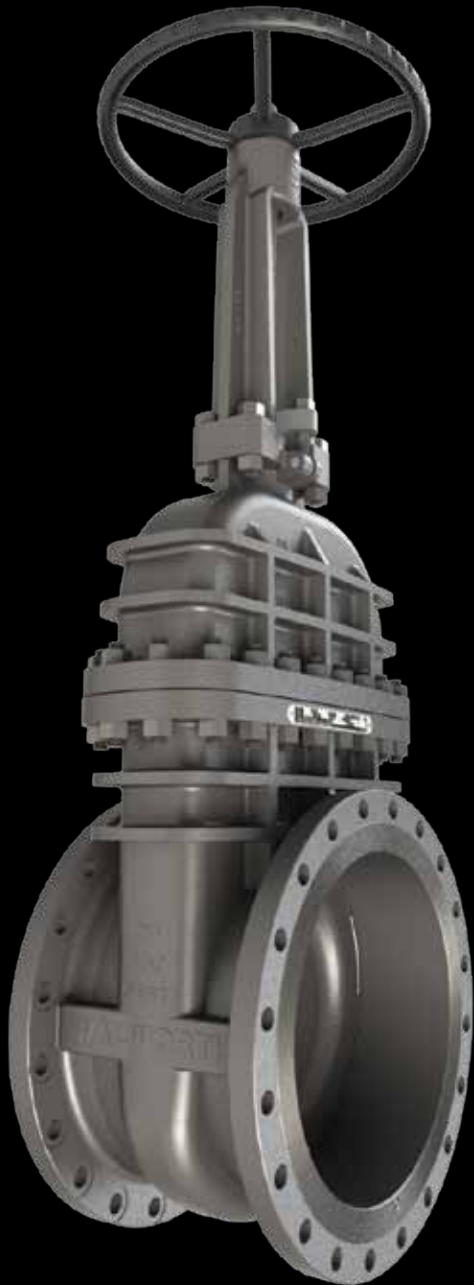




WALWORTH®
Since 1842



**API-603 CAST STAINLESS STEEL
AND SPECIAL ALLOY VALVE**

CATALOG

API-603 CAST STAINLESS STEEL & SPECIAL ALLOY GATE, GLOBE AND CHECK VALVES

API-603 CAST STAINLESS STEEL & SPECIAL ALLOY GATE, GLOBE AND CHECK VALVES STAINLESS STEEL, SPECIAL ALLOY & EXOTIC ALLOY VALVES

The light pattern WALWORTH product line, manufactured in accordance with ANSI classes 150, 300 & 600# and sizes from 2” up to 24” nominal diameter, provides the end user a wide variety of valves to satisfy their needs. This product line is manufactured as per API-603 design requirements for gate, globe & swing check valves.

One of the most important features of WALWORTH API-603 Cast Stainless Steel Valves is that they guarantee a 50 ppm maximum fugitive emissions rate as furnished “off the shelf” without a Customer’s special order requirements.

WALWORTH offers the majority of materials known and used for this product line, including but not limited to:

1. Stainless Steel such as CF8, CF8M, CF8C, CF10, CG8M, etc.
2. Low Carbon Stainless Steel such as CF3, CF3M, CG3M, etc.
3. Super Stainless Steel such as CN7M(Alloy 20), CN3M (Alloy 20 modified), CT15C, etc.
4. Duplex Stainless Steel such as CE8MN, CD6MN, CD3MN, etc.
5. High Nickel Alloys such as Monel M30C, Monel M35-1, Monel CZ100, Inconel CY40 (Inconel 600), CW2M (Hastelloy C4), N12MV (Hastelloy B), CW12MW (Former Hastelloy C-276), CW6M (New Hastelloy C-276), CU5MCuC (Incoloy 825), N7M (Hastelloy B2), CW6MC (Incoloy 625), etc.
6. Super Duplex Stainless Steel such as CE3MN, CD3MNCuN, etc.

Type	Size	Pressure class as per ASME B16.34	Ends
Gate	2” to 24”	150, 300 & 600	RF, RTJ & WE
Globe	2” to 24”	150, 300 & 600	RF, RTJ & WE
Swing Check	2” to 24”	150, 300 & 600	RF, RTJ & WE



API-603 CAST STAINLESS STEEL & SPECIAL ALLOY VALVES BODY MATERIALS

WALWORTH offers the standard product line of API 603 Cast Steel valves in a wide variety of stainless steel, high nickel alloys and exotic alloys that can be used in combination with either their specific trims or one requested by the Customer.

Material suffix	Common designation	Forging specification	Wrought bar specification	Service recommendations (1)	Common trim for this base material
ASTM A351 Grade CF8	18% Chrome; 8% Nickel; 0.08% C Stainless Steel	ASTM A182 F304	ASTM A479 304	Corrosive or extremely high temperature non-corrosive services between -450°F (-268°C) and +1200°F (+649°C). Above +800°F (+425°C) specify carbon content of 0.04% or greater.	2, 4HF
ASTM A351 Grade CF8M	18% Chrome; 12% Nickel; 2% Mo; 0.08% C Stainless Steel	ASTM A182 F316	ASTM A479 316	Corrosive or either extremely low or high temperature non-corrosive services between -450°F (-268°C) and +1200°F (+649°C). Above +800°F (+425°C) specify carbon content of 0.04% or greater.	18-8smo, 3HF
ASTM A351 Grade CF3	18% Chrome; 8% Nickel; 0.03% C Low Carbon Stainless Steel	ASTM A182 304L	ASTM A479 304L	Brackish water, phosphate solutions, pressurized water @ 570°F (299°C), sea water, steam.	304L, 3HF
ASTM A351 Grade CF3M	18% Chrome; 12% Nickel; 2% Mo; 0.03% C Low Carbon Stainless Steel	ASTM A182 F316L	ASTM A479 316L	Acetic acid, calcium carbonate, calcium lactate, potable water, sea water, steam, sulfites.	316L, 3HF
ASTM A351 Grade CG3M	18% Chrome; 12% Nickel; 3% Mo; 0.03% C Low Carbon Stainless Steel	ASTM A182 F317L	ASTM A182 F317L	Corrosive or non corrosive services to +800°F (+425°C)"	317L, 317LH
ASTM A351 Grade CF8C	18% Chrome; 10% Nickel; Cb; 0.08% C Stainless Steel	ASTM A182 F347	ASTM A479 347	Primarily for high temperature, corrosive applications between -450°F (-268°C) and +1200°F (+649°C). Above +1000°F (+540°C) specify carbon content of 0.04% or greater. Hydrogen service."	347H, 347HF
ASTM A351 Grade CF10	18% Chrome; 8% Nickel; 0.08% C Stainless Steel	ASTM A182 F304H	ASTM A479 304H	Corrosive or extremely high temperature non-corrosive services between -450°F (-268°C) and +1200°F (+649°C). Above +800°F (+425°C) specify carbon content of 0.04% or greater.	310, 310HF
ASTM A351 Grade CF10M	18% Chrome; 8% Nickel; 2% Mo; 0.08% C Stainless Steel	ASTM A182 F316H	ASTM A479 316H	Corrosive or extremely high temperature non-corrosive services between -450°F (-268°C) and +1200°F (+649°C). Above +800°F (+425°C) specify carbon content of 0.04% or greater.	310, 310HF
ASTM A351 Grade CG8M	18% Chrome; 10% Nickel; 3% Mo; 0.08% C Stainless Steel	ASTM A182 F317	ASTM A182 F317	Heavy water manufacturing, nuclear, petroleum, pipe line, power, pulp and paper, printing textile, corrosive dye solutions, ink, sulfite liquor.	317H, 21HF

API-603 CAST STAINLESS STEEL & SPECIAL ALLOY VALVES BODY MATERIALS

Material suffix	Common designation	Forging specification	Wrought bar specification	Service recommendations (1)	Common trim for this base material
ASTM A351 Grade CK20	25% Chrome; 20% Nickel; 0.04 To 0.2% C Super Stainless Steel	ASTM A182 F310H	ASTM A182 F310H	Aircraft, chemical processing, oil refining, pulp and paper. Corrosives hot products around 1200°F (649°C), sulfite liquor, sulfuric acid (dilute).	310, 310HF
ASTM A351 Grade CN7M	19% Chrome; 28% Nickel; Cu-Mo; 0.07 % C Super Stainless Steel	ASTM B462 N08020	ASTM B473 N08020	Acetic acid (hot), brines, caustic solutions, (strong, hot), hydrochloric acid (dilute), hydrofluoric acid and hydrofluosilicic acid (dilute), nitric acid, (strong, hot), nitric-hydrofluoric pickling acids, sulfates and sulfites, sulfuric acid, (all concentrations to 150°F (65.6°C), sulfurous acid, phosphoric acid.	A20, A20H
ASTM A351 Grade CN3MN	19% Chrome; 28% Nickel; Cu-Mo; 0.03 % C Super Stainless Steel	ASTM B462 N08020	ASTM B473 N08020	Acetic acid (hot), brines, caustic solutions, (strong, hot), hydrochloric acid (dilute), hydrofluoric acid and hydrofluosilicic acid (dilute), nitric acid, (strong, hot), nitric-hydrofluoric pickling acids, sulfates and sulfites, sulfuric acid, (all concentrations to 150°F (65.6°C), sulfurous acid, phosphoric acid. Better weldability properties than CN7M	A20, A20H
ASTM A351 Grade CK3MCuN	20% Chrome; 18% Nickel; 6% Mo; 0.25% C Super Stainless Steel	ASTM A182 F44	ASTM A479 S31254	Acetic acid, antibiotics and drugs, bleaching compounds, formic acid, fruit and juices, hot air, hot water, hydrocarbons, hydrochloric acid, organic liquids and acids, nitric acid, organic salts, oxalic acid, phosphoric acid, sea water, sewage, sodium bisulfite, steam, sulfamic acid, 10% sulfuric acid,	254HF
ASTM A351 Grade CT15C	19% Chrome; 32% Nickel; 0.05 to 0.15% C Incoloy 800.	ASTM B564 N08810	ASTM B408 N08810		810T
ASTM A351 Grade CK3McuN	20% Chrome; 18% Nickel; 6.5% Mo; 0.025% C Super Stainless Steel	ASTM A182 F44	ASTM A479 S31254	High resistance to pitting and crevice corrosion. Very high resistance to chloride stress corrosion cracking. 50% stronger than 300 series austenitic stainless steels. Excellent impact resistance.	31254H
ASTM A351 Grade CN2MCuN	21% Chrome; 25.5% Nickel; 4.5% Mo; 1.5%Cu; 0.02% C Super Stainless Steel	ASTM B469 8904	ASTM B625 8904	Chloride-containing environments where conventional 300 series stainless steel does not provide adequate pitting and crevice corrosion resistance.	8904H
ASTM A494 Grade M-35-1	67% Ni; 30% Cu, Monel	ASTM B564 N04400	ASTM B164 N04400	Weldable grade. Good resistance to corrosion by all common organic acids and salt water. Also highly resistant to most alkaline solutions to +750 °F (+400°C)	A, AHF
ASTM A494 Grade CZ100	95% Nickel	ASTM B160 N02200	ASTM B160 N02200	Chemical processing, mineral processing, food processing. Nickel is useful in handling hot concentrate alkaline or caustic solutions, reducing acids, certain food products, organic acids under certain conditions, dry chlorine and anhydrous ammonia. Cast nickel is not applicable in oxidizing acids and alkaline perchlorite.	2200

API-603 CAST STAINLESS STEEL & SPECIAL ALLOY VALVES BODY MATERIALS

Material suffix	Common designation	Forging specification	Wrought bar specification	Service recommendations (1)	Common trim for this base material
ASTM A494 Grade CY-40	75% Nickel; 15% Cr; 8% Fe, Inconel 600	ASTM B564 N06600	ASTM B166 N06600	Very good for high temperature service. Good resistance to strongly corrosive media and atmosphere to +800°F (+425°C). Hot boiler feed water, hot caustics, hot concentrate alk water, elevated temperature oxidizing conditions.	600, 600HF
ASTM A494 Grade CW6MC	60% Nickel; 22% Cr; 9% Mo; 3.5% Cb, Inconel 625	ASTM B564 N06625	ASTM B446 N06625	Very good for high temperature service. Good resistance to strongly corrosive media and atmosphere to +800°F (+425°C).	625, 625HF
ASTM A494 Grade CU5MCuC	42% Nickel; 21.5% Cr; 3% Mo; 2.3% Cu, Incoloy 825	ASTM B564 N08825	ASTM B425 N08825	Sour gas service. Excellent resistance to both reducing and oxidizing acids, stress corrosion cracking, localized attack such as pitting and crevice corrosion, and sulfuric and phosphoric acids.	825, 23HF
ASTM A494 Grade N12MV	62% Nickel; 28% Mo; 5% Fe, Hastelloy B	ASTM B335 N10001	ASTM B335 N10001	Excellent corrosion resistance. Suitable for most chemical process applications. Excellent resistance to pitting and stress corrosion cracking.	10001, HB
ASTM A494 Grade N7M	62% Nickel; 28% Mo; 2% Fe, Hastelloy B2	ASTM B335 N10665	ASTM B335 N10665	Excellent corrosion resistance and improved resistance to knife-line and heat affected zone attack. Resists formation of grain-boundary carbide precipitates in the weld heat-affected zone.	HB
ASTM A494 Grade CW2M	61% Nickel; 16% Mo; 16% Cr, Hastelloy C4	ASTM B574 N06455	ASTM B574 N06455	Good resistance to strong oxidation conditions. Good properties at high temperatures, high resistance to formic, phosphoric, sulphurous and sulfuric acids to +1200°F (+649°C)	6455H
ASTM A494 Grade CW12MW	56% Nickel; 18% Mo; 17% Cr; 6% Fe, Hastelloy C-276 (FORMER ALLOY)	ASTM B574 N10276	ASTM B574 N10276	Good resistance to strong oxidation conditions. Good properties at high temperatures, high resistance to formic, phosphoric, sulphurous and sulfuric acids to +1200°F (+649°C)	HC, HCH
ASTM A494 Grade CW6M	56% Nickel; 19% Mo; 18% Cr; 16% Fe, Hastelloy C-276 (NEW ALLOY)	ASTM B574 N10276	ASTM B574 N10276	Good resistance to strong oxidation conditions. Good properties at high temperatures, high resistance to formic, phosphoric, sulphurous and sulfuric acids to +1200°F (+649°C)	HC, HCH
ASTM A995 Grade CD4MCuN	25.5% Chrome; 5.5% Nickel; 2% Mo; 0.040% C Duplex Stainless Steel Grade 1A.	N/A	ASTM A479 S32550	Concentrated brine, fatty acids, potable water, pulp water, pulp liquors at 220°F (104°C), sea water, stem, sulfuric acid (15-30% @ 140-160°F (60-71°C), sulfuric acid (35-40% @ 185°F (85°C), plus 5% organics).	32250H
ASTM A995 Grade CE8MN	24% Chrome; 9.5% Nickel; 4% Mo; 0.080% C Duplex Stainless Steel Grade 2A.	ASTM A182 F51	ASTM A479 32750	Concentrated brine, fatty acids, potable water, pulp water, pulp liquors at 220°F (104°C), sea water, stem, sulfuric acid (15-30% @ 140-160°F (60-71°C), sulfuric acid (35-40% @ 185°F (85°C), plus 5% organics).	32750H, 31803H, 51H

API-603 CAST STAINLESS STEEL & SPECIAL ALLOY VALVES BODY MATERIALS

Material suffix	Common designation	Forging specification	Wrought bar specification	Service recommendations (1)	Common trim for this base material
ASTM A995 Grade CD3MN	22% Chrome; 5% Nickel; 3% Mo; N; 0.030% C Duplex Stainless Steel Grade 4A.	ASTM A182 F51	ASTM A479 31803	Concentrated brine, fatty acids, potable water, pulp water, pulp liquors at 220°F (104°C), sea water, stem, sulfuric acid (15-30% @ 140-160°F (60-71°C), sulfuric acid (35-40% @ 185°F (85°C), plus 5% organics).	32750H, 31803H, 51H
ASTM A995 Grade CE3MN	25% Chrome; 7% Nickel; 4.5% Mo; N; 0.030% C Duplex Stainless Steel Grade 5A.	ASTM A182 F53	ASTM A182 F53	Concentrated brine, fatty acids, potable water, pulp water, pulp liquors at 220°F (104°C), sea water, stem, sulfuric acid (15-30% @ 140-160°F (60-71°C), sulfuric acid (35-40% @ 185°F (85°C), plus 5% organics). Useful where the Pitting Resistance Number (PREN) is required.	53H, 53HF
ASTM A995 Grade CD3MWCuN	25% Chrome; 7.5% Nickel; 3.5% Mo; N; 0.030% C Duplex Stainless Steel Grade 6A.	ASTM A182 F53	ASTM A182 F53	Concentrated brine, fatty acids, potable water, pulp water, pulp liquors at 220°F (104°C), sea water, stem, sulfuric acid (15-30% @ 140-160°F (60-71°C), sulfuric acid (35-40% @ 185°F (85°C), plus 5% organics). Useful where the Pitting Resistance Number (PREN) is required.	53H, 53HF

(1) The above list of consuming industries and corrosive materials are useful as examples of typical applications where these materials can be used as a guide; however, the responsibility to choose the proper alloy lies with the Engineering firm or End User.

NOMENCLATURE

Type	Class
ST6	STELLITE 6
316	STAINLESS STEEL 316
304	STAINLESS STEEL 304
HC	HASTELLOY "C"
CN7M	CHROME-NICKEL STEEL
321	STAINLESS STEEL 321
ST21	STELLITE 21
A20	STAINLESS STEEL ALLOY 20
347	STAINLESS STEEL 347
321	STAINLESS STEEL 321
8810	STAINLESS STEEL 8810
625	INCONEL 625
316L	STAINLESS STEEL 316L

Type	Class
HB	HASTELLOY "B"
317L	STAINLESS STEEL 317L
17 4PH	STAINLESS STEEL 17 4PH
317	STAINLESS STEEL 317
825	INCOLOY 825
304L	STAINLESS STEEL 304L
K500	MONEL K500
31803	STAINLESS STEEL 31803
718	INCONEL 718
8367	STAINLESS STEEL 8367
TC	TUNGSTEN CARBIDE
W1	WALWELD-100
NUC	NUCALLOY

API-603 CAST STAINLESS STEEL & SPECIAL ALLOY VALVES TRIM ARRANGEMENTS

WALWORTH valves are available in the widest range of standard and special trims available in the Industry. The following table shows the most popular trims used for the valves currently offered.

Special trims as per Customer requirements are available upon request. Please contact your closest WALWORTH Distributor.

WALWORTH Trim Nr.	API-600 Trim Nr.	Seal material Type	Stem and other Trim parts (1)	Wedge/disc seat Surfaces	Body seat Surfaces (2)
18-8	2	19Cr-9.5Ni-2Mn-0.08C	SS-304	SS-304	SS-304
310	3	25Cr-20.5Ni-2Mn	SS-310	SS-310	SS-310
A	9	70Ni-30Cu	UN N04400 (Monel 400)	UN N04400 (Monel 400)	UN N04400 (Monel 400)
18-8smo	10	18Cr-12Ni-2.5Mo-2Mn	SS-316	SS-316	SS-316
AHF	11 OR 11A	70Ni-30Cu/1/2Co-Cr-A	UN N04400 (Monel 400)	UN N04400 (Monel 400)	Stellite 6 (350 HBN min)
3HF	12 OR 12A	18Cr-12Ni-2.5Mo-2Mn/1/2Co-Cr-A	SS-316	SS-316	Stellite 6 (350 HBN min)
A20	13	29Ni-19Cr-2.5Mo-0.07C	UNS N08020 (Alloy 20)	UNS N08020 (Alloy 20)	UNS N08020 (Alloy 20)
A20H	14 OR 14A	29Ni-19Cr-2.5Mo-0.07C/1/2Co-Cr-A	UNS N08020 (Alloy 20)	UNS N08020 (Alloy 20)	Stellite 6 (350 HBN min)
4HF	Not specified	19Cr-9.5Ni-2Mn-0.08C/1/2Co-Cr-A	SS-304	SS-304	Stellite 6 (350 HBN min)
4HF+HF	Not specified	19Cr-9.5Ni-2Mn-0.08C/Co-Cr-A	SS-304	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
304L	Not specified	19Cr-9.5Ni-2Mn-0.03C	SS-304L	SS-304L	SS-304L
1HF	Not specified	18Cr-12Ni-2.5Mo-2Mn/Co-Cr-Mo	SS-316	Stellite 21 (320 HBN min)	Stellite 21 (320 HBN min)
3HF+HF	16	18Cr-12Ni-2.5Mo-2Mn/Co-Cr-A	SS-316	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
3TC (3)	Not specified	18Cr-8Ni-Mo/TgC	SS-316/Tungsten carbide	Tungsten Carbide	Stellite 6 (350 HBN min)
316L	Not specified	17Cr-12Ni-2.5Mo-2Mn0.03C	SS-316L	SS-316L	SS-316L
3LHF	Not specified	17Cr-12Ni-2.5Mo-2Mn0.03C/1/2Co-Cr-A	SS-316L	SS-316L	Stellite 6 (350 HBN min)
3HFL	Not specified	17Cr-12Ni-2.5Mo-2Mn0.03C/Co-Cr-A	SS-316L	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
21HF	Not specified	19Cr-11.5Ni-3.5Mo/Co-Cr-A	SS-317	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
317	Not specified	19Cr-11.5Ni-3.5Mo	SS-317	SS-317	SS-317
21HF	Not specified	19Cr-11.5Ni-3.5Mo/Co-Cr-A	SS-317	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
317	Not specified	19Cr-11.5Ni-3.5Mo	SS-317	SS-317	SS-317
3LHF	Not specified	17Cr-12Ni-2.5Mo-2Mn0.03C/1/2Co-Cr-A	SS-316L	SS-316L	Stellite 6 (350 HBN min)
3HFL	Not specified	17Cr-12Ni-2.5Mo-2Mn0.03C/Co-Cr-A	SS-316L	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
21HF	Not specified	19Cr-11.5Ni-3.5Mo/Co-Cr-A	SS-317	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
317	Not specified	19Cr-11.5Ni-3.5Mo	SS-317	SS-317	SS-317

Notes: 1. Free machining grades of 13 Cr are prohibited.
2. A minimum of 50 HB against seat ring(s) is required.

API-603 CAST STAINLESS STEEL & SPECIAL ALLOY VALVES TRIM ARRANGEMENTS

WALWORTH Trim Nr.	API-600 Trim Nr.	Seal material Type	Stem and other Trim parts (1)	Wedge/disc seat Surfaces	Body seat Surfaces (2)
317H	Not specified	19Cr-11.5Ni-3.5Mo/1/2Co-Cr-A	SS-317	SS-317	Stellite 6 (350 HBN min)
317LH	Not specified	19Cr-13Ni-3.5Mo/Co-Cr-A	SS-317L	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
317L	Not specified	19Cr-13Ni-3.5Mo-0.03C	SS-317L	SS-317L	SS-317L
317LS	Not specified	19Cr-13Ni-3.5Mo/1/2Co-Cr-A	SS-317L	SS-317L	Stellite 6 (350 HBN min)
2HF	Not specified	18Cr-10Ni-0.1N/Co-Cr-A	SS-321	SS-321	Stellite 6 (350 HBN min)
321F	Not specified	18.5Cr-11Ni-2Mn/Co-Cr-A	SS-321	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
321	Not specified	19Cr-11.5Ni-3.5Mo	SS-321	SS-321	SS-321
347HF	Not specified	18.5Cr-11Ni-2Mn-Co/Co-Cr-A	SS-347	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
347	Not specified	18.5Cr-11Ni-2Mn-Co	SS-347	SS-347	SS-347
347H	Not specified	18.5Cr-11Ni-2Mn-Co/1/2Co-Cr-A	SS-347	SS-347	Stellite 6 (350 HBN min)
254HF	Not specified	20Cr-18Ni-6.2Mo-0.02C-Cu+N	UNS S31254	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
51H	Not specified	22Cr-5.5Ni-3Mo-N-0.03C/Co-Cr-A	UNS S31803	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
31803H	Not specified	22Cr-5.5Ni-3Mo-N-0.03C/Co-Cr-A	UNS S31803	UNS S31803	Stellite 6 (350 HBN min)
T9	Not specified	16Cr-4Ni-4Cu-Nb+Ta/Co-Cr	17-4pH	Triballoy 900	Triballoy 900
HC	Not specified	55Ni-15.5Cr-16Mo-3Tg-4Fe	Hastelloy C-276	Hastelloy C-276	Hastelloy C-276
HCH	Not specified	55Ni-15.5Cr-16Mo-3Tg-4Fe/1/2Co-Cr-A	Hastelloy C-276	Hastelloy C-276	Stellite 6 (350 HBN min)
UOP	Not specified	63Ni-30Cu-Al+Ti/70Ni-30Cu	UN N05500 (Monel K-500)	UN N04400 (Monel 400)	UN N04400 (Monel 400)
625	Not specified	60Ni-22Cr-9Mo-3.5Cb	UNS N06625 (Inconel 625)	UNS N06625 (Inconel 625)	UNS N06625 (Inconel 625)
625HF	Not specified	60Ni-22Cr-9Mo-3.5Cb/Co-Cr-A	UNS N06625 (Inconel 625)	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
8367HF+HF	Not specified	25Ni-20Cr-6.5Mo-2Mn-0.03C/Co-Cr-A	UNS N08367 (AL6XN)	Stellite 6 (350 HBN min)	Stellite 6 (350 HBN min)
810T	Not specified	33Ni-21Cr-39.5Fe-1.5Mn	UNS N08810 (Incoloy 800H)	UNS N08810 (Incoloy 800H)	UNS N08810 (Incoloy 800H)
825	Not specified	42Ni-21.5Cr-3Mo-Ti+Al-0.05C	UNS N08825 (Incoloy 825)	UNS N08825 (Incoloy 825)	UNS N08825 (Incoloy 825)
23HF	Not specified	42Ni-21.5Cr-3Mo/CO-Cr-Mo	UNS N08825 (Incoloy 825)	Stellite 21 (320 HBN min)	Stellite 21 (320 HBN min)
HB	Not specified	66Ni-28Mo-1Mn-0.02C	UNS N10665 (Hastelloy B2)	UNS N10665 (Hastelloy B2)	UNS N10665 (Hastelloy B2)

Notes: 1. A minimum of 50 HB against seat ring(s) is required.

COMMON CONSTRUCTION MATERIALS COMBINATION

The following table shows the most common combination of base materials and trim. There are many other trims which can be combined with these base materials. Please refer to other sections of this catalog for additional information.

GATE VALVES 150#						
Description	ASTM A351 CF8M Trim 3HF (API-600 nr. 12)	ASTM A351 CF8C Trim 347H (API-600 nr. N/A)	ASTM A351 CN7M Trim A20H (API-600 nr. 14)	ASTM A494 M35-1 Trim AHF (API-600 nr. 11)	ASTM A494 CW12MW Trim HCH (API-600 N/A)	ASTM A995 CD3MN Trim 31803H (API-600 nr. N/A)
Body	ASTM A351 CF8M	ASTM A351 CF8C	ASTM A351 CN7M	ASTM A494 M35-1	ASTM A494 CW12MW	ASTM A995 CD3MN
Bonnet	ASTM A351 CF8M	ASTM A351 CF8C	ASTM A351 CN7M	ASTM A494 M35-1	ASTM A494 CW12MW	ASTM A995 CD3MN
Wedge/seating	ASTM A351 CF8M, Stellite 6	ASTM A351 CF8C, Stellite 6	ASTM A351 CN7M, Stellite 6	ASTM A494 M35-1, Stellite 6	ASTM A494 CW12MW, Stellite 6	ASTM A995 CD3MN, Stellite 6
Seat rings	ASTM A351 CF8M	ASTM A351 CF8C	ASTM A351 CN7M	ASTM A494 M35-1	ASTM A494 CW12MW	ASTM A995 CD3MN
Stem nut	ASTM B 148 UNS C95600	ASTM B 148 UNS C95600	ASTM B 148 UNS C95600	ASTM B 148 UNS C95600	ASTM B 148 UNS C95600	ASTM B 148 UNS C95600
Bonnet bushing	SS-304	SS-410	ASTM A 276 Type 316	ASTM A 276 Type 316	ASTM A 276 Type 316	ASTM A 276 Type 316
Bonnet stud	ASTM A193 Gr. B8	ASTM A193 Gr. B8	ASTM A193 Gr. B8	ASTM A193 Gr. B8	ASTM A193 Gr. B8	ASTM A193 Gr. B8
Bonnet stud nut	ASTM A194 Gr. 8	ASTM A194 Gr. 8	ASTM A194 Gr. 8	ASTM A194 Gr. 8	ASTM A194 Gr. 8	ASTM A194 Gr. 8
Stem packing	Flexible graphite intermediate rings / Anti-extrusion rings on the top and bottom sides of the packing chamber	Flexible graphite intermediate rings / Anti-extrusion rings on the top and bottom sides of the packing chamber	Flexible graphite intermediate rings / Anti-extrusion rings on the top and bottom sides of the packing chamber	Flexible graphite intermediate rings / Anti-extrusion rings on the top and bottom sides of the packing chamber	Flexible graphite intermediate rings / Anti-extrusion rings on the top and bottom sides of the packing chamber	Flexible graphite intermediate rings / Anti-extrusion rings on the top and bottom sides of the packing chamber
Bonnet gasket	Graphite/316 Stainless	Graphite/316 Stainless	Graphite/316 Stainless	Graphite/316 Stainless	Graphite/316 Stainless	Graphite/316 Stainless
Handwheel	As per WALWORTH design	As per WALWORTH design	As per WALWORTH design	As per WALWORTH design	As per WALWORTH design	As per WALWORTH design
Gear operator	Commercial	Commercial	Commercial	Commercial	Commercial	Commercial

CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

The following table shows the nominal chemical composition and mechanical properties for the most common materials supplied. Additional information can be requested from your closest WALWORTH Distributor for other steels, stainless steels or Nickel alloys.

Chemical composition and mechanical properties											
Elements and properties	Stainless steel		Low carbon stainless steel		Nickel alloy steel		Nickel alloy steel		Duplex stainless steel		
	ASTM A 351		ASTM A 351		ASTM A 494				ASTM A995		
	CF8M	CF8	CG3M	CF3	M35-1(B)	CW12MW	CW6MC	CU5MCuC	CD4MCuN	CD3MN	CE3MN
Carbon	0.08	0.08	0.03	0.03	0.35	.012	0.06	0.050	0.040	0.030	0.030
Manganese	1.50	1.50	1.50	1.50	1.50	1.00	1.00	1.0	1.00	1.50	1.50
Phosphorus	0.04	0.04	0.04	0.04	0.03	0.040	0.015	0.030	0.040	0.040	0.040
Sulphur	0.04	0.04	0.04	0.04	0.03	0.030	0.015	0.030	0.040	0.020	0.040
Silicon	1.50	2.00	1.50	2.0	1.25	1.00	1.00	1.0	1.00	1.00	1.00
Nickel	9.0-12.0	8.0-11.0	9.0-13.0	8-12	Balance	Balance	Balance	38.0-44.0	4.7-6.0	4.5-6.5	6.0-8.0
Iron	-	-	-	-	3.50	4.5-7.5	5.0	Balance	-	-	-
Chromium	18.0-21.0	18.0-21.0	18.0-21.0	17.0-21.0	-	15.5-17.5	20.0-23.0	19.5-23.5	24.5-26.5	21.0-23.5	24.0-26.0
Niobium	-	-	-	-	0.5	(A)	3.15-4.50	0.60-1.20	-	-	-
Molybdenum	2.0-3.0	0.50	3.0-4.0	0.50	-	16.0-18.0	8.0-10.0	2.5-3.5	1.70-2.30	2.5-3.5	4.0-5.0
Copper	-	-	-	-	26.0-33.0	(A)	(A)	1.50-3.50	2.7-3.3	1.00	-
Tungsten	-	-	-	-	-	0.20-0.40	(A)	(A)	-	-	-
Nitrogen	-	-	-	-	-	-	-	-	0.10-0.25	0.10-0.30	0.10-0.30
Vanadium	-	-	-	-	-	0.20-0.40	(A)	(A)	-	-	-
Tensile Strength PSI minimum	70,000	77,000	75,000	70,000	65,000	72,000	72,000	75,000	100,000	90,000	100,000
Yield Strength PSI minimum	30,000	35,000	35,000	30,000	25,000	40,000	40,000	35,000	70,000	60,000	75,000
Elongation In 2" minimum	30.0	35.0	25.0	35.0	25.0	4.0	25.0	20.0	16.0	25.0	18.0

Notes: (A). Element to be analyzed and reported for information only. (B). Order M35-1 or M30C when weldability is required. 1. The percentage (%) shown on the elements is the maximum except where ranges are indicated. 2. Steel CF8C should have a Columbium content of not less than 8 times the carbon content, but not exceeding 1%.