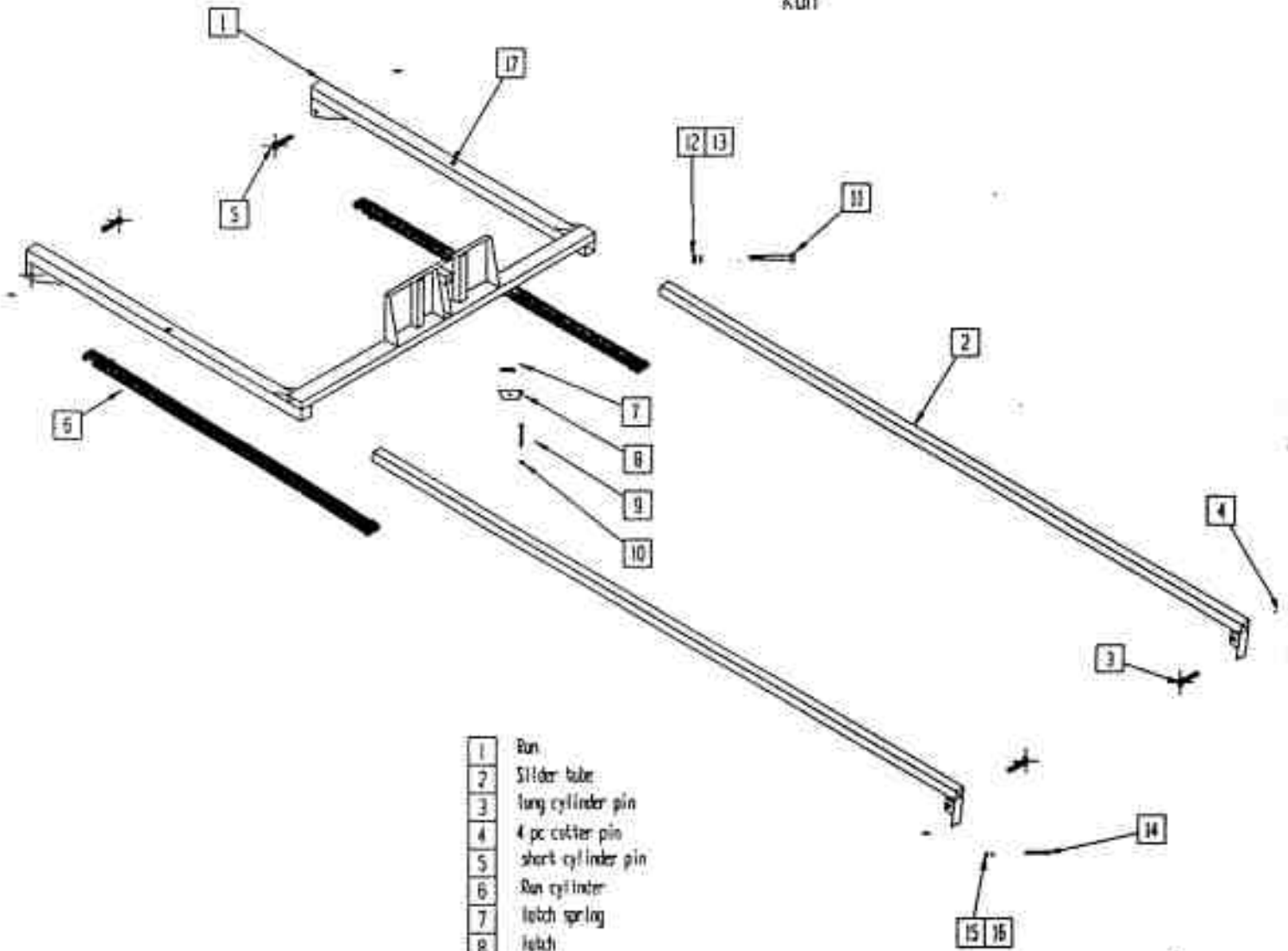
# TubeLine 500

Bale saddle



# Tube-Line 500

Ran

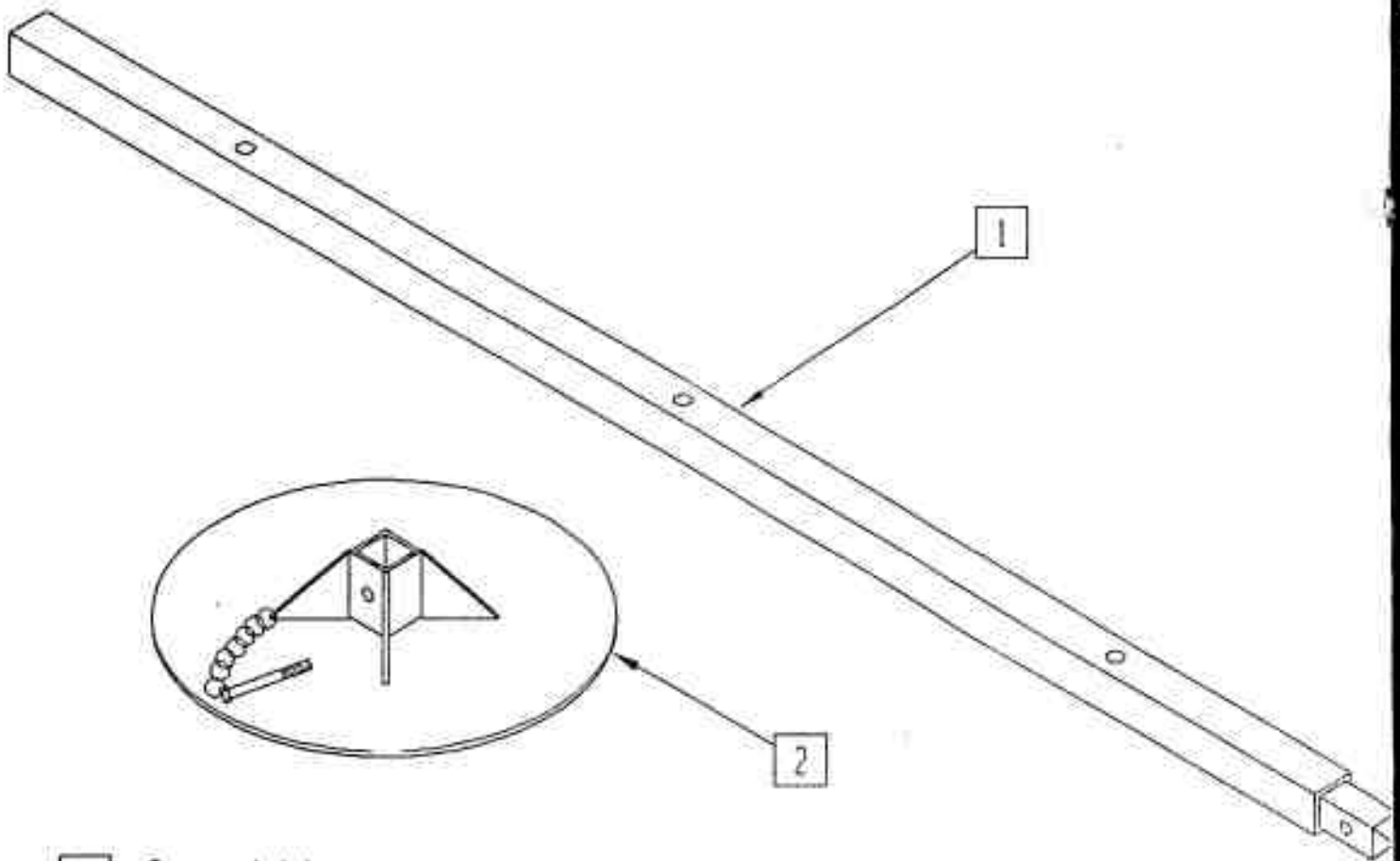


- |    |                              |
|----|------------------------------|
| 1  | Ran                          |
| 2  | Slider tube                  |
| 3  | long cylinder pin            |
| 4  | 4 pc cotter pin              |
| 5  | short cylinder pin           |
| 6  | Ran cylinder                 |
| 7  | latch spring                 |
| 8  | latch                        |
| 9  | 1/2 x 2 1/2 bolt             |
| 10 | 1/2 locknut                  |
| 11 | 2 pc 1/2 x 4 bolt            |
| 12 | 2 pc 1/2 nut                 |
| 13 | 2 pc 1/2 lockwasher          |
| 14 | 4 pc 1/2 x 1 1/2 bolt        |
| 15 | 4 pc 1/2 nut                 |
| 16 | 4 pc 1/2 lockwasher          |
| 17 | 2 pc 1/4 - 20 grease fitting |

Ran

# Tube-Line 500

Push tube & push plate

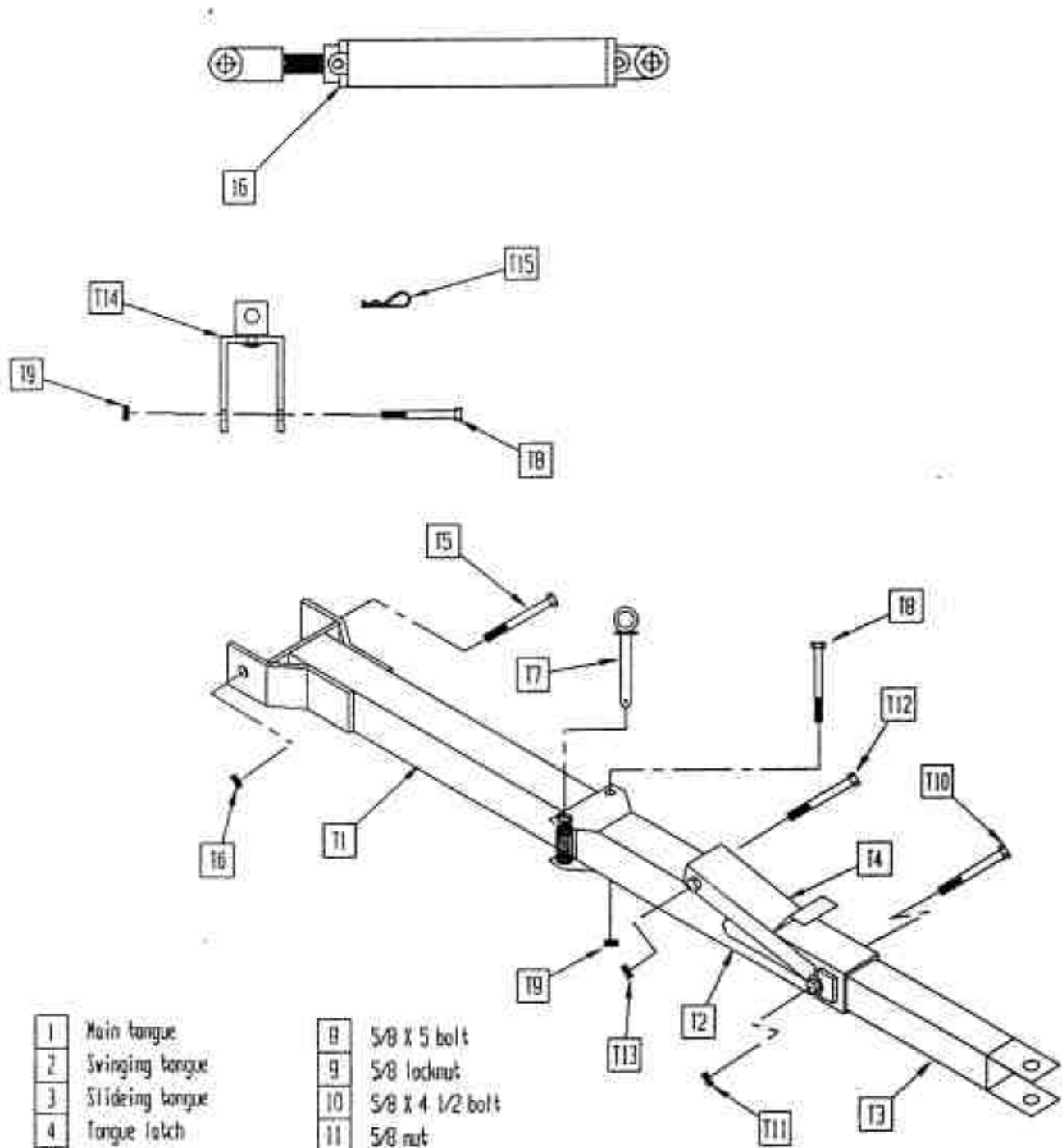


- 1 3 pc push tube
- 2 Push plate

Ptpp

# Tube-Line 500

Tongue



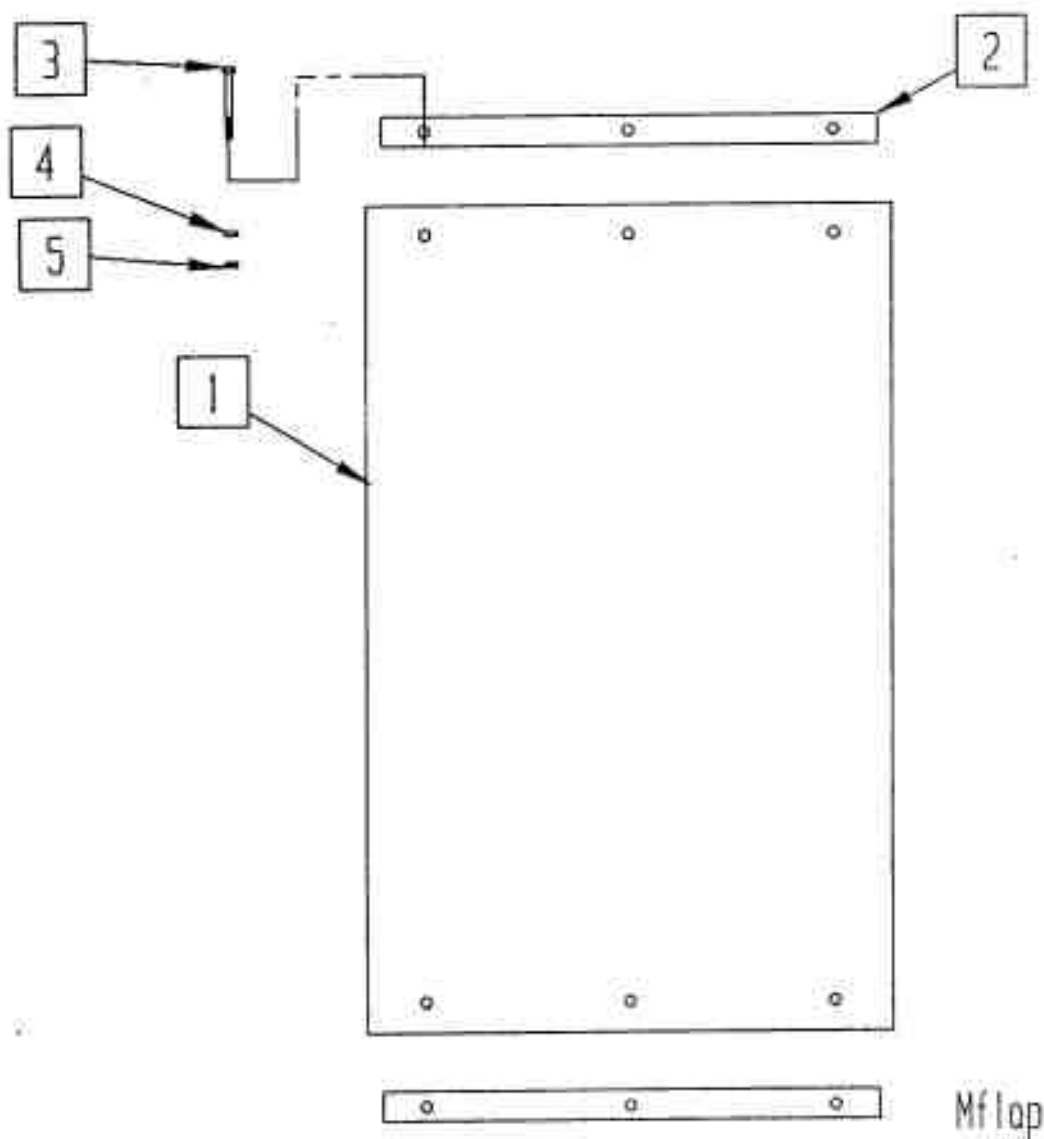
- |   |                  |
|---|------------------|
| 1 | Main tongue      |
| 2 | Swinging tongue  |
| 3 | Sliding tongue   |
| 4 | Tongue latch     |
| 5 | 3/4 X 6 1/2 bolt |
| 6 | 3/4 locknut      |
| 7 | Tongue pin       |

- |    |                     |
|----|---------------------|
| 8  | 5/8 X 5 bolt        |
| 9  | 5/8 locknut         |
| 10 | 5/8 X 4 1/2 bolt    |
| 11 | 5/8 nut             |
| 12 | 5/8 X 4 1/2 bolt    |
| 13 | 5/8 nut             |
| 14 | Tongue Holder       |
| 15 | Hair pin            |
| 16 | 2 1/2 X 16 Cylinder |

1512

# Tube-Line 500

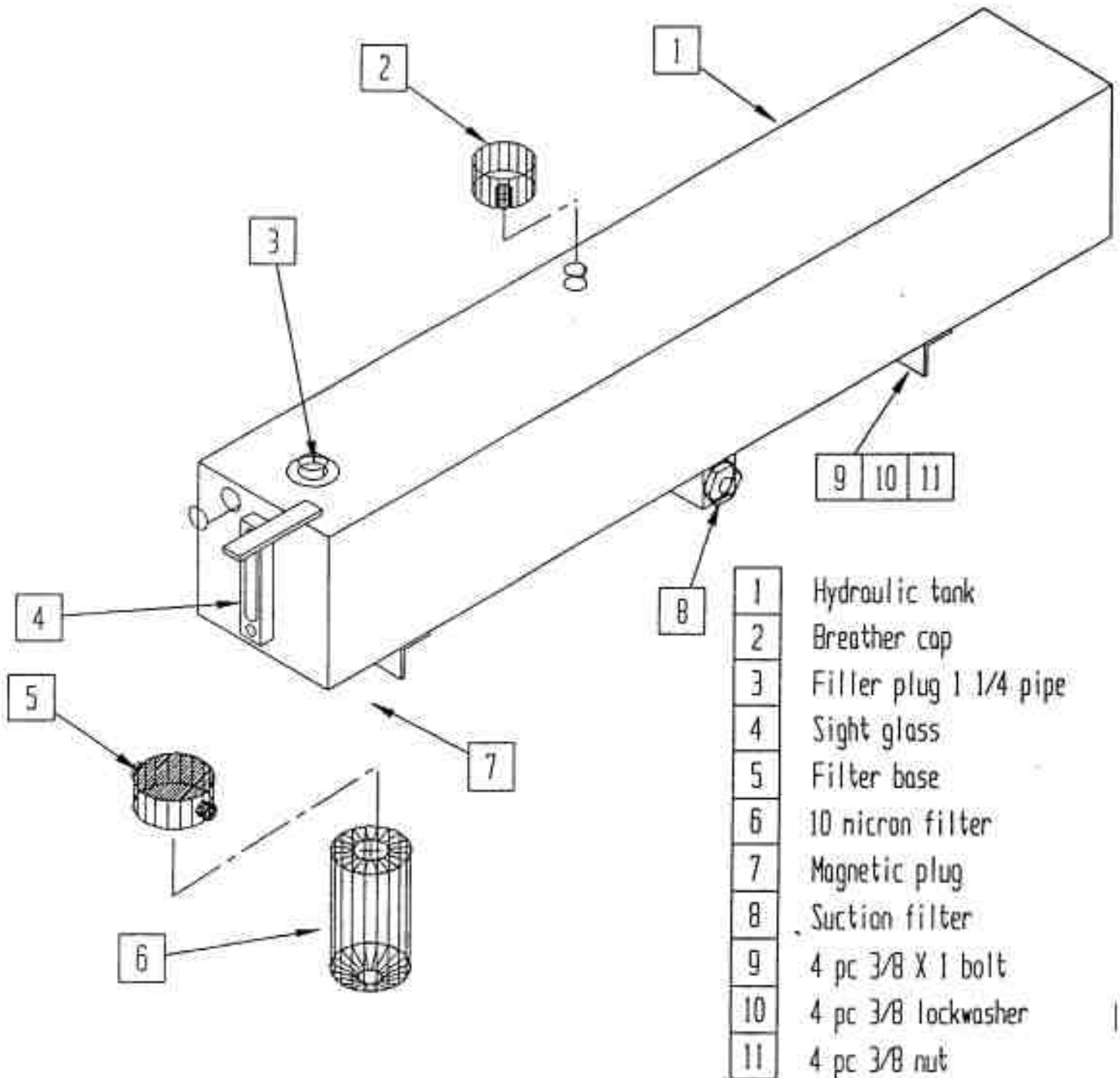
Mud Flap



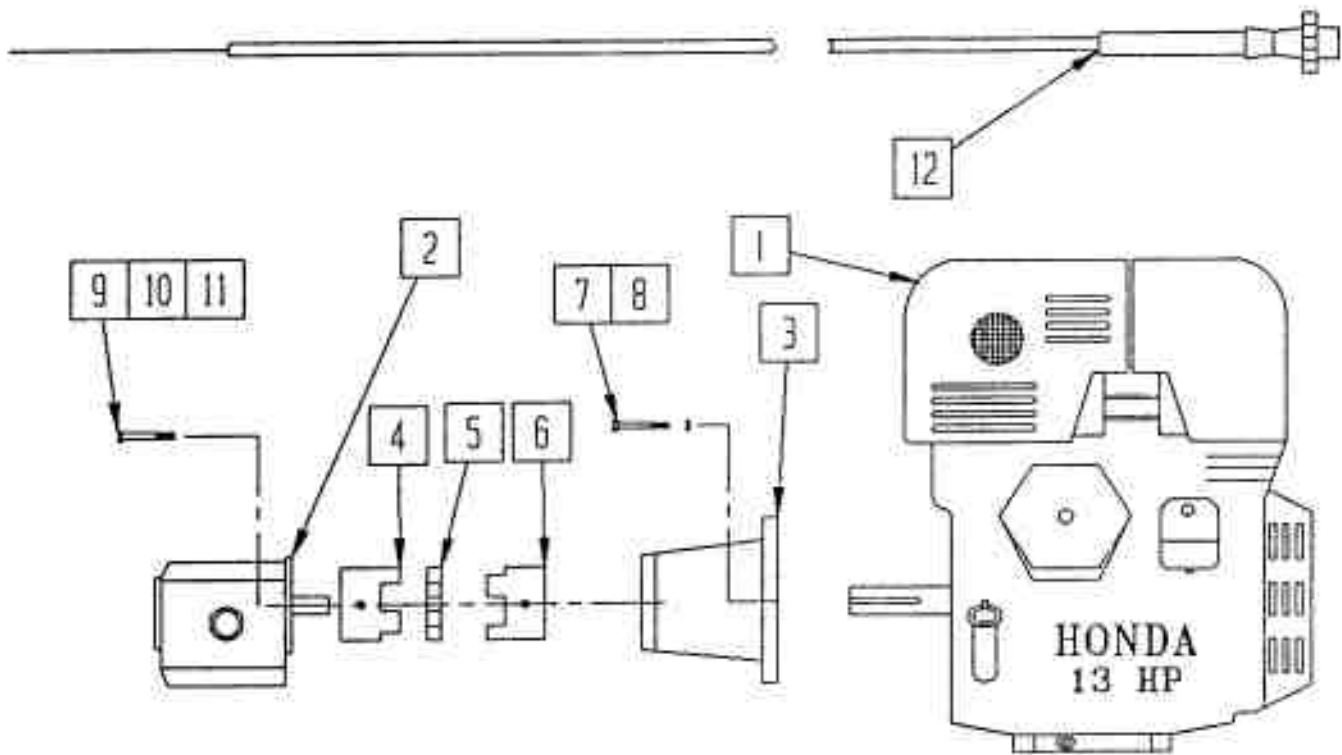
1	mud flap
2	metal strip
3	bolt
4	lockwasher
5	nut

# Tube-Line 500

Hydraulic tank



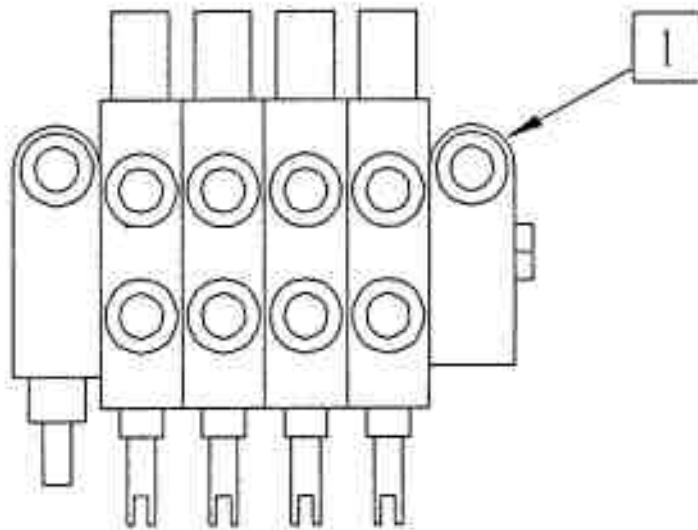
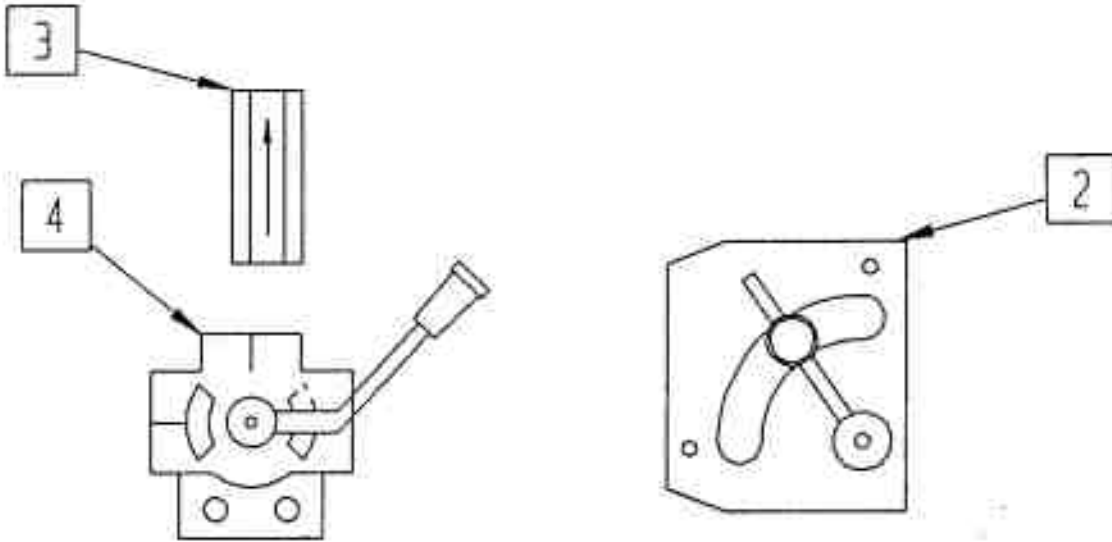
# Tube-Line 500



- |   |                          |    |                         |
|---|--------------------------|----|-------------------------|
| 1 | 13 Hp HONDA Engine       | 7  | 4 pc 3/8 X 1 bolt       |
| 2 | Hydraulic Pump           | 8  | 4 pc 3/8 lockwasher     |
| 3 | Engine to pump adaptor   | 9  | 2 pc 3/8 1 1/4 bolt     |
| 4 | Love Joy Coupling        | 10 | 2 pc 3/8 lockwasher     |
| 5 | Coupling spacer          | 11 | 2 pc 3/8 flatwasher     |
| 6 | Love Joy Coupling engine | 12 | Throttle Cable (manual) |



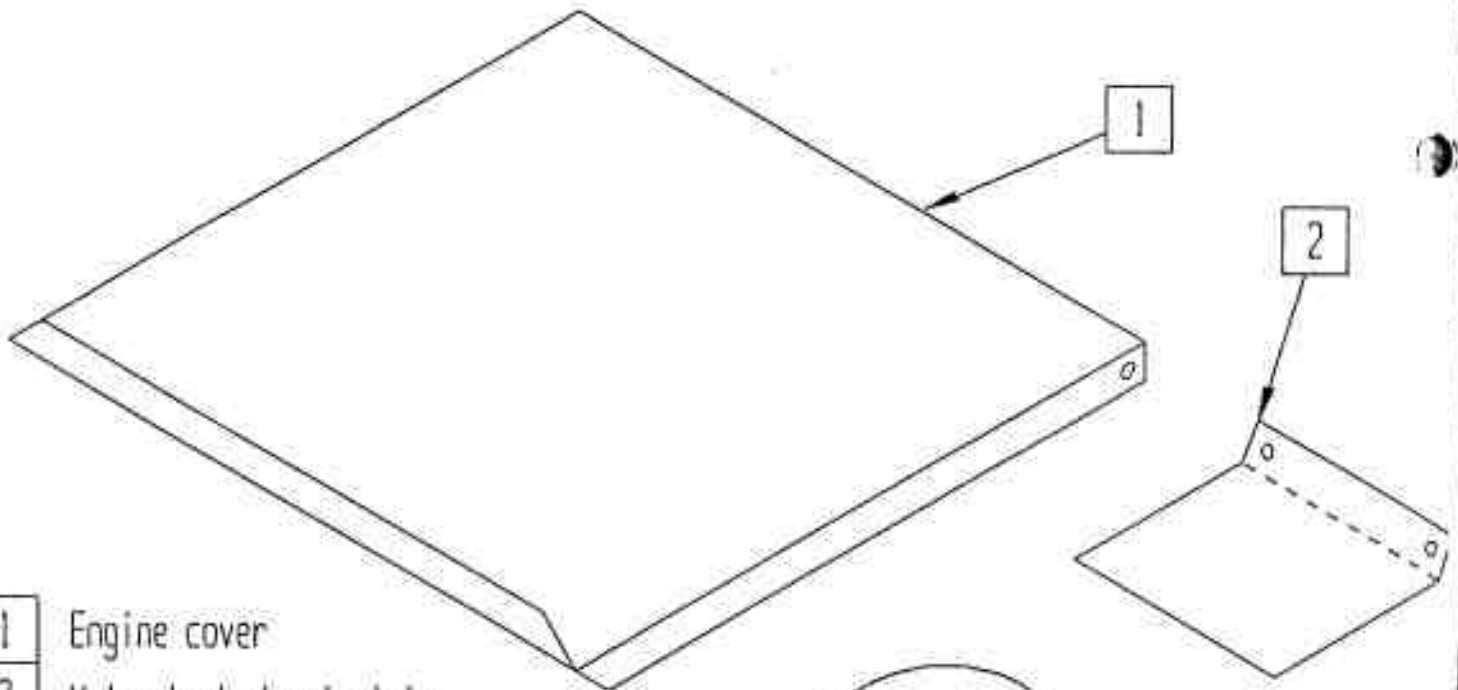
Tube-Line 500  
Manual valve bank



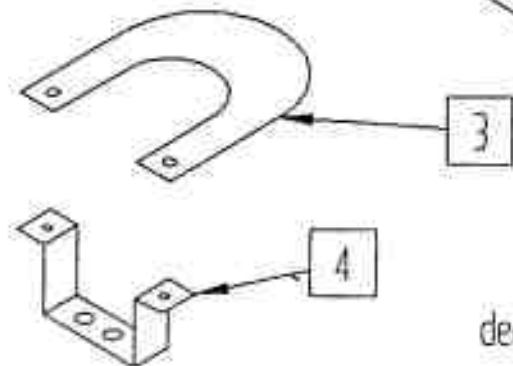
- |   |                            |
|---|----------------------------|
| 1 | CPV0014 Valve stack        |
| 2 | RD - 150 - 16 Flow control |
| 3 | 1/2 Check valve            |
| 4 | Selector Valve             |

# Tube-Line 500

Engine cover & decal plate

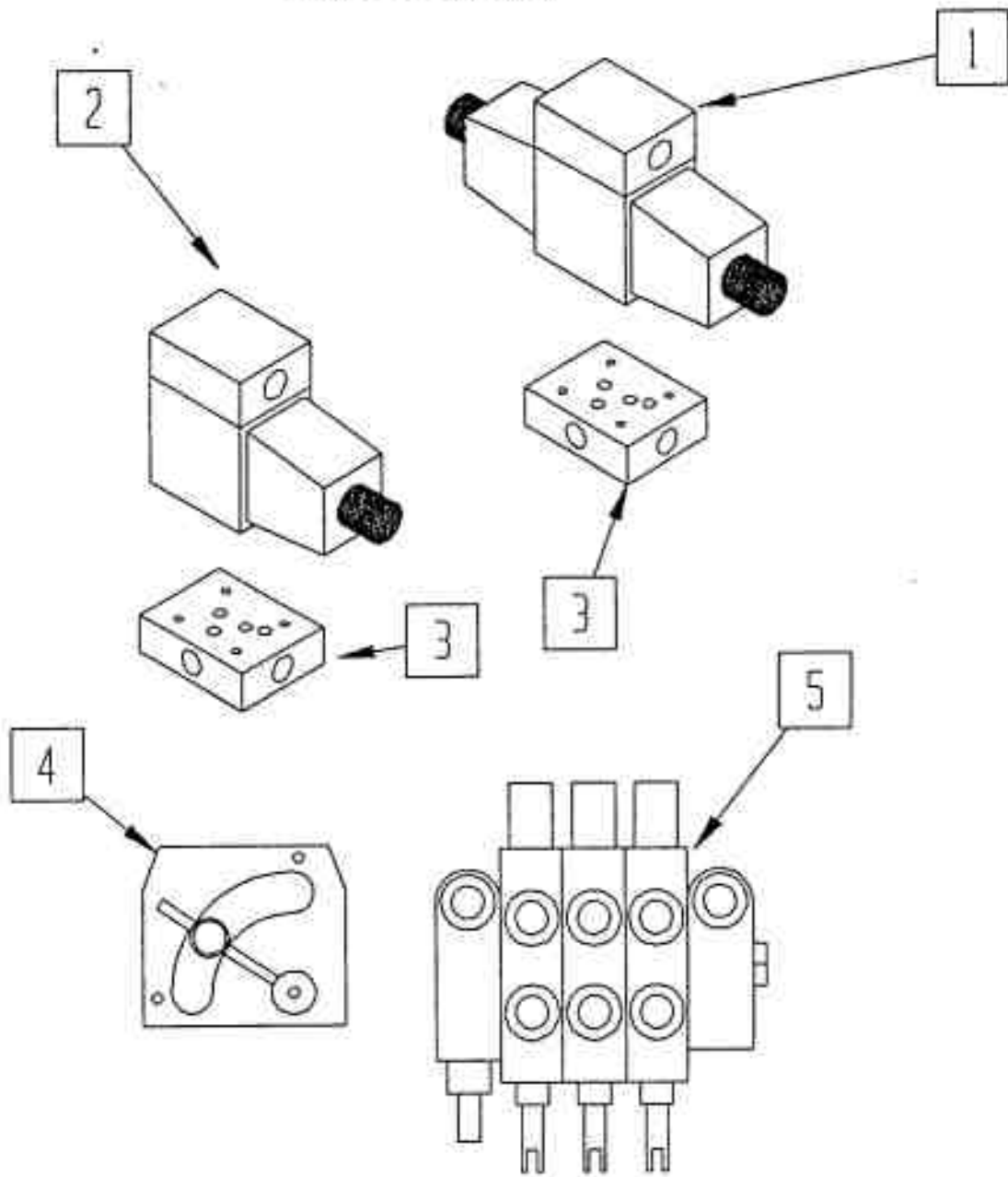


- 1 Engine cover
- 2 Valve bank decal plate
- 3 Selector valve decal plate
- 4 Selector valve decal plate bracket



decpl

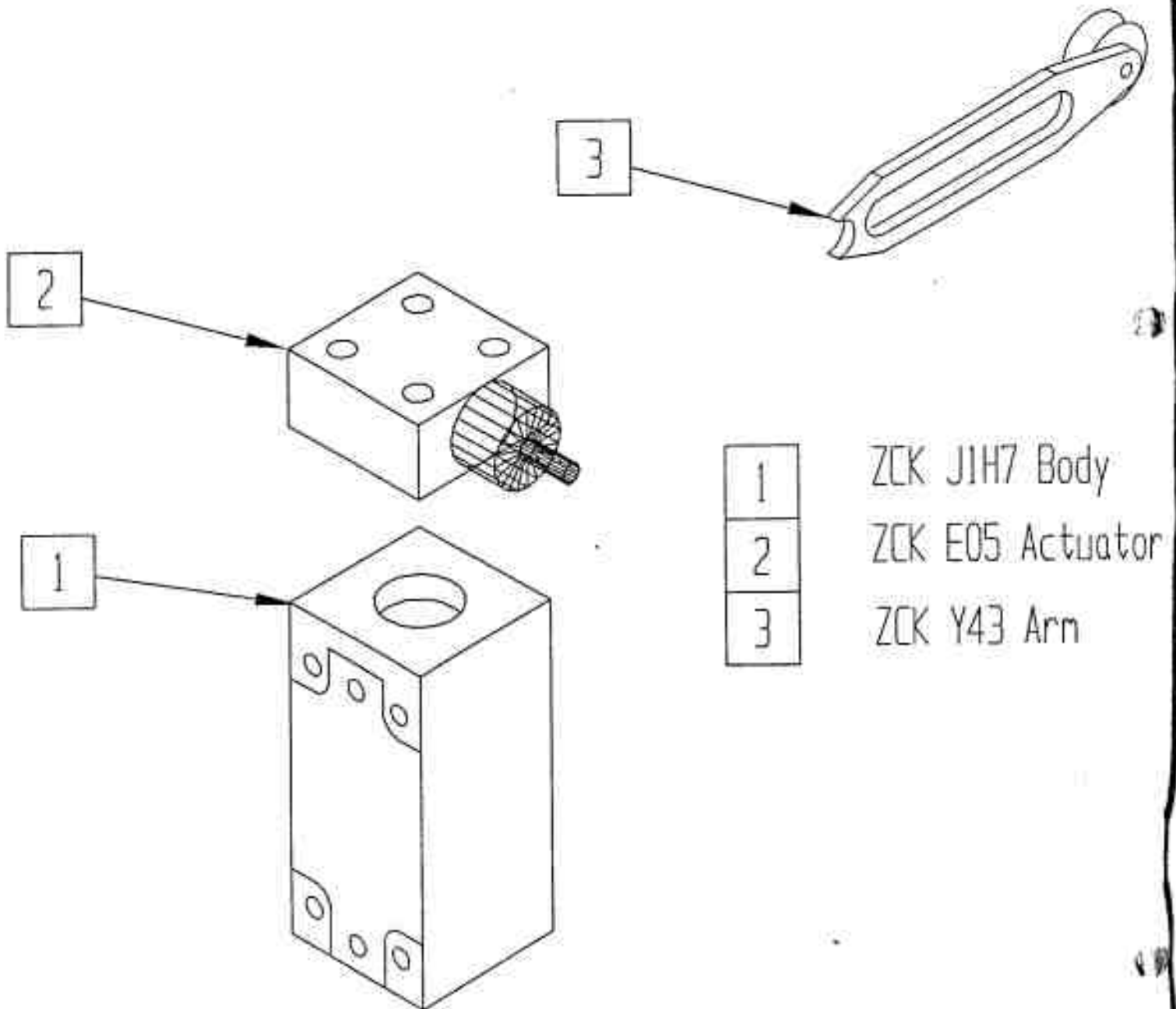
# Tube-Line 500 Electric Solenoid Valve



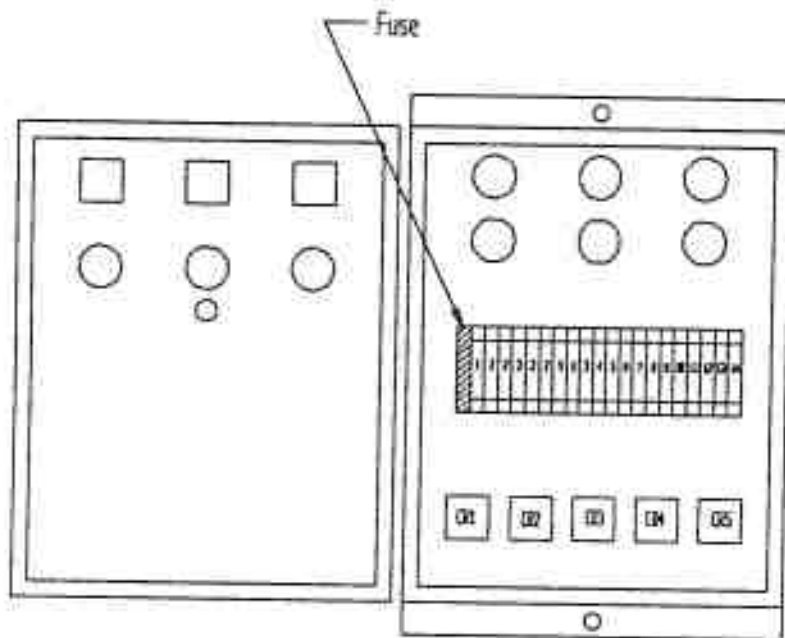
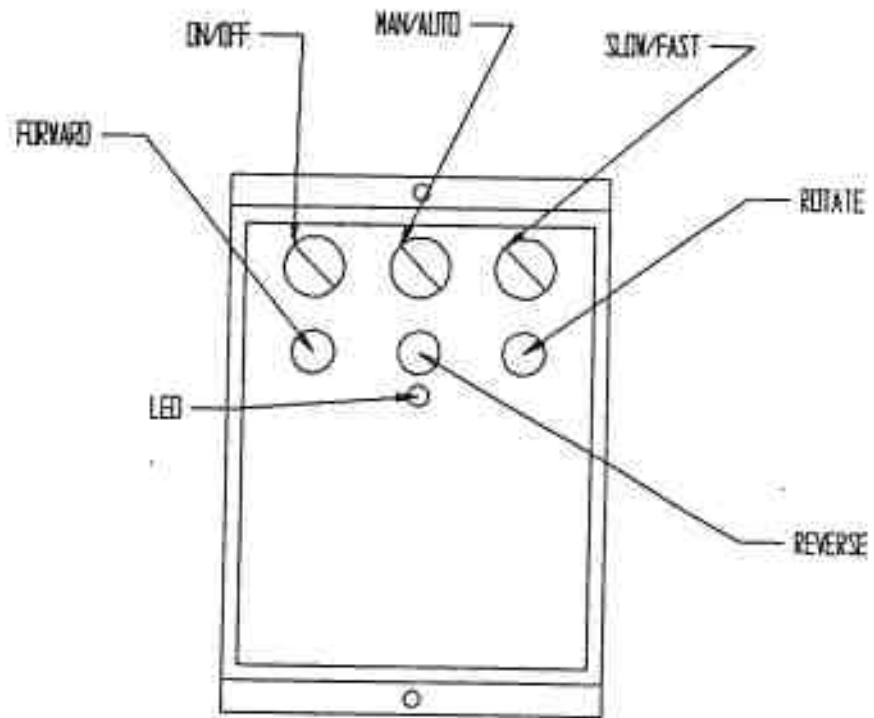
- |   |                                   |
|---|-----------------------------------|
| 1 | VS12M3LEB75L tandem center 12 vdc |
| 2 | VS12M1AGE75L single sol 12 vdc    |
| 3 | A005SPS8S subplate SAE ported     |
| 4 | RD - 150 Flow control             |
| 5 | CPV0013 Valve stack               |

# Tube-Line 500

Telemecanique Limit Switch

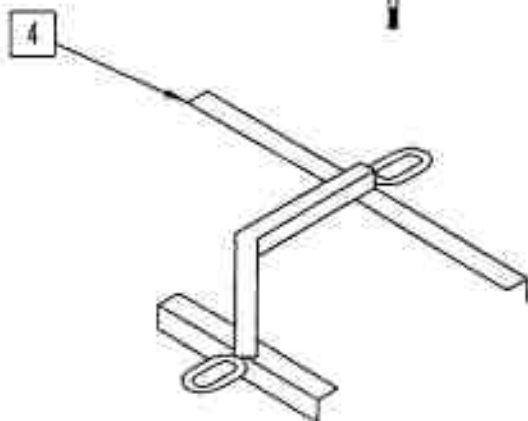
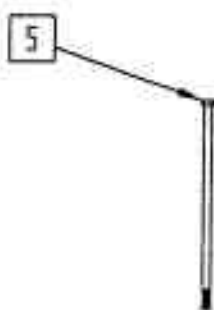
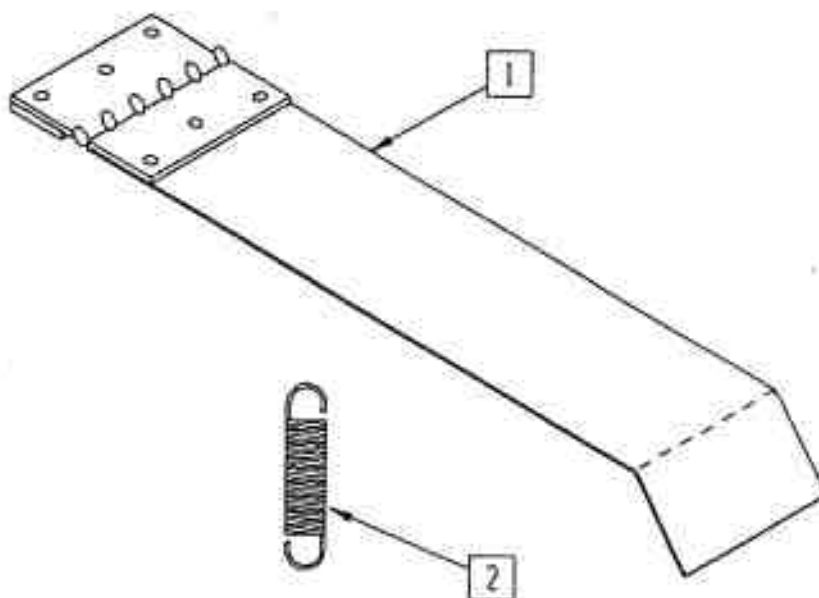
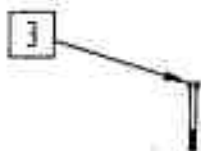


# Tube-Line 500 Control Panel



# Tube-Line 500

Trigger & Battery hold down



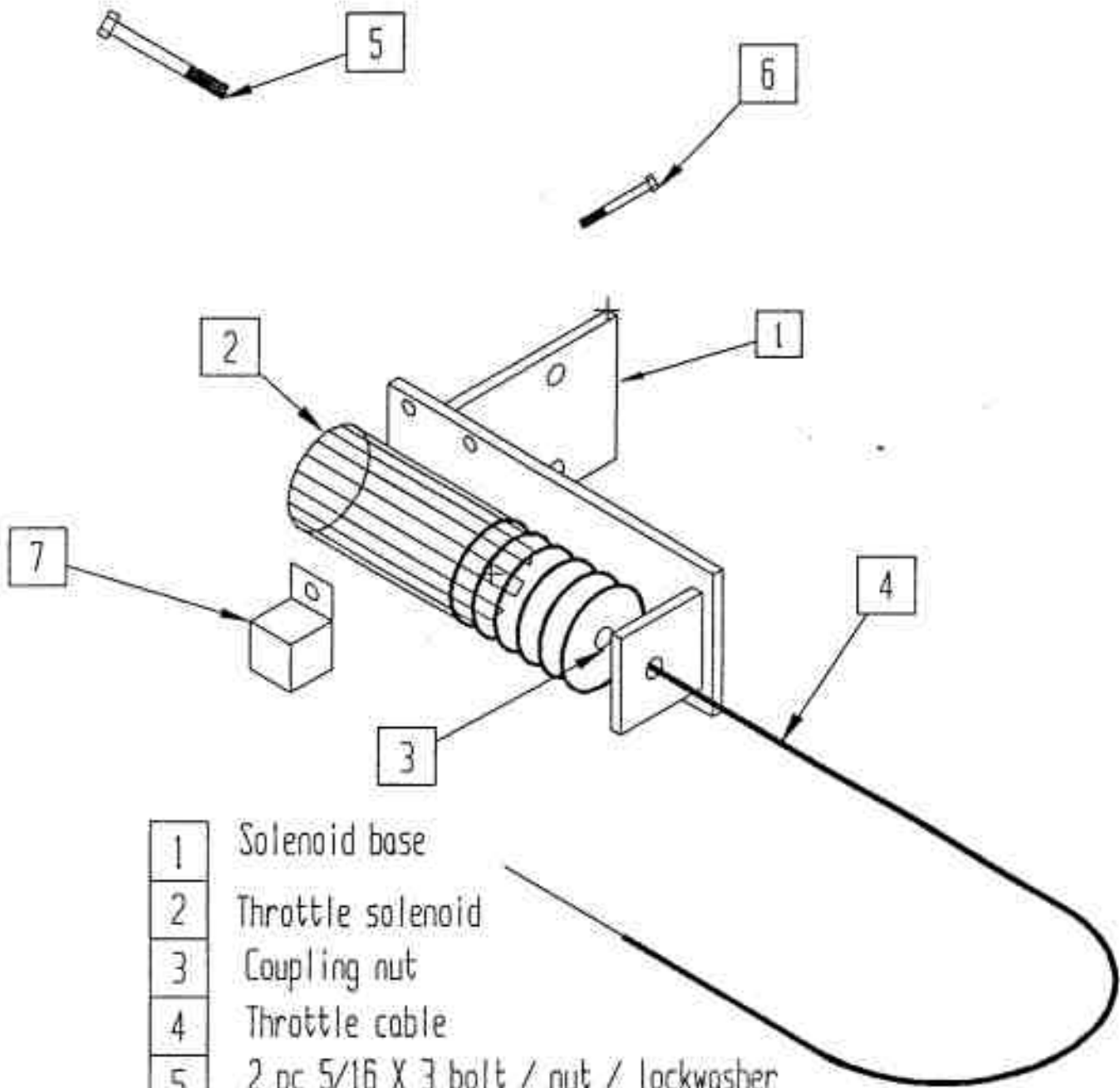
- |   |   |
|---|---|
| 1 | Trigger plate                                   |
| 2 | Trigger spring                                  |
| 3 | 2 pc 1/4 X 1 stove bolt / nut & lockwasher      |
| 4 | Battery hold down                               |
| 5 | 1 pc 5/16 X 7 corrugate bolt / nut / lockwasher |
| 6 | 1 pc 5/16 X 2 bolt / nut / lockwasher           |

Trig

4 B

# Tube-Line 500

Throttle Solenoid (automatic)



- |   |  |
|---|--|
| 1 | Solenoid base                          |
| 2 | Throttle solenoid                      |
| 3 | Coupling nut                           |
| 4 | Throttle cable                         |
| 5 | 2 pc 5/16 X 3 bolt / nut / lockwasher  |
| 6 | 4 pc 1/4 X 3/4 bolt / nut / lockwasher |
| 7 | 70 AMP relay                           |

## Tube-Line500

### Manual Hydraulic Sequence of operation

- 1 With valves in neutral position engine running hydraulic fluid is pumped through valve stack and returned to reservoir.
- 2 Brakes, tail, steering are standard hydraulic cylinder operation.
- 3 Wrap cycle - push wrap valve in, detent will hold valve in position, fluid flows from valve through flow control and is split into 2 circuits, one circuit will go to ram cylinders and the other circuit will go to the hydraulic motor. These circuits are proportioned with the lever on flow control valve. With the selector valve handle in "Both" position flow will go to cylinder and motor. By changing flow control handle, cylinders will speed up or slow down accordingly. At the same time motor will change speed inversely to cylinder ie. when cylinder slows down motor will speed up.
- 4 Selector valve is used to bleed either cylinder or motor flow back to tank or block both circuits causing both cylinder and motor to operate. ie. With handle in wrap only position the fluid that would normally go to the cylinder will flow to tank. With handle in ram only position motor fluid will go to the tank.
- 5 Wrap cycle - pull wrap valve out, detent will hold valve in position, fluid will flow valve port to cylinder causing cylinder to retract. Fluid from the other end of cylinder will return through the check- valve, at flow control back through valve stack and to tank.
- 6 Check valve at motor lets motor freewheel in one direction without cavitating.

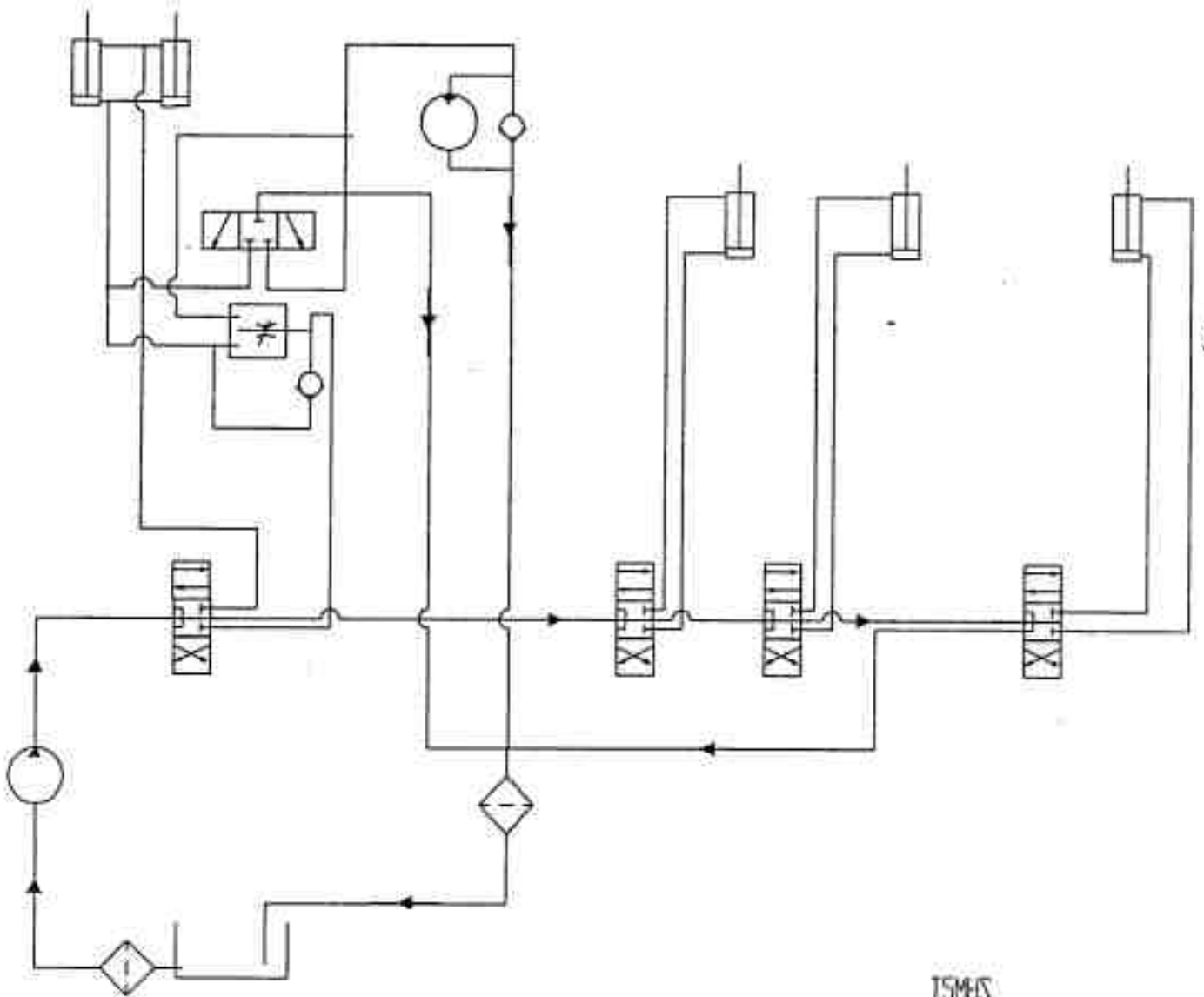


**Tube-Line 500**  
Electric Hydraulic  
Sequence of operation

- 1 With valves in neutral position , control panel on/off switch in off position, engine running fluid is pumped through valve stack and returned to reservoir.
- 2 Brakes,tail,steering, are standard hydraulic cylinder operation.
- 3 Wrap cycle fluid flows from power beyond port on valve stack to flow control,and is split into 2 circuits one circuit goes to double solenoid valve for ram cylinder, the other circuit goes to single solenoid valve for hydraulic motor. By moving flow control handle more or less fluid will flow to cylinder or motor ie. as more fluid flows to cylinder less fluid will flow to motor and vise-versa.
- 4 Electric control panel - With "Fast-Slow" switch turned to Slow with "Man-Auto" switch turned to Man turn "On-Off" switch to On, then red LED will light up indicating 12V power is at control circuits, with engine running turn "Fast-Slow switch to Fast and the engine will speed up to max. RPM approx 3500-RPM. Push Forward button in to energize solenoid A on double solenoid valve . Ram cylinder will extend. Push Reverse button to energize solenoid B on same valve. Ram cylinder will retract. Push Rotate button in and hydraulic motor will turn. Push-buttons have to be held in to operate, by releasing them action will stop.
- 5 When "Man-Auto" switch is turned to Auto, engine throttle "Fast-Slow" switch now no longer functions, including push-buttons switches. Depress trigger switch located on bale table, and the engine thottle and hydraulic valve are energised. The engine will speed up and the ram cylinder will extend until the bale on the table starts to move the bale in wrap chamber. This will cause the roller with sprocket to turn, tripping the limit switch thereby energizing the single solenoid valve and turning the wrap motor. When ram is extended to limit switch at end of stroke, single solenoid valve and double solenoid valve A will turn off. Solenoid B will energize causing ram cylinder to retract until it trips limit switch at the front end of bale table, solenoid B and throttle solenoid will turn off, the ram cylinder will stop and engine will idle down.

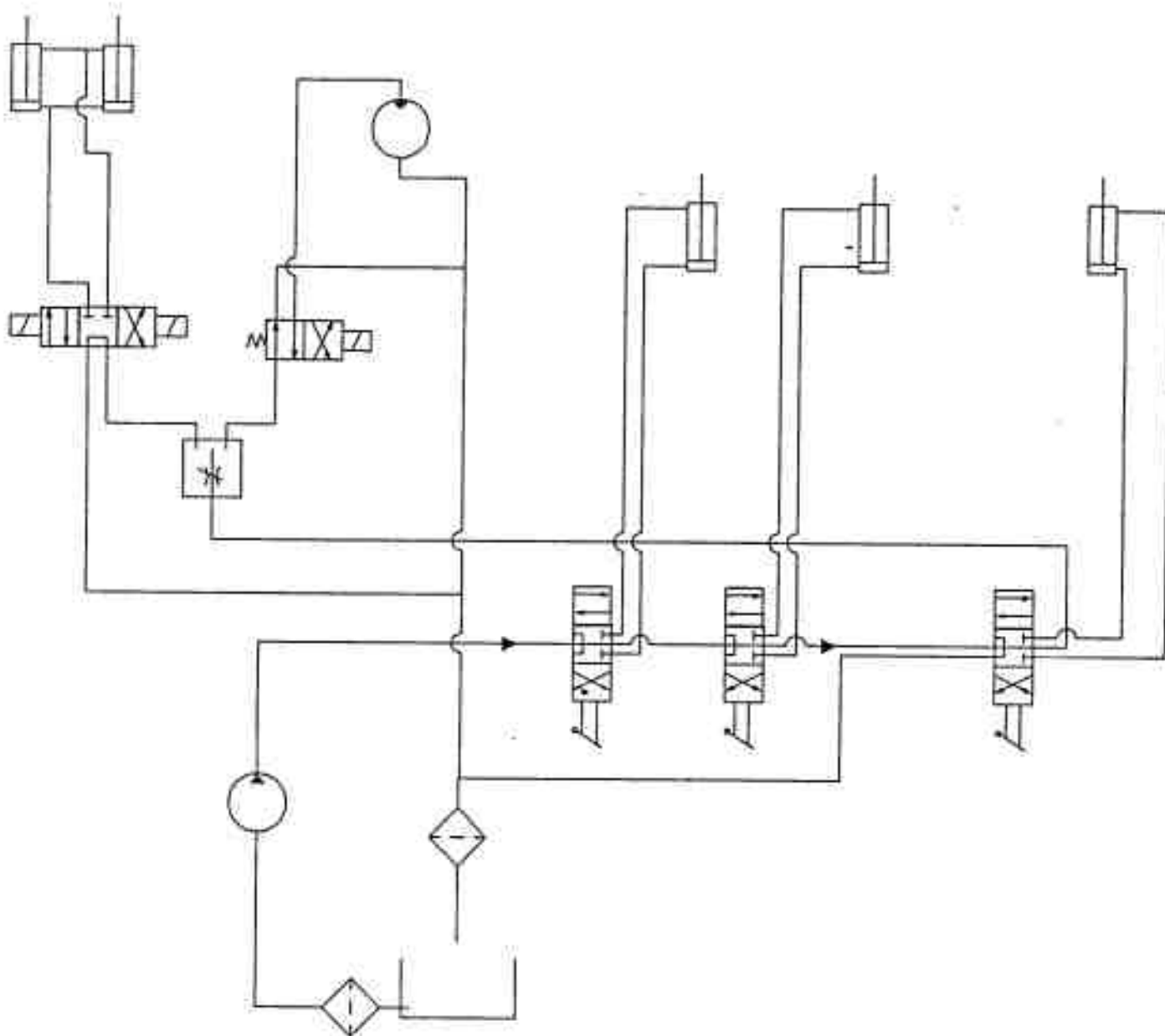
# Tube-Line 500

Manual Hydraulic Schematic



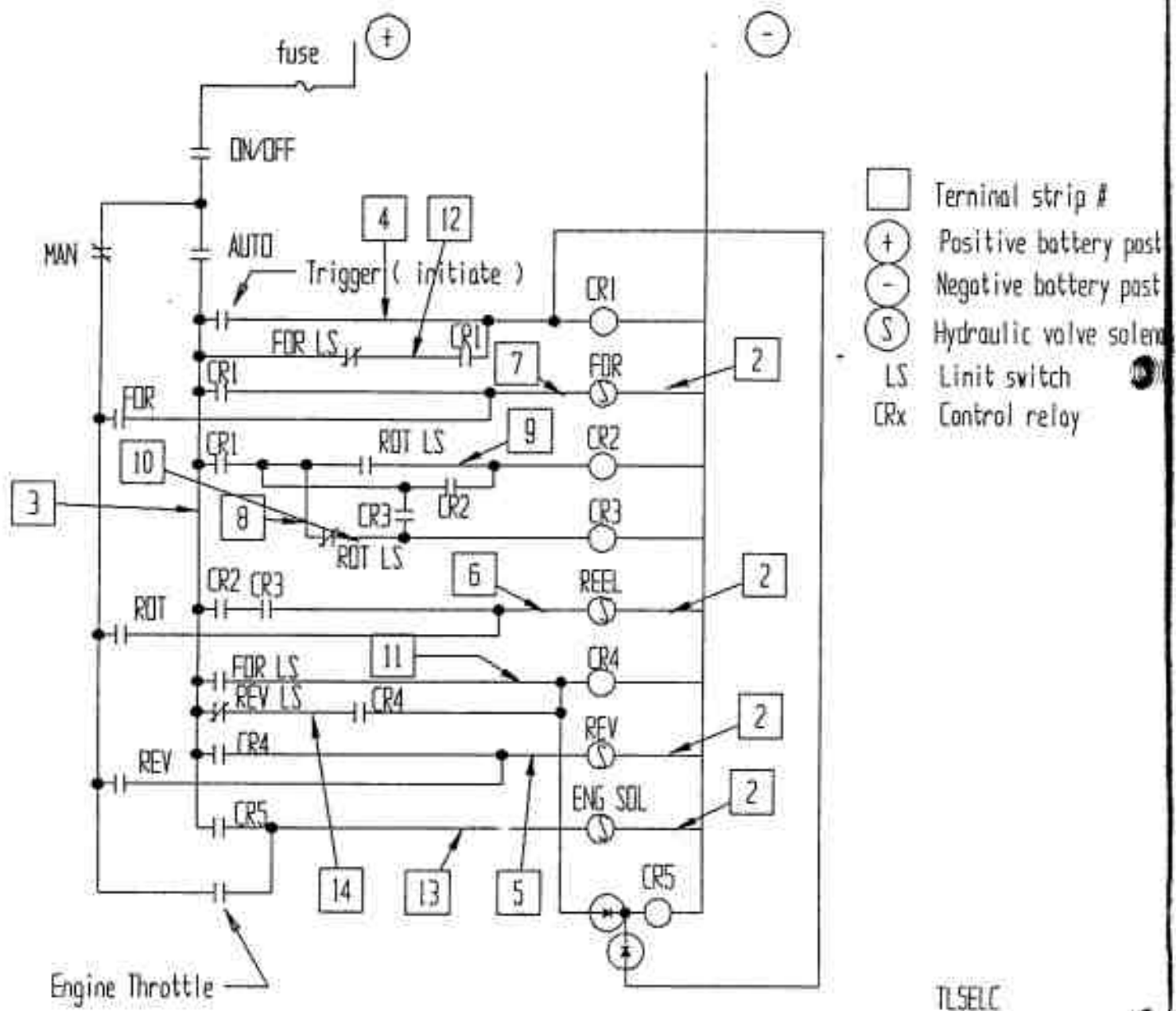
# Tube-Line 500

## Electric Hydraulic Schematic



# TubeLine 500

Electric Automatic



## Tube-Line 500 Part Numbers

Page #	Ref #	Part #	Qty	Description	
3	1	500-100-001	1	Front Channel Ring	13.15
3	2	500-100-002	1	Front Tube Ring	155.16
3	3	500-100-003	4	Front Wheel 6 inch	12.50
3	4	500-100-004	4	Ring Tie	12.55
3	5	500-100-005	1	Rear Channel Ring	16.60
3	6	500-100-006	1	Rear Tube Ring	106.55
3	7	500-100-007	4	Rear Wheel 4 inch	10.60
3	8	500-100-008	4	Mounting Bolt 1/2 X 2 /lockwasher / nut	.62
3	9	500-100-009	1	Top Left Hoop Tie	21.35
3	10	500-100-010	1	Top Right Hoop Tie	21.35
3	11	500-100-011	1	Bottom Right Hoop Tie	21.35
3	12	500-100-012	1	Bottom Left Hoop Tie	35.75
5	1	500-100-013	4	6 inch Wheel	10.13
5	2	500-100-014	4	4 inch Wheel	9.44
5	3	500-100-015	8	Axle Bolt	2.25
5	4	500-100-016	16	Bearing Seal	}
5	5	500-100-017	8	Outer Race	
5	6	500-100-018	8	Roller Bearing	
5	7	500-100-019	8	Inner Race	
5	8	500-100-020	8	Locknut	.75
6	1	500-100-021	4	Plastic Bearing	6.00
6	2	500-100-022	2	Plastic Pipe	7.46
6	3	500-100-023	2	Plastic Roller Shaft	4.35
6	4	500-100-024	2	Plastic Wrap Spool (no hair pin hole)	10.50
6	5	500-100-025	2	Spacer	1.30
6	6	500-100-026	4	Oilite Bearing	5.91
6	7	500-100-027	4	Nylon Locknut	.38
6	8	500-100-028	2	Stretch Wrap Holder (small end)	11.55
6	9	500-100-029	2	Plastic Wrap Spool (with hair pin hole)	11.89
6	10	500-100-030	2	Hair Pin	.41
6	11	500-100-031	2	Stretch Wrap Holder (large end)	11.85
6	12	500-100-032	2	Cotter Pin	.21
7	1 L	500-100-033	1	Left Side Safety Shield	104.40
7	1 R	500-100-034	1	Right Side Safety Shield	104.40
7	2 L	500-100-035	1	Left Latch Post	16.20
7	2 R	500-100-036	1	Right Latch Post	16.20
7	3	500-100-037	8	U Bolt	1.45
7	4	500-100-038	16	3/8 lockwasher	.06
7	5	500-100-039	16	3/8 Nut	.10
7	6	500-100-040	2	Rubber Latch Pin	N/A
7	7	500-100-041	2	Rubber Latch	7.85
7	8	500-100-042	2	Cotter Pin	.21
8	1	500-100-043	2	Bottom Brace Part	22.05
8	2	500-100-044	2	Top Brace Part	9.00
8	3	500-100-045	1	Valve Brace	3.75
8	4	500-100-047	6	3/8 X 2 Bolt	.30
8	5	500-100-046	2	3/8 X 1 Bolt	.15
8	6	500-100-039	6	3/8 Nut	.10

page #	Ref #	Part #	Qty	Description	
8	7	500-100-038	6	3/8 Lockwasher	.06
9	1	500-100-049	1	Drive Wheel Base	20.00
9	2	500-100-050	1	Hydraulic Motor	218.15
9	3	500-100-051	1	Motor Hub	25.98
9	4	500-100-052	1	Drive Wheel	27.70
9	5	500-100-053	4	1/2 X 3 UNF Bolt	.80
9	6	500-100-054	4	1/2 Wheel Nut	.30
9	7	500-100-055	2	5/8 X 1 1/2 Bolt	.45
9	8	500-100-056	2	5/8 Locknut	.15
9	9	500-100-057	4	3/8 X 3/4 Bolt	-
9	10	500-100-038	4	3/8 Lockwasher	-
9	11	500-100-059	1	Hydraulic Check Valve (manual model only)	25.11
9	12	500-100-060	1	Washer	.95
9	13	500-100-061	1	1/4 X 1 Bolt / Lockwasher	.15
10	1	500-100-062	1	Axle	24.50
10	2	500-100-063	2	Inner Seal	1.26
10	3	500-100-064	2	Inner Bearing	1.26
10	4	500-100-065	2	Inner Bearing Race	3.55
10	5	500-100-066	2	Hub	22.75
10	6	500-100-067	2	Outer Bearing Race	2.09
10	7	500-100-068	2	Outer Bearing	4.03
10	8	500-100-069	2	Flat Washer	.03
10	9	500-100-070	2	Castellated Nut	1.20
10	10	500-100-071	2	Cotter Pin	.11
10	11	500-100-072	10	Wheel Stud	.25
10	12	500-100-073	2	Dust Cap	2.00
10	13	500-100-113	2	Spindle Bolt 1/2 X 3 1/2	.60
10	14	500-100-075	2	1/2 Lockwasher	.12
10	15	500-100-076	2	1/2 Nut	.14
10	16	500-100-077	2	Spindle	24.00
10	17	500-100-078	1	Axle Pin	4.95
10	18	500-100-079	1	Cotter Pin	.11
11	1	500-100-080	1	Brack Rocker	121.75
11	2	500-100-081	2	Bearing	18.40
11	3	500-100-082	2	2 1/2 X 8 Hydraulic Cylinder	72.36
11	4	500-100-083	4	1/2 X 3 Bolt	.50
11	5	500-100-078	4	1/2 Nut	.14
11	6	500-100-075	4	1/2 Lockwasher	.12
11	7	500-100-085	2	Cylinder Pin	4.05
12	1	500-100-086	4	Large Roller	52.25
12	2	500-100-087	1	Sprocket Motion Sensor (electric)	27.50
12	3	500-100-088	2	3/8 Set Screw	.20
12	4	500-100-089	2	Short Wood Strip	20.40
12	5	500-100-090	2	Retainer Bar	2.75
12	6	500-100-091	6	5/16 X 3 Carriage Bolt	.61
12	7	500-100-092	6	5/16 Lockwasher	.10
12	8	500-100-093	6	5/16 Nut	.09
12	9	500-100-094	4	1/2 X 6 Carriage Bolt	.78
12	10	500-100-075	4	1/2 Lockwasher	.12
12	11	500-100-076	4	1/2 Nut	.14

page #	Ref #	Part #	Qty	Description	
13	1	500-100-097	1	Tail Base	204.56
13	2	500-100-086	4	Large Roller	50.75
13	3	500-100-099	1	4 in Roller	53.26
13	4	500-100-100	1	2 in Roller	21.10
13	5	500-100-101	2	Retainer Bar	10.10
13	6	500-100-102	2	Long Wood Strip	42.75
13	7	500-100-103	1	2 1/2 X 18 Hydraulic Cylinder	40.41
13	8	500-100-091	8	5/8 X 3 Carriage Bolt	1.27
13	9	500-100-104	6	1/2 X 3 1/2 Carriage Bolt	1.45
13	10	500-100-075	6	1/2 Lockwasher	1.12
13	11	500-100-076	6	1/2 Nut	1.14
13	12	500-100-092	8	5/16 Lockwasher	1.09
13	13	500-100-093	8	5/16 Nut	1.09
13	14	500-100-109	1	Hinge Pin	11.65
13	15	500-100-110	1	Cotter Pin	1.05
13	16	500-100-111	1	Tail Tie Bar	11.15
13	17	500-100-112	1	Hair Pin	1.41
13	18	500-100-113	1	1/2 X 3 1/2 Bolt	1.60
13	19	500-100-114	1	1/2 Locknut	1.15
14	1	500-100-115	1	Short Roller	53.65
14	2	500-100-116	1	Left Bearing Bracket	17.09
14	3	500-100-117	1	Right Bearing Bracket	17.09
14	4	500-100-118	2	Bearing	11.52
14	5	500-100-119	4	3/8 X 1 1/4 Bolt	1.19
14	6	500-100-038	4	3/8 Lockwasher	1.06
14	7	500-100-039	4	3/8 Nut	1.10
14	8	500-100-122	2	1/2 X 4 Bolt	1.10
14	9	500-100-076	2	1/2 Nut	1.14
15	1	500-100-124	2	Bale Saddle	44.50
15	2	500-100-125	4	1/2 X 1 1/4 Bolt	1.15
15	3	500-100-114	2	1/2 Locknut	1.15
15	4	500-100-076	2	1/2 Nut	1.14
15	5	500-100-075	2	1/2 Lockwasher	1.12
16	1	500-100-129	1	Ram	155.25
16	2	500-100-130	2	Slider Tube	1.13
16	3	500-100-131	2	Long Cylinder Pin	1.13
16	4	500-100-132	2	Short Cylinder Pin	1.13
16	6	500-100-134	2	Ram Hydraulic Cylinder	285.00
16	7	500-100-135	1	Latch Spring	3.10
16	8	500-100-136	1	Latch	1.10
16	9	500-100-137	1	1/2 X 2 1/2 Bolt	1.10
16	10	500-100-114	1	1/2 Locknut	1.15
16	11	500-100-139	2	1/2 X 4 Bolt	1.10
16	12	500-100-076	2	1/2 Nut	1.14
16	13	500-100-075	2	1/2 Lockwasher	1.12
16	14	500-100-142	4	1/2 X 1 1/2 Bolt	1.13
16	15	500-100-076	4	1/2 Nut	1.14
16	16	500-100-075	4	1/2 Lockwasher	1.12
16	17	500-100-145	2	Grease Fitting	1.35

page #	Ref #	Part #	Qty	Description	
17	1	500-100-146	3	Push Tube	29.75
17	2	500-100-147	1	Push Plate	215.50
18	1	500-100-148	1	Main Tongue	
18	2	500-100-149	1	Swinging Tongue	50.00
18	3	500-100-150	1	Sliding Tongue	21.50
18	4	500-100-151	1	Tongue Latch	n/a
18	5	500-100-152	1	3/4 X 8 1/2 Bolt	
18	6	500-100-153	1	3/4 Locknut	1.10
18	7	500-100-154	1	Tongue Pin	2.10
18	8	500-100-155	2	5/8 X 5 Bolt	1.70
18	9	500-100-056	2	5/8 Locknut	
18	10	500-100-157	1	5/8 X 4 1/2 Bolt	n/a
18	11	500-100-056	1	5/8 Locknut	.15
18	12	500-100-157	1	5/8 X 4 1/2 Bolt	
18	13	500-100-160	1	Tongue Holder	11.50
18	14	500-100-161	1	Hair Pin	.10
18	15	500-100-103	1	2 1/2 X 16 Hydraulic Cylinder	17.00
19	1	500-100-163	2	Mud Flap	25.45
19	2	500-100-164	4	Metal Strip	3.10
19	3	500-100-165	12	5/16 X 1 Bolt	.15
19	4	500-100-092	12	5/16 Lockwasher	.07
19	5	500-100-093	12	5/16 Nut	.09
20	1	500-100-168	1	Hydraulic Tank	105.00
20	2	500-100-169	1	Breather Cap	11.00
20	3	500-100-170	1	Filler Plug 1 1/4 Pipe	1.05
20	4	500-100-171	1	Sight Gauge	11.75
20	5	500-100-172	1	Filter Base	12.00
20	6	500-100-173	1	10 Micron Filter	15.00
20	7	500-100-174	1	Magnetic Plug	2.00
20	8	500-100-175	1	Suction Filter	11.05
20	9	500-100-176	4	3/8 X 1 Bolt	.10
20	10	500-100-038	4	3/8 Lockwasher	.15
20	11	500-100-039	4	3/8 Nut	.10
21	1	500-100-179	1	13 HP Honda Engine (rope start QA)	745.00
		500-100-180	1	" " (electric start QNE)	795.00
21	2	500-100-181	1	Hydraulic Pump	130.00
21	3	500-100-182	1	Engine to Pump Adaptor	16.00
21	4	500-100-183	1	Love Joy Coupling pump side	15.00
21	5	500-100-184	1	Coupling Spacer	8.95
21	6	500-100-185	1	Love Joy Coupling engine side	15.00
21	7	500-100-186	4	3/8 X 1 Bolt	.10
21	8	500-100-038	4	3/8 Lockwasher	.15
21	9	500-100-188	2	3/8 X 1 1/4 Bolt	.10
21	10	500-100-038	2	3/8 Lockwasher	.15
21	11	500-100-190	2	3/8 Flatwasher	.15
21	12	500-100-191	2	Throttle Cable (manual)	
22	1	500-100-192	1	CPV0014 Valve stack	
22	2	500-100-193	1	Flow Control RD-150-16	11.00
22	3	500-100-194	1	1/2 Check Valve	
22	4	500-100-195	1	Selector Valve	

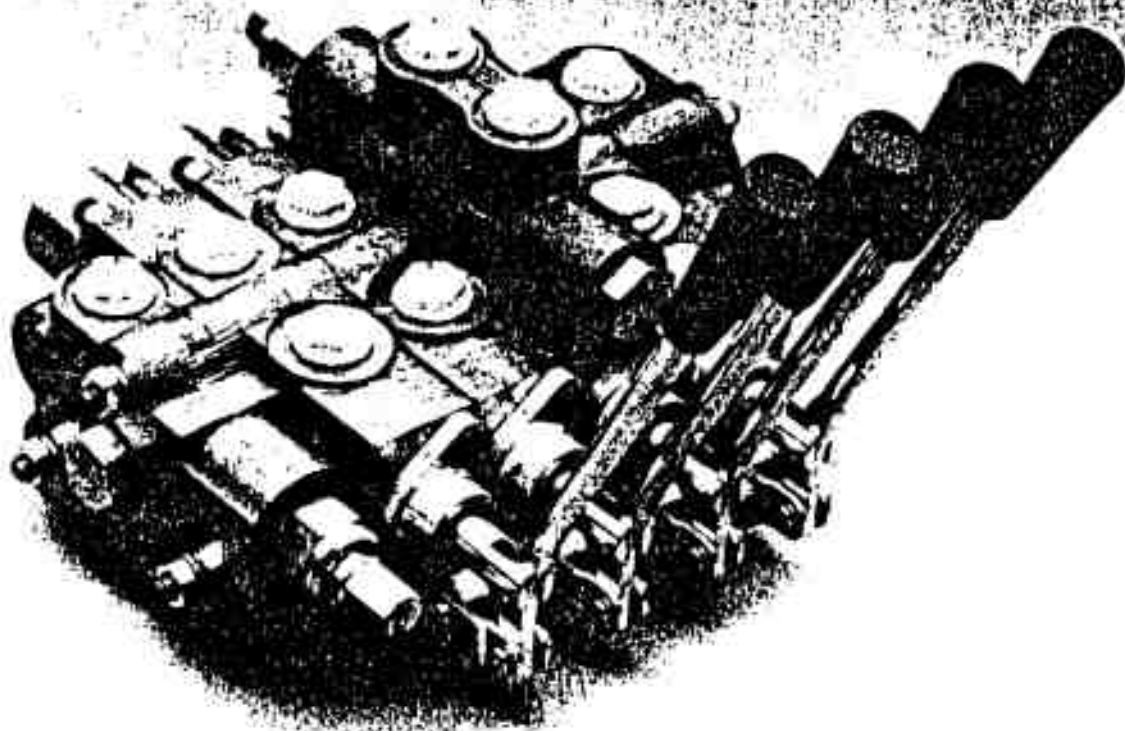


page #	Ref #	Part #	Qty	Description	
23	1	500-100-196	1	Engine Cover	12.58
23	2	500-100-197	1	Valve Stack Decal Plate	4.55
23	3	500-100-198	1	Selector Valve Decal Plate	2.57
23	4	500-100-199	1	Selector Valve Decal Plate Bracket	3.95
24	1	500-100-200	1	Tandem Center 12 Volt VS12MBLGB75L	312.45
24	2	500-100-201	1	Single Center 12 volt VS12M1AGB75L	...
24	3	500-100-202	2	Subplate SAE port ADO5SPS8S	27.55
24	4	500-100-203	1	Flow Control RD-150	81.87
24	5	500-100-209	1	Valve Stack CPV0013	173.14
25	1	500-100-204	4	Body ZCK J1H7	88.00
25	2	500-100-205	4	Actuator ZCK E05	5.70
25	3	500-100-206	4	Arm ZCK Y43 <i>front switch complete</i>	5.31 77.46
26	1	500-100-207	1	Control Panel	577.50
27	1	500-100-208	1	Trigger Plate	11.75
27	2	500-100-135	1	Trigger Spring	3.17
27	3	500-100-210	2	1/4 X 1 Stove Bolt c/w nut & lockwasher	1.00
27	4	500-100-211	1	Battery Holdown	5.75
27	5	500-100-212	1	5/16 X 7 Carriage Bolt c/w nut & lockwasher	1.95
27	6	500-100-213	1	5/16 X 2 Bolt c/w nut & lockwasher	1.00
28	1	500-100-214	1	Solenoid Base	6.50
28	2	500-100-215	1	Throttle Solenoid	115.75
28	3	500-100-216	1	Coupling Nut	1.50
28	4	500-100-217	1	Throttle Cable	95.00
28	5	500-100-218	2	5/16 X 3 Bolt c/w nut & lockwasher	1.15
28	6	500-100-219	2	1/4 X 3/4 Bolt c/w nut & lockwasher	1.00
28	7	500-100-220	1	70 Amp Relay	17.00
		500-100-221		Relay (Control Box)	17.35
		500-100-222		Relay (Control Box)	14.75

## Directional Control Valves



# SECTIONAL BODY



*Model SV*

### STANDARD FEATURES

- 1-8 Sections Per Valve Bank
- Load Checks On Each Section
- Hard Chrome Plated Spools
- Compact Construction
- Enhanced Metering Section Available In both the High and Low Sections (Consult Factory)
- Differential Poppet Style Relief, Adjustable from 500 to 3000 psi (Also Available in Low Pressure Version Adjustable from 500 to 1500 psi)
- Power Beyond Capability
- Reversible Handle

### SPECIFICATIONS

#### Parallel Circuit Construction

#### Pressure Rating

Maximum Operating Pressure ..... 3000 PSI  
Maximum Tank Port Pressure ..... 500 PSI

Nominal Flow Rating ..... 12 GPM  
Refer to Pressure Drop Curves

#### Foot Mounting

Maximum Operating Temp. .... 180° F

#### Weight Per Section

Inlet Section ..... Approx. 3.75 lbs.  
Outlet Section ..... Approx. 3.75 lbs.  
Work Section (Standard) ..... Approx. 5.50 lbs.

## VALVE ASSEMBLIES

The SV Series sectional body directional control valve can be ordered as separate sections as outlined or as a complete factory tested assembly. This will need to be specified with each order. An assembly model number will be assigned at the time of the order. This assembly number can then be used for future orders.

**ASSEMBLY MODEL NUMBER**    S V A - X X X

Sequence of Numbers. This number will be assigned to final valve to be assembled and tested at the factory. Each new order or quote will be assigned a new assembly model number.

### FIELD CONVERSION AND REPAIR KITS

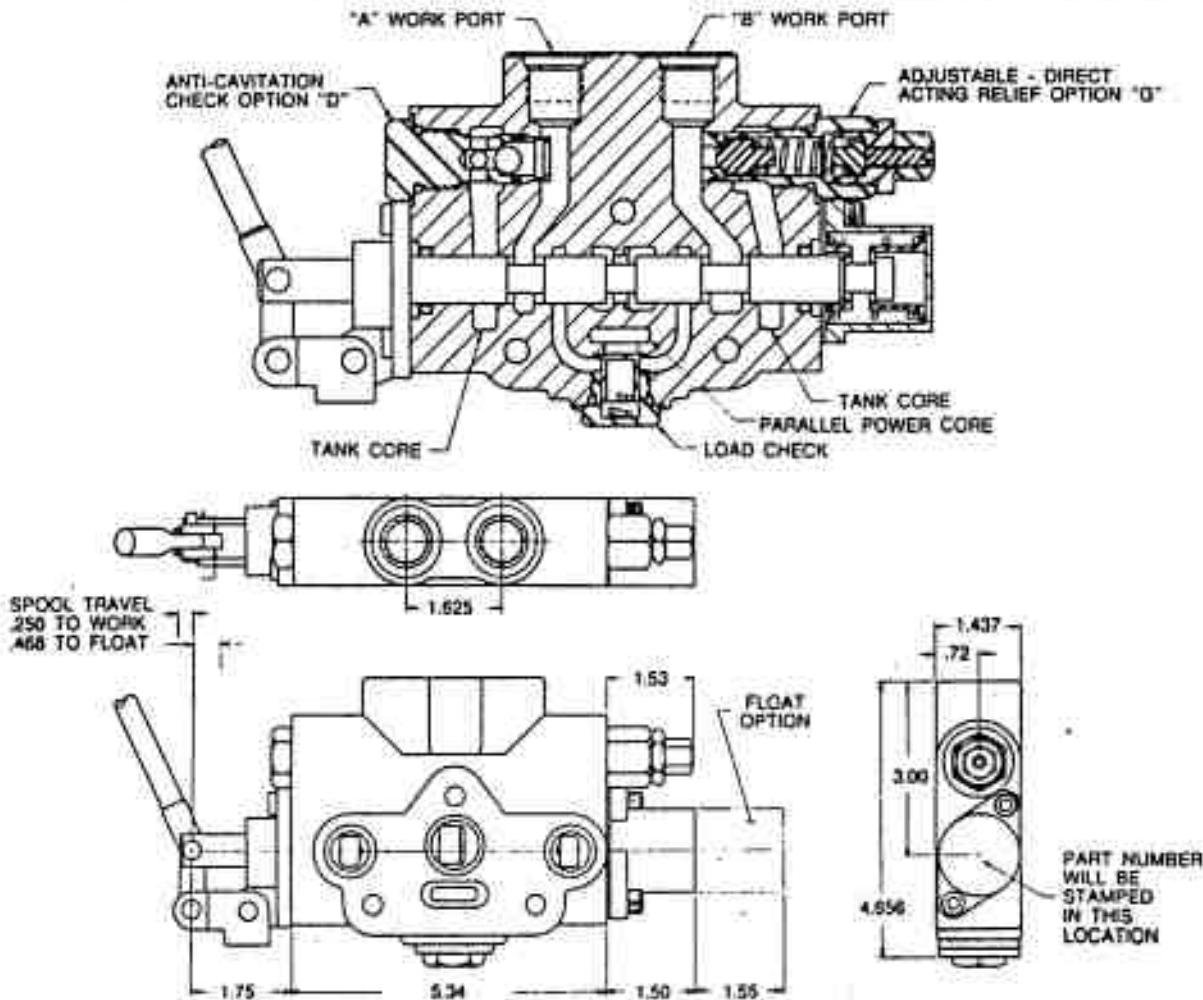
- 660180001 SPRING CENTER KIT
- 660180002 3 POSITION DETENT KIT — *MAN.*
- 660180003 FRICTION DETENT KIT
- 660250003 LOW PRESSURE RELIEF CART.
- 660250002 HIGH PRESSURE RELIEF CART.
- 660580001 SEAL KIT 5VW SECTION
- 660580002 SEAL KIT 5VI SECTION
- 660580003 SEAL KIT 5VE SECTION
- 660280002 CLOSED CENTER PLUG
- 660280001 POWER BEYOND PLUG #8 SAE — *Auto*
- 660180004 STD. HANDLE, PINS & LINK KIT
- 660180005 COMPLETE STD HANDLE
- 660180006 ADJ HANDLE, PINS & LINK KIT
- 660180007 COMPLETE ADJ HANDLE
- 660180008 3/4 IN. MOUNTING BOLT KIT
- 660180009 1 IN. MOUNTING BOLT KIT
- 660180010 #10 SAE PLUG W/ GAUGE PORT
- 660580004 SEAL KIT—O-RINGS BETWEEN SECTIONS ONLY.

### PORT RELIEF CARTRIDGES

- 660280004 NO RELIEF PLUG
- 660280005 ANTI-CAVITATION CHECK
- \*660280012 ADJUSTABLE PORT RELIEF/ ANTI-CAVITATION CHECK
- \*660280008 ADJUSTABLE PORT RELIEF 1500-3000 PSI
- \*660280011 ADJUSTABLE PORT RELIEF 500-1500 PSI
- 660280003 SHIM ADJUSTING PORT RELIEF 1500-3000 PSI
- 660280010 SHIM ADJUSTING PORT RELIEF 500-1500 PSI
- 672000101 .015 SHIM
- 672000102 .033 SHIM
- 672000103 .060 SHIM

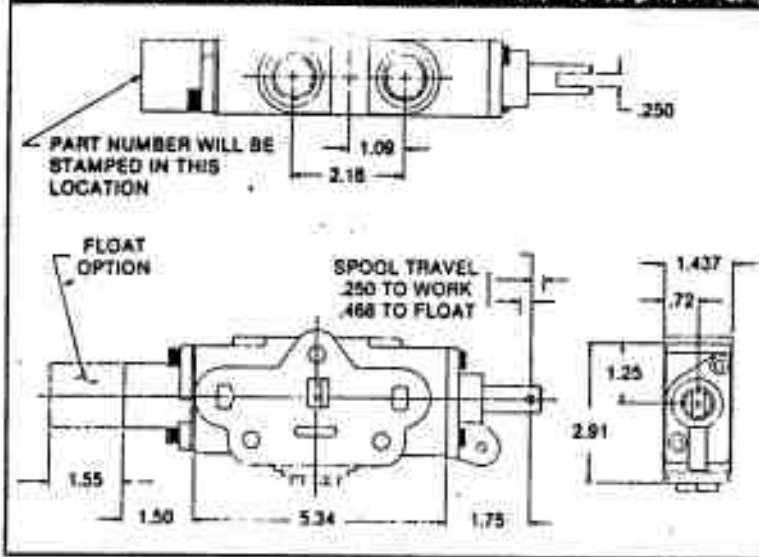
\*Cannot be used on the 'A' Port of work sections with Float Spool Option 'D'.

### PORT RELIEF WORK SECTION DIMENSIONAL DATA

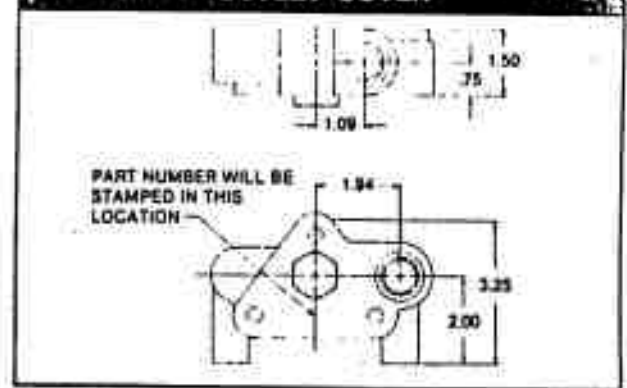


# DIMENSIONAL DATA

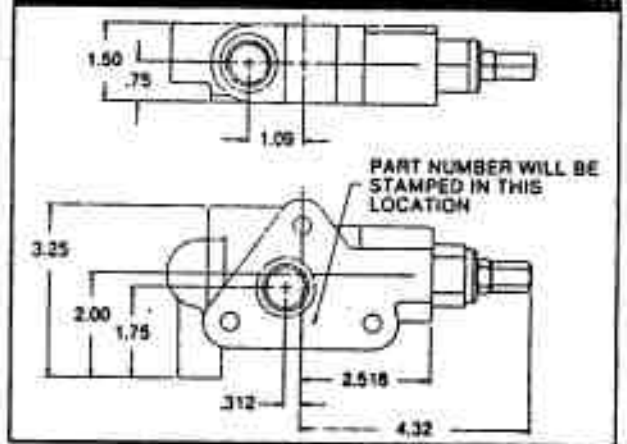
## WORK SECTION



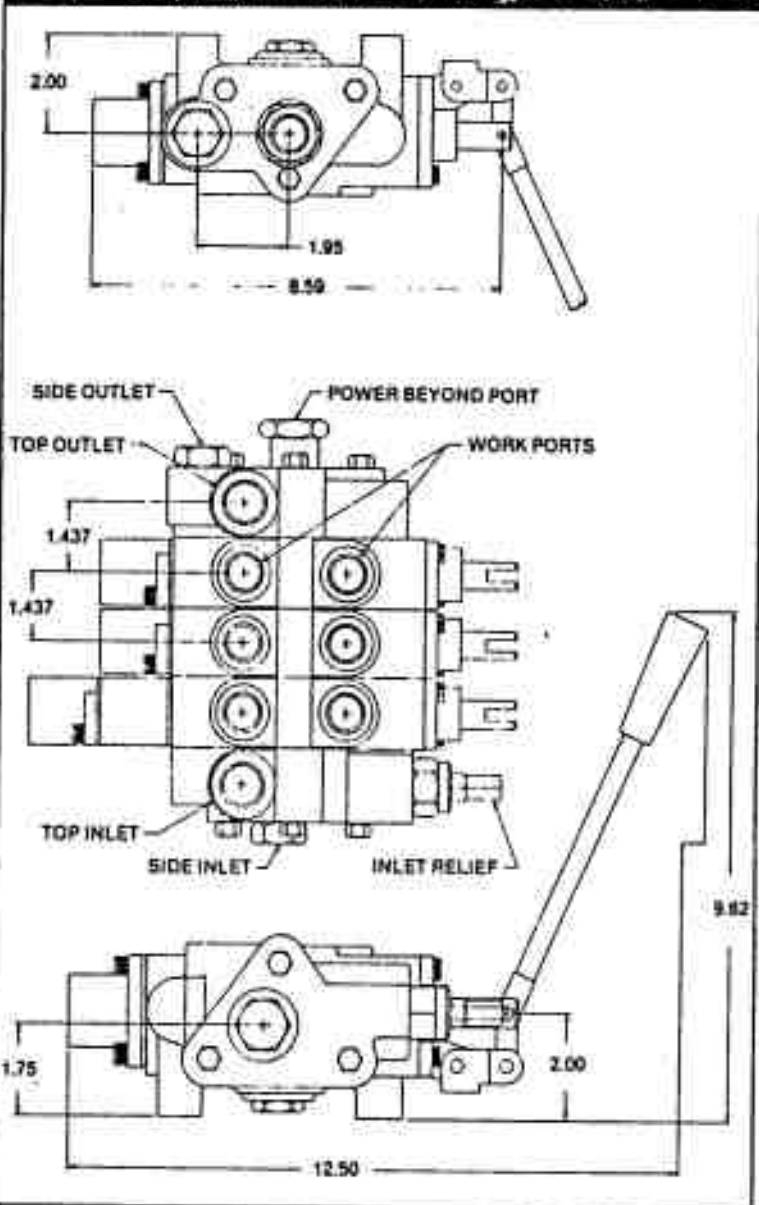
## OUTLET COVER



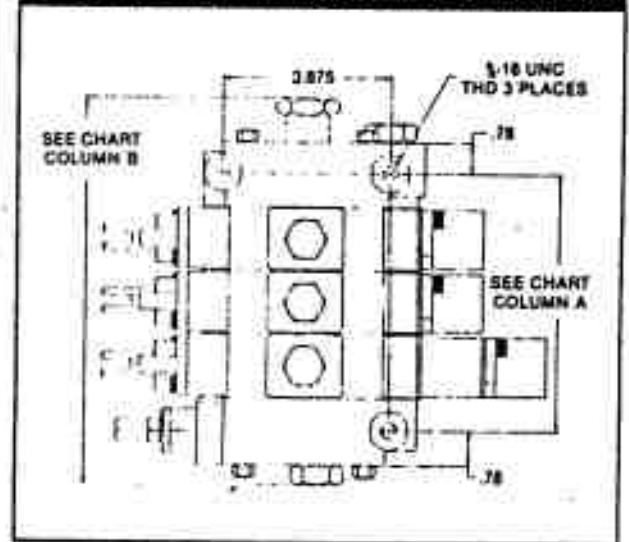
## INLET COVER



## TYPICAL STACK



## BOTTOM VIEW OF MOUNTING DIMENSIONS

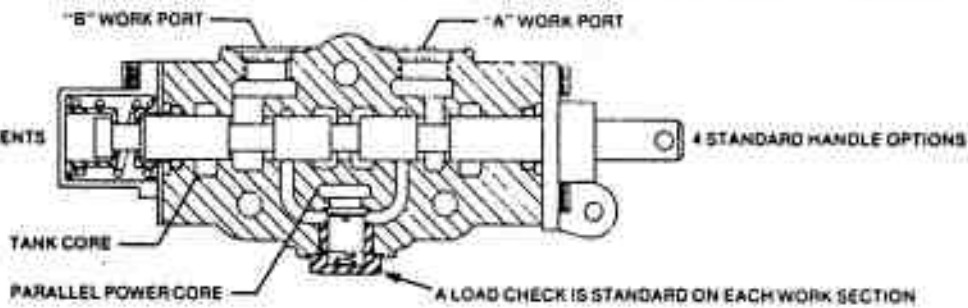


NUMBER OF WORK SECTIONS	"A"	"B"
1	2.875	5.875
2	4.312	7.312
3	5.750	8.750
4	7.187	10.187
5	8.625	11.625
6	10.062	13.062
7	11.500	14.500
8	12.937	15.937

# WORK SECTIONS

Standard and optional feature descriptions

4 STANDARD SPOOL ATTACHMENTS

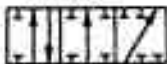


## SPOOL TYPE

ALL SPOOLS ARE OPEN CENTER, P → T IN NEUTRAL, WHEN CLOSED CENTER IS REQUIRED USE OUTLET OPTION 3.

### OPTION A

SINGLE ACTING  
WORK PORT BLOCKED  
IN NEUTRAL



3-WAY, 3-POSITION

### OPTION B

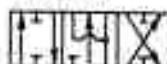
DOUBLE ACTING  
WORK PORTS BLOCKED  
IN NEUTRAL



4-WAY, 3-POSITION

### OPTION C

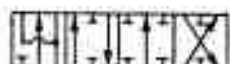
DOUBLE ACTING  
WORK PORTS OPEN IN  
NEUTRAL



4-WAY, 3-POSITION MOTOR

### OPTION D

DOUBLE ACTING WITH  
4th POSITION FLOAT

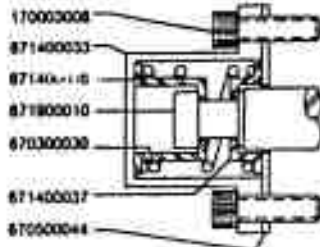


4-WAY, 4-POSITION FLOAT

## SPOOL ACTION

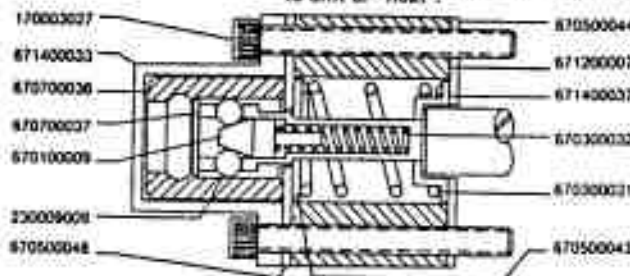
### 3 POSITION SPRING CENTER TO NEUTRAL

#### OPTION A



### 4 POSITION SPRING CENTER TO NEUTRAL DETENT SPOOL 'IN' FOR FLOAT POSITION.

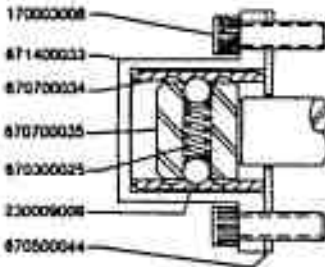
#### OPTION D



This option provides for spring center to neutral from either work position. It also provides a 4th position, float detent. The float detent is reached by pushing the spool in as far as it will go. In the float position both work ports are open to return. This allows a cylinder to drift or "float".

### 3 POSITION DETENT

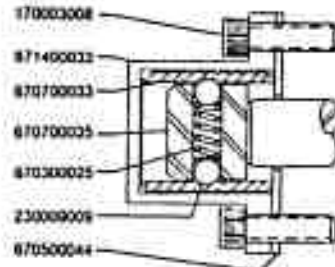
#### OPTION B



### FRICION DETENT

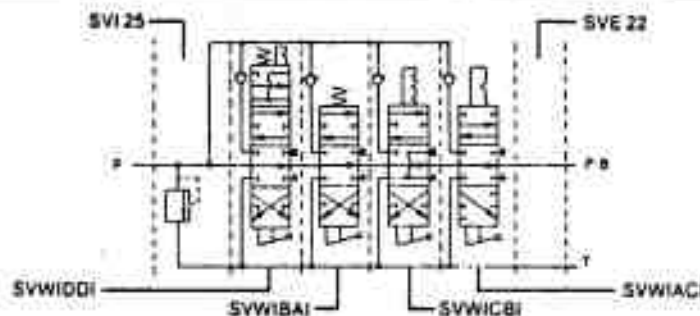
#### OPTION C

This option provides for a detent in the neutral position only. As the spool is manually moved away from the neutral position it will be held in place by the friction of the detent balls on the detent sleeve. Note: Because the spool is held in place by friction only, excessive vibration may cause spool to move when not in the neutral detented position.

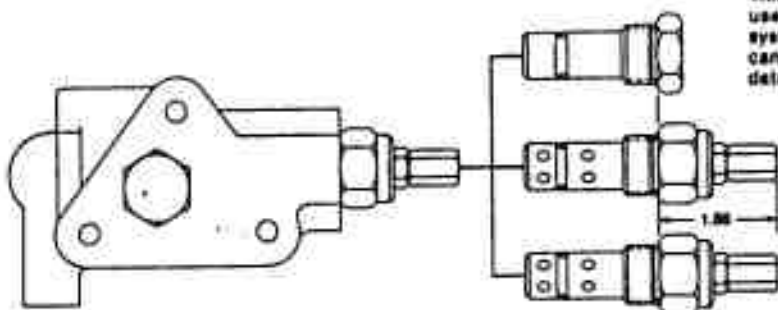


## ANSI SYMBOL

EXAMPLE FOUR SECTION STACK



## INLET RELIEF OPTIONS



### OPTION 1 NO RELIEF

This option provides for no built in relief. This is used when a relief is provided elsewhere in the system or in a closed center application. This plug can be replaced with a relief cartridge at a later date.

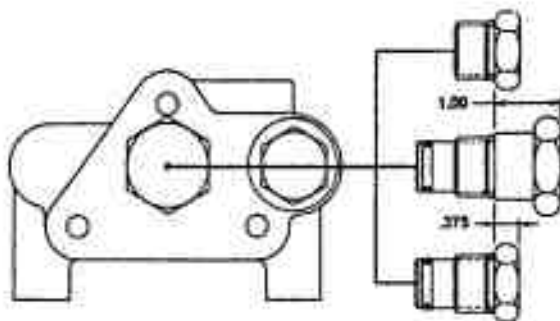
### OPTION 2 LOW PRESSURE ADJUSTABLE RELIEF

This option provides for a differential poppet relief adjustable from 500-1500 PSI. The standard setting is 1000 PSI @ 10 GPM.

### OPTION 3 HIGH PRESSURE ADJUSTABLE RELIEF

This option provides for a differential poppet relief adjustable from 1500-3000 PSI. The standard setting is 2000 PSI @ 10 GPM. The differential poppet relief provides smooth quiet operation with high cracking pressure.

## OUTLET COVER OPTIONS



### OPTION 1 STANDARD OPEN CENTER OUTLET WITH CONVERSION PLUG

This is the standard outlet option. This option allows for conversion in the field for power beyond or closed center applications. When the spools are in neutral the inlet is unloaded to tank.

### OPTION 2 POWER BEYOND OUTLET WITH 3/8 SAE BEYOND PORT

This option provides for a high pressure power beyond port. This would be used if a valve is to be added downstream. The outlet must be connected to tank. When the spools are in neutral the inlet is connected to power beyond port.

### OPTION 3 CLOSED CENTER OUTLET

This option provides for closed center operation. This is typically used with a variable displacement pressure compensated pump or in a system with an unloading valve. When the spools are in neutral the inlet port is blocked.

## HANDLE OPTIONS

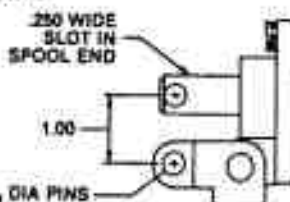
### OPTION 1 STANDARD LEVER HANDLE

The handle is shipped unattached. The handle can be installed as shown or it can be rotated 180° for applications where valve is mounted with the work ports down. The clevis assembly can also be rotated 180°. This would make the handle travel opposite to the spool travel.



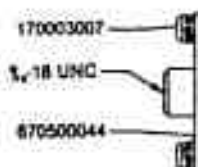
### OPTION 2 LESS HANDLE ONLY

This option provides the clevis assembly, clevis pins, and cotters. This option would be used if a special handle or linkage is installed by the customer. The parts are the same as option 1.



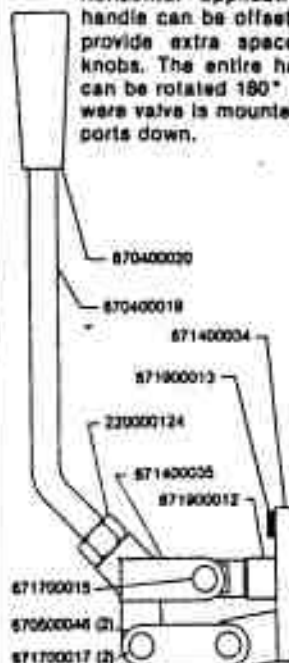
### OPTION 3 LESS COMPLETE HANDLE

This option provides no handle or clevis. A retainer plate is installed to hold the seals.



### OPTION 4 ADJUSTABLE HANDLE

This option provides a heavy duty adjustable handle for vertical or horizontal applications. Also the handle can be offset left or right to provide extra space between the knobs. The entire handle assembly can be rotated 180° for applications where valve is mounted with the work ports down.



# PRESSURE COMPENSATED ADJUSTABLE FLOW CONTROL VALVES

## MODEL RD-100 TOP PORT FLOW CONTROL



## MODEL RD-1900 SIDE PORT FLOW CONTROL



The PRINCE valve models RD-100 and RD-1900 are pressure compensated adjustable flow control valves. By rotating the handle the flow out the "CF" or controlled flow port can be varied within the range given in the chart below. Any remaining flow is bypassed to the "EF" or excess flow port. This flow can be used to power another circuit or can be returned to tank. Once the controlled flow is set it will remain nearly constant with variations in pressure on either the controlled or excess flow ports. Please note, if during operation the controlled flow port is blocked the valve will compensate in such a way as to shut off flow to the excess port.

These valves can also be used as a restrictive flow control by plugging the excess flow port.

The PRINCE valve models RDRS-100 and RDRS-1900 have a built in adjustable pressure relief. For these models the excess flow port must be connected to tank.

It should be noted that whenever these or any valve is used to bypass or restrict flow heat will be generated. Steps maybe required to keep oil temperature from becoming too high.

### VALVE SPECIFICATIONS:

Capacity: 30 gpm max inlet flow  
 Pressure: 3000 psi max  
 Weight: RD-100 8 lbs.  
           RD-1900 9 lbs.

### STANDARD MODELS AVAILABLE

MODEL NUMBER		PORT SIZES	CONTROLLED FLOW RANGE
RD-137-8	RD-1937-8	3/8 NPTF	0-8 GPM
RD-150-8	RD-1950-8	1/2 NPTF	0-8 GPM
RD-150-16	RD-1950-16	1/2 NPTF	0-16 GPM
RD-175-16	RD-1975-16	3/4 NPTF	0-16 GPM
RD-175-30	RD-1975-30	3/4 NPTF	0-30 GPM
RD-108-8	RD-1908-8	#8 SAE	0-8 GPM
RD-112-30	RD-1912-30	#12 SAE	0-30 GPM
RDRS-150-16	RDRS-1950-16	1/2 NPTF	0-16 GPM
RDRS-175-30	RDRS-1975-30	3/4 NPTF	0-30 GPM

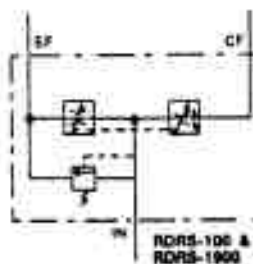
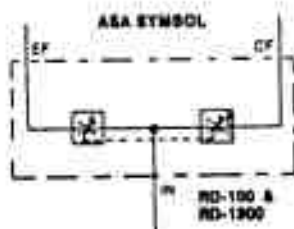
### FIELD REPAIR KITS:

Handle hardware kit 660301002  
 Seal Kit 660501001

These models have built in relief set at 1500 psi @ 10 GPM.

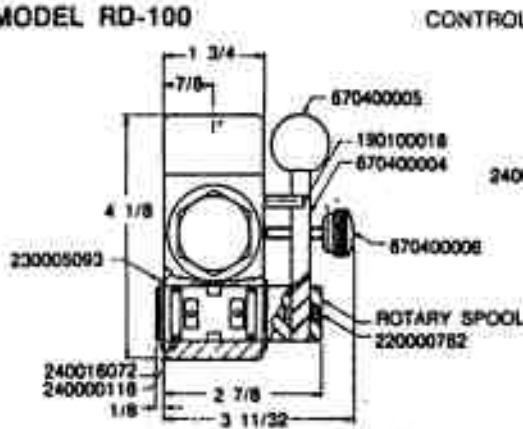
Special combinations of port size and controlled flow range are available in OEM quantities. Please consult your sales representative.

### SYMBOL

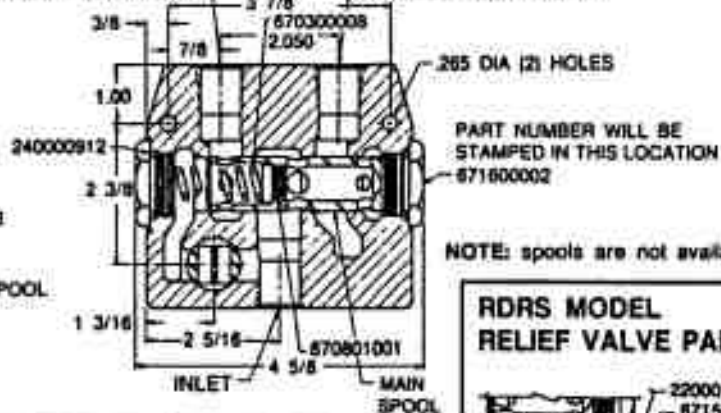


# MODEL RD-100 AND RD-1900 PARTS BREAKDOWN AND DIMENSIONS

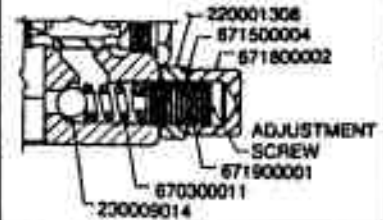
## MODEL RD-100



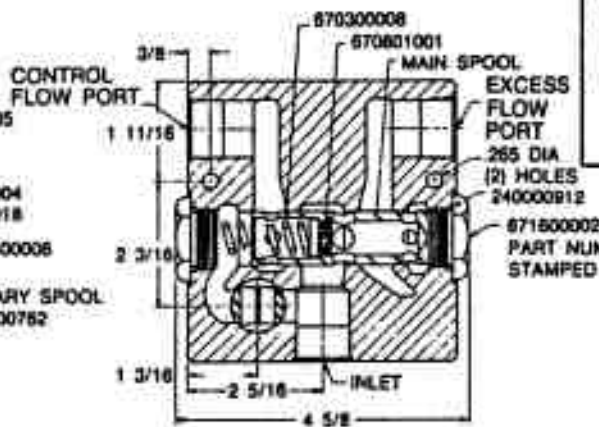
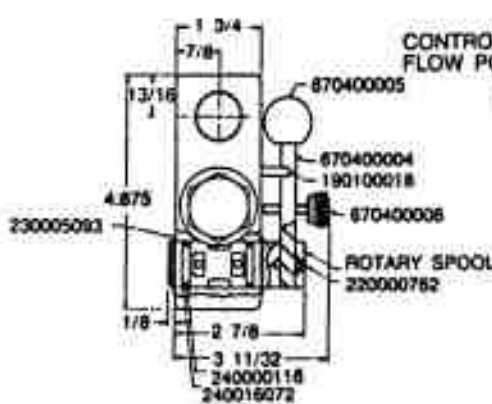
CONTROL FLOW PORT      EXCESS FLOW PORT



### RDRS MODEL RELIEF VALVE PARTS



## MODEL RD-1900

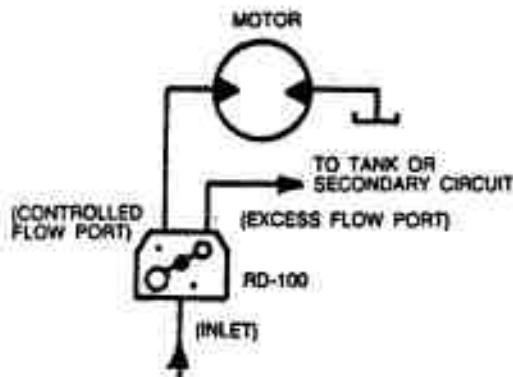


### APPLICATIONS:

As illustrated in the circuit below the RD-100/RD-1900 adjustable flow control valves can be used to control the speed of a hydraulic motor. In this circuit oil from a source is directed into the inlet of the valve. By moving the handle the flow can be varied from zero when handle is vertical to maximum when the handle is horizontal. Oil not going to the controlled flow port is bypassed to the excess flow port where it can be used to supply another circuit or returned

to tank. Instead of the control flow directly supplying a motor it can be used as an adjustable priority divider and provide adjustable priority flow to a directional control valve bank. Also as illustrated the RD-100/RD-1900 can be used as a restrictive type flow control. In this circuit the excess flow port is blocked. This would normally be used with a pressure compensated pump or in a closed center system.

#### BYPASS FLOW CIRCUIT



#### RESTRICTIVE FLOW CIRCUIT

