

SCHEMATIC FEATURES AND TIPS

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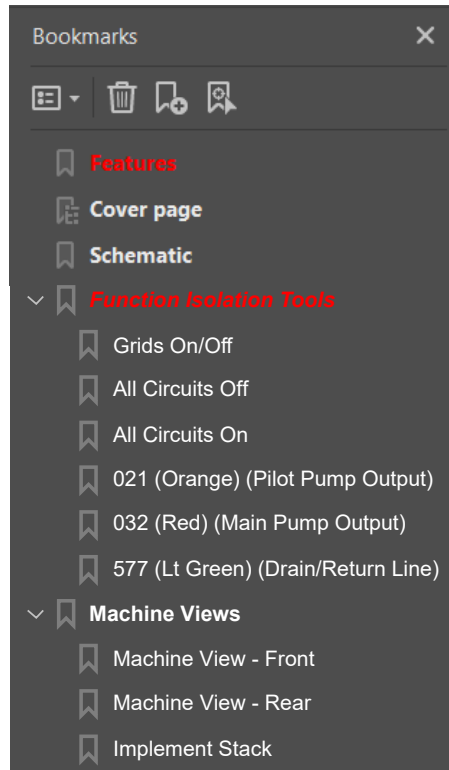
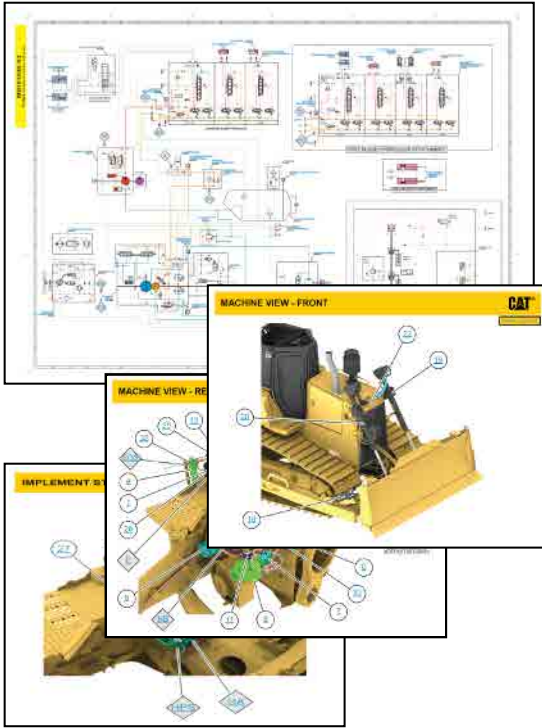


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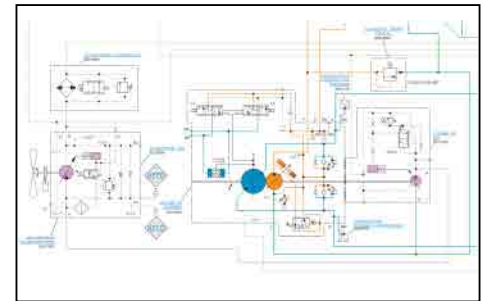


SAVE
a copy of this schematic

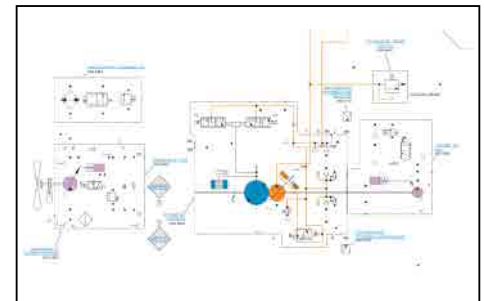
THE BOOKMARKS PANEL WILL ALLOW YOU TO QUICKLY NAVIGATE TO POINTS OF INTEREST.



THE FUNCTION ISOLATION TOOLS ISOLATE CIRCUITS FOR TRACING HYDRAULIC LINES

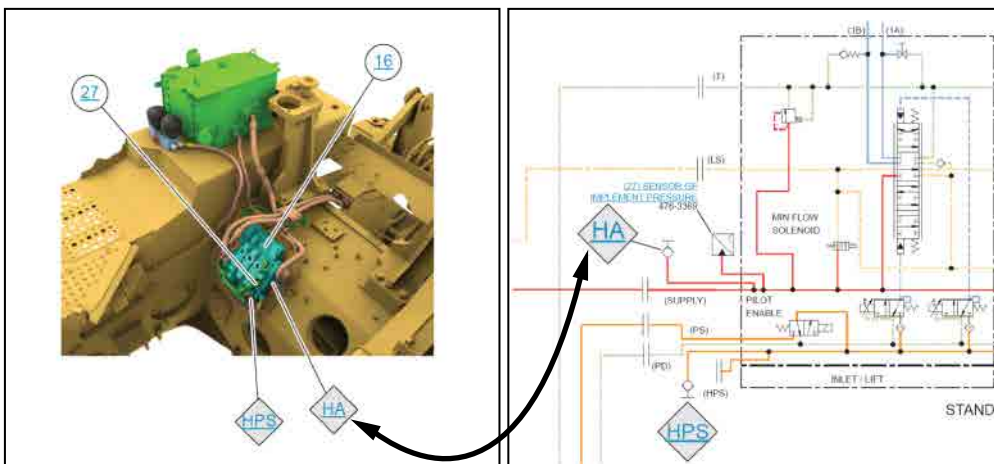


STANDARD VIEW



021 (Orange) (Pilot Output)
CIRCUIT ISOLATED

UTILIZE HYPERTEXT TO NAVIGATE TO COMPONENTS AND THEIR MACHINE LOCATION QUICKLY. HYPERTEXT IS INDICATED BY TEXT THAT IS **BLUE AND UNDERLINED**.



VIEW ALL CALLOUTS

WHEN ONLY ONE CALLOUT IS SHOWING ON A MACHINE VIEW, CLICKING ON THIS BUTTON WILL MAKE ALL OF THE CALLOUTS VISIBLE. THIS BUTTON IS TYPICALLY LOCATED IN THE TOP RIGHT CORNER OF EVERY MACHINE VIEW PAGE.

[CLICK HERE TO VIEW THE SCHEMATIC SYMBOLS AND DEFINITIONS PAGE](#)

ELECTRICAL SYMBOLS			
Pressure Switch	Temperature Switch	Level Switch	Circuit Breaker

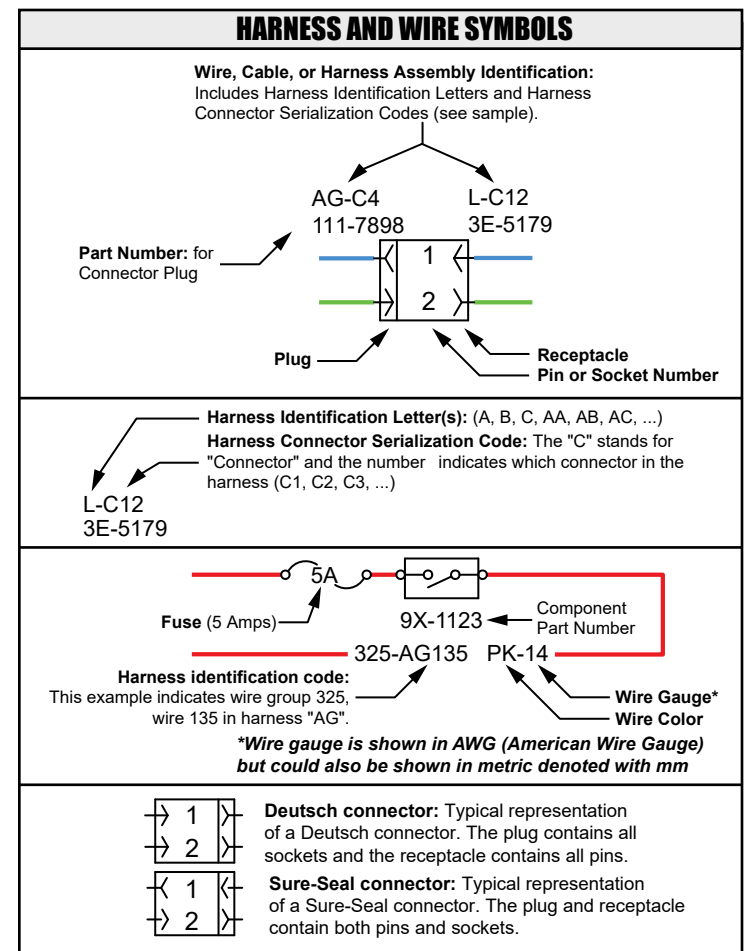
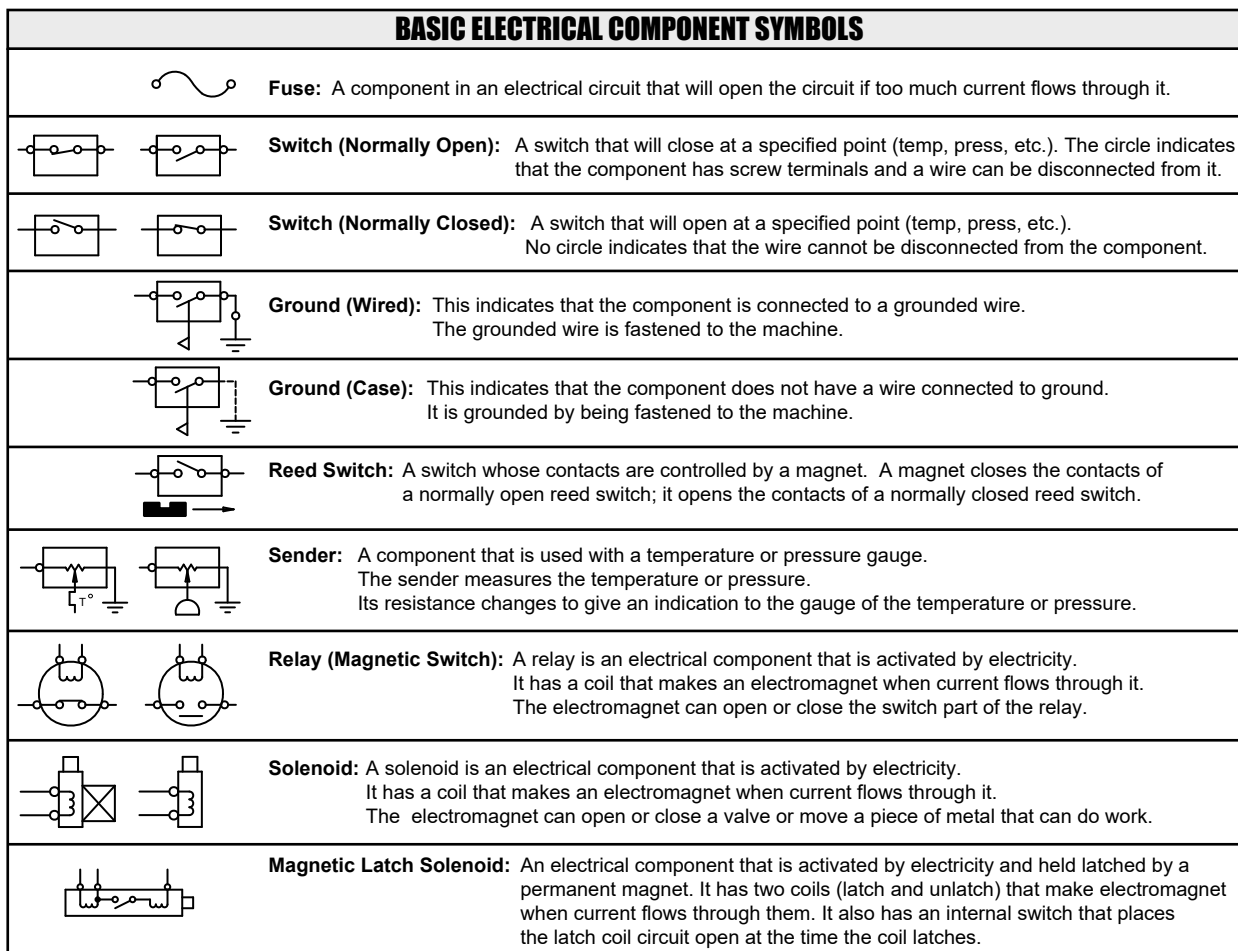
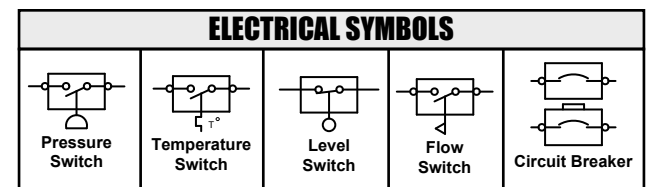
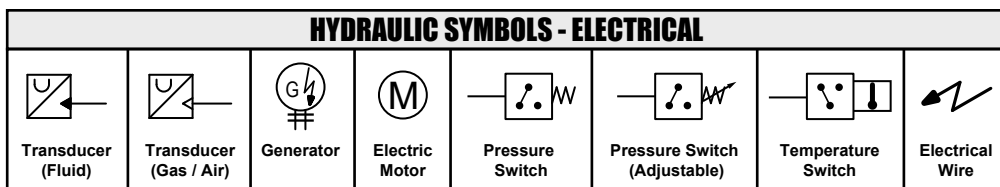
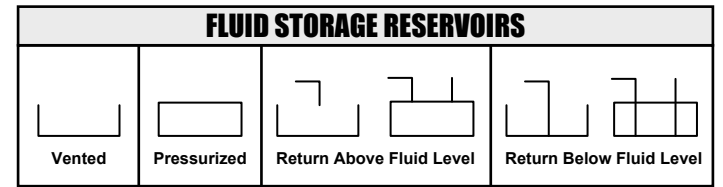
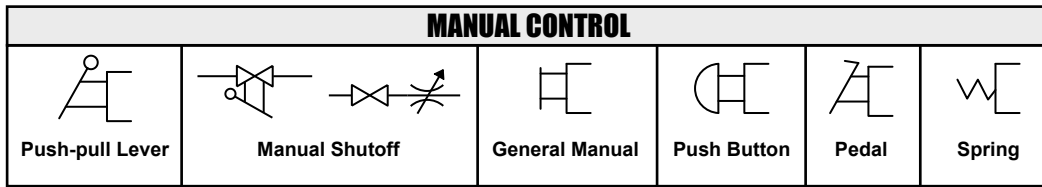
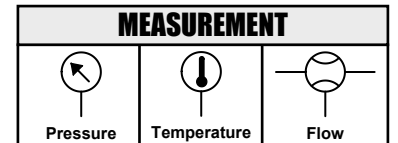
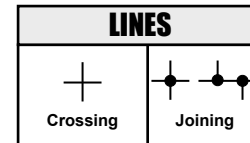
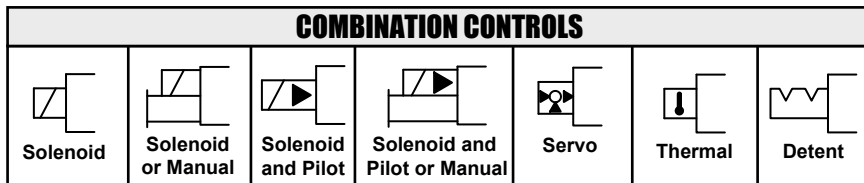
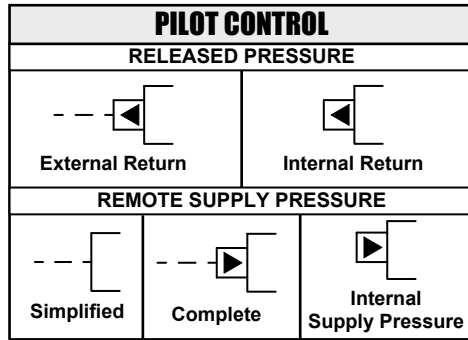
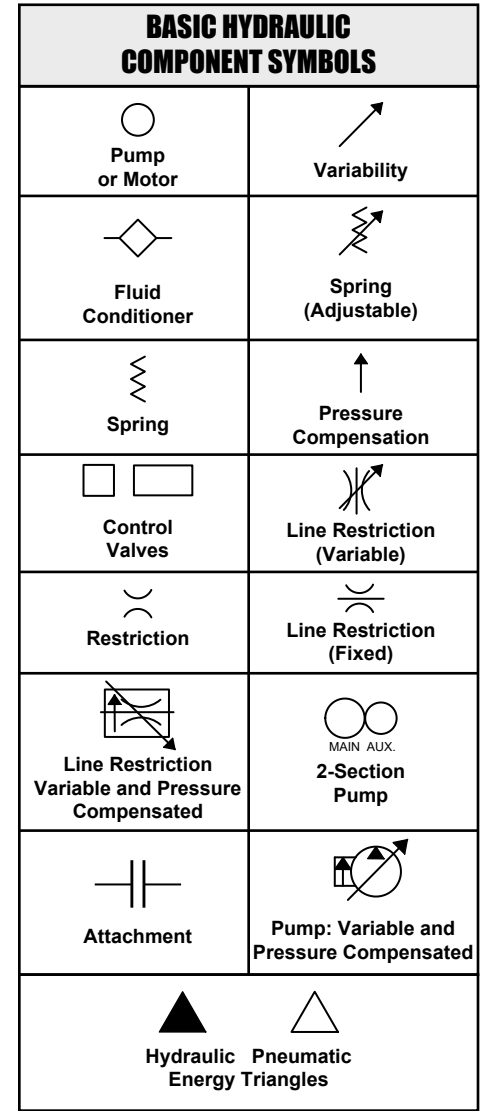
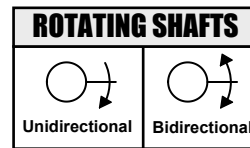
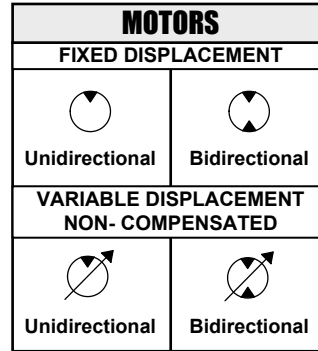
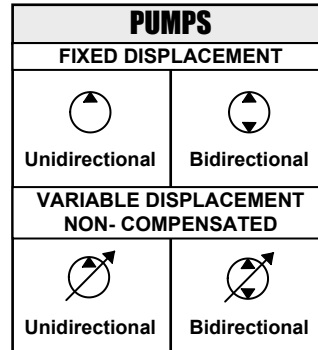
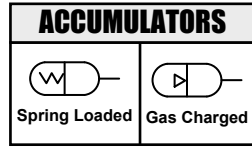
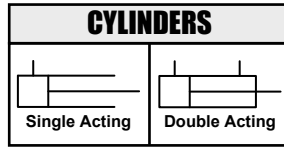
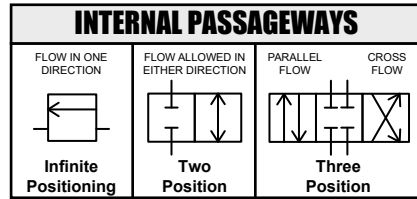
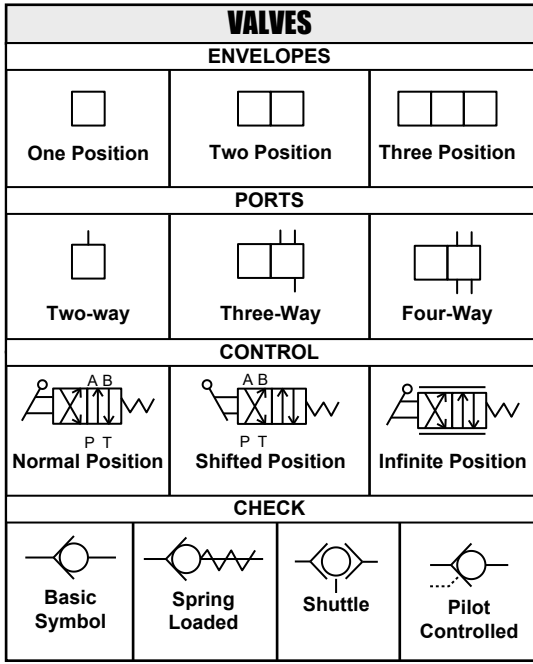
BASIC HYDRAULIC SYMBOLS			
Fluid Conditioner	Pump or Motor	Spring (Adjustable)	Variability

HOTKEYS (Keyboard Shortcuts)		
FUNCTION	KEYS	
	Zoom In	"CTRL" / "+"
	Zoom Out	"CTRL" / "-"
	Fit to Page	"CTRL" / "0" (zero)
	Hand Tool	"SPACEBAR" (hold down)
	Find	"CTRL" / "F"
	Search	"CTRL" / "SHIFT" / "F"

Due to different monitor sizes and PDF reader preferences there may be some variance in linked schematic locations. This document is best viewed at a screen resolution of 1024 X 768.



SCHEMATIC SYMBOLS AND DEFINITIONS





Schematic

12K, 120K, 140K, and 160K Motor Grader Hydraulic System

JJA1-UP
SZP1-UP
SZN1-UP
JAP1-UP
SZS1-UP
JPA1-UP
SZL1-UP
SZW1-UP
SZM1-UP
JBP1-UP

Volume 1 of 2: standard Implement Control Valve Configuration
Volume 2 of 2: Alternate Implement Control Valve Configurations

COMPONENT LOCATION

VOLUME 1 - STANDARD IMPLEMENT CONTROL

VALVE CONFIGURATION



Description	Schematic Location	Machine Location
Accumulator - Blade Cushion LH	C-7, D-7	1
Accumulator - Blade Cushion RH	D-2	2
Accumulator (Secondary Steering)	B-3	34
Cylinder - Articulation LH	D-4	3
Cylinder - Articulation RH	D-3	4
Cylinder - Blade Lift (LH)	C-6, D-6	5
Cylinder - Blade Lift (RH)	D-1	6
Cylinder - Bladetip	E-6	35
Cylinder - Center Shift	D-2	7
Cylinder - Sideshift	E-6	36
Cylinder - Steering LH	E-4	8
Cylinder - Steering RH	E-3	9
Cylinder - Wheel Lean	D-2	10
Motor - Circle Drive	C-7, D-7	11
Orifice (Implement Pump)	C-6	37
Orifice (Secondary Steering)	B-4	38
Pump - Implement/Steering	A-4	12
Swivel	E-6	39
Tank - Hydraulic	A-6	13
Unit - Hand Metering (Not Shown)	D-5	14
Valve - Blade Cushion Accumulator LH	C-6, D-6	15
Valve - Blade Cushion Accumulator RH	D-1	16
Valve - Check (Pump)	C-6	40
Valve - Check 1 (Pump)	C-5	41
Valve - Check (Steering)	B-4	42
Valve - Check With Orifice	B-3	43
Valve - Combination	B-5	17
Valve - Pressure Relief (Steering)	B-4	44
Valve - Implement Control LH (120K)	B-6, D-6	18
Valve - Implement Control RH	D-3	19

COMPONENT LOCATION

VOLUME 2 - ALTERNATE IMPLEMENT CONTROL VALVE CONFIGURATIONS



Description	Schematic Location	Machine Location
Accumulator (Blade Cushion)	B-11, E-5, J-13	48
Cylinder - Articulation LH	G-14, B-14, E-14, G-8	20
Cylinder - Articulation RH	G-13, B-13, G-7, E-13	21
Cylinder - Blade Lift LH	E-4, J-5, J-12	22
Cylinder - Blade Lift RH	G-10, G-4, E-10, B-10	23
Cylinder - Blade Tip	J-11, J-4, E-3	24
Cylinder - Centershift	G-12, G-6, E-12, B-12	40
Cylinder - Plow Angle	B-8	47
Cylinder - Plow/Dozer	G-9, G-2, B-9	41
Cylinder - Ripper	J-14, J-6, E-6	42
Cylinder - Scarifier	D-5, G-9, G-3	43
Cylinder - Side Shift	J-11, J-5, D-4	44
Cylinder - Wheel Lean	G-12, G-5, E-11, B-11	45
Motor - Circle Drive	E-2, J-10, J-3	46
Swivel	D-3, I-11, I-5	25
Valve - Implement Control LH Config. 1	J-9	26
Valve - Implement Control LH Config (Accugrade)	I-2	27
Valve - Implement Control LH Config. 3	D-1	28
Valve - Implement Control RH Config. 1	G-11	29
Valve - Implement Control RH Config. 2	G-1	30
Valve - Implement Control RH Config. 3	D-11	31
Valve - Implement Control RH Config. 4	B-8	32
Valve - Blade Cushion	B-11, E-4, I-13	49

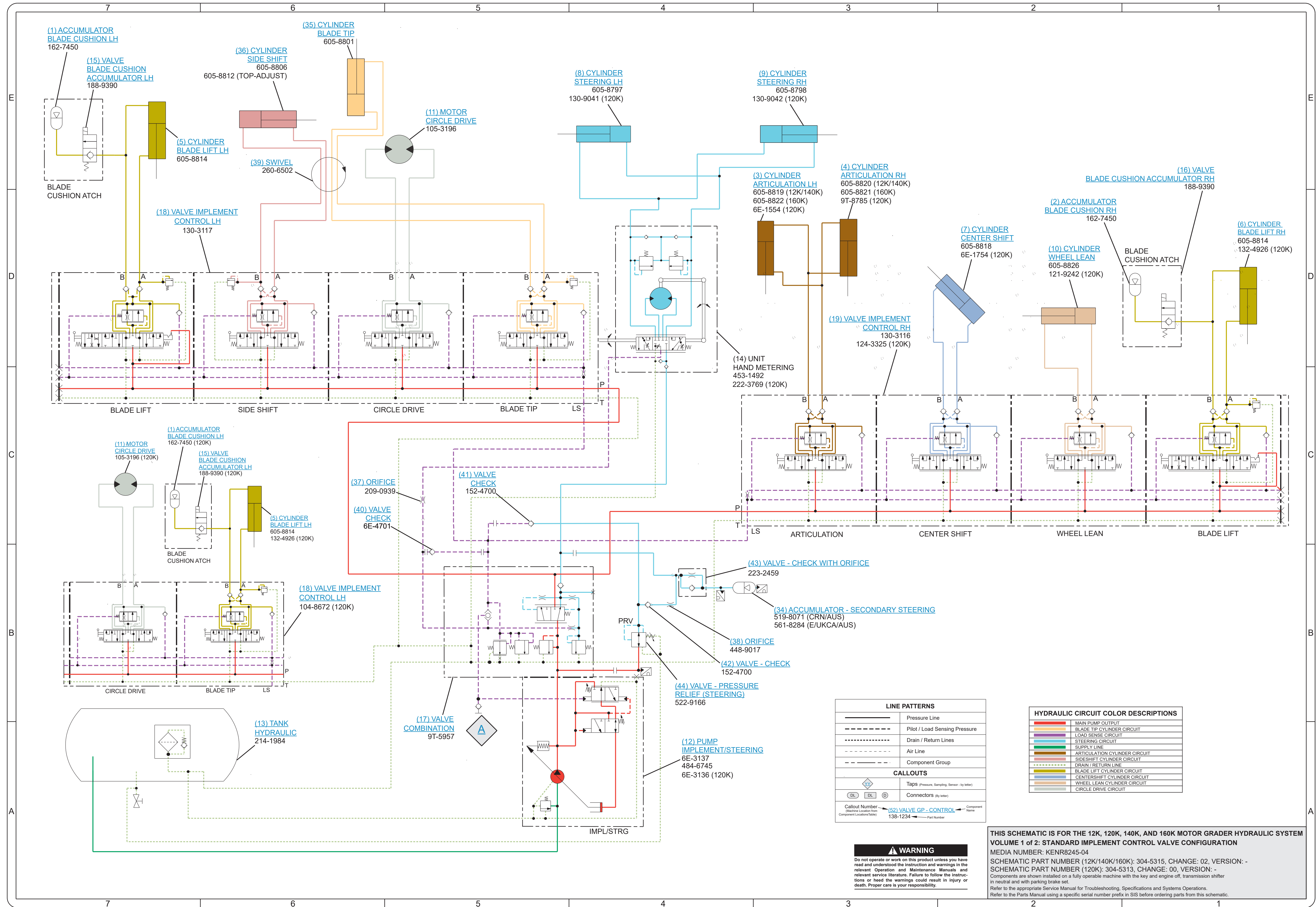
TAP LOCATION

VOLUME 1 - STANDARD IMPLEMENT CONTROL

VALVE CONFIGURATION



Tap Number	Description	Schematic Location
A	Implement/Steering Pump - Combination Valve Pressure	A-5



LINE PATTERNS	
	Pressure Line
	Pilot / Load Sensing Pressure
	Drain / Return Lines
	Air Line
	Component Group

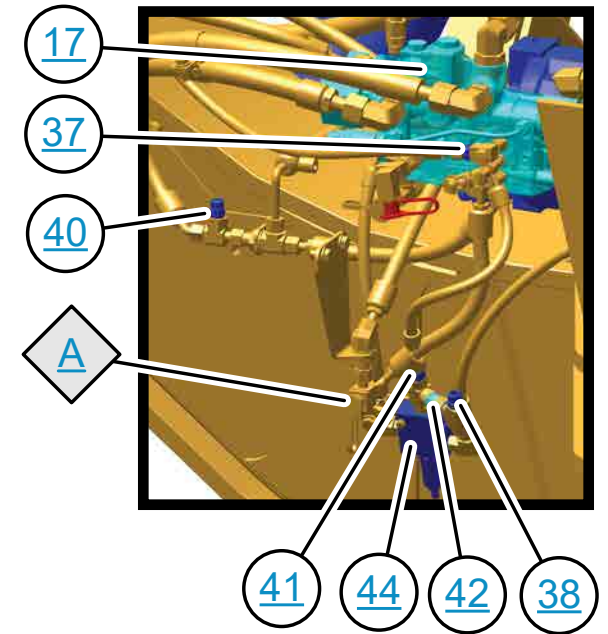
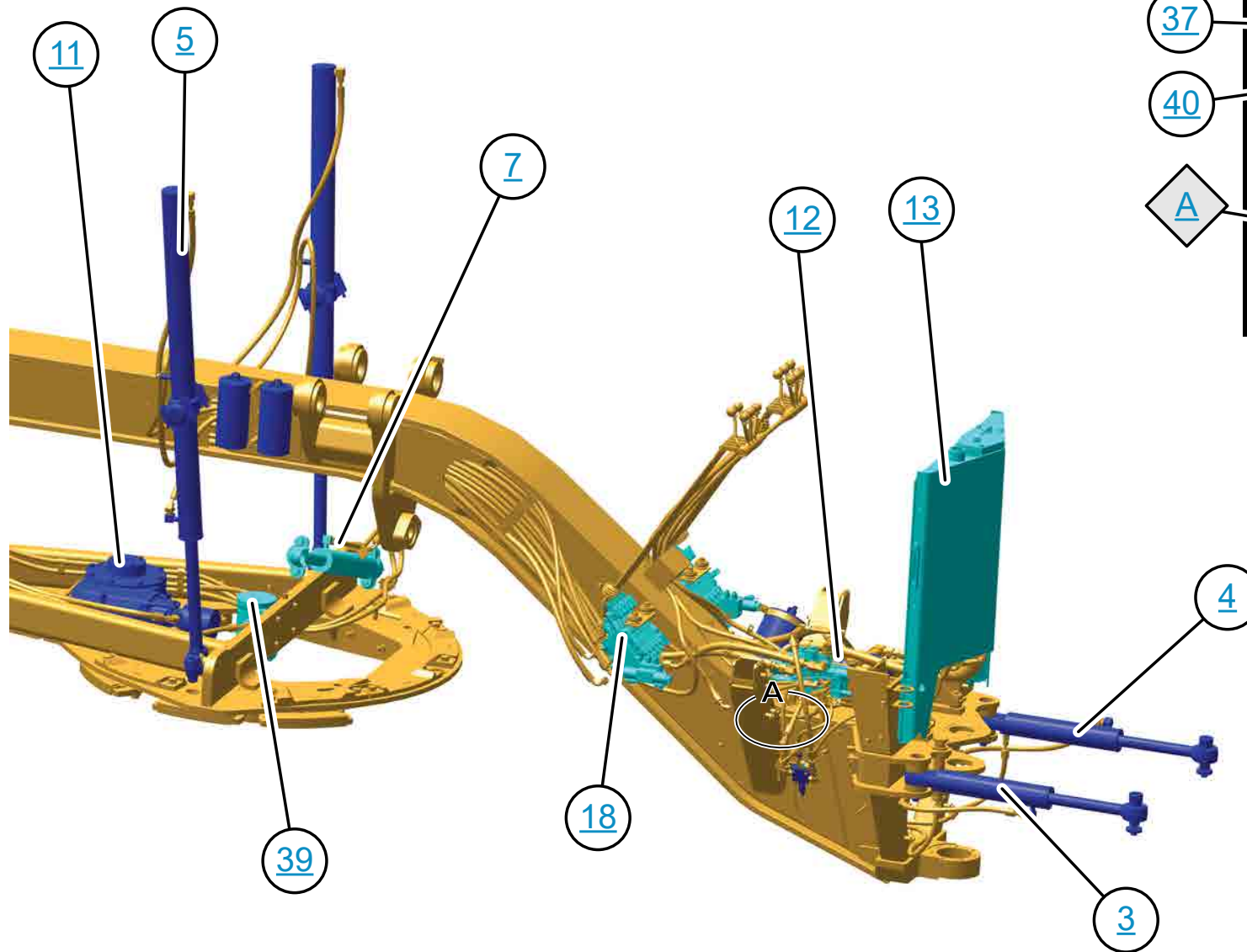
CALLOUTS	
	Taps (Pressure, Sampling, Sensor - by letter)
	Connectors (by letter)
	Callout Number - Machine Location from Component Location (Letter) - Component Name

HYDRAULIC CIRCUIT COLOR DESCRIPTIONS	
	MAIN PUMP OUTPUT
	BLADE TIP CYLINDER CIRCUIT
	LOAD SENSE CIRCUIT
	STEERING CIRCUIT
	SUPPLY LINE
	ARTICULATION CYLINDER CIRCUIT
	SIDESHIFT CYLINDER CIRCUIT
	DRAIN / RETURN LINE
	BLADE LIFT CYLINDER CIRCUIT
	CENTERSHIFT CYLINDER CIRCUIT
	WHEEL LEAN CYLINDER CIRCUIT
	CIRCLE DRIVE CIRCUIT

WARNING
 Do not operate or work on this product unless you have read and understood the instruction and warnings in the relevant Operation and Maintenance Manuals and relevant service literature. Failure to follow the instructions or heed the warnings could result in injury or death. Proper care is your responsibility.

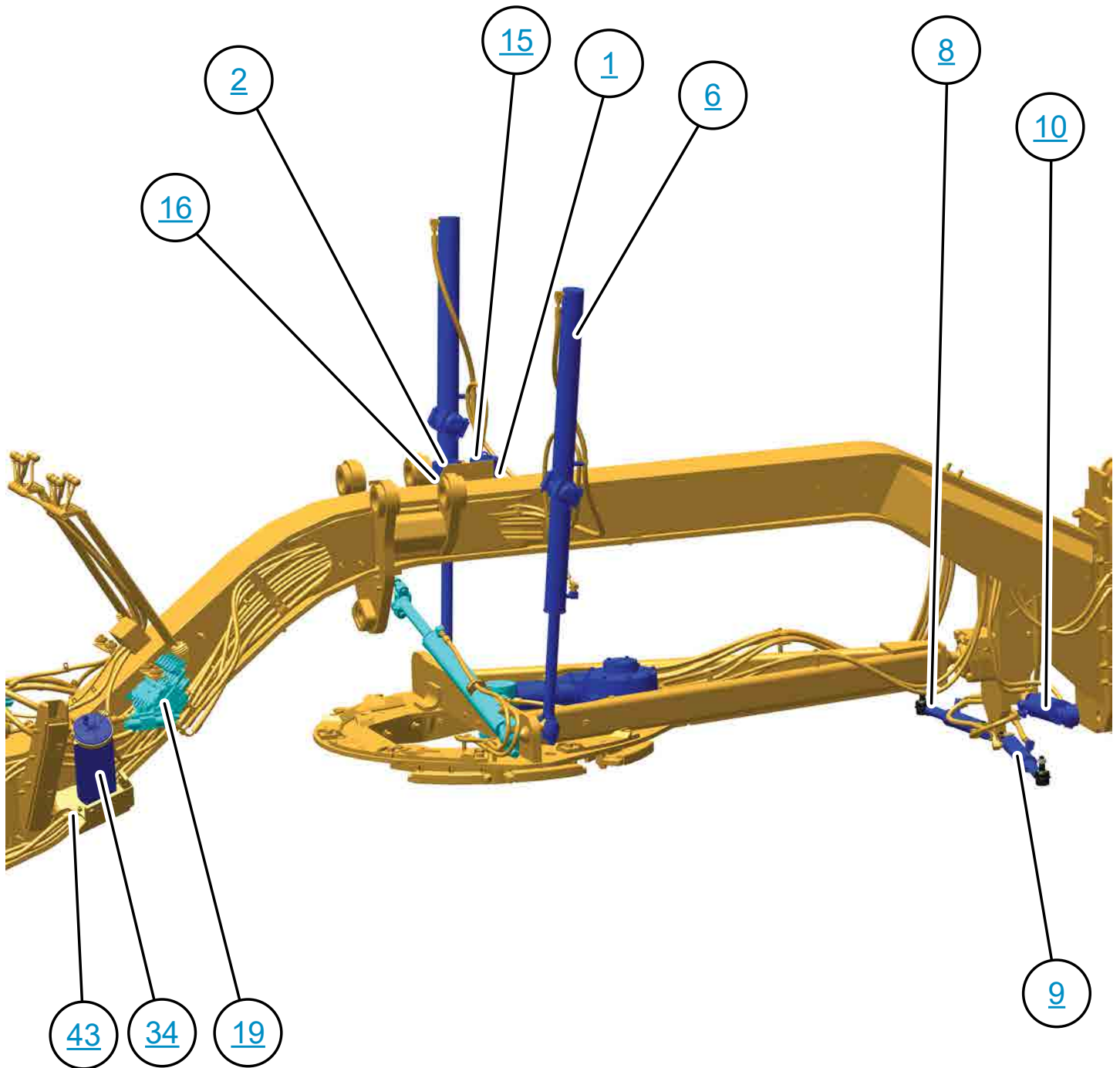
THIS SCHEMATIC IS FOR THE 12K, 120K, 140K, AND 160K MOTOR GRADER HYDRAULIC SYSTEM
VOLUME 1 of 2: STANDARD IMPLEMENT CONTROL VALVE CONFIGURATION
 MEDIA NUMBER: KENR8245-04
 SCHEMATIC PART NUMBER (12K/140K/160K): 304-5315, CHANGE: 02, VERSION: -
 SCHEMATIC PART NUMBER (120K): 304-5313, CHANGE: 00, VERSION: -
 Components are shown installed on a fully operable machine with the key and engine off, transmission shifter in neutral and with parking brake set.
 Refer to the appropriate Service Manual for Troubleshooting, Specifications and Systems Operations.
 Refer to the Parts Manual using a specific serial number prefix in SIS before ordering parts from this schematic.

MACHINE LEFT VIEW

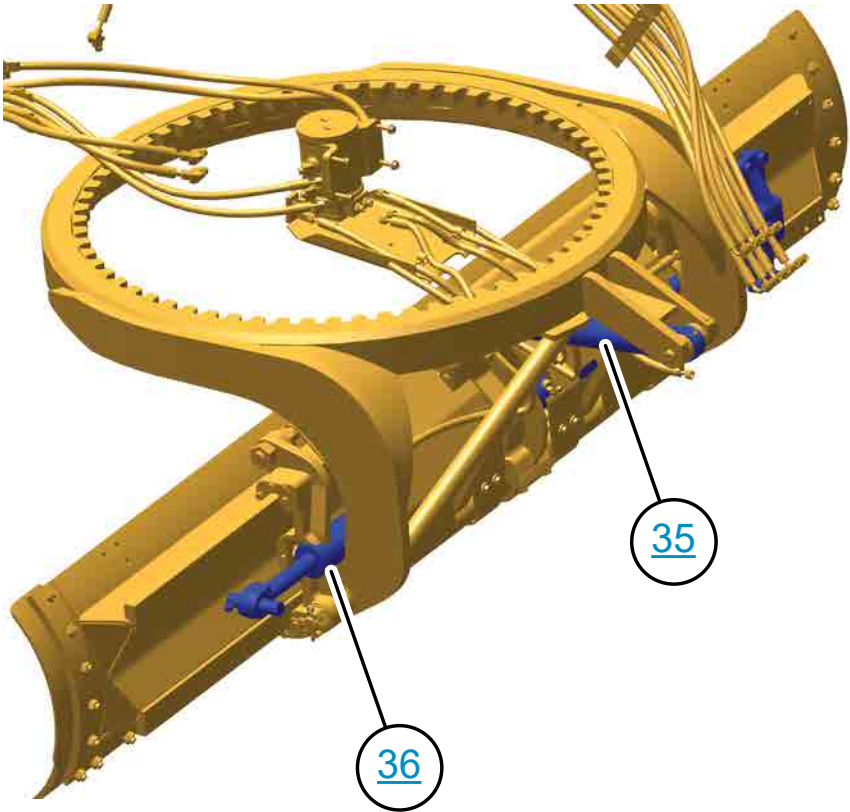


VIEW OF AREA "A"

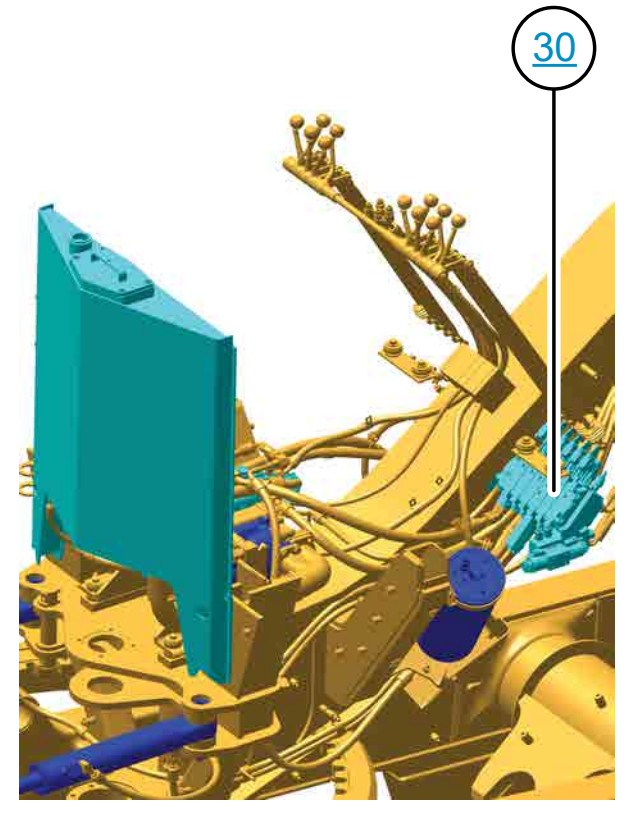
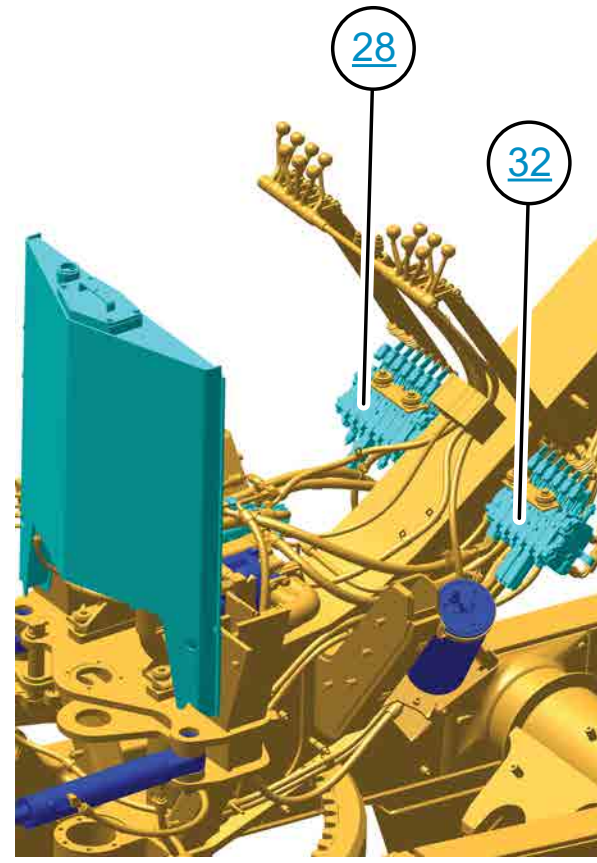
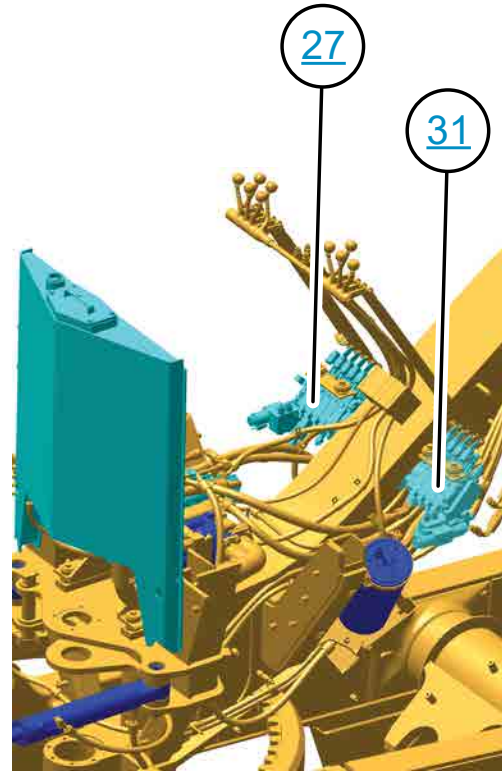
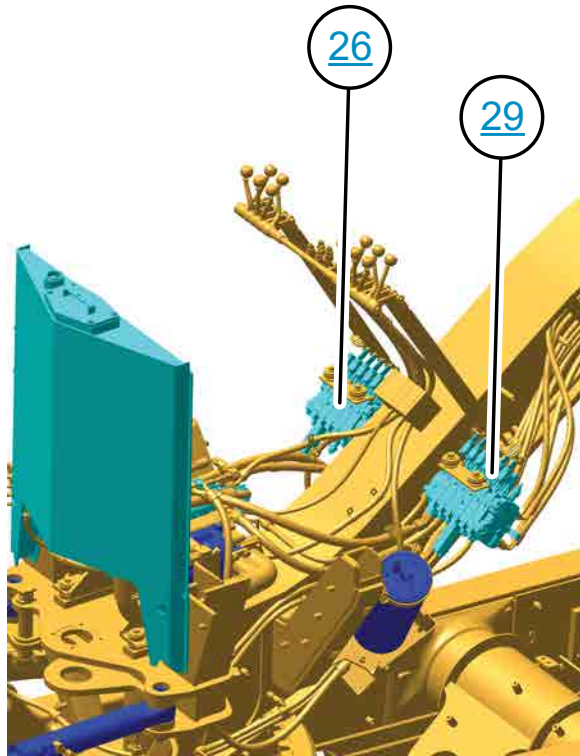
MACHINE RIGHT VIEW



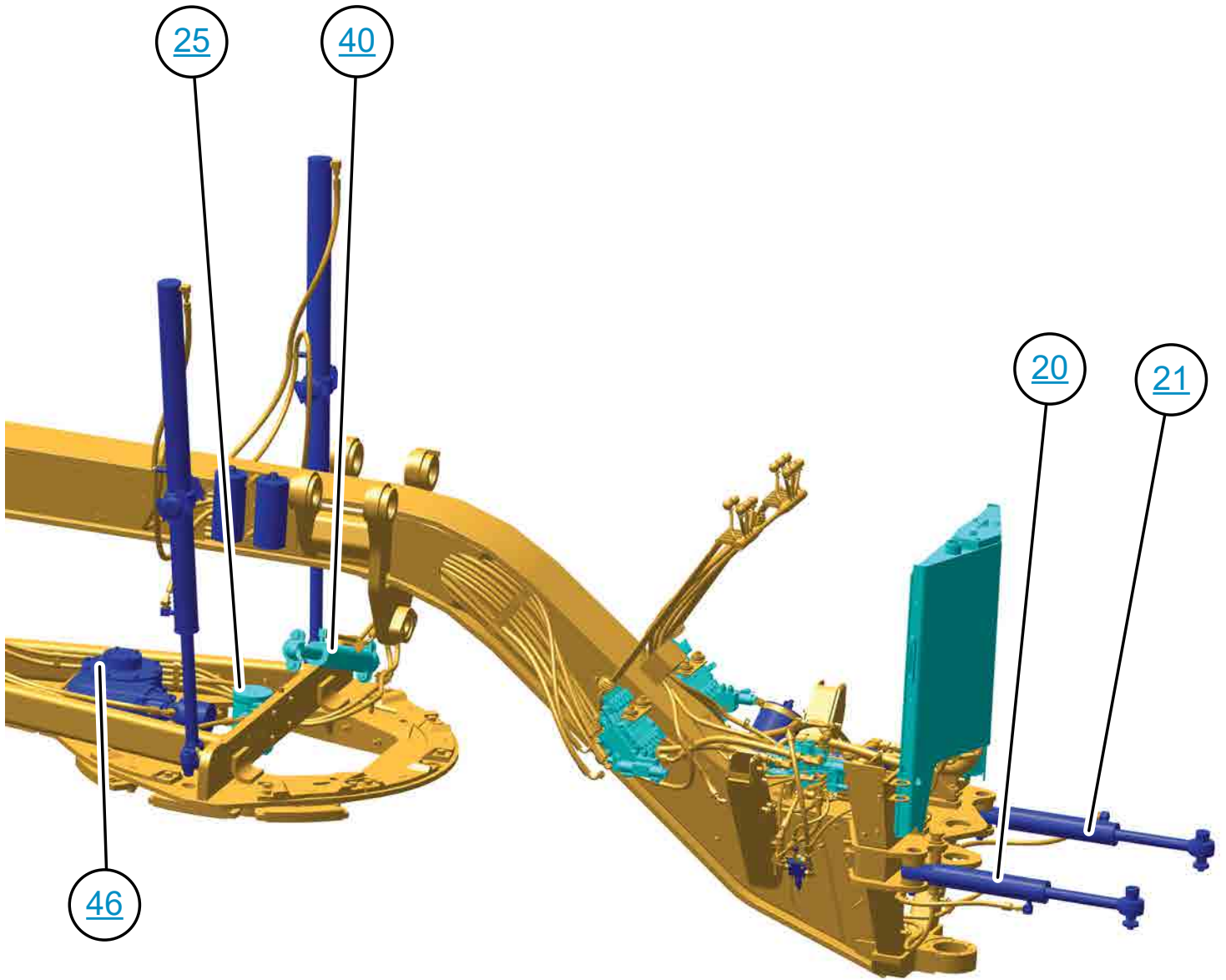
BLADE AND TIP ARRANGEMENT



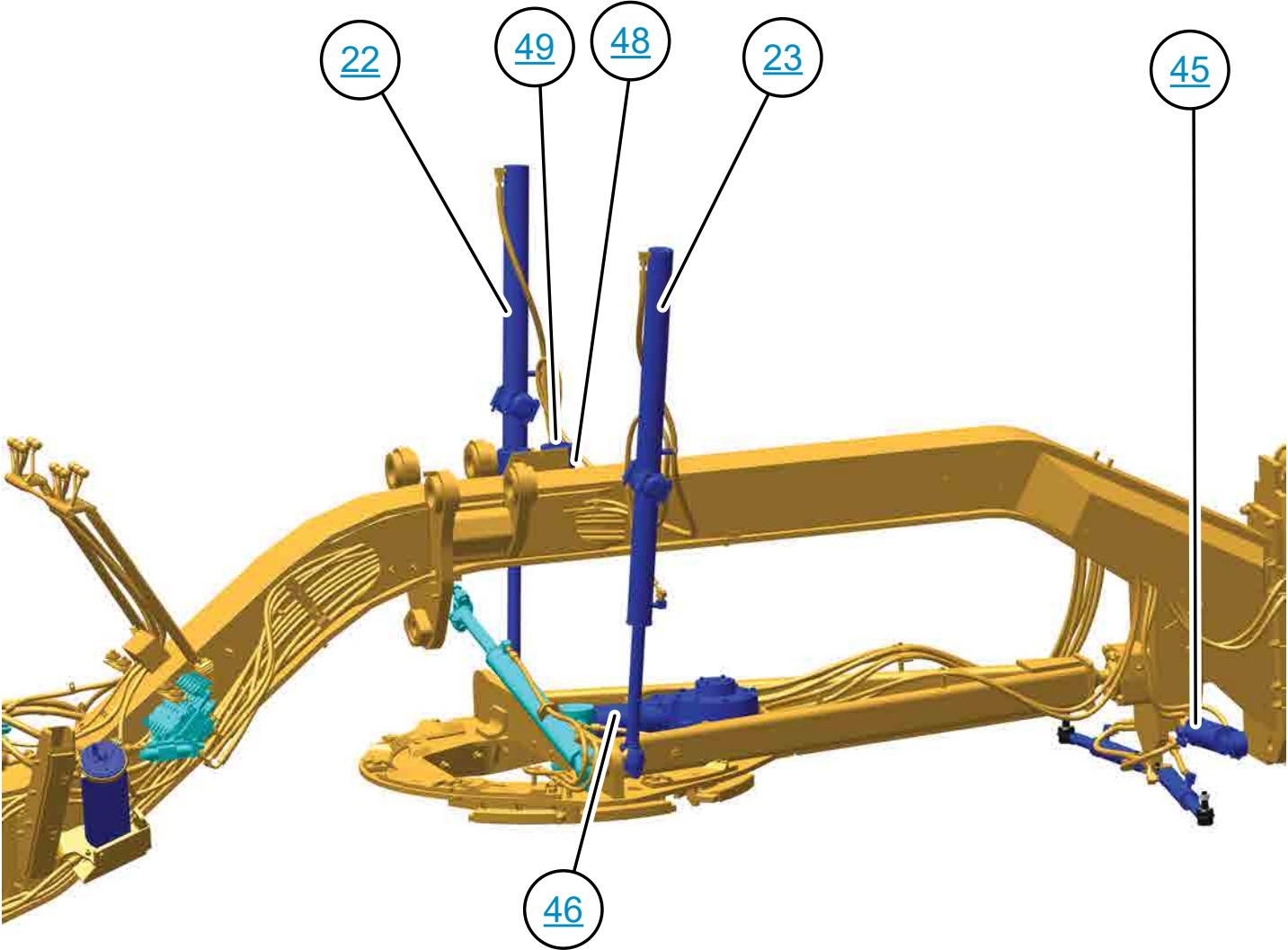
IMPLEMENT VALVE ATTACHMENTS



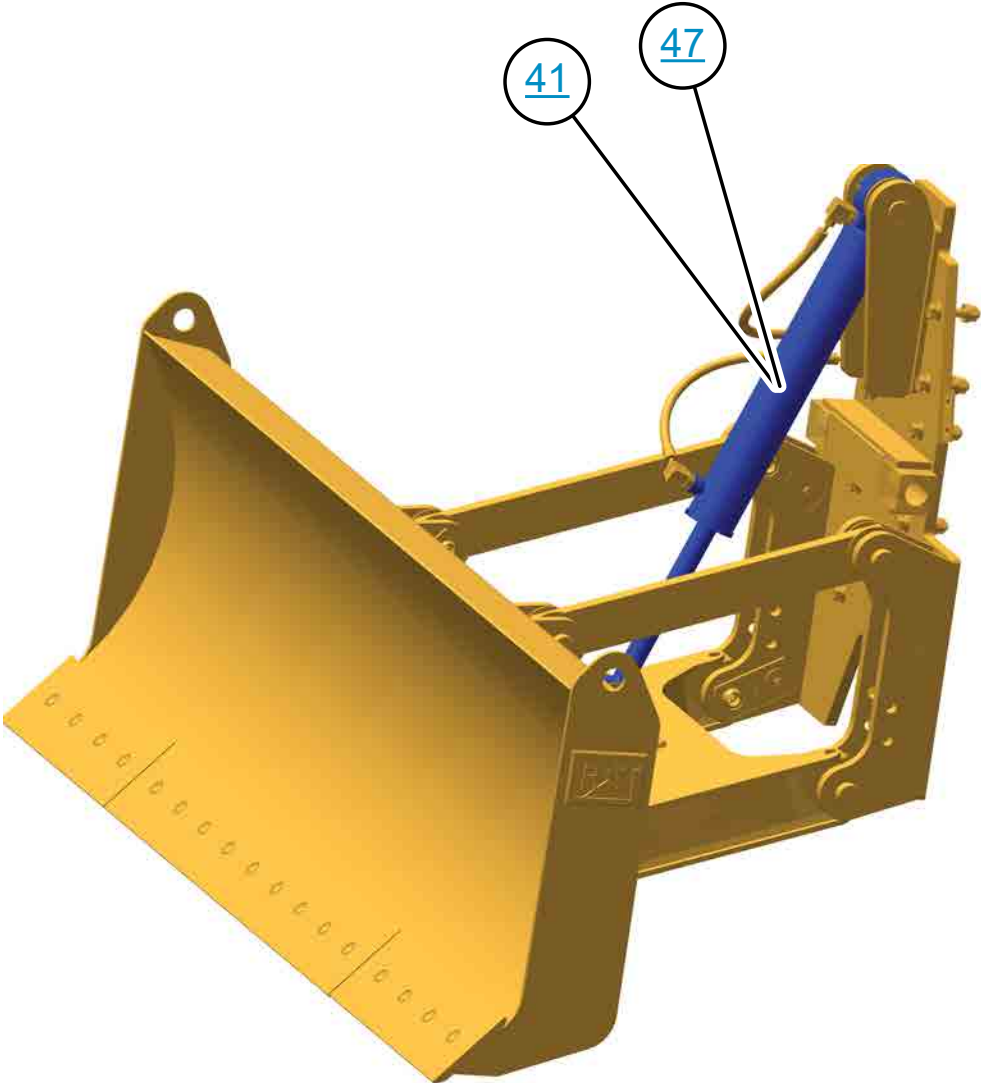
MACHINE LEFT VIEW



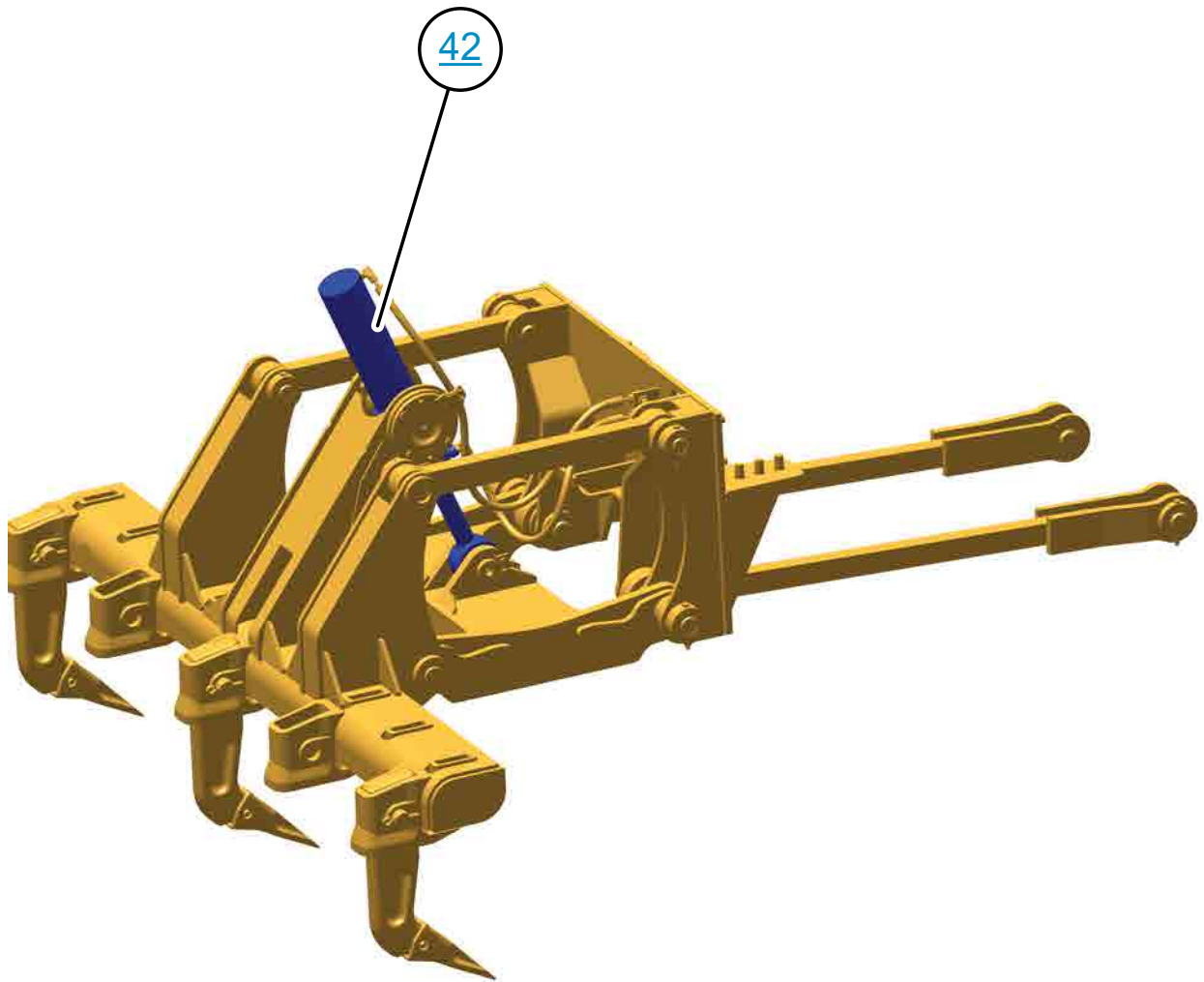
MACHINE RIGHT VIEW



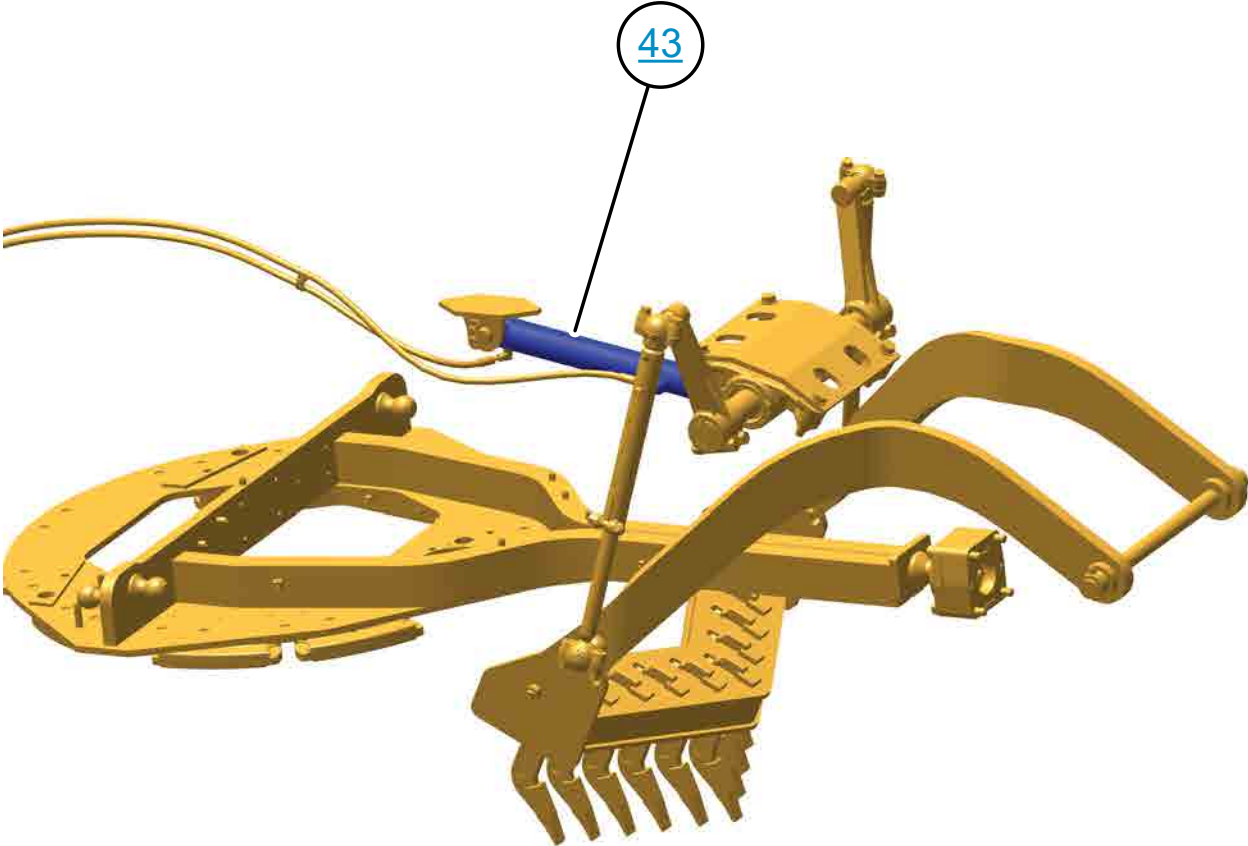
PLOW DOZER ATTACHMENT



RIPPER ATTACHMENT



SCARIFIER ATTACHMENT



BLADE AND TIP ARRANGEMENT

