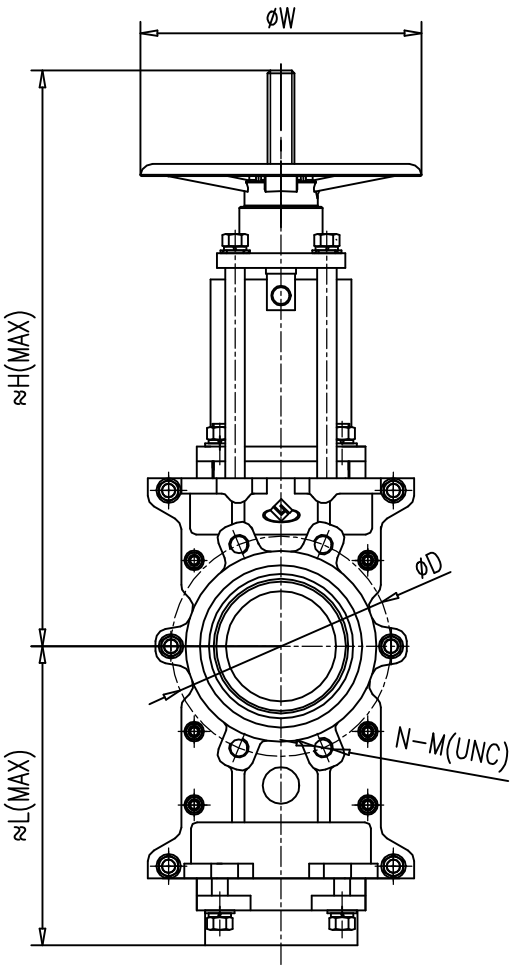
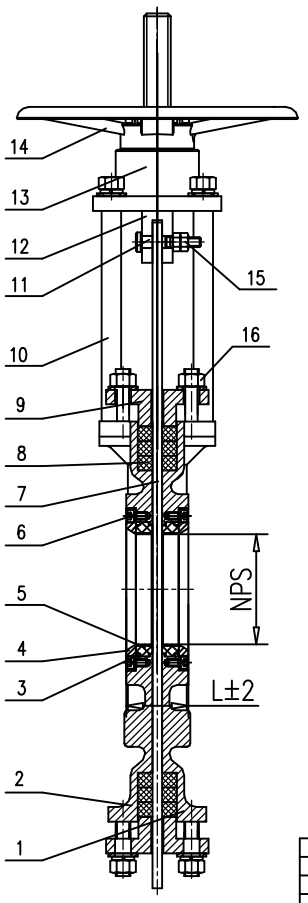
Ref	Part	Drawing Material	Requirement / Service Fit	Compliance
1, 2	Upper/Lower Body	**WCB** (bare carbon steel)	Requirement = **Carbon steel body with rubber lining**. WCB is OK as substrate, **but no liner is shown**. Bare WCB is not acceptable in phosphoric acid.	**Needs EPDM lining**
3	O-ring	**EPDM**	EPDM is compatible with 54% H_3PO_4 at 90 °C.	Acceptable
4	Retainer	**A105 + HCR (hard chrome?)**	A105 = plain CS, chrome coating will not last in hot acid. Should be **316L/904L/Alloy 20**.	**Upgrade required**
5	Seat	**PTFE**	Excellent chemical resistance, good to 90 °C. Matches requirement.	Acceptable
6	Socket screw	**304**	304 corrodes in phosphoric acid. For fasteners in contact with acid, must be **316L/904L**.	**Upgrade required**
7	Disk (knife)	**316L**	Requirement = **904L knife**. 316L is insufficient in 54% H_3PO_4 with impurities → pitting/crevice risk.	**Must change to 904L**
8	Packing	**NBR**	Nitrile is *not compatible* with hot phosphoric acid. Should be **PTFE/ePTFE** or **EPDM**.	**Must change**
9	Gland	**WCB**	Packing gland is exposed to leakage/fumes; WCB corrodes. Must be **316L/904L**.	**Must change**
10	Pillar	**AISI 1045 + HCR**	Carbon steel with chrome coat. Same issue as retainer — not durable in acid. Use **SS316L/904L**.	**Must change**
11	Pin	**304**	Not acceptable; needs **316L/904L**.	**Must change**
12	Shaft	**304**	Not acceptable; needs **316L/904L** (or 904L preferred).	**Must change**
13	Yoke	**ZL108 (Aluminum alloy)**	Yoke is external, non-wetted. Aluminum in acid vapors is at risk. Normally **carbon steel epoxy-coated** is used. Aluminum not ideal.	**better to change to CS coated**
14	Handwheel	**WCB**	External only; acceptable if coated.	Acceptable
15	Nuts	**A2-70 / A194-8 (304/316)**	A2-70 = 304; A194-8 = 304/316. For acid service, should be **316L minimum** (better = 904L).	**Upgrade required**
16	Hexagon bolt	**304**	Same issue — 304 not suitable; should be **316L or 904L**.	**Upgrade required**

REVIEWED

By Michael Hernandez at 10:58 am, Sep 08, 2025





DESIGN SPECIFICATIONS			
GENERAL VALVE DESIGN		MSS SP 81	
PRESSURE TEMPERATURE RATING		ASME B16.34 - 2009	
END CONNECTION			APPLIED OR NOT
LUG	ASME/B 16.5		YES
BUTT-WELD	ASME B16.25 - 2012		NO
NPT THREADED	ASME B1.20.1 - 1983		NO
SOCKET WELD	ASME B16.11 - 2005		NO
FACE-TO-FACE / END-TO-END DIMENSION			
WAFER OR BUTT-WELD	MSS SP 81		
THREADED OR SOCKET WELD	DECIDED BY MANUFACTURER		
TESTING	MSS SP 81		
	Kg/cm²	TESTING MEDIUM	APPLIED OR NOT
SHELL	30.0	WASTE WATER	YES
BACK SEAT		WASTE WATER	NO
SEAT	2.8	WASTE WATER	YES
SEAT		AIR	NO
Leakage		4	ml/min/in
operating temperature		-20-100	℃

NPS	L	H	L	W	D	N-M
3″	51	490	270	220	152.4	4-5/8"-11
4″	51	530	340	220	190.5	4-5/8"-11
5″	57	640	400	250	215.9	4-3/4"-10
6″	57	690	450	280	241.3	4-3/4"-10
8″	70	820	580	320	298.5	4-3/4"-10
10″	70	1000	700	355	362	8-7/8"-9
12″	76	1180	840	400	431.8	8-7/8"-9

No.	Name	Material
16	Hexagon	304
15	Nut	A2-70/ASTM A194-8
14	hand wheel	WCB
13	Yoke	ZL108
12	Shaft	304
11	pin	304
10	Pillar	ANSI 1045+HCR
9	Gland	WCB
8	Packing	NBR
7	Disc	316L
6	Socket Head Screw	304
5	Seat	PTFE
4	Retainer	A105+HCR
3	O Ring	EPDM
2	Lower Valve Body	WCB
1	Upper Valve Body	WCB

OWNER NAME	KSB Company		
CLIENT NO.			
CLIENT NAME			
PROJECT NAME			
PURCHASING ORDER NO.			

P.O.SL.NO.	SIZE	TAG. NO.	KKS CODE	QTY.

DRAWED BY			GENERAL ASSEMBLY DRAWING	
CHECKED				
APPROVED			VALVE TYPE	BHT knife gate valves
	DATE	NAME	SERIES NAME	150LB

REV 01

REVIEWED

By Michael Hernandez at 10:58 am, Sep 08, 2025