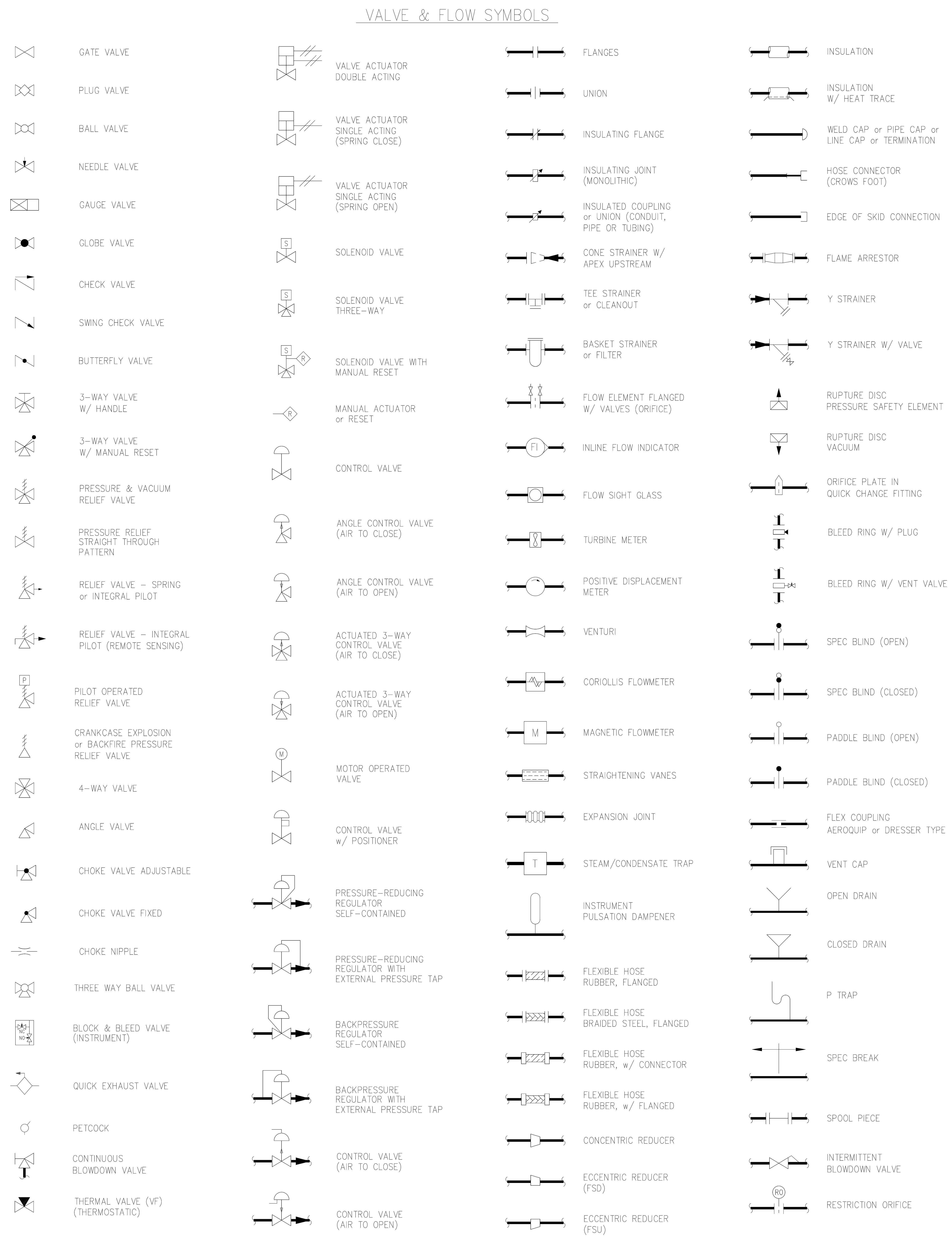
VALVE & FLOW SYMBOLS



INSTRUMENTATION IDENTIFICATION LETTERS (ISA)

(USED INSIDE INSTRUMENT BALLOONS)

AE – ANALYSIS ELEMENT
AI – ANALYSIS INDICATOR
AIC – ANALYSIS INDICATING CONTROLLER
AIS* – ANALYSIS INDICATING SWITCH
AIT – ANALYSIS INDICATOR AND TRANSMITTER
AR – ANALYSIS RECORDER
ARC – ANALYSIS RECORDING CONTROLLER
AS* – ANALYSIS SWITCH
AT – ANALYSIS TRANSMITTER
AV – ANALYSIS (LOOP) CONTROL VALVE
AY – ANALYSIS RELAY
BE – BURNER FLAME DETECTOR
BI – BURNER FLAME INDICATOR
BS* – BURNER FLAME SWITCH
BT – BURNER TRANSMITTER
BX – BURNER FLAME TV RECEIVER
CE – CONDUCTIVITY PRIMARY ELEMENT
CRE – CORROSION PRIMARY ELEMENT
CI – CONDUCTIVITY INDICATOR
CRI – CORROSION INDICATOR
CIC – CONDUCTIVITY INDICATING CONTROLLER
CP – CORROSION TEST CONNECTION
CR – CONDUCTIVITY RECORDER
CRC – CONDUCTIVITY RECORDING CONTROLLER
CT – CONDUCTIVITY TRANSMITTER
CRT – CORROSION TRANSMITTER
DC – DENSITY CONTROLLER
DE – DENSITY PRIMARY ELEMENT
DI – DENSITY INDICATOR
DIC – DENSITY INDICATING CONTROLLER
DQ – DENSITY TOTALIZER
DR – DENSITY RECORDER
DRC – DENSITY RECORDING CONTROLLER
DT – DENSITY TRANSMITTER
ET – VOLTAGE TRANSMITTER
ESD – EMERGENCY SHUTDOWN
FC – FLOW CONTROLLER
FCV – FLOW CONTROL VALVE (SELF ACTUATED)
FE – FLOW ELEMENT
FG – FLOW SIGHT GAUGE OR GLASS
FI – FLOW INDICATOR
FIC – FLOW INDICATING CONTROLLER
FIR – FLOW INDICATOR RECORDER
FIT – FLOW INDICATING TRANSMITTER
FO – FLOW RESTRICTION ORIFICE
FQ – FLOW TOTALYZER
FQI – FLOW TOTALING INDICATOR
FR – FLOW RECORDER
FRC – FLOW RECORDING CONTROLLER
FS* – FLOW SWITCH
FT – FLOW TRANSMITTER
FU – FLOW COMPUTER (FISCAL METERING)
FV – FLOW (LOOP) CONTROL VALVE
FY – FLOW RELAY, SOLENOID, COMPUTING DEVICE (I/P FOR FLOW)
GC – GRAVITY CONTROLLER
GE – GRAVITY PRIMARY ELEMENT
GI – GRAVITY INDICATOR
GIC – GRAVITY INDICATING CONTROLLER
GR – GRAVITY RECORDER
GRC – GRAVITY RECORDING CONTROLLER
GT – GRAVITY TRANSMITTER
HC – HAND CONTROLLER
HIC – HAND INDICATOR CONTROLLER (MANUAL)
HS – HAND SWITCH (ON-OFF)
HV – HAND CONTROL VALVE
IA – INSTRUMENT AIR
IS* – CURRENT SWITCH
IT – CURRENT TRANSMITTER
JT – POWER TRANSMITTER
KC – TIME CONTROL
KCV – TIME CONTROL VALVE
KI – TIME INDICATOR
KS – SEQUENCE RELATED SWITCH FUNCTION
KV – TIME (LOOP) CONTROL VALVE
LC – LEVEL CONTROLLER
LCS* – LEVEL CONTROL SWITCH
LCV – LEVEL CONTROL VALVE (SELF ACTUATED)
LG – LEVEL GAUGE
LI – LEVEL INDICATOR
LIC – LEVEL INDICATING CONTROLLER
LIT – LEVEL INDICATING TRANSMITTER
LR – LEVEL RECORDER
LRC – LEVEL RECORDING CONTROLLER
LS* – LEVEL SWITCH
LT – LEVEL TRANSMITTER
LV – LEVEL CONTROL VALVE (NOT SELF ACTUATED)
MC – MOISTURE CONTROL
MCV – MOTOR CONTROL VALVE (SELF ACTUATED)
ME – MOISTURE PRIMARY ELEMENT
MI – MOISTURE INDICATOR
MIC – MOISTURE INDICATING CONTROLLER
MR – MOISTURE RECORDER
MRC – MOISTURE RECORDING CONTROLLER
MS – MANUAL SHUTDOWN SWITCH
MT – MOISTURE TRANSMITTER
MV – MOTOR CONTROL VALVE (NOT SELF ACTUATED)
NE – VISCOSITY ELEMENT
NI – VISCOSITY INDICATOR
NT – VISCOSITY TRANSMITTER

PC – PRESSURE CONTROLLER
PCV – PRESSURE CONTROL VALVE
PDC – PRESSURE DIFFERENTIAL CONTROLLER
PDI – PRESSURE DIFFERENTIAL INDICATOR
PDIC – PRESSURE DIFFERENTIAL INDICATING CONTROLLER
PDIS* – PRESSURE DIFFERENTIAL INDICATING SWITCH
PDIT – PRESSURE DIFFERENTIAL INDICATING TRANSMITTER
PDR – PRESSURE DIFFERENTIAL RECORDER
PDS* – PRESSURE DIFFERENTIAL SWITCH
PDT – PRESSURE DIFFERENTIAL TRANSMITTER
PDY – PRESSURE DIFFERENTIAL SIGNAL TRANSDUCER, SOLENOID, RELAY, OR COMPUTING DEVICE
PE – PRESSURE PRIMARY ELEMENT
PG – PRESSURE GLASS (OBSERVATION ONLY)
PI – PRESSURE INDICATOR
PIC – PRESSURE INDICATING CONTROLLER
PIT – PRESSURE INDICATING TRANSMITTER
PJY – PRESSURE SCANNING RELAY
PR – PRESSURE RECORDER
PRC – PRESSURE RECORDING CONTROLLER
PS* – PRESSURE SWITCH
PSE – PRESSURE SAFETY ELEMENT (RUPTURE DISK)
PSV – PRESSURE SAFETY VALVE
PT – PRESSURE TRANSMITTER
PY – PRESSURE SIGNAL TRANSDUCER, SOLENOID, RELAY, OR COMPUTING DEVICE
PZ – PRESSURE ACTUATOR
PZV – PRESSURE ACTUATED VALVE
SC – SPEED CONTROLLER
SDV – SHUTDOWN VALVE
SE – SENSING ELEMENT (SPEED PICKUP)
SI – SPEED INDICATOR
SIC – SPEED INDICATING CONTROLLER
SIT – SPEED INDICATING TRANSMITTER
SR – SPEED RECORDER
SRC – SPEED RECORDING CONTROLLER
SS* – SPEED SWITCH
ST – SPEED TRANSMITTER
SV – SPEED (LOOP) CONTROL VALVE
SY – SPEED SIGNAL TRANSDUCER, SOLENOID, RELAY, OR COMPUTING DEVICE
SZ – SPEED ACTUATOR
TC – TEMPERATURE CONTROLLER
TCS* – TEMPERATURE CONTROL SWITCH
TCV – TEMPERATURE CONTROL VALVE (SELF ACTUATED)
TDT – TEMPERATURE DIFFERENTIAL TRANSMITTER
TE – TEMPERATURE ELEMENT
TI – TEMPERATURE INDICATOR
TIC – TEMPERATURE INDICATING CONTROLLER
TIT – TEMPERATURE INDICATING TRANSMITTER
TJI – TEMPERATURE MULTIPOINT SCANNING INDICATOR
TJR – TEMPERATURE MULTIPOINT SCANNING RECORDER
TR – TEMPERATURE RECORDER
TRC – TEMPERATURE RECORDING CONTROLLER
TS* – TEMPERATURE SWITCH
TT – TEMPERATURE TRANSMITTER
TV – TEMPERATURE CONTROL VALVE (NOT SELF ACTUATED)
TW – TEMPERATURE WELL (THERMOWELL)
TY – TEMPERATURE SIGNAL TRANSDUCER, SOLENOID, RELAY, OR COMPUTING DEVICE
TZV – TEMPERATURE ACTUATED VALVE
UC – MULTIVARIABLE CONTROLLER
UCV – MULTIVARIABLE CONTROL VALVE (SELF CONTAINED)
UI – MULTIVARIABLE CALCULATION INDICATOR
UIC – MULTIVARIABLE INDICATING CONTROLLER
US* – MULTIVARIABLE SWITCH
UT – MULTIVARIABLE TRANSMITTER
UV – MULTIVARIABLE CONTROL VALVE (NOT SELF CONTAINED)
UY – MULTIVARIABLE SIGNAL CONVERSION ELEMENT
VA* – VIBRATION ALARM
VE – VIBRATION ELEMENT
VI – VIBRATION INDICATOR
VIT – VIBRATION INDICATING TRANSMITTER
VS* – VIBRATION SWITCH
VT – VIBRATION TRANSMITTER
WE – WEIGHT PRIMARY ELEMENT
WI – WEIGHT INDICATOR
WQ – WEIGHT TOTALIZER
WR – WEIGHT RECORDER
WT – WEIGHT TRANSMITTER
XA – ANNUNCIATOR POINT OR UNSPECIFIED ALARM OR REMOTE SHUTDOWN
XI – USER DEFINED INDICATOR
XS – REMOTE STATUS
XV – USER DEFINED VALVE
*XY – SOLENOID VALVE
ZE – POSITION ELEMENT
ZI* – POSITION INDICATOR (ZIO, ZIC)
ZIH – POSITION INDICATOR (OPEN)
ZIL – POSITION INDICATOR (CLOSED)
ZL – POSITION LIGHT (INDICATOR)
ZS* – POSITION SWITCH or LIMIT SWITCH
ZT – POSITION TRANSMITTER
ZV – POSITION VALVE (LIMIT VALVE), PROXIMITY SWITCH
ZY – POSITION SIGNAL TRANSDUCER, SOLENOID, RELAY, OR COMPUTING DEVICE

MECHANICAL EQUIPMENT ABBREVIATIONS

AD – ADAPTER
AF – AIR FILTER
AN – ANALYZER
B – BELT
BD – BETA DRIVE
BF – BLIND FLANGE
BG – BELT GUARD
BKT – BRACKET
BL – BLOCK (LUBRICATOR)
BJ – BARRING JACK
BR – BLEED RING
BU – BUSHING
C – COMPRESSOR
CAP – CAP (PRESSURE)
CB – CLEARANCE BOTTLE
CC – CATALYTIC CONVERTER
CG – COUPLING GUARD
CHOP – CHAIN OPERATED
CP – COUPLING
CPI – CYCLE PIN INDICATOR (LUBRICATOR)
CS – CYLINDER SUPPORT
CV – CYLINDER VALVE
CW – CROSSHEAD NUT WRENCH
CWC – COUNTERWEIGHT
CYL – CYLINDER
DV – DELUGE VALVE
E – ENGINE
E/H – ELECTRO/HUDRAULIC ACTUATOR
EJ – EXPANSION JOINT
ERD – EXPLOSION RELIEF DEVICE
ES – EXHAUST SILENCER
F – FILTER
FA – FLAME ARRESTER
FIL – FILTER ELEMENT
FJ – FLEXIBLE JOINT
FLC – FLOAT CHAMBER
FVCP – FIXED VOLUME CLEARANCE POCKET
G – GEAR
GN – GENERATOR
HCA – HEAT EXCHANGER AIR COOLER
HCP – HOSE CLAMP
HCN – HOSE CONNECTION
HH – HAND HOLE
HM – HYDRAULIC MOTOR
HR – HOSE REEL
HT – HEAT EXCHANGER (COOLER)

HTR – HEATER
ICP – INSTRUMENT CONTROL PANEL
LD – LOCKING DEVICE
LU – LUBRICATOR
LV – LOUVERS
M – MOTOR
MB – MANIFOLD BAR (LUBRICATOR)
MCC – MOTOR CONTROL CENTER
MOV – MOTOR OPERATED VALVE
MS – MOTOR STARTER
P – PUMP
PA – PNEUMATIC ACTUATOR
PB – PILLOW BLOCK
PD – PULSATION DAMPENER
PLS – PRELUBE SYSTEM
PM – PNEUMATIC (AIR/GAS) MOTOR
PMS – PNEUMATIC STARTER
PTO – POWER TAKE OFF
PW – PISTON NUT WRENCH
SA – STACK ARRESTOR
SB – SPECTACLE BLIND
SH – SHAFT
SLB – SLIDE BASE (MOTOR)
SN – SNUBBER
ST – TANK (STORAGE)
STR – STRAINER
SV – SHEAVE
T – TURBINE
TR – PISTON TRAM
TS – TEMPORARY STRAINER
UL – UNLOADER
V – VESSEL (CODED AND NON-CODED)
V3W – 3-WAY VALVE
V4W – 4-WAY VALVE
VBB – BLOCK AND BLEED VALVE
VF – FIRE SAFE VALVE
VI – GAUGE VALVE
VNP – VANE PACK
VPD – PULSATION DAMPENER, VALVE
VTI – VALVE TEST INSERT
VVCP – VARIABLE VOLUME CLEARANCE POCKET
VW – VALVE WRENCH
XC – CHOKE VALVE
XCN – CHOKE NIPPLE
XW – CROSSHEAD WEIGHT

MISC. RELATED ABBREVIATIONS

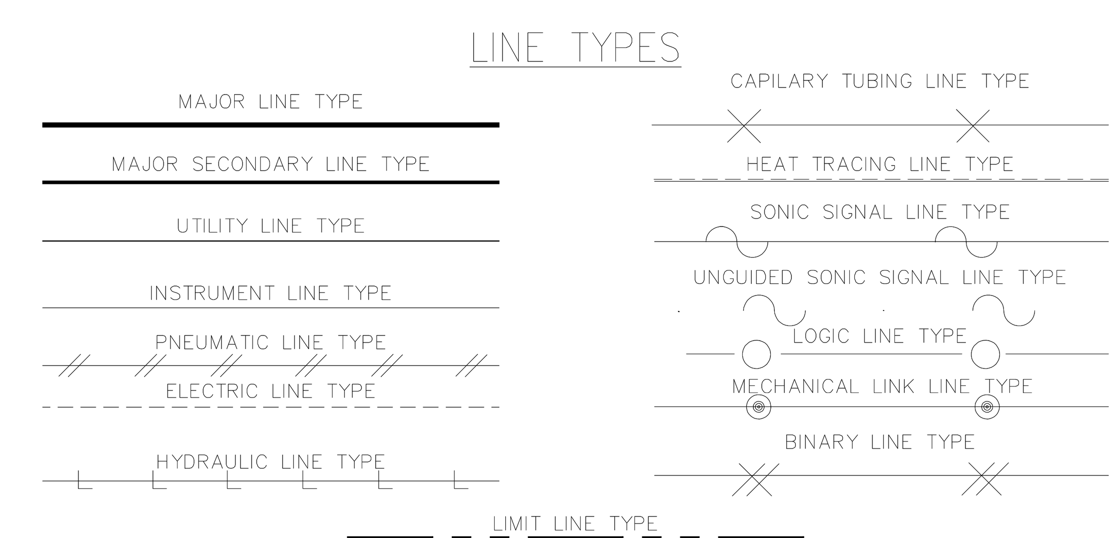
A/G – ABOVE GROUND
AC – AIR TO CLOSE
AO – AIR TO OPEN
AS – AIR SUPPLY
BOP – BOTTOM OF PIPE
BOS – BOTTOM OF STEEL
BSW – BOTTOM SEDIMENT AND WATER
BW – BUTT WELD
CA – CORROSION ALLOWANCE
CO – CLEAN OUT
CPP – PRESSURE CONNECTION – PLUGGED
CS – CARBON STEEL
CSC – CAR SEAL CLOSED
CSO – CAR SEAL OPEN
CTP – TEMPERATURE CONNECTION – PLUGGED
D – DRAIN
ΔP – DIFFERENTIAL PRESSURE
DP – DESIGN PRESSURE
DPG – DRAIN PLUG
EL – ELEVATION
EOP – END OF PIPE
ES – ELECTRIC SUPPLY
ESD – EMERGENCY SHUTDOWN
ETR – ELECTRICAL TRACE
EX – EXHAUST
F – FLARE
F/F – FACE OF FLANGE
FB – FULL BORE
FF – FLAT FACE
FLC – FAIL LOCKED (LAST POSITION)
FMU – FITTING MAKE-UP
FSD – FLAT SIDE DOWN
FSU – FLAT SIDE UP
FW – FIELD WELD
GJ – GLYCOL JACKET
GO – GEAR OPERATED
GS – GAS SUPPLY
H2S – HYDROGEN SULFIDE (SOUR GAS)
HP – HORSEPOWER
HPS – HIGH PRESSURE
ID – INSIDE DIAMETER
IG – INSTRUMENT GAS SUPPLY
IGV – INSTRUMENT GAS VENT
KPaG – KILOPASCAL GAGE
LCD – LOCKED CLOSED
LO – LOCKED OPEN
LP – LOW PRESSURE
MAOP – MAXIMUM ALLOWABLE OPERATING PRESSURE
MAWP – MAXIMUM ALLOWABLE WORKING PRESSURE

MLW – MEAN LOW WATER
MMSCFD – MILLION STANDARD CUBIC FEET PER DAY
MSCFD – THOUSAND STANDARD CUBIC FEET PER DAY
MSL – MEAN SEA LEVEL
MW – MANWAY
NB – IMPORTANT NOTE (NOTA BIEN)
NC – NORMALLY CLOSED
NNF – NORMALLY NO FLOW
NO – NORMALLY OPEN
NS – NITROGEN SUPPLY
NTS – NOT TO SCALE
OD – OUTSIDE DIAMETER
OF – OWNER FURNISHED
OP – OPERATING PRESSURE
OT – OPERATING TEMPERATURE
PD – POSITIVE DISPLACEMENT
PGS – POWER GAS SUPPLY
PID – PROPORTIONAL, INTEGRAL, DIFFERENTIAL
PO – PUMP OUT
PP – PERSONEL PROTECTION
PS – PIPE SUPPORT
PSD – PROCESS SHUTDOWN
PSIG – POUNDS PER SQUARE INCH
RA – REVERSE ACTING
REF – REFERENCE
REV – REVISION
RF – RAISED FACE
RP – REDUCED PORT
RSP – REMOTE SETPOINT
RTJ – RING TYPE JOINT
S – SAMPLER
S/S – SEAM TO SEAM
SD – SHUTDOWN
SP – SETPOINT
SS – STAINLESS STEEL
T/T – TANGENT TO TANGENT
TOG – TOP OF GRATING
TOS – TOP OF STEEL
TP – TIE-IN POINT
TPP – TEMPERATURE POINT PLUGGED
U/G – UNDER GROUND
V – VENT
VF – VENDOR FURNISHED
VFD – VARIABLE FREQUENCY DRIVE
VP – VENT CONNECTION – PLUGGED
VSA – VENT TO SAFE ATMOSPHERE
WN – WELD NECK
WS – WATER SUPPLY
Y – RELAY

TYPICAL EQUIPMENT IDENTIFICATION

TAG No: DESCRIPTION:	V-22XX SEPARATOR
MAKE AND MODEL:	...
DIMENSIONS:	...inches O.D. x ...inches S/S
DESIGN PRESSURE @ DESIGN TEMP., CORROS. ALLOWANCE:	... psig @ ... °F, ...inches C.A.
GAS FLOW RATES:	... MMscfd
LIQUID FLOW RATES:	... USgpm ... btu/h
DUTIES: MOTOR POWER:	... hp @ V/ø/Hz S.R.:
STRESS RELIEVING AND X-RAY:	YES/NO, X-RAY: FULL/100%/SPOT

LINE TYPES



NOTES:

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		0		ISSUED FOR CONSTRUCTION	NJL	TCF	RFD	5/2/22

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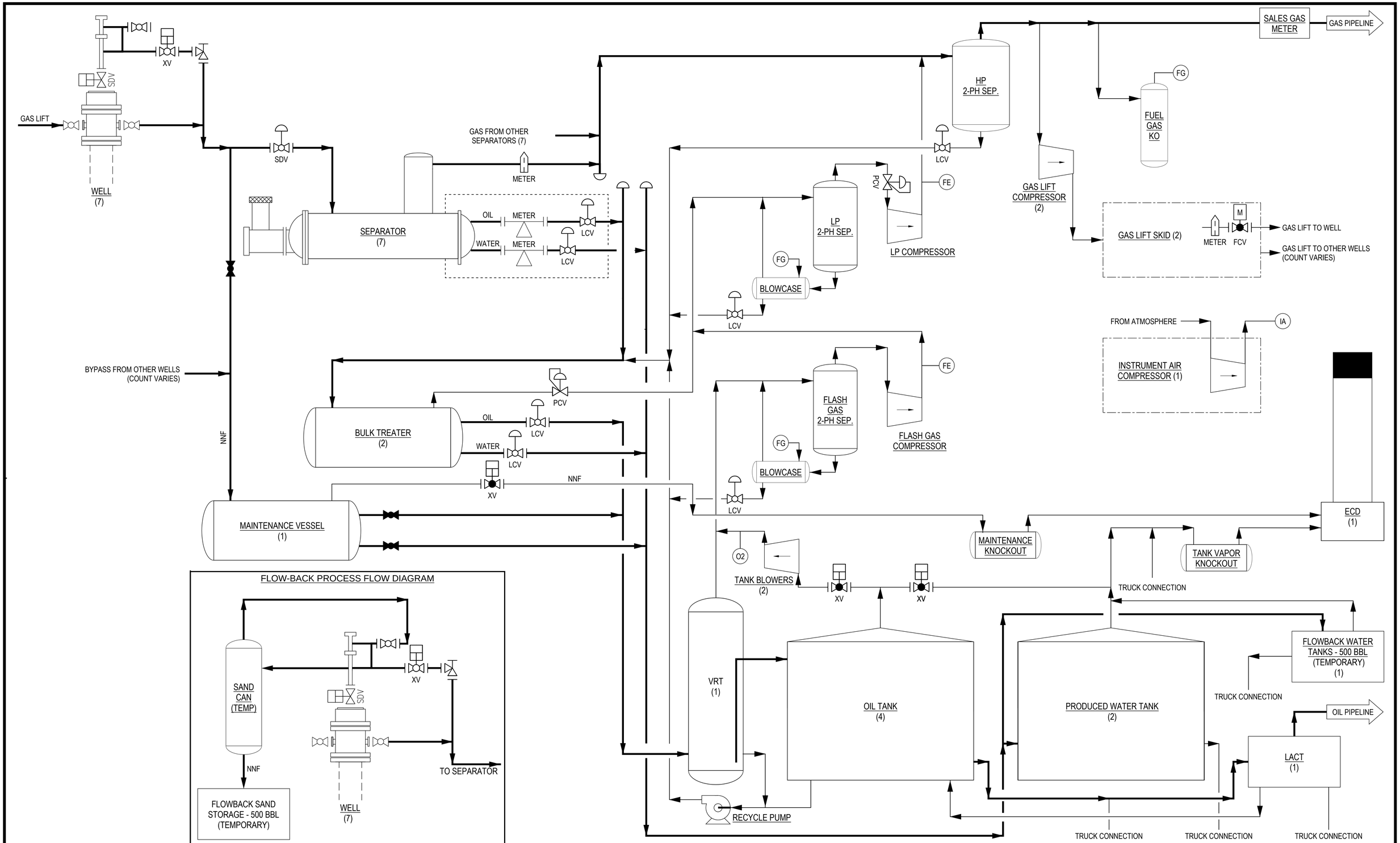
CIVITAS

Crestone Peak Resources Operating , LLC
KING 3-65 28-29
NESE SEC. 28 R3S-T65W, 6TH P.M.
Preliminary Process Flow Diagram Production Operations
Well Pad 3-Phase Separation

DRAWING NUMBER	SCALE	REVISION
WATKINS1W-PFD-1100	NONE	0

PLOTTED BY: Livermore, Nathan
PLOT DATE: Tuesday, May 3, 2022 10:19:25 AM
DWG. NAME: G:\LDIS_CLIENT_PROJECTS\Crestone Peak Resources\Watkins Single Well Seps Standard\P&IDs\WATKINS1W-PFD-1100.dwg



NOTES:

LDIS LLC
A Tetra Tech Company

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CIVITAS

Crestone Peak Resources Operating , LLC

LUSSING TRUST 4-64 19-20 NORTH WELLPAD

PROCESS FLOW DIAGRAM

DRAWING NUMBER	SCALE	REVISION
	NONE	A