

HYDRAULIC SYSTEM INFORMATION

GLOSSARY OF HYDRAULIC/HYDROSTATIC SYMBOLS FOR LOADERS

SYMBOL DESCRIPTION

SYMBOL DESCRIPTION

FLOW LINES and CONNECTIONS

BASIC and MISCELLANEOUS SYMBOLS

 WORKING CIRCUITS - Continuous, Solid Line - Working (Main) Line, Return Line (line conducting fluid from working devices to the reservoir) and Feed Line (main line conductor)

 RESTRICTION - Line with Fixed Restriction - Affected by Viscosity (property of resistance to flowing fluid)

 PILOT PRESSURE - Dashed Line - Pilot Line (line which conducts control fluid)

 VARIABLE ADJUSTMENT RESTRICTION - Regulated or Variable Restriction

 DRAIN CIRCUITS - Dotted Line - Drain Line (drain or bleed line - line conducting fluid from a component housing to the reservoir)

 TEMPERATURE CONTROL - (indication of temperature)

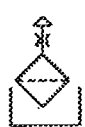
 COMPONENTS - Long Chain Line - Enclosure outline for several components assembled in one unit

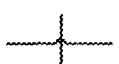
 TEMPERATURE INDICATOR - (temperature measurement - thermometer)

 MECHANICAL CONNECTIONS - Double Line (Shaft, Lever, Piston Rod)

 FILTER (strainer or screen) - For fluid conditioning

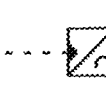
 CONNECTED JUNCTION OF OIL LINES (Flow Line Connection)

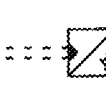
 VENTED AND FILTERED RESERVOIR (reservoir open to atmosphere)

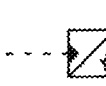
 OIL LINES CROSSING (NOT Connected)

 OIL COOLER (heat exchanger) - The arrows in the diamond indicate the extraction of heat (heat dissipation)

 COUPLER - Quick-Acting Coupling (uncoupled, closed by non-return valve)

 PRESSURE SENSOR - Varies electric signal with pressure

 DIFFERENTIAL PRESSURE SWITCH - Switch activates when pressure difference reaches specified level

 PRESSURE SWITCH - Switch activates when pressure reaches specified level

 MUFFLER (silencer) - Reduces noise

HYDRAULIC SYSTEM INFORMATION (Cont'd)

GLOSSARY OF HYDRAULIC/HYDROSTATIC SYMBOLS FOR LOADERS

SYMBOL DESCRIPTION

CYLINDER: Equipment to convert hydraulic energy into linear energy and in which the fluid pressure operates alternately in both directions (forward and backward strokes)



DOUBLE ACTING HYDRAULIC CYLINDER, UNEQUAL DISPLACEMENT - With single piston rod



DOUBLE ACTING HYDRAULIC CYLINDER, UNEQUAL DISPLACEMENT and CUSHION ON ONE END - With single piston rod

PUMP: To convert mechanical energy into hydraulic energy



FIXED CAPACITY DISPLACEMENT HYDRAULIC PUMP - With one direction of flow



VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDRAULIC PUMP - With two directions of flow (bidirectional)

MOTOR: To convert hydraulic energy into rotary mechanical energy



FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDRAULIC MOTOR - With two directions of flow (bidirectional)

SYMBOL DESCRIPTION

CONTROL MECHANISMS



CONTROL VALVE WITH DETENT (Holds Valve in Position) - device for maintaining a given position (mechanical)



CONTROL VALVE ACTIVATED BY A PULL BUTTON (manual)



CONTROL VALVE ACTIVATED BY A PUSH-PULL BUTTON (manual)



CONTROL VALVE ACTIVATED BY A LEVER (manual)



CONTROL VALVE ACTIVATED BY A PEDAL (manual)



CONTROL VALVE WITH SPRING RETURN (mechanical)



CONTROL VALVE ACTIVATED BY AN ELECTRIC SOLENOID (electrical)



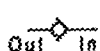
CONTROL VALVE ACTIVATED BY PILOT PRESSURE (indirect control, pilot actuated by application of pressure)

HYDRAULIC SYSTEM INFORMATION (Cont'd)

GLOSSARY OF HYDRAULIC/HYDROSTATIC SYMBOLS FOR LOADERS

SYMBOL DESCRIPTION

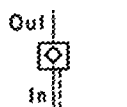
NON-RETURN VALVE, SHUTTLE VALVE: Valve which allows free flow in one direction only



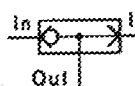
NON-RETURN VALVE (Check Valve) - Used as Replenishing Valve, Load Check Valve or Anticavitation Valve - Opens if the Inlet pressure is higher than the Outlet pressure. Often contains internal spring which has NO significant pressure value



SPRING LOADED VALVE (Bypass Valve) - Opens if the Inlet pressure is greater than the Outlet pressure plus the spring pressure



PILOT CONTROLLED NON-RETURN VALVE - It is possible to open the valve by pilot pressure



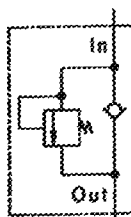
SHUTTLE VALVE - The Inlet port connected to the higher pressure is automatically connected to the Outlet port while the other Inlet port is closed

SYMBOL DESCRIPTION

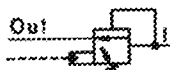
PRESSURE CONTROL VALVE: Valve ensuring the control of pressure



RELIEF VALVE - When the Inlet pressure overcomes the opposing force of the spring, the valve opens permitting flow from the Outlet port.



RELIEF/REPLENISHING VALVE or RELIEF/ANTICAVITATION VALVE - When the Inlet pressure overcomes the opposing force of the spring, the valve opens permitting flow from the Outlet port - Allows free flow in the opposite direction

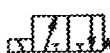


DUAL PRESSURE RELIEF VALVE - When the inlet pressure overcomes the opposing force of the spring, the valve opens permitting flow from the Outlet port. Pilot pressure provides a second pressure value.

DIRECTIONAL CONTROL VALVE: Valve providing for the opening (fully or restricted) or the closing of one or more flow paths (represented by several squares)



TWO PORTS and CLOSED FLOW PATHS

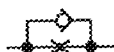


SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (Two Position) - controlled by an electric solenoid (with return spring)

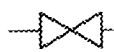


PILOT ACTIVATED DIRECTIONAL CONTROL VALVE (Two Position) - controlled by pressure (with return spring)

FLOW CONTROL VALVE: Valve controlling the flow in one or both directions



ONE WAY RESTRICTOR VALVE (Non-Return Valve with Restriction) - Unit allowing free flow in one direction but restricted flow in the other direction

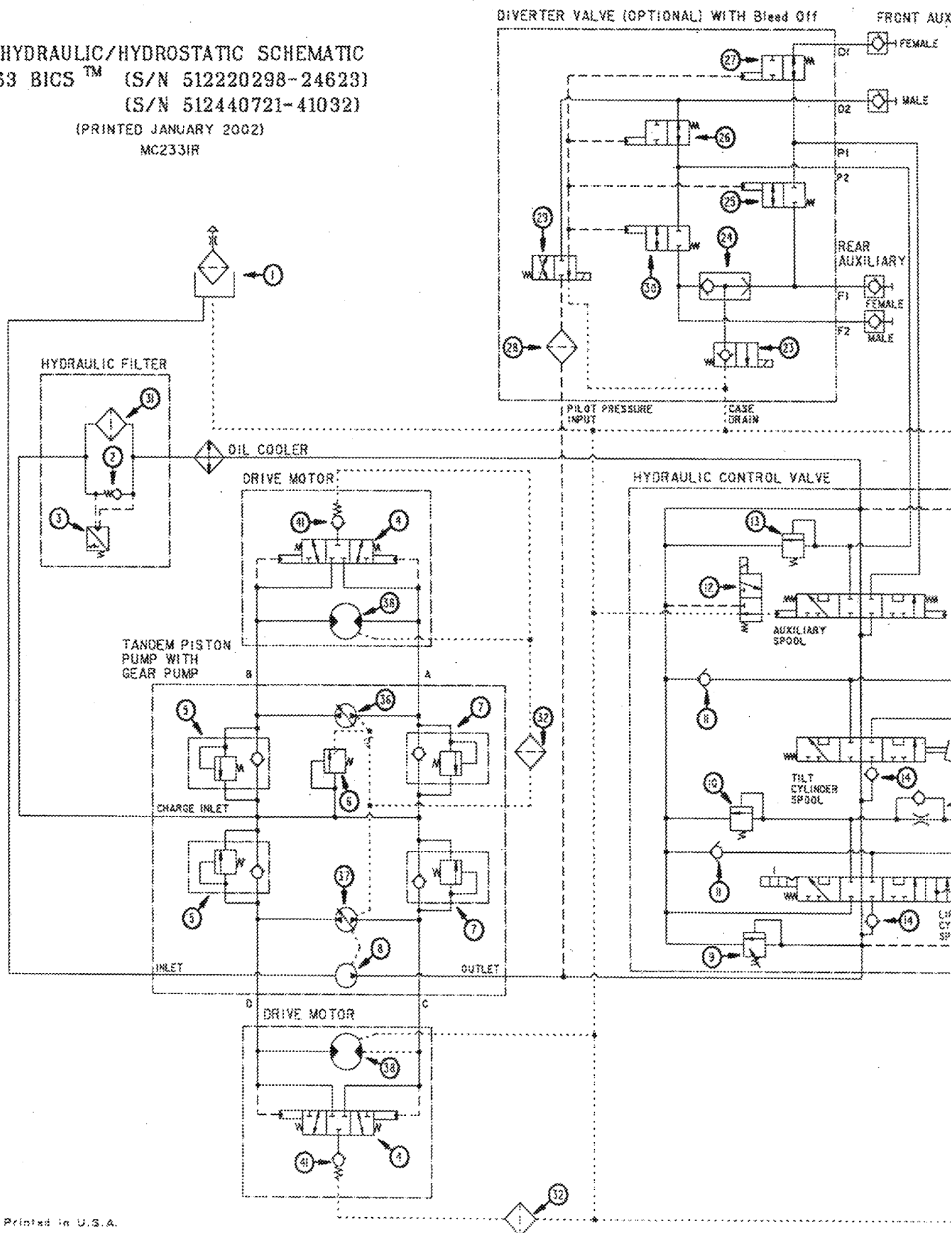


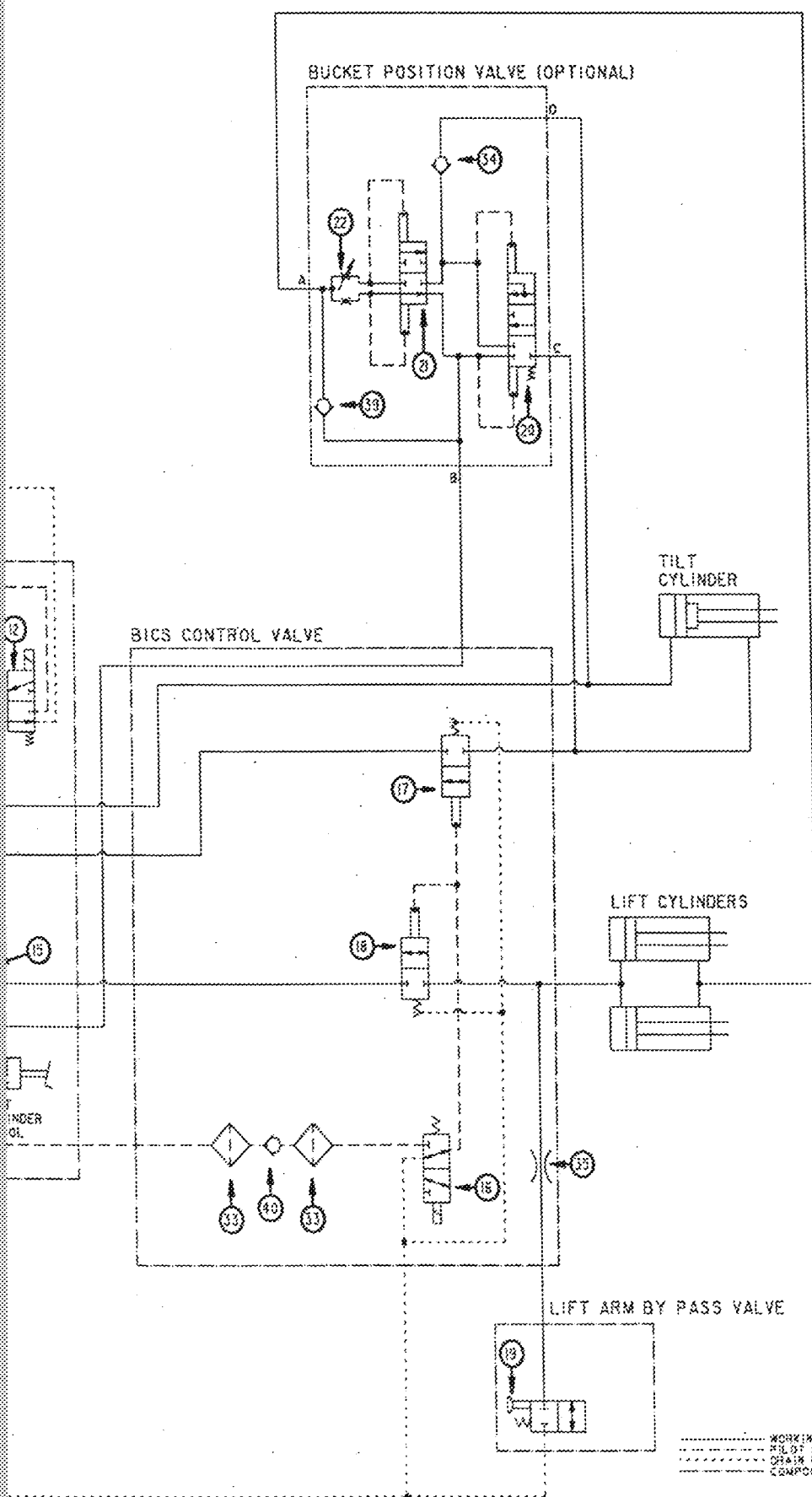
TOW VALVE - Normally in closed position



Bobcat®

HYDRAULIC/HYDROSTATIC SCHEMATIC
 763 BICS™ (S/N 512220298-24623)
 (S/N 512440721-41032)
 (PRINTED JANUARY 2002)
 MC233IR





===== LEGEND =====

- ① RESERVOIR:
Capacity . . . 24 Qts. (23 L)
- ② SPRING LOADED FILTER BYPASS
- ③ DIFFERENTIAL PRESSURE SWITCH:
36-44 PSI (250-300 kPa)
Without B.O.S.S.
(Normally Open - Shown)
With B.O.S.S.
(Normally Closed - NOT Shown)
- ④ DRIVE MOTOR SHUTTLE VALVE
- ⑤ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa)
- ⑥ RELIEF VALVE - CHARGE INLET:
185-195 PSI
(1276-1345 kPa) at 15.0 GPM
(56.8 L/min.) at 2850 RPM
W/120°F. (49°C.) Fluid
- ⑦ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa)
- ⑧ HYDRAULIC PUMP: Gear Type
15.0 GPM (56.8 L/min.)
at 2850 RPM at 1150 PSI (7929 kPa)
- ⑨ RELIEF VALVE - MAIN:
3000 PSI (20684 kPa)
at Front Quick Couplers
- ⑩ RELIEF VALVE - PORT: .
3500 PSI (24132 kPa)
- ⑪ ANTICAVITATION VALVE
- ⑫ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY
- ⑬ RELIEF VALVE - PORT: (Optional)
3500 PSI (24132 kPa)
- ⑭ LOAD CHECK VALVE
- ⑮ ONE WAY RESTRICTOR VALVE
- ⑯ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT/TILT
CONTROL
- ⑰ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - TILT CONTROL
- ⑱ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT CONTROL
- ⑲ PULL BUTTON ACTIVATED
DIRECTIONAL CONTROL VALVE -
LIFT ARM BY PASS
- ⑳ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - UNLOADING
SPOOL
- ㉑ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FLOW CONTROL
SPOOL
- ㉒ FLOW DIVIDER ADJUSTMENT VALVE
- ㉓ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - BLEED OFF REAR
AUXILIARY ("SV2")
- ㉔ LOAD SHUTTLE VALVE - BLEED OFF
- ㉕ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY CLOSED
("PI" & "FI")
- ㉖ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY OPEN
("D2")

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27 PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY OPEN
("DI")

28 FILTER - DIVERter VALVE
(SINTERED BRONZE)

29 SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - TO ACTIVATE
REAR AUXILIARY ("SVI")

30 PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY CLOSED
("P2" & "F2")

31 FILTER - HYDRAULIC (CANISTER)

32 FILTER - CASE DRAIN (SINTERED
BRONZE)

33 FILTER - BICS CONTROL VALVE
(SCREEN)

34 CHECK VALVE - BUCKET POSITION
VALVE

35 RESTRICTION

36 VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

37 VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

38 FIXED CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
MOTOR

39 CHECK VALVE - BUCKET
POSITION VALVE

40 CHECK VALVE - BICS CONTROL
VALVE

41 SHUTTLE RELIEF VALVE:
(Not Adjustable - Factory Set)
65 PSI (448 kPa)

42 RELIEF/ANTICAVITATION VALVE -
PORT (TILT BASE END)
3500 PSI (24132 kPa)

43 RELIEF VALVE - PORT:
3500 PSI (24132 kPa)

44 SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY
BLEED VALVE - FOUND ONLY ON
MACHINES WITH S/N'S:
S/N 512241838-49999
S/N 512613989-19999

45 LOAD SHUTTLE VALVE - AUXILIARY
BLEED VALVE - FOUND ONLY ON
MACHINES WITH S/N'S:
S/N 512241838-49999
S/N 512613989-19999

NOTE: Unless otherwise specified
springs have NO significant
pressure value.

LEGEND

- ① RESERVOIR:
Capacity . . . 24 Qls. (23 L)
- ② SPRING LOADED FILTER BYPASS
VALVE: 45-55 PSI (311-379 kPa)
- ③ DIFFERENTIAL PRESSURE SWITCH:
36-44 PSI (250-300 kPa)
Without B.O.S.S.
(Normally Open - Shown)
With B.O.S.S.
(Normally Closed - NOT Shown)
- ④ DRIVE MOTOR SHUTTLE VALVE
- ⑤ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa)
- ⑥ RELIEF VALVE - CHARGE INLET:
185-195 PSI
(1276-1345 kPa) at 15.0 GPM
(56,8 L/min.) at 2850 RPM
W/120° F. (49° C.) Fluid
- ⑦ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa)
For S/N 512221067-24623
S/N 512440768-41032
REPLENISHING VALVES (ONLY)
For S/N 512220298-21066 and
S/N 512440721-40767
- ⑧ HYDRAULIC PUMP: Gear Type
15.0 GPM (56,8 L/min.)
at 2850 RPM at 1150 PSI (7929 kPa)
- ⑨ RELIEF VALVE - MAIN:
3000 PSI (20684 kPa)
at Front Quick Couplers
- ⑩ RELIEF VALVE - PORT:
3500 PSI (24132 kPa)
- ⑪ ANTICAVITATION VALVE
- ⑫ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY
- ⑬ RELIEF VALVE - PORT: (Optional)
3500 PSI (24132 kPa)
- ⑭ LOAD CHECK VALVE
- ⑮ ONE WAY RESTRICTOR VALVE
- ⑯ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT/TILT
CONTROL
- ⑰ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - TILT CONTROL
- ⑱ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT CONTROL
- ⑲ PULL BUTTON ACTIVATED
DIRECTIONAL CONTROL VALVE -
LIFT ARM BY PASS
- ⑳ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - UNLOADING
SPOOL
- ㉑ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FLOW CONTROL
SPOOL
- ㉒ FLOW DIVIDER ADJUSTMENT VALVE
- ㉓ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - BLEED OFF REAR
AUXILIARY ("SV2")
- ㉔ LOAD SHUTTLE VALVE - BLEED OFF

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PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY CLOSED
("PI" & "FI")

PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY OPEN
("D2")

PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY OPEN
("DI")

FILTER - DIVERter VALVE
(SINTERED BRONZE)

SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - TO ACTIVATE
REAR AUXILIARY ("SVI")

PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY CLOSED
("P2" & "F2")

FILTER - HYDRAULIC (CANISTER)

FILTER - CASE DRAIN (SINTERED
BRONZE)

FILTER - BICS CONTROL VALVE
(SCREEN)

CHECK VALVE - BUCKET POSITION
VALVE

RESTRICTION

③⑥ VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

③⑦ VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

③⑧ FIXED CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
MOTOR

③⑨ CHECK VALVE - BUCKET
POSITION VALVE

④⑩ CHECK VALVE - BICS CONTROL
VALVE

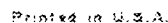
④⑪ SHUTTLE RELIEF VALVE:
(Not Adjustable - Factory Set)
65 PSI (448 kPa)

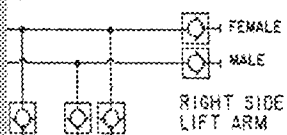
NOTE: Unless otherwise specified
springs have NO significant
pressure value.

763H BICS TM

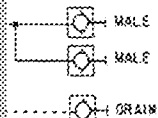
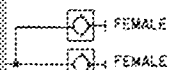
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WITH SHUTTLE VAL

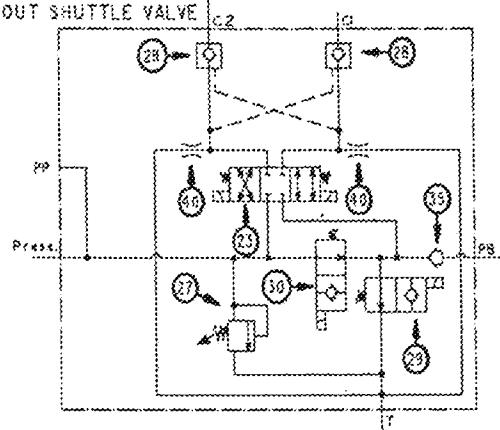




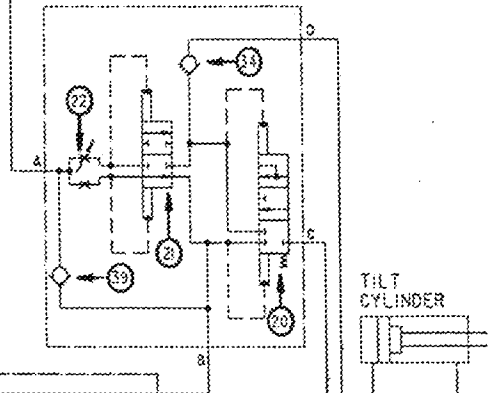
REAR QUICK COUPLERS (Optional)



SELECT VALVE
Earlier Model Machines
WITHOUT SHUTTLE VALVE



BUCKET POSITION VALVE (OPTIONAL)



TILT CYLINDER

BIGS CONTROL VALVE

LIFT CYLINDERS

LIFT CYLINDER SPOOL

LIFT ARM BY PASS VALVE

WORKING CIRCUITS
PILOT CIRCUITS
DRAIN CIRCUITS
COMPONENTS

HYDRAULIC/HYDROSTATIC
763H BICS™ (S/N 51222
(S/N 51261

(PRINTED JANUARY 200

MC2333RLEGEND

LEGEND

- | | | |
|--|--|----|
| ① RESERVOIR:
Capacity . . . 24 Qls. (23 L) | ⑪ ANTICAVITATION VALVE | ②6 |
| ② SPRING LOADED FILTER BYPASS
VALVE: 45-55 PSI (311-379 kPa) | ⑫ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY | |
| ③ DIFFERENTIAL PRESSURE SWITCH:
36-44 PSI (250-300 kPa)
Without B.O.S.S.
(Normally Open - Shown)
With B.O.S.S.
(Normally Closed - NOT Shown) | ⑬ RELIEF VALVE - PORT: (Optional)
3500 PSI (24132 kPa) | ②7 |
| ④ DRIVE MOTOR SHUTTLE VALVE | ⑭ LOAD CHECK VALVE | ②8 |
| ⑤ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa) | ⑮ ONE WAY RESTRICTOR VALVE | ②9 |
| ⑥ RELIEF VALVE - CHARGE INLET:
185-195 PSI
(1276-1345 kPa) at 15.0 GPM
(56,8 L/min.) at 2850 RPM
W/120°F. (49°C.) Fluid | ⑯ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT/TILT
CONTROL | ③0 |
| ⑦ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa)
For S/N 512221067-24623 and
S/N 512612331-12557
REPLENISHING VALVES (ONLY)
For S/N 512220298-21066 and
S/N 512612258-12330 | ⑰ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - TILT CONTROL | ③1 |
| ⑧ HYDRAULIC PUMP: Gear Type
15.0 GPM (56,8 L/min.)
at 2850 RPM at 1150 PSI (7929 kPa) | ⑱ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT CONTROL | ③2 |
| ⑨ RELIEF VALVE - MAIN:
3000 PSI (20685 kPa)
at Front Quick Couplers | ⑲ PULL BUTTON ACTIVATED
DIRECTIONAL CONTROL VALVE -
LIFT ARM BY PASS | ③3 |
| ⑩ RELIEF VALVE - PORT:
3500 PSI (24132 kPa) | ⑳ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - UNLOADING
SPOOL | ③4 |
| | ㉑ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FLOW CONTROL
SPOOL | ③5 |
| | ㉒ FLOW DIVIDER ADJUSTMENT VALVE | |
| | ㉓ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE (TWO COIL) | |
| | ㉔ RESTRICTION | |
| | ㉕ CHECK VALVE - BICS CONTROL
VALVE | |

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AUXILIARY HYDRAULIC PUMP:

PUMP CAPACITY:

10 GPM (37,8 L/min.)

at 2850 RPM

RELIEF VALVE - MAIN (HIGH FLOW)

3000 PSI (20685 kPa)

PILOT TO OPEN CHECK VALVE

SOLENOID ACTIVATED DIRECTIONAL

CONTROL VALVE - HIGH FLOW

SOLENOID ACTIVATED DIRECTIONAL

CONTROL VALVE - DIVERTER

FILTER - HYDRAULIC (CANISTER)

FILTER - CASE DRAIN (SINTERED
BRONZE)

FILTER - TILT LOCK VALVE
(SCREEN)

CHECK VALVE - BUCKET POSITION
VALVE

CHECK VALVE

VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

37) VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

38) FIXED CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
MOTOR

39) CHECK VALVE - BUCKET
POSITION VALVE

40) RESTRICTION

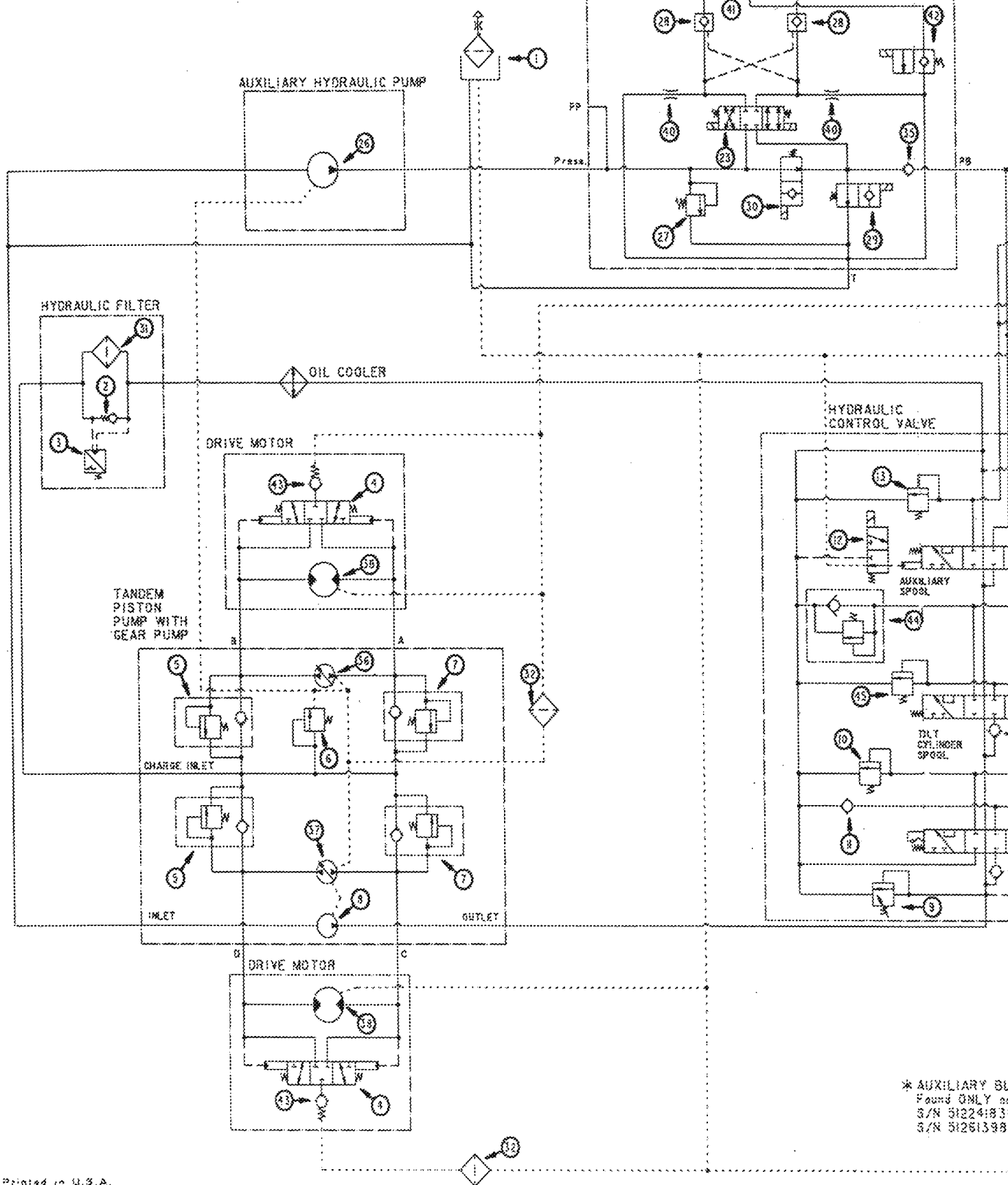
41) LOAD SHUTTLE VALVE

42) SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE (BLEED OFF)

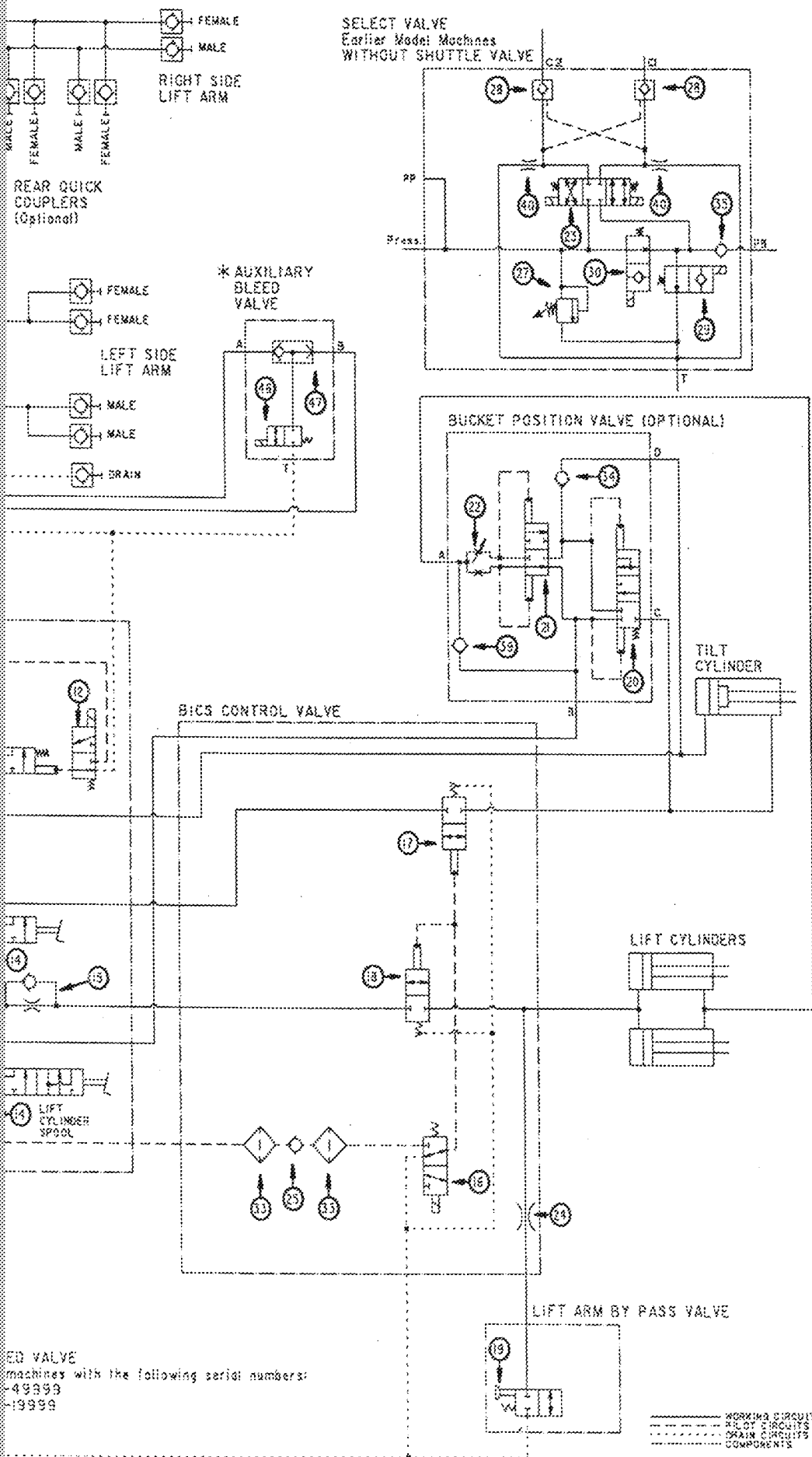
43) SHUTTLE RELIEF VALVE:
(Not Adjustable - Factory Set)
65 PSI (448 kPa)

NOTE: Unless otherwise specified
springs have NO significant
pressure value.

(PRINTED JANUARY 2002)
MC2666

[illegible]

* AUXILIARY BL
Found ONLY on
S/N 512241836
S/N 512613981



LEGEND

- | | | |
|---|--|----|
| ① RESERVOIR:
Capacity . . . 24 Qts. (23 L) | ⑪ ANTICAVITATION VALVE | ②⑥ |
| ② SPRING LOADED FILTER BYPASS
VALVE: 45-55 PSI (311-379 kPa) | ⑫ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY | |
| ③ DIFFERENTIAL PRESSURE SWITCH:
36-44 PSI (250-300 kPa)
Without B.O.S.S.
(Normally Open - Shown)
With B.O.S.S.
(Normally Closed - NOT Shown) | ⑬ RELIEF VALVE - PORT: . (Optional)
3500 PSI (24132 kPa) | ②⑦ |
| ④ DRIVE MOTOR SHUTTLE VALVE | ⑭ LOAD CHECK VALVE | ②⑧ |
| ⑤ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa) | ⑮ ONE WAY RESTRICTOR VALVE | ②⑨ |
| ⑥ RELIEF VALVE - CHARGE INLET:
185-195 PSI
(1276-1345 kPa) at 15.0 GPM
(56.8 L/min.) at 2850 RPM
W/120°F. (49°C.) Fluid | ⑯ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT/TILT
CONTROL | ③① |
| ⑦ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa) | ⑰ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - TILT CONTROL | ③② |
| ⑧ HYDRAULIC PUMP: Gear Type
15.0 GPM (56.8 L/min.)
at 2850 RPM at 1150 PSI (7929 kPa) | ⑱ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT CONTROL | ③③ |
| ⑨ RELIEF VALVE - MAIN:
3000 PSI (20685 kPa)
at Front Quick Couplers | ⑲ PULL BUTTON ACTIVATED
DIRECTIONAL CONTROL VALVE -
LIFT ARM BY PASS | ③④ |
| ⑩ RELIEF VALVE - PORT:
3500 PSI (24132 kPa) | ⑳ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - UNLOADING
SPOOL | ③⑤ |
| | ㉑ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FLOW CONTROL
SPOOL | ③⑥ |
| | ㉒ FLOW DIVIDER ADJUSTMENT VALVE | ③⑦ |
| | ㉓ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE (TWO COIL) | ③⑧ |
| | ㉔ RESTRICTION | ③⑨ |
| | ㉕ CHECK VALVE - BICS CONTROL
VALVE | ③⑩ |

CHEMATIC

4624-49999)

2558-19999)

2)

AUXILIARY HYDRAULIC PUMP:

PUMP CAPACITY:

10 GPM (37,8 L/min.)

at 2850 RPM

RELIEF VALVE - MAIN (HIGH FLOW)

3000 PSI (20685 kPa)

PILOT TO OPEN CHECK VALVE

SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - HIGH FLOW

SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - DIVERTER

FILTER - HYDRAULIC (CANISTER)

FILTER - CASE DRAIN (SINTERED
BRONZE)

FILTER - TILT LOCK VALVE
(SCREEN)

CHECK VALVE - BUCKET POSITION
VALVE

CHECK VALVE

VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP

FIXED CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
MOTOR

CHECK VALVE - BUCKET
POSITION VALVE

(40) RESTRICTION

(41) LOAD SHUTTLE VALVE

(42) SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE (BLEED OFF)

(43) SHUTTLE RELIEF VALVE:
(Not Adjustable - Factory Set)
65 PSI (448 kPa)

(44) RELIEF/ANTICAVITATION VALVE -
PORT (TILT BASE END)
3500 PSI (24132 kPa)

(45) RELIEF VALVE - PORT:
3500 PSI (24132 kPa)

(46) SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY
BLEED VALVE - FOUND ONLY ON
MACHINES WITH S/N'S:
S/N 512241838-49999
S/N 512613989-19999

(47) LOAD SHUTTLE VALVE - AUXILIARY
BLEED VALVE - FOUND ONLY ON
MACHINES WITH S/N'S:
S/N 512241838-49999
S/N 512613989-19999

NOTE: Unless otherwise specified
springs have NO significant
pressure value.

HYDRAULIC/HYDROSTATIC SCHEMATIC

763 BICS™ (S/N 512212001-20297)

(S/N 512440001-40720)

(PRINTED JANUARY 2002)

MC2325R

DIVERTER VALVE (OPTIONAL)
Later Model Machines WITH Bleed Off

FRONT
AUXILIARY

D1 FEMALE

D2 MALE

REAR
AUXILIARY

F1 FEMALE

F2 MALE

PUMP PRESSURE
INPUT

CASE
DRAIN

HYDRAULIC FILTER

OIL
COOLER

+ DRIVE MOTOR

TANDEM
PUMP WITH
GEAR PUMP

CHARGE INLET

INLET

+ DRIVE MOTOR

HYDRAULIC
CONTROL VALVE

AUXILIARY
SPOOL

TILT
CYLINDER
SPOOL

LIFT
CYLINDER
SPOOL

TILT LOCK

PP

* DRIVE MOTOR

TO PORT
'S'

TO DRAIN

TO PORT
'A'

* DRIVE MOTOR

TO PORT
'D'

TO PORT
'C'

TO DRAIN

* DRIVE MOTOR

S/N 512212001-18843

S/N 512440001-40643

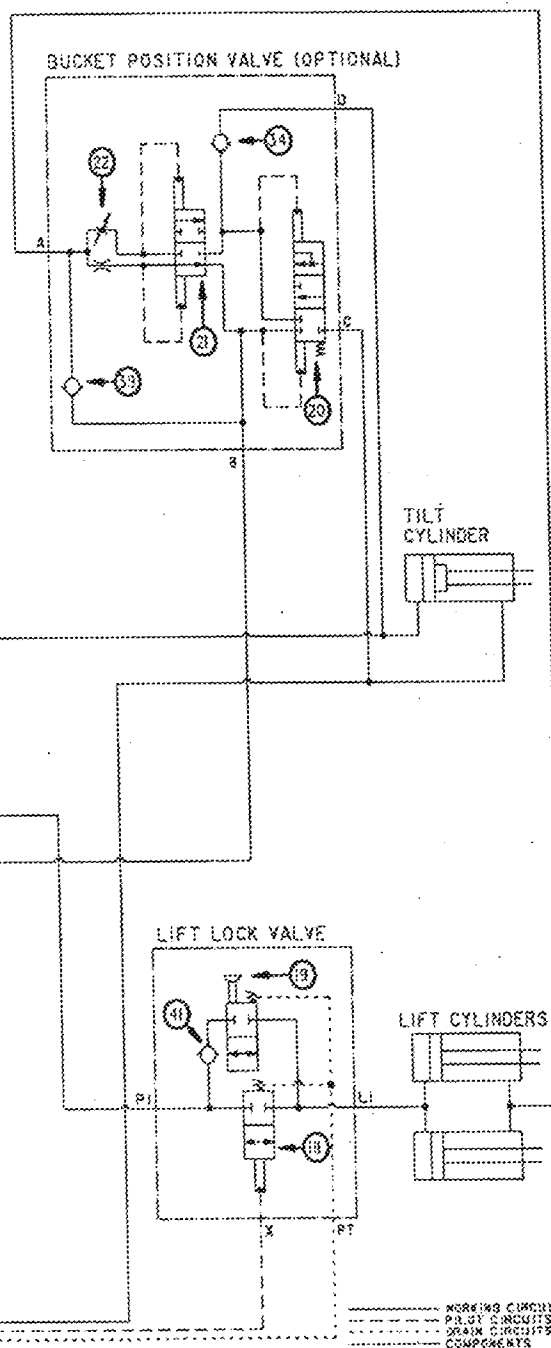
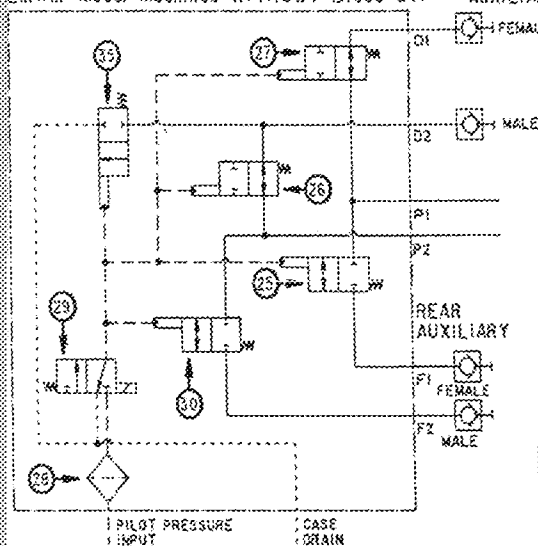
+ DRIVE MOTOR

S/N 512218844-20297

S/N 512440646-40720

Printed in U.S.A.

DIVERTER VALVE (OPTIONAL) FRONT
 Earlier Model Machines WITHOUT Bleed Off AUXILIARY



MC2325R (1-19-52)

LEGEND

- ① RESERVOIR:
Capacity . . . 24 Qts. (23 L)
- ② SPRING LOADED FILTER BYPASS
VALVE: 45-55 PSI (311-379 kPa)
- ③ DIFFERENTIAL PRESSURE SWITCH:
36-44 PSI (250-300 kPa)
Without B.O.S.S.
(Normally Open - Shown)
With B.O.S.S.
(Normally Closed - NOT Shown)
- ④ DRIVE MOTOR SHUTTLE VALVE
- ⑤ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa)
- ⑥ RELIEF VALVE - CHARGE INLET:
For S/N 512218814-20297 and
S/N 512440645-40720
185-195 PSI
(1276-1345 kPa) at 15.0 GPM
(56.8 L/min.) at 2850 RPM
W/120° F. (49° C.) Fluid
For S/N 512212001-18813 and
S/N 512440001-40644
155-165 PSI
(1069-1138 kPa) at 15.0 GPM
(56.8 L/min.) at 2850 RPM
W/120° F. (49° C.) Fluid
- ⑦ REPLENISHING VALVE
- ⑧ HYDRAULIC PUMP: Gear Type
15.0 GPM (56.8 L/min.)
at 2850 RPM at 1150 PSI (7929 kPa)
- ⑨ RELIEF VALVE - MAIN:
3000 PSI (20685 kPa)
at Front Quick Couplers
- ⑩ RELIEF VALVE - PORT:
3500 PSI (24132 kPa)
- ⑪ ANTICAVITATION VALVE
- ⑫ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY
- ⑬ RELIEF VALVE - PORT: (Optional)
3500 PSI (24132 kPa)
- ⑭ LOAD CHECK VALVE
- ⑮ ONE WAY RESTRICTOR VALVE
- ⑯ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT/TILT
CONTROL
- ⑰ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - TILT CONTROL
- ⑱ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT CONTROL
- ⑲ PULL BUTTON ACTIVATED
DIRECTIONAL CONTROL VALVE -
LIFT ARM BY PASS
- ⑳ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - UNLOADING
SPOOL
- ㉑ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FLOW CONTROL
SPOOL
- ㉒ FLOW DIVIDER ADJUSTMENT VALVE
- ㉓ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - BLEED OFF REAR
AUXILIARY ("SV2")
- ㉔ LOAD SHUTTLE VALVE - BLEED OFF
- ㉕ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FOR REAR
AUXILIARY - NORMALLY CLOSED
("PI" & "FI")

SCHEMATIC
001-20297)
001-40720)

2)

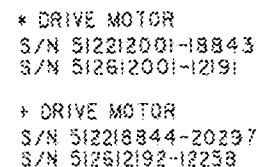
- PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - FOR REAR AUXILIARY - NORMALLY OPEN ("D2")
- PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - FOR REAR AUXILIARY - NORMALLY OPEN ("D1")
- FILTER - DIVERTER VALVE (SINTERED BRONZE)
- SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - TO ACTIVATE REAR AUXILIARY ("SVI")
- PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - FOR REAR AUXILIARY - NORMALLY CLOSED ("P2" & "F2")
- FILTER - HYDRAULIC (CANISTER)
- FILTER - CASE DRAIN (SINTERED BRONZE)
- FILTER - TILT LOCK VALVE (SCREEN)
- CHECK VALVE - BUCKET POSITION VALVE
- PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - BLEED OFF FRONT MALE COUPLER
- VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC PUMP

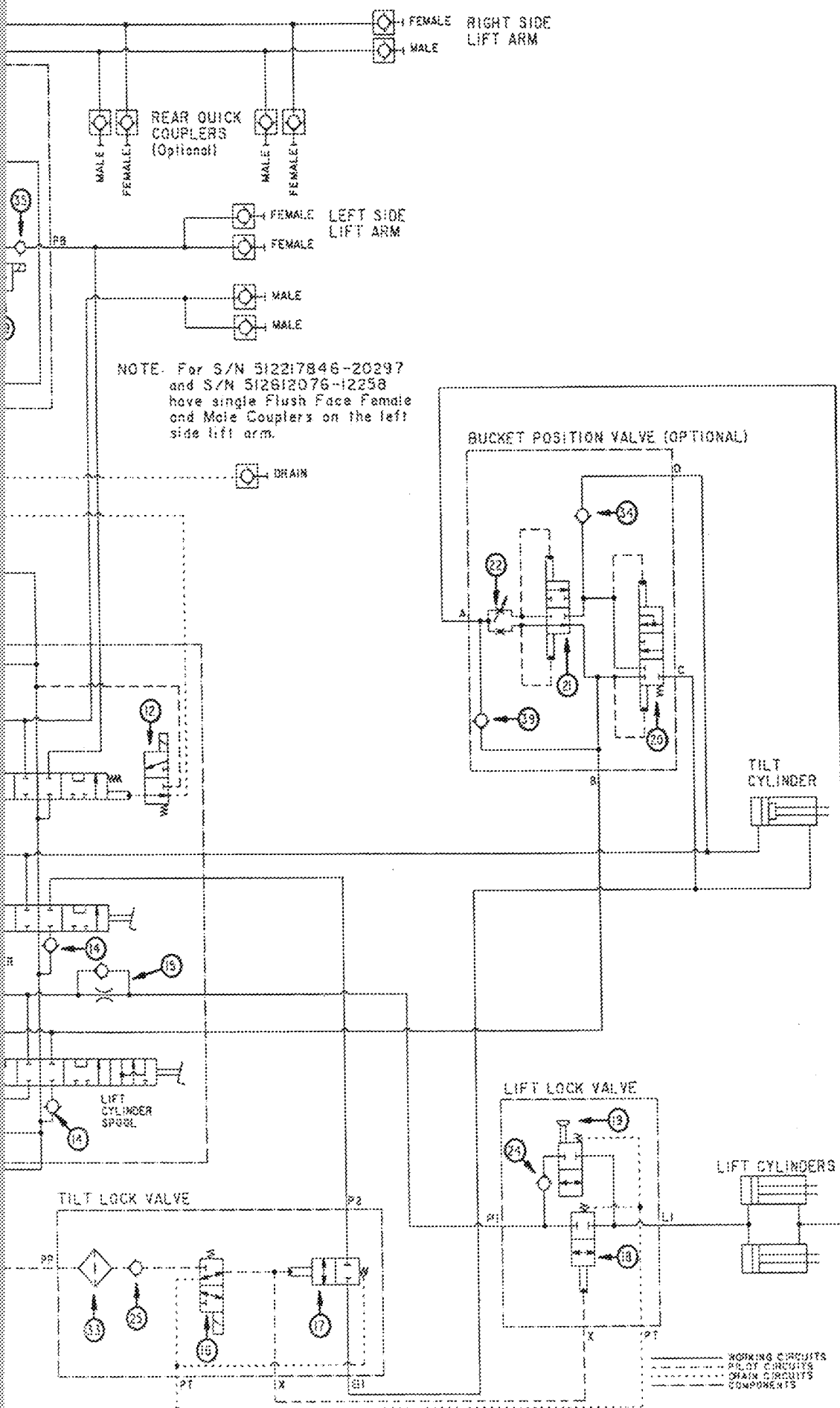
- 37) VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC PUMP
- 38) FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC MOTOR
- 39) CHECK VALVE - BUCKET POSITION VALVE
- 40) CHECK VALVE - TILT LOCK VALVE
- 41) CHECK VALVE - LIFT LOCK VALVE
- 42) SHUTTLE RELIEF VALVE:
(Not Adjustable - Factory Set)
65 PSI (448 kPa)

NOTE: Unless otherwise specified springs have NO significant pressure value.

(PRINTED JANUARY 2002)
MC2332R

MC2332R





LEGEND

- ① RESERVOIR:
Capacity . . . 24 Qts. (23 L)
- ② SPRING LOADED FILTER BYPASS
VALVE: 45-55 PSI (311-379 kPa)
- ③ DIFFERENTIAL PRESSURE SWITCH:
36-44 PSI (250-300 kPa)
Without B.O.S.S.
(Normally Open - Shown)
With B.O.S.S.
(Normally Closed - NOT Shown)
- ④ DRIVE MOTOR SHUTTLE VALVE
- ⑤ RELIEF/REPLENISHING VALVE - HIGH
PRESSURE: 5000 PSI (34475 kPa)
- ⑥ RELIEF VALVE - CHARGE INLET:
For S/N 512218814-20297 and
S/N 512612191-12258
185-195 PSI
(1276-1345 kPa) at 15.0 GPM
(56.8 L/min.) at 2850 RPM
W/120°F. (49°C.) Fluid
For S/N 512212001-18813 and
S/N 512612001-12190
155-165 PSI
(1069-1138 kPa) at 15.0 GPM
(56.8 L/min.) at 2850 RPM
W/120°F. (49°C.) Fluid
- ⑦ REPLENISHING VALVE
- ⑧ HYDRAULIC PUMP: Gear Type
15.0 GPM (56.8 L/min.)
at 2850 RPM at 1150 PSI (7929 kPa)
- ⑨ RELIEF VALVE - MAIN:
3000 PSI (20685 kPa)
at Front Quick Couplers
- ⑩ RELIEF VALVE - PORT:
3500 PSI (24132 kPa)
- ⑪ ANTICAVITATION VALVE
- ⑫ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - AUXILIARY
- ⑬ RELIEF VALVE - PORT: (Optional)
3500 PSI (24132 kPa)
- ⑭ LOAD CHECK VALVE
- ⑮ ONE WAY RESTRICTOR VALVE
- ⑯ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT/TILT
CONTROL
- ⑰ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - TILT CONTROL
- ⑱ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - LIFT CONTROL
- ⑲ PULL BUTTON ACTIVATED
DIRECTIONAL CONTROL VALVE -
LIFT ARM BY PASS
- ⑳ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - UNLOADING
SPOOL
- ㉑ PILOT ACTIVATED DIRECTIONAL
CONTROL VALVE - FLOW CONTROL
SPOOL
- ㉒ FLOW DIVIDER ADJUSTMENT VALVE
- ㉓ SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE (TWO COIL)
- ㉔ CHECK VALVE - TILT LOCK
VALVE
- ㉕ CHECK VALVE - LIFT LOCK
VALVE

SCHEMATIC

(12001-20297)

(12001-12257)

02)

-
- | | |
|---|---|
| 6) AUXILIARY HYDRAULIC PUMP:
PUMP CAPACITY:
10 GPM (37,8 L/min.)
at 2850 RPM | 37) VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP |
| 7) RELIEF VALVE - MAIN (HIGH FLOW)
3000 PSI (20685 kPa) | 38) FIXED CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
MOTOR |
| 8) PILOT TO OPEN CHECK VALVE | 39) CHECK VALVE - BUCKET
POSITION VALVE |
| 9) SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - HIGH FLOW | 40) RESTRICTION |
| 0) SOLENOID ACTIVATED DIRECTIONAL
CONTROL VALVE - DIVERTER | 41) SHUTTLE RELIEF VALVE:
(Not Adjustable - Factory Set)
65 PSI (448 kPa) |
| 1) FILTER - HYDRAULIC (CANISTER) | |
| 2) FILTER - CASE DRAIN (SINTERED
BRONZE) | |
| 3) FILTER - TILT LOCK VALVE
(SCREEN) | |
| 4) CHECK VALVE - BUCKET POSITION
VALVE | |
| 5) CHECK VALVE | |
| 6) VARIABLE CAPACITY DISPLACEMENT
BIDIRECTIONAL HYDROSTATIC
PUMP | |

NOTE: Unless otherwise specified
springs have NO significant
pressure value.

HYDRAULIC/HYDROSTATIC SCHEMATIC
 763 BICS™ (S/N 512224624-49999)
 (S/N 512441033-49999)
 (PRINTED JANUARY 2002)
 MC2665

