Comments to API 618 5th Edition

Set Filter | Select Row for Copying | View Copy to Word/Excel

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
		Filter & Search Functions												
1	N	API 618 5th Ed.	9	6.1.7	C	Water velocity: 1.5 - 2.5 m/s Temperature rise: 10 K Test pressure: 1.5 times MAWP	The criteria of water velocity and temperature rise may not be fulfilled at the same time. Refer to BCA's quotation for cooling water system data. Test pressure for pressure vessels is according 8.3.2.1		CO01,QN10	[API618-5]The criteria for temperature rise and water velocity can be very difficult to fulfill with large cooler tube diameters. This can be used to argue for smaller cooler tubes.	I	1234	All	3
2	N	API 618 5th Ed.	10	6.1.9	C	The equipment's trip speed shall not be less than the values in Table 2. [e.g. 110% for a variable speed motor]	Please refer to our quotation.		DM04	[API618-5]Sizing need to know when variable speed drive is offered and sizing needs to clarify with D&M whether we can go over the max. speed stated in our Design Data based on rod loading.	I	1234	All	3
3	N	API 618 5th Ed.	10	6.1.15	C	After installation, the performance of the combined units shall be the joint responsibility of the purchaser and the vendor who has unit responsibility.	BCA shall take responsibility for complete drive arrangement including main motor gear and coupling etc. (if any) only if these items are within BCA's scope of supply.		CO01	[API618-5]It is common sense that one cannot take responsibility for something supplied by someone else. BCA however always defines the speed, power and coupling parameters and carries out a torsional analysis. Of course BCA has to take responsibility for this engineering	I	1234	All	3
4	N	API 618 5th Ed.	12	6.5.1	D	Unless otherwise specified and agreed, the maximum predicted discharge temperature shall not exceed 150°C (300°F).	Temperature limit applies to ring type compressor and not to the Labyrinth Piston Compressor with which much higher discharge temperatures can be achieved safely due to the frictionless movement of piston and piston rod. Refer to the quotation for the offered discharge temperatures. Trip setpoint stated in 6.5.2 may also be exceeded.		DM02,DM04	[API618-5]	S	1		3
5	N	API 618 5th Ed.	12	6.5.1	D	Unless otherwise specified and agreed, the maximum predicted discharge temperature shall not exceed 150°C (300°F). ... Predicted discharge temperatures shall not exceed 135°C (275°F) for hydrogen rich services (molar mass less than or equal to 12).	The limitation 150°C (300°F) is not considered as well as 135°C (275°F) for H2-gases (M<12). Due to our experience, gases without reaction can safely and reliably be compressed at higher temperatures. Refer to the quotation for the offered discharge temperatures. Trip setpoint stated in 6.5.2 may also be exceeded.		DM02,DM04	[API618-5]Sizing needs to take care that discharge temperatures do not exceed these limits.	I	2	All	3
6	N	API 618 5th Ed.	12	6.5.1	D	Unless otherwise specified and agreed, the maximum predicted discharge temperature shall not exceed 150°C (300°F).	Refer to the quotation for the offered discharge temperatures. BCA has proven safe and reliable operation above this limit many times. Trip setpoint stated in 6.5.2 may also be exceeded.		DM02,DM04	[API618-5]	S	3		3
7	N	API 618 5th Ed.	12	6.3.2	C	For non-horizontal cylinders, the procedures and tolerances for runout measurements shall be mutually agreed upon between the purchaser and vendor.	Runout is not measured on vertical cylinders		DM02	[API618-5]If client specifies measurement of rod runout for vertical cylinders, we have to make this deviation, otherwise keep silent about this item	O	123	All	3
8	Y	API 618 5th Ed.	12	6.5.2	C	... temperature trip setpoints shall not exceed 180°C (350°F)...	BCA allows higher discharge temperatures than stated in 6.5.1, therefore the trip setpoints may exceed 180°C (350°F).		DM04,DM02,CO30	[API618-5]Covered by additional sentence to 6.5.1	I	123	All	3
9	N	API 618 5th Ed.	13	6.7.1	D	The compressor vendor shall perform the necessary lateral and torsional studies to demonstrate the elimination of any lateral or torsional vibrations that may hinder the operation of the complete unit within the specified operating speed range...	BCA do not carry out a lateral analysis. The first lateral critical speed is higher than the operation speed due to the rigid construction of the compressor.		DM04	[API618-5]This is not a customer deviation because if we mention this in the sales phase client will insist and we will have to do it during execution. Instead we will only do it when the client insists during execution and try to get through with a short analysis (see project 2000797).	I	1234	All	3
10	N	API 618 5th Ed.	13	6.6.4	D	For all specified operating load steps and the fully unloaded condition, the component of combined rod loading parallel to the piston rod shall fully reverse between the crosshead pin and bushing during each complete revolution of the crankshaft. The duration and magnitude of this reversal shall be consistent with the oil distribution design of the crosshead bushing in order to maintain proper lubrication.	Based on our experience special bushings will be provided in cases without full reversal of combined loading so as to maintain adequate lubrication of crosshead pin and bushing.		DM02	[API618-5]	S	13		3
11	N	API 618 5th Ed.	13	6.8.1.2	D	Unless otherwise specified, horizontal cylinders shall be used for compressing saturated gases or for gases carrying injected flushing liquids	BCA has vast experience with the compression of saturated gases with the Labyrinth Piston Compressor. Separators are used to separate droplets from the gas before they enter the cylinder.		CO01	[API618-5]	S	13		3
12	N	API 618 5th Ed.	14	6.8.1.3	D	Cylinders shall be spaced and arranged to permit access for operating and removal for maintenance of all components ... without removing the cylinder, the process piping, ...	On special high pressure (> 100bar) applications it is necessary to remove the cylinder in order to replace the crossheads or the piston rod gland.		DM04	[API618-5]This applies only to HP Labys where the piston rod diameter is larger than the piston diameter (e.g. Shell Moerdijk) This needs to be added if a similar compressor is offered!!!!	O	1		3
13	N	API 618 5th Ed.	14	6.8.1.4	C	Single acting, step piston, or tandem cylinder arrangements may be provided if accepted by the purchaser at the time of purchase.	Use of single acting, step piston or tandem cylinder arrangement is stated in the quotation and deemed accepted.		DM02,DM04	[API618-5]Make sure step piston arrangements stated in the quotation (single acting is stated in the technical data of the quotation (chapter 1))	I	123	All	3

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
14	N	API 618 5th Ed.	14	6.8.1.5	E	The walls of cylinders without liners (see 6.8.2.2) shall be thick enough to provide for reboring to a total of 3.0 mm (1/8 in.) increase over the original diameter.	Not applicable to non-contacting Laby®		DM02	[API618-5]For Labyrinth Piston Compressors a maximum reboring of 1 mm is possible. It must be noted that wear on a Labyrinth Piston Compressor is neglectable due to the frictionless movement of the piston in the cylinder.	S	13		3
15	N	API 618 5th Ed.	14	6.8.2.1	C	Cylinder supports ...	Not applicable to vertical compressors		DM02	[API618-5]	I	123	CS	3
16	N	API 618 5th Ed.	14	6.8.2.2	D	Unless otherwise specified, each cylinder shall have a replaceable dry-type liner...	Step pistons do not have a liner.		DM02	[API618-5]Common sense to everybody who has some experience with reciprocating compressors. It is cheaper to replace the complete step piston than a liner.	I	2	All	3
17	Y	API 618 5th Ed.	14	6.8.2.4	E	If specified, the running bore of cylinders with non-metallic, tetrafluoroethylene-based (TFE) rings shall be honed using a hone surface of the same material as the rider bands and/or piston rings.	Cylinder liners are honed with a honing stone with different material than the piston rings. This is BCA's proven standard procedure for lube and non-lube applications.		DM02	[API618-5]It is practically impossible to hone the liner with the same material as the rings (how to hone with PTFE??)	O	23	All	3
18	N	API 618 5th Ed.	15	6.8.3	C	Cylinders shall have cooling provisions as required by the conditions of service described in 6.8.3.2 through 6.8.3.4.1 (see 7.7.4 and Figure G-1)	The details of the cooling system are described in BCA's quotation. Fig. G-1 may not be fulfilled in all details.		CO01	[API618-5]Para fulfilled for PL2. For PL1 coolant system is different. There are also deviations to individual paras below 6.8.3 Fig. G-1 Note 7 says: The system shown is typical: more or less equipment may be furnished.	S	13		3
19	N	API 618 5th Ed.	15	6.8.2.6	C	Valve cage designs shall be of the cylindrical type held in place by a circular contact cover. [...] Designs that utilize three or more through bolts acting on the circumference of the valve cage may be furnished with purchaser approval. If this design is furnished, the through bolts shall be self-retaining and shall be furnished with cap type nuts and gaskets to prevent gas leakage.	BCA uses the through bolt design (four or more) as described as alternative design in this paragraph. This method provides better sealing of the valve chamber against ingress of dirt. This design is deemed accepted by the Purchaser.		DM02	[API618-5]See e.g. drawing 122.847.112 for our design.	O	123	All	3
20	N	API 618 5th Ed.	15	6.8.3.4.1	C	Non-cooled or air-cooled cylinders shall not be furnished except by mutual agreement of the purchaser and the vendor.	For Ni-resist cylinders for cryogenic applications uncooled cylinders are used as a standard and are deemed accepted by the Purchaser.		DM02,CO01	[API618-5]This comment is not required because we have already made a general comment reverting to the quotation to 6.8.3	I	13		3
21	N	API 618 5th Ed.	16	6.8.3.4.3	C	Coolant inlet temperature shall be at least 5K (10°F) above the inlet gas temperature. The coolant system shall be such that the above requirements are satisfied under all operating and transient conditions including start-up from cold. In applications where it is known that the gas dew point is substantially below the gas inlet temperature and remains that way at all times during operation, a lower coolant inlet temperature may be considered as long as condensation is avoided.	Coolant system will be designed to keep the coolant temperature 5K above the gas inlet temperature only in case there is a potential of condensation at the specified operating conditions or during start-up.		CO01	[API618-5]API uses "may" and "potential", which we should use in case of discussion. Usually the coolant system is always designed to keep the coolant temperature 5K above gas inlet temperature. Only in cases were it is evidently clear that there is no condensation (e.g. H2 or BOG) the coolant system is not designed for this condition.	I	1234	All	3
22	Y	API 618 5th Ed.	16	6.8.3.5.2	D	If specified, a self-contained, forced circulation, closed jacket coolant system shall be furnished (see Figure G-1, Plan D of Annex G).	Jacket coolant system is only provided when required by para. 6.13.2		CO01	[API618-5]	O	2	All	3
23	Y	API 618 5th Ed.	16	6.8.3.5.2	D	If specified, a self-contained, forced circulation, closed jacket coolant system shall be furnished (see Figure G-1, Plan D of Annex G).	A jacket coolant system is not required for BCA's Labyrinth Piston Compressor because the sealing of the piston rod is done contactless according the labyrinth principle, therefore direct cooling of the packing is not required.		DM02,CO01	[API618-5]	O	1		3
24	N	API 618 5th Ed.	16	6.8.4.1.1	D	All openings or nozzles for piping connections on cylinders shall be DN 20 (3/4 NPS) or larger ...	For drain connections and cylinder lubrication connections (if applicable) BCA uses DN 15 (1/2" NPS) connections.		DM02	[API618-5]Cylinder lubrication connections cannot be increased to 3/4" without hindering the lubrication. Drain with 1/2" connection just takes a little longer than with 3/4". Too large bores might lead to problems with the tightness of cylinders.	S	234	All	3
25	N	API 618 5th Ed.	16	6.8.4.1.1	D	All openings or nozzles for piping connections on cylinders shall be DN 20 (3/4 NPS) or larger ...	For drain connections BCA uses DN 15 (1/2" NPS) connections.		DM02	[API618-5]Drain with 1/2" connection just takes a little longer than with 3/4". Too large bores might lead to problems with the tightness of cylinders.	S	1		3
26	N	API 618 5th Ed.	16	6.8.4.1.2 6.8.4.2.1	E	All connections shall be flanged or machined and studded, except where threaded connections are permitted by 6.8.4.1.5.	The Labyrinth Piston Compressor uses stubends instead of flanges for the process gas connections to the cylinders.		DM02	[API618-5]Some Laby cylinders of newer design (LNG) have standard ASME B16.5 flanges.	S	13		3
27	Y	API 618 5th Ed.	17	6.8.4.1.16	E	If specified, each cylinder shall be provided with a DN 12 (NPT 1/2") indicator tap at each end.	The Labyrinth Piston Compressor does not have indicator taps. If required BCA uses the discharge valves center bolt to measure indicator pressure.		DM02	[API618-5]Installing indicator pressure measurement after order requires new cylinder covers and valves. No other changes to the compressor are required.	O	13		3
28	N	API 618 5th Ed.	18	6.9.1.2	D	Each individual unloading device shall be provided with a visual indication of its position and its load condition (loaded or unloaded)	There is no visual indication of the servo-piston position. If the flow is being manually controlled, the position of the hand switch indicates the loading stage. If the flow is being controlled by means of an electric or pneumatic switch, the loading stage may be taken from the indicator mounted on the instrument board.		CO30,DM02	[API618-5]Indication available at additional cost.	S	13	All	3

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
29	N	API 618 5th Ed.	19	6.9.1.10	D	[...] Valve seats and sealing surfaces shall also be finished to an Ra of 0.4 µm (16 µin.) or better. When non-metallic valve plates or disks are furnished, flatness and surface finish shall be controlled so that adequate sealing occurs in operation. The vendor shall provide the properties of non-metallic valve plate materials. These properties shall include filler type and content, specific gravity, melting temperature, glass transition temperature (where applicable), izod impact strength (notched and un-notched), water absorption and coefficient of thermal expansion. Reinforcement of non-metallic materials shall be with fibers, not with spherical beads or other shapes. Fibers shall be oriented to optimize component life (e.g., the fibers shall follow the stress path).	BCA valve seats have sealing surface finish Ra≤1.6µm. The finish is achieved by precision-turning. Due to the special machining process no special check for the flatness is necessary. BCA does not give the required details on non-metallic valve plates.		DM02	[API618-5]No client deviation, because nobody will care as long as the valves are working. Material details are not always known to BCA according N. Feistel.	I	1234	All	3
30	N	API 618 5th Ed.	19	6.9.1.4	D	... Valve-seat-to-cylinder gaskets shall be solid metal or metal jacketed. [...] Other gasket types may be used with mutual agreement between the purchaser and the vendor.	BCA's proven design is without gasket between valve seat and the cylinder		DM02	[API618-5]No deviation made because if client insists on gasket during order execution he will get the same gasket that is used for special gases (e.g. HCl)	I	1234	All	3
31	Y	API 618 5th Ed.	19	6.9.1.9	C	The vendor shall conduct a computer study of the valve dynamics to optimize the valve sealing element motion during the opening and closing phase.[...] If specified, the vendor shall submit a written valve dynamics report to the purchaser.	Study is carried out according BCA standard.		DM04	[API618-5]Additional cost to be foreseen. BCA do not make an explicit calculation for the actual pulsation levels! This is taken into account by experience.	O	1234	All	2
32	Y	API 618 5th Ed.	19	6.9.2.1	C	If cylinder valve unloading is specified, the type of unloader provided (valve depressor or plug-type) shall be mutually agreed upon.	BCA uses finger type unloaders.		DM02	[API618-5]BCA does not have plug unloaders. Bigger valves would be required to accommodate plug unloaders because the flow area is reduced by the plug.	O	1234	All	2
33	N	API 618 5th Ed.	20	6.10	C	Pistons, piston rods and piston rings	The Laby® has neither piston sealing rings nor piston rider rings. Sealing is done by contactless labyrinth thereby eliminating the need for replacement of rings.		DM02	[API618-5]	S	13		3
34	N	API 618 5th Ed.	20	6.10.2.1	C	Piston rod connection to the crosshead	For compressors with piston rod diameter ≤ 75mm a conical connection and pre-tightened by two wedges is BCA's proven method.		DM02	[API618-5]Connection for Laby <=75mm piston rod diameter see drawing ZNG 122.847.112 Other Labys & PL2: indirect connection with positive locking (no deviation) BC, BS, CS: hydraulic tightening BA_01, BX_01: Superbolt, no positive locking because Superbolt is equal to hydraulic tightening (no deviation made, although it might be required in rare cases); for both hydraulic tightening is possible if required.	S	1		3
35	N	API 618 5th Ed.	20	6.9.2.7	C	If specified, a stainless steel protective sheet metal rain shield shall be furnished to protect exposed topside unloader parts from the elements.	Refer to quotation for details		DM02	[API618-5]Can be provided at additional cost.	I	1234	All	3
36	N	API 618 5th Ed.	21	6.10.4.1	D	Unless otherwise specified, all piston rods, regardless of base material, shall be coated with a wear resistant material	Uncoated piston rod is provided		DM02	[API618-5]PL2 standard (was) uncoated; it was decided that the deviation to this item is deleted, therefore all PL2 piston rods need to be coated when API 618 is valid	I	2	All	3
37	N	API 618 5th Ed.	21	6.10.4.2	D	When coatings are used, piston rods shall be continuously coated from the piston rod packing through the oil wiper travel areas	Coating only in the stuffing box area		DM02	[API618-5]For Laby® compressors stuffing box area is chromium plated for uncoated piston rods; oil wiper travel area is not chromium plated; no deviation made as this is a minor item PL3 is mainly used in LNG applications, therefore no deviation	I	1		3
38	N	API 618 5th Ed.	21	6.10.4.5	E	Piston rods with threads shall be furnished with rolled threads having a polished thread relief area.	The piston rod thread on the crosshead end is cut with an ACME thread for piston rods with diameter > 75mm. ACME threads have large radii at the bottom for stress relief)		DM02	[API618-5]Laby <= 75mm piston rod diameter see 6.10.2.1 (conical connection with wedges) Thread on the piston side is always rolled.	S	13		3
39	N	API 618 5th Ed.	22	6.11.4	D	For compressors above 150kW, crossheads shall be made of steel […] The crosshead top and bottom shoes or guides shall be replaceable.	Single piece crosshead of nodular cast iron		DM04	[API618-5]Option for three-piece steel crosshead available for all new compressors. BS, BX_01, BA_01, BE_01. The BC has a special two-part design but after discussion with Sta we do not make a deviation for the BC.	S	2	BS,CS,BC	2
40	N	API 618 5th Ed.	22	6.11.4	D	For compressors above 150kW, crossheads shall be made of steel […] The crosshead top and bottom shoes or guides shall be replaceable.	Single piece crosshead of cast steel		DM04	[API618-5]Option for three-piece steel crosshead available for all new compressors. BS, BX_01, BA_01, BE_01. The BC has a special two-part design but after discussion with Sta we do not make a deviation for the BC.	S	2	BC_01,BE_01 ,BA,BX	2
41	N	API 618 5th Ed.	22	6.11.4	D	For compressors above 150kW, crossheads shall be made of steel […] The crosshead top and bottom shoes or guides shall be replaceable.	The crossheads are replaceable but not adjustable and made of nodular cast iron. They have no separate shoes. For vertical compressors adjustment of the crosshead is not required.		DM04	[API618-5]No option available for Laby® Take note: all Laby® with rod load > 200kN (4D375, 2D250, 2DL250, 4/6LP) have crossheads of cast steel	S	1		2

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
42	N	API 618 5th Ed.	22	6.11.4	D	For compressors above 150kW, crossheads shall be made of steel […] The crosshead top and bottom shoes or guides shall be replaceable.	The crossheads are replaceable but not adjustable. They have no separate shoes. For vertical compressors adjustment of the crosshead is not required.		DM04	[API618-5]No option available for Laby-GI®; material is cast steel	S	3		2
43	Y	API 618 5th Ed.	22	6.11.5	D	If specified, the crankcase shall be provided with relief devices to protect against rapid pressure rise. [...] The ratio of the total throat area of these devices to the crankcase free volume should be no less than 70 mm^2/dm^3.	BCA standard design is according the BICERA (British Internal Combustion Engine Research Association) standard.		DM02	[API618-5]BICERA standard is the requirement of the previous API 618 (4th edition). The new requirement results in larger devices that may not be fittable on small compressors. For BE_01, BC_01 two relief devices according API 618 5th Ed. are installed	O	2	BS,CS,BA,BX,BC	2
44	Y	API 618 5th Ed.	22	6.11.5	D	If specified, the crankcase shall be provided with relief devices to protect against rapid pressure rise. [...] The ratio of the total throat area of these devices to the crankcase free volume should be no less than 70 mm^2/dm^3.	BCA uses a safety relief valve for a gastight Laby. On an open Laby crankcase no relief device is mounted.		DM02	[API618-5]	O	13		3
45	Y	API 618 5th Ed.	23	6.12.1	E	The purchaser shall specify the type of distance piece to be supplied. The types are listed in 6.12.1.2 through 6.12.1.5 (see Figure G-3).	BCA uses long distance piece design which is superior to a short distance piece.		DM02	[API618-5]Short distance pieces are not available.	O	2	All	3
46	Y	API 618 5th Ed.	23	6.12.2.1	D	Distance pieces (or compartments) shall be equipped with screened safety guards, louvered weather covers, or gasketed solid metal covers as specified.	Only solid metal covers are used.		DM02	[API618-5]	O	2	All	3
47	Y	API 618 5th Ed.	23	6.12.2.1	D	Distance pieces (or compartments) shall be equipped with screened safety guards, louvered weather covers, or gasketed solid metal covers as specified.	For a gastight Labyrinth Piston Compressor only solid metal covers are possible. Refer to quotation for the offered type of cover.		DM02	[API618-5]	O	13		3
48	N	API 618 5th Ed.	23	6.12.2.2	D	Distance piece design shall be such that the packing rings can be removed and replaced without removal of the piston rod.	Due to the contactless sealing principle of a Labyrinth Compressor, replacement of the sealing rings of the piston rod gland is not part of normal maintenance. Labyrinth Compressor packings are non-segmented, piston rods have to be removed to replace the packing.		DM02	[API618-5]Optional three segmental rings are available at additional cost. No customer deviation because the distance piece IS designed according API 618. It is the non-segmented ring that causes the problem.	I	13		3
49	Y	API 618 5th Ed.	23	6.12.2.3	D	Where solid metal distance piece covers are provided or specified, the distance piece, partitions, covers, bolting, and the intermediate partition packing shall be designed for a minimum compartment differential pressure of 2 bar (25psi) or higher, if specified	The distance piece of Laby® compressors is connected with the crankcase. It is therefore either subject to atmospheric pressure or the suction pressure. Design pressure may therefore be lower than 2 bar.		DM02,QN10	[API618-5] Not applicable for Laby® with gastight guide bearings	O	13	All	3
50	N	API 618 5th Ed.	24	6.12.2.7	D	Internal packing vent tubing and fittings shall be of austenitic stainless steel.	Material of packing vent tubing depends on the type of gas. If possible, carbon steel is used.		DM02	[API618-5]All K-compressors and small D-compressors have CS tubing due to cost considerations. SS available as option at additional cost. No client deviation; D&M should change their standard. 99% customers will insist on SS tubing.	I	1		3
51	Y	API 618 5th Ed.	24	6.13.1.6	C	If specified, to reduce process gas emissions to an absolute minimum, the cylinder pressure packing shall include venting and buffer gas cups with side-loaded packing rings in the adjacent sealing cups.	Depending on the suction pressure BCA can offer a completely gastight Labyrinth Piston Compressor to eliminate process gas emissions. Refer to quotation for the quoted type of compressor.		DM02	[API618-5]	O	13		3
52	N	API 618 5th Ed.	25	6.14	C	Compressor Frame Lubrication	Burckhardt Compression's lube oil system does not fully comply with the requirements of these paragraphs. Please refer to our proposal for a detailed description of system design and materials.		CO01	[API618-5]For PL2 we just exclude API 614 and make specific deviations to items we do not cover (less than for PL1)	S	13		3
53	N	API 618 5th Ed.	25	6.13.2	C	Pressure Packing Case Cooling Systems	The Laby® piston rod sealing uses a contactless piston rod gland that does not require direct cooling. Therefore the requirements of paragraph 6.13.2.1 to 6.13.2.7 are not applicable.		DM02	[API618-5]	S	13		3
54	Y	API 618 5th Ed.	25	6.13.2.7	C	If specified, the vendor shall supply a closed liquid cooling system. If specified, and for all sour or toxic gas services, this system shall be separate from the cylinder jacket cooling system.	Coolant system only provided when mentioned in the quotation. Details of the coolant system refer to quotation		CO01	[API618-5]	O	2	All	3
55	N	API 618 5th Ed.	25	6.14.1	C	In addition to the requirements of ISO 10438-1 and ISO 10438-3 or API 614, Chapters 1 and 3, the following requirements apply...	The oil system is according API 618 4th edition		CO01	[API618-5]It is no longer possible to exclude ISO 10438-1 and -3 because these describe general purpose systems and API 618 only excludes ISO 10438-2 for non-turbine driven compressors. For PL1 and PL3 we have deviation to 6.14.	S	24	All	3
56	N	API 618 5th Ed.	26	6.14.2.1.5	D	All external oil-containing pressure components, including auxiliary pumps, shall be steel...	Auxiliary pump and oil filter casing is made of nodular cast iron. These two components can also be provided in steel at additional price and a potential delivery impact.		CO01	[API618-5]For PL1 material mentioned in the standard text.	S	2	All	1

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
57	N	API 618 5th Ed.	26	6.14.2.1.7	D	To prevent the oil from being contaminated if the cooler fails, the oil-side operating pressure shall be higher than the water-side operating pressure.	The additional pressure holding valve is not included, but can be offered as an option.		CO01	[API618-5]For K-compressors with high suction pressure this may be fulfilled anyway without pressure holding valve (lube oil pressure > suction pressure). For PL1 additional pressure holding valve downstream cooler (approx. CHF 3000.--) and a new PSV for the crankshaft driven lube oil pump is required. NOT covered by the standard tender text (not mentioned at all) For PL2: pressure holding valve is a standard option.	S	24	All	1
58	Y	API 618 5th Ed.	26	6.14.2.2	D	For each unit having a nominal frame rating of more than 150 kW (200 hp), the vendor shall provide a separate, independently driven, full-capacity, full pressure auxiliary oil pump...	BCA provides a prelube oil pump that is sized for pre- and postlubrication.		CO01	[API618-5]No separate deviation because this is already covered by 6.14.2 and described in quotation standard	I	1		3
59	N	API 618 5th Ed.	27	6.14.2.3	C	The following requirements apply to lube oil coolers. c. Tubes shall not have an outside diameter of less than 16mm (5/8in.), and the tube shall have a wall thickness of not less than 1.2 mm (18 BWG).	BCA's standard is a tube size of 10mm to be able to fulfill the requirements stated in 6.1.7 for cooling water velocity and temperature rise.		CO01	[API618-5]Covered by deviation to 6.14 for PL1 and quotation standard text. Larger tubes generally results in lower water velocity and bigger, more expensive coolers (lower water speed -> lower heat transfer). Due to the low water speed, coolers with large tube diameter will violate the requirement for water velocity mentioned in 6.1.7	S	2	All	2
60	Y	API 618 5th Ed.	27	6.14.2.5	D	If specified, provisions to heat the oil for compressor start-up in cool ambient conditions shall be provided.	In cases were the cooling water temperature does not drop below around 15°C the oil can be circulated with the electric motor driven oil pump and can be heated in the oil cooler to reach the minimum starting temperature of approximately 10°C		CO01	[API618-5]Not a standard deviation because it is covered by deviation to 6.14.2; we do not mention exclusion of the frame lube oil heater in the standard text; we mention only when it is included.	O	13		3
61	Y	API 618 5th Ed.	27	6.14.2.6	E	Each lube oil pump pressure relief valve shall be individually piped back to the crankcase reservoir. ... If specified, the relief valve for the crankcase-driven pump shall be mounted outside the crankcase	The auxiliary oil pump has an internal relief valve. It is impossible to provide an external relief valve for the crankcase-driven pump.		CO01,DM02	[API618-5]Only for PL1; PL2 has no crankcase driven pump, oil pumps always have an external relief valve that is piped back to the tank individually. It is also possible to provide an external relief valve for a Laby but there are additional cost. Covered by deviation 6.14.2 in the standard	O	1		3
62	N	API 618 5th Ed.	27	6.14.2.7	D	An oil temperature control system with a manual over-ride or bypass shall be provided.	This control valve is not our standard scope of supply and due to our experience constant lube oil temperature is not required for our machines.		CO01	[API618-5]Not a standard deviation because it is covered by deviation to 6.14.2; TCV standard for PL2	I	1		3
63	N	API 618 5th Ed.	27	6.14.3	C	Cylinder and Packing Lubrication	This system is not required for the Labyrinth Piston Compressor.		CO01,DM02	[API618-5]	S	1		3
64	Y	API 618 5th Ed.	27	6.14.3.1.1	C	The vendor shall supply either a single plunger-per-point or a divider-block mechanical lubricator system for compressor cylinder and packing lubrication, as specified.	Depending on number of lubrication points pump-to-point is used if possible, for more lubrication points than possible with pump-to-point lubricator, divider block is used. Refer to the quotation for the offered type of lubricator.		DM02	[API618-5]Both designs are possible. Comment could be deleted. What about price for the two systems?	O	2	All	3
65	Y	API 618 5th Ed.	29	6.15.1.5	C	Additional optional tests and inspections may be specified by the purchaser.	Refer to the quotation for the included tests and inspections.		QN10	[API618-5]	O	1234	All	3
66	N	API 618 5th Ed.	31	6.15.3 6.15.4 6.15.8	D	ASTM materials and material testing (castings and forgings)	BCA uses materials according European material standards. Testing and acceptance criteria are in accordance with the relevant European standards.		QN10	[API618-5]Castings are always supplied acc. EN. The material standards also define testing standards. Therefore both need to match (e.g. EN 1563 for impact testing). The reason we have to do this deviation now is that the cross references from ASTM to EN materials have been deleted from API 618 and are now part of a new API standard R22 This is especially important for low temperature applications were para 6.15.8.4 requires meeting the impact test values of ASME VIII which cannot be met with cast material.	S	1234	All	3
67	N	API 618 5th Ed.	31	6.15.3.2	E	A minimum of one set (three samples) of Charpy V-notch impact specimens at one-third the thickness of the test block shall be made from the material adjacent to the tensile specimen on each keel or Y-block. All three specimens shall have an impact value not less than 12 J (9 ft-lb) and the mean of the three specimens shall not be less than 14 J (10 ft-lb) at room temperature.	Material testing is according the relevant material specification (e.g. EN 1563)		QN10	[API618-5]The impact values according the material specifications are used, not the ones in API. The material norm for EN-GJS-400-U-LT for example specifies minimum requirement for impact value. This value may be different than in API 618 Deviation only internal because covered with general deviation to 6.15.3 and 6.15.4	I	1234	All	3

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
68	N	API 618 5th Ed.	31	6.15.3.2.3	E	The keel or Y-block cast at the end of the pour shall have a thickness not less than the thickness of critical sections of the main casting. This test block shall be tested for tensile strength and hardness and shall be microscopically examined. Classification of graphite nodules under microscopic examination shall be in accordance with ASTM A 247.	Material testing is according the relevant material specification (e.g. EN 1563)		QN10	[API618-5]Similar to 6.15.3.2 The material is always tested according the standard under which it is bought, otherwise we end up with material that meets the material purchase order but not the API requirement. In this case testing is only according ASTM A247 if material is purchased according ASTM A247 Deviation only internal because covered with general deviation to 6.15.3 and 6.15.4	I	1234	All	3
69	N	API 618 5th Ed.	32	6.15.4	E	Forgings Pressure-containing forgings shall be in accordance with ASTM A 668	BCA uses material according European standards (EN)		QN10	[API618-5]Similar to 6.15.3.2 We buy material according EN standards Deviation only internal because covered with general deviation to 6.15.3 and 6.15.4	I	1234	All	3
70	N	API 618 5th Ed.	33	6.15.6	D	Repairs to Castings and Forgings	Castings may be repaired according to BCA's standard procedures (will be made available on client request) without case by case approval by the client. This deviation only applies to gases with molecular weight larger than 12.		QN10	[API618-5]Well-known topic...only valid for compressors compressing gases with mol weight > 12 (we do not repair castings for applications with mol weight <12) Formulation covers our repair procedures (e.g. impregnation which is forbidden), states that delivery is based on repair procedures and states that client approval before repair is not required Deviation because API allows impregnation, but only vacuum impregnation, which is not carried out by BCA	S	1234	All	3
71	Y	API 618 5th Ed.	35	6.15.8.1	C	The minimum design metal temperature and concurrent pressure used to establish impact test and other material requirements shall be as specified.	Materials and test procedures for low temperature application (< -20°C) are according to vendor inspection and test plan.		DM02,QN10	[API618-5]EN-GJS-350-22U-LT is impact tested at -40°C according material standard, EN-GJS-400-18U-LT at -20°C. Impact test at lower temperatures is possible, but no values to decide whether material is acceptable can be found. If client insists on impact test at MDMT and impact values according standard (e.g. ASME VIII) then Ni-resist has to be used for MDMT below -40°C. Another argument against this is that the cylinder material never actually "sees" the MDMT because the cylinder is heated by the compressed gas.	S	13		3
72	Y	API 618 5th Ed.	36	7.1.1.1	C	Unless otherwise specified, the compressor vendor shall furnish the driver and power transmission equipment. The type of driver shall be as specified by the purchaser.	Driver and power transmission equipment is only included when explicitly mentioned in BCA's quotation. Type of driver as per BCA quotation.		CO30	[API618-5]No client deviation because scope is discussed and part of the contract.	I	1234	All	3
73	N	API 618 5th Ed.	36	7.1.1.3 7.1.2.2	C	[7.1.1.3] The driver shall be capable of driving the compressor with all stages at full flow and discharging at the relevant relief valve set pressure. [7.1.2.2]: For motor-driven units, the motor rating [...] shall be not less than 105% of the power required [...] for the relieving operation specified in 7.1.1.3.	For special cases with low pressure ratios at elevated suction pressures this requirement will lead to extremely oversized motor. Refer to BCA's quotation for the offered motor rating.		CO30,DM04	[API618-5]This deviation is required mainly for Recycle Compressors with low pressure ratio at high suction pressure. In these cases PSV setting will determine the motor rating.	I	1234	All	3
74	Y	API 618 5th Ed.	37	7.1.2.1	C	The type of motor supplied and its characteristics and accessories, including but not limited to the following, shall be as specified by the purchaser: - applicability of the various parts of IEC 60034, API 541 or 546, or IEEE 841.	BCA delivers motors according IEC 60034		CO30	[API618-5]API leaves it open according which standard the motor shall be delivered. Motor department has to be contacted in case the client specifies a NEMA, API 541 / 546 or IEEE841 motor because with these standards we are limited to purchase motors from Europe	I	1234	All	3
75	Y	API 618 5th Ed.	38	7.1.2.4	C	The motor's starting torque shall meet the requirements of the driven equipment, at a reduced voltage of 80% of the normal voltage, or other specified value...			CO30	[API618-5]The 80% voltage start-up is a minimum requirement by API 618, client may specify even lower start-up voltages	I	1234	All	3
76	N	API 618 5th Ed.	38	7.1.2.8	D	The rotor of a cantilevered (overhung) or single-bearing motor driver shall be mounted on a shaft extension with a keyed interference fit. The shaft extension shall be rigidly coupled to the crankshaft, with forged flanges integral with the motor.	For cantilevered (overhung) or single bearing motor drivers a shaft extension is not provided. The motor rotor has a flanged end which is directly coupled to the rigid coupling.		CO30	[API618-5]Shaft extension not provided by BCA because it does not provide sufficient rigidity to prevent the main rotor from contacting the stator and causes problems with torsional frequencies (API 618 para. 7.1.2.12 states these issues as critical when using cantilevered motors). Deviation only necessary when 7.1.2.12 is specified.	S	24	All	2
77	N	API 618 5th Ed.	38	7.1.2.8	D	The rotor of a cantilevered (overhung) or single-bearing motor driver shall be mounted on a shaft extension with a keyed interference fit. The shaft extension shall be rigidly coupled to the crankshaft, with forged flanges integral with the motor.	For cantilevered (overhung) or single bearing motor drivers a shaft extension is not provided. The motor rotor has a flanged end which is directly coupled to the rigid coupling.		CO30	[API618-5]Cantilevered motor usually not used on Laby -> no standard deviation unlike PL2. Shaft extension not provided by BCA because it does not provide sufficient rigidity to prevent the main rotor from contacting the stator and causes problems with torsional frequencies (API 618 para. 7.1.2.12 states these issues as critical when using cantilevered motors). Deviation only necessary when 7.1.2.12 is specified.	I	13		3

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
78	N	API 618 5th Ed.	39	7.1.2.12	C	Unless specified, cantilevered (overhung) motors shall not be supplied.	BCA may choose to quote a cantilevered (overhung) motor depending on compressor type and motor rating. For details refer to quotation.		CO30	[API618-5]To avoid expensive couplings above approx. 1500kW motor rating, BCA uses rigid couplings with single bearing motors.	S	24	All	2
79	N	API 618 5th Ed.	39	7.2.1.2	C	Unless otherwise specified, a flexible coupling shall be supplied. The coupling shall be of the all-steel, non-lubricated, flexible membrane, torsionally-rigid, spacer-type. For low speed applications, couplings may be of the elastomeric type where necessary to avoid torsional resonance problems.	Depending on the motor power, speed and application, BCA uses elastomeric, torsionally-rigid or rigid couplings. Refer to our quotation for details.		CO01	[API618-5]API 618 specifies a membrane coupling which becomes very expensive for large moments. For small Laby's an elastomeric coupling is mandatory due to torsional resonance problems.	S	1234	All	2
80	Y	API 618 5th Ed.	39	7.2.1.3	D	If specified, the coupling or couplings shall be special purpose couplings conforming to ISO 10441 or API 671.	Rigid couplings (if used) do not fall under API 671. For other coupling types API 671 is only taken into account if explicitly mentioned in BCA's quotation		CO01	[API618-5]Coupling according API 671 is more expensive because of higher service factors	O	1234	All	1
81	N	API 618 5th Ed.	40	7.1.2.5	C	Unless otherwise specified, the design of the motor shall conform to either IEC 60034-1, IEC 60079, and IEC 60529, or to NFPA 70 and NEMA MG 1	The motors are according the standards stated in the quotation.		CO30	[API618-5]Care shall be taken in case the client specifies standards other than IEC because this limits our choice of motor vendors. Quoting standards other than IEC must be discussed with the motor department.	O	1234	All	3
82	N	API 618 5th Ed.	41	7.5	D	Mounting Plates	Refer to BCA's quotation for the offered method of installation. Generally BCA's proven method of installation aims to transfer the forces and moments of the compressor directly to the foundation and may not follow the requirements of this and the following paragraphs in every detail.		CO01	[API618-5]For detailed explanations refer to comments to 7.5.1.1, 7.5.2.2, 7.5.3.2 (these are for information only and are superseded by this general deviation). This has not become part of the standard deviations because it has not been in the past and has rarely caused problems. If client insists on mounting according API 618 the PM has to find a solution.	I	1234	All	3
83	N	API 618 5th Ed.	41	7.4.1	E	Unless otherwise specified, timing type belts and sheaves shall be provided.	In case a belt drive is used, BCA uses V-belts. Use of timing type belts is not possible.		DM02	[API618-5]Timing type belt (Keilriemen) would mean a new flywheel, which is not worth to develop for the small amount of compressors sold and offered with belt drive.	S	1		3
84	N	API 618 5th Ed.	41	7.4.2	C	The vendor shall provide a positive belt-tensioning device on all belt drives.	Belt drives are tensioned by motor slide rails.		DM02	[API618-5]Cost adder for positive belt-tensioning device is CHF 2500	S	1		3
85	Y	API 618 5th Ed.	41	7.5.1.1	D	The equipment shall be furnished with a baseplate, a skid, soleplates, or rails as specified.	If the compressor is not skidmounted, leveling will be done with leveling screws placed directly on the concrete foundation. After leveling out the compressor, the leveling spindles and the bottom of the crankcase are grout in. This installation procedure provides the best transfer of the forces and moments to the foundation. Soleplates are not required because maintenance of the compressor can be done without lifting the compressor from the foundation.		CO01	[API618-5]	I	1234	All	3
86	N	API 618 5th Ed.	41	7.5.2.2	D	When equipment is mounted directly on machined metal surfaces integral with mounting plates, such surfaces shall a. be machined after the baseplate is fabricated.	In case of skidmounting, BCA places leveling spindles between the skid and the compressor. After leveling out the compressor is fixed with screws to the skid and then grout to the baseplate. This procedure provides easy leveling and the required bondage to transmit the compressor's forces and moments to the baseplate.		CO01	[API618-5]This is the standard procedure, even in the US. Machining the baseplate after assembly is practically impossible because packagers do not have suitable machines.	I	1234	All	3
87	N	API 618 5th Ed.	42	7.5.3.2	C	Anchor bolts shall not be used to fasten drive train equipment to mounting plates, or to fasten compressors through baseplates or skids.	In case of skidmounting the compressor is fastened as described in comment to 7.5.2.2 with bolts to the baseplate. The anchor bolts for fixing the compressor onto the foundation go through the compressor feet and the baseplate into the foundation. According BCA's experience this is the best method to transfer the forces and moments from the compressor to the foundation. There is no need to remove the compressor from the foundation for maintenance.		CO01	[API618-5]	I	1234	All	3
88	Y	API 618 5th Ed.	42	7.5.3.5	D	If specified, chock blocks shall be supplied by the vendor (see Annex L).	Chock blocks are not used. Refer to item 7.5.1 for BCA's recommended solutions to mount the compressor.		CO01	[API618-5]	O	1234	All	1
89	Y	API 618 5th Ed.	42	7.5.3.9	D	If specified, leveling plates shall be supplied. Leveling plates (see Annex L) shall be steel plates at least 19mm (3/4 in.) thick.	Leveling plates are not used. Refer to item 7.5.1 for BCA's recommended solutions to mount the compressor.		CO01	[API618-5]	O	1234	All	1
90	Y	API 618 5th Ed.	43	7.5.4.14	C	If specified, a dynamic analysis of the skid, including a modal analysis and forced response analysis shall be performed ...	The modal analysis is only provided if mentioned in BCA's quotation.		DM04	[API618-5]The analysis must be carried out by our design group as part of the vibration analysis because vibration forces resulting from gas pulsation need to be considered. Our sizing can do this analysis. Additional cost of 16TB-h PER COMPRESSOR are required (the model of each skid cannot be copied)	O	1234	All	2

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
91	Y	API 618 5th Ed.	43	7.5.4.15	D	If specified, sub-soleplates, complying with 7.5.3.3 shall be provided with the baseplate by the vendor.	Sub-soleplates are not provided. The skid is leveled with leveling spindles and then grout. Sub-soleplates underneath the skid frame are not recommended due to considerations about transfer of forces from the compressor to the foundation, difficult manufacturing and high cost.		CO01	[API618-5]A soleplate under the skid makes only sense when the skid needs to be removed in order not having to remove grouting. On the other hand a soleplate underneath a skid will be very large and must be manufactured with tight tolerances to ensure the skid rests safely.	O	1234	All	1
92	Y	API 618 5th Ed.	44	7.5.5.1	C	When soleplates or rails are specified, they shall be provided by the vendor, and they shall meet the requirements of 7.5.3.1.1 and 7.5.3.1.2 in addition to those of 7.5.1.			CO01	[API618-5]Soleplates are not provided by BCA anyway according the above deviations, so no deviation is required to shifting the supply of soleplates to the vendor.	I	1234	All	3
93	Y	API 618 5th Ed.	44	7.5.5.4	C	If specified, sub-soleplates shall be provided with the soleplates by the vendor.			CO01	[API618-5]Soleplates and subsoleplates are not provided by BCA anyway according the above deviations, so no deviation is required to shifting the supply of soleplates to the vendor.	I	1234	All	3
94	N	API 618 5th Ed.	44	7.6.1.1	D	Control systems, instrumentation, electrical systems, and their installation shall conform to the purchaser's specifications and unless otherwise specified, shall comply with the requirements of ISO 10438-1 (or equivalents such as API 614, Chapter I), except as modified by the following clauses.	BCA uses 100mm pressure gauges on the compressor due to space constraints.		CO30	[API618-5]D. Maag studied also API 614 and found this deviation. It was decided not to mention this as a standard deviation because a solution can be found with the client during order execution.	I	1234	All	3
95	N	API 618 5th Ed.	45	7.6.2.5	D	Unless otherwise specified, five-step unloading shall provide nominal capacities of 100%, 75%, 50%, 25% and 0%; three-step unloading shall provide nominal capacities of 100%, 50% and 0%, and two-step unloading shall provide capacities of 100% and 0%.	Capacity control method and the offered capacities are described in BCA's quotation.		DM02	[API618-5]Laby: 0% step not desired and if sold only for max. 2 minutes operation. 0% step on a Laby is practically useless for the client because of the time limitation which makes the control concept quiet complicated.	S	13		3
96	Y	API 618 5th Ed.	45	7.6.4.1	D	Instruments shall be furnished and mounted locally, on a gauge board, or on a panel, as specified.	BCA mounts the instruments on a local gauge board.		CO30	[API618-5]As per API definitions a gauge board is an open rack, a panel is enclosed. If the LIB has to be constructed as a panel there are high additional cost, as well as for instances where the client requests certain instruments to be mounted in an enclosure.	O	1234	All	1
97	Y	API 618 5th Ed.	46	7.6.4.3.3	D	Packing or piston rod temperature indication, as recommended by the vendor, shall be provided for cylinders operating at or above a gauge pressure of 35 bar (500 psig) ...	The Laby® has a piston rod gland that achieves sealing according the labyrinth principle. Movement between gland and piston rod is without contact. Therefore temperature surveillance is not required.		CO30	[API618-5]Deviation only required when packing temperature measurement is specified by the client. Temperature surveillance is possible at additional price, especially for O2 compressors.	O	1		3
98	Y	API 618 5th Ed.	46	7.6.4.3.4	D	If specified, main bearing and/or valve temperature detectors shall be supplied.	Main bearing temperature measurement is not possible for K-type compressors and for small D-type compressors due to space constraints. For details refer to our quotation. Valve temperature monitoring is available as an option.		DM02,CO30	[API618-5]BCA does not like to provide bearing temperature monitoring for gastight compressors to avoid additional holes in the crankcase. Bearing temperature measurement is NOT POSSIBLE for K-type compressors and for 3D200, and all D-types smaller D200.	O	1		3
99	N	API 618 5th Ed.	46	7.6.6.2	C	Various alarms / shutdowns listed in Table 5	The following conditions are not applicable for Labyrinth Piston Compressors because these systems are not provided: cylinder lubricator system failure, jacket coolant system failure High frame vibration alarm is not provided because the compressor is protected with a vibration switch that trips the compressor when the trip limit is reached.		CO30	[API618-5]No client deviation because it is more or less common sense. Frame vibration alarm would either require a second switch set at a lower limit or a monitoring system as described in 7.6.7	I	1		3
100	N	API 618 5th Ed.	46	7.6.6.2	C	Various alarms / shutdowns listed in Table 5 [1] Cylinder lubricator system failure [2] Jacket coolant system failure	These alarms / shutdowns are only provided if the compressor is lubricated [1] or a jacket coolant system [2] is provided		CO30	[API618-5]Deviation is deleted because it is common sense that alarms for non-existing systems are not provided.	I	2	All	3
101	Y	API 618 5th Ed.	46	7.6.6.7	D	If specified, crossheads shall be equipped with a high crosshead-pin temperature alarm to protect the crosshead-pin bushing.	Crosshead pin temperature alarm cannot be installed due to space constraints.		CO30,DM02	[API618-5]Kongsberg system could be an option to measure crosshead pin temperature. See also 7.6.8	O	123	All	3
102	Y	API 618 5th Ed.	47	7.6.8	D	If specified, the vendor shall supply a temperature monitoring system ... The temperatures monitored shall be as specified by the purchaser and may include...: a. main bearing temperatures b. valve temperatures c. packing temperatures d. crosshead pin bearing temperatures	a. Main bearing temperature measurement is not possible for K-type compressors and for small D-type compressors due to space constraints. For details refer to our quotation. b. refer to quotation c. refer to 7.6.4.3.3 d. OPEN		DM02,CO30	[API618-5]a. BCA does not like to provide bearing temperature monitoring for gastight compressors to avoid additional holes in the crankcase. Bearing temperature measurement is NOT POSSIBLE for K-type compressors and for 3D200, and all D-types smaller D200. b. valve temperature at extra cost (mainly instrumentation) d. to be clarified by DM	O	13		3
103	Y	API 618 5th Ed.	47	7.6.7.1	D	The vendor shall furnish and mount a vibration detection and transducing device ... Each device shall have a velocity or accelerometer-type detector, and each shall provide for each of the following functions: a. continuous vibration measurement b. alarm The device ... shall conform to API 670. ... Magnetic-type switches are unacceptable.	For protection of BCA's Labyrinth Piston Compressors, experience has shown that a magnetic-type switch is best suited because it provides the quickest reaction time. As only one switch is installed, alarm signal is not provided.		CO30	[API618-5]If we cannot get the switch through we have to provide a BN or Prognost SILver system	S	13		3

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
104	Y	API 618 5th Ed.	47	7.6.7.2	C	If specified, a non-contacting device shall also be installed to measure the horizontal movement of each piston rod.	Available at extra price.		CO30,DM02	[API618-5]There is no proper guidance in the horizontal plane therefore this measurement is meaningless. Horizontal measurement possible as option if client insists.	O	2	BS,BA,BX,BC	1
105	Y	API 618 5th Ed.	47	7.6.7.2	D	If specified, the vendor shall furnish and mount piston rod drop detectors of the non-contacting type to measure the vertical movement of each piston rod (piston rod drop). If specified, a non-contacting device shall also be installed to measure the horizontal movement of each piston rod.	Rod drop measurement is not applicable to vertical compressors.		CO30,DM02	[API618-5]Vertical piston has no proper guidance, therefore rod drop measurement is meaningless	O	123	CS	3
106	Y	API 618 5th Ed.	47	7.6.7.3	D	A one-event-per revolution machined mark on the crankshaft shall be provided....	The mark is located on the compressor flywheel		DM02	[API618-5]Mark is always installed / prepared (Laby and PL2); on PL1 to allow later on the integration of Prognost	S	13	All	3
107	Y	API 618 5th Ed.	47	7.6.7.3	D	If specified, or when a non-contacting device is installed to indicate piston rod position, a corresponding phase-reference transducer shall be provided...	For vertical compressors a phase-reference-transducer is not required because rod-drop is not a critical issue and therefore not measured.		DM02,CO30	[API618-5]A keyphaser is required is a monitoring system (e.g. Prognost) is required. Deviation not required because if 7.6.7.2 is accepted, then keyphasor is also obsolete according this para.	I	123	CS	3
108	Y	API 618 5th Ed.	47	7.6.7.4	D	If specified, the vendor shall furnish and mount piston rod drop detectors of the contact type, such as a mechanical roller or fuse metal plug (eutectic) type.	Rod drop detectors are not applicable for vertical compressors		CO30	[API618-5]The described system is available from BCA at less cost than a BN rod drop system for horizontal compressors.	O	123	CS	3
109	N	API 618 5th Ed.	49	7.7.2.1	C	The vendor shall provide interconnecting piping [for lubricating oil systems]	Interconnecting oil piping may be excluded from BCA scope. Refer to our quotation for details.		CO01	[API618-5]No client deviation; scope should be described in the Contract. API requires vendor to supply lube oil piping only when the skid is placed adjacent to the compressor "in the vendor's recommended location". So there is always room to argue that the location is not our standard location.	I	1234	All	3
110	N	API 618 5th Ed.	49	7.7.2.3	C	Unless otherwise specified, oil piping (with the exception of cast-in-frame lines or passages) and tubing, including fittings, shall be stainless steel.	BCA standard is carbon steel piping upstream and stainless steel downstream of the oil filter. Refer to our quotation for details.		CO01	[API618-5]	S	1234	All	1
111	N	API 618 5th Ed.	49	7.7.4.2	D	Both the coolant inlet line and the coolant outlet line to each compressor cylinder shall be provided with an isolation valve. A globe valve with union shall be provided on the main outlet line from each cylinder. A sight flow indicator shall be installed in the common coolant outlet line from each cylinder.	Only an isolation valve in the common inlet line to all cylinders is provided. Sight flow glasses are only provided when mentioned in the quotation.		CO01	[API618-5]This deviation could be deleted because cost impact is small and only few clients will realize that our design is not in accordance with API 618 Not a client comment. In case client insists during order execution, cost impact is minor.	I	123	All	3
112	N	API 618 5th Ed.	57	7.9.4.2.5.2.1	E	Unless other criteria (such as loss of compressor efficiency) are specified, the unfiltered peak-to-peak pulsation level at the compressor cylinder flange, as a percentage of average absolute line pressure, shall be limited to the lesser of 7% or the value computed from Equation 6. P_{cf}=3R%	Due to the construction feature of the Laby (long channels and long piping to the dampers), BCA allows a maximum pulsation limit of 15% on the compressor cylinder flange. This limit is verified by experience, the higher pulsation is taken care by using piping with larger wall thickness between compressor nozzle and damper. A mechanical response analysis (refer to Annex M) is only carried out if stated in the quotation.		DM04	[API618-5]It is impossible to meet the API requirement for Laby because of the long piping. There is also nothing that can be done about this high pulsation because the nozzle diameter is fixed and the piping is too short for useful dampening. Annex M requires a mechanical response analysis to be carried out in cases were pulsation limits are exceeded. We only do this if stated in the quotation (to avoid having to do this for small Laby compressors). It has been decided not to make this a client comment because this can be fixed by order execution by confirming to the client that the higher pulsation does not cause any problems.	I	13		3
113	Y	API 618 5th Ed.	63	7.9.5.1.10	D	A DN 20 (3/4 NPS) pressure test connection shall be provided at each pulsation suppressor inlet and outlet nozzle.	Pressure test connection on each inlet and outlet nozzle is not provided.		CO01	[API618-5]This deviation could be deleted because cost impact is small and only few clients will realize that our design is not in accordance with API 618 Deviation deleted because cost and time impact is neglectable.	I	1234	All	3
114	Y	API 618 5th Ed.	63	7.9.5.1.11	D	The cylinder nozzle of each discharge pulsation suppression device shall be provided with two connections located to permit, without interference, the purchaser's installation of thermowells of at least DN 25, (NPS 1) for a high-temperature alarm or shutdown element and a dial thermometer. If specified, a thermowell connection of at least DN 25, (NPS 1) shall also be provided for the cylinder nozzle of each suction pulsation suppressor.	If there is sufficient piping between damper and cylinder connection, BCA prefers to place the thermowell in this piping.		CO01	[API618-5]This deviation is not required if all dampers are mounted directly on the cylinders and there is no piping. It is easier to install the connections in the piping than on the dampers.	O	1234	All	1
115	N	API 618 5th Ed.	63	7.9.5.1.14	D	Pulsation suppressors with an internal diameter equal to or greater than 450 mm (18 in.) shall have studded pad-type inspection openings of at least 150 mm (6 in.) in diameter.... For pulsation suppressors with an internal diameter less than 450 mm (18 in.), 100 mm (4 in.) studded pad-type inspection openings may be used.	Inspection openings will be as per applicable pressure vessel code and may be smaller than the requirements of API 618.		CO01	[API618-5]BCA's inspection openings are usually 3'', even for bigger vessels (e.g. 4D375). Providing such big inspection openings would weaken the vessel a lot. For small vessels the inspection opening would even be bigger than the gas connection! This deviation might be left out of the standard because the cost impact is medium and most clients will forget this requirement during execution.	S	1234	All	2

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
116	N	API 618 5th Ed.	63	7.9.5.1.3	D	[Dampers] Regardless of materials, all shells, heads, baffles, and partitions shall have a minimum thickness of 10 mm (3/8 in.).	Vessel thickness is as per code requirements, taking into account the pulsation levels and may be lower than 10mm.		CO01	[API618-5]Minimum thickness of 10mm results in higher cost, especially for SS dampers. SS dampers can be below 10mm for design pressures of even 13 barg	S	1234	All	1
117	Y	API 618 5th Ed.	64	7.9.5.1.20	D	If specified, internal surfaces of carbon steel pulsation suppression devices shall be covered with a coating of phenolic or vinyl resins that are suitable for the service conditions.	BCA do not recommend coating of internal surfaces with resins due to the danger posed to the compressor in case the coating dislodges.		CO01	[API618-5]BCA uses N2 filling which is a higher quality preservation method than required by API 618	O	1234	All	1
118	N	API 618 5th Ed.	64	7.9.5.2.1	D	When two or more cylinders are to be connected to the same pulsation suppression device, the flanges shall be fitted up to aligned cylinders at the compressor vendor's shop and welded in place to assure proper final alignment and to minimize residual stresses. This procedure is especially important for ring joint flanges.	On Laby compressors the dampers are always connected to the compressor nozzle with piping that is fitted at site. Therefore shop fit up of dampers is not implemented.		CO01	[API618-5]	S	13		3
119	N	API 618 5th Ed.	64	7.9.5.2.1	D	When two or more cylinders are to be connected to the same pulsation suppression device, the flanges shall be fitted up to aligned cylinders at the compressor vendor's shop and welded in place to assure proper final alignment and to minimize residual stresses. This procedure is especially important for ring joint flanges.	Instead BCA provides a machined template to the damper manufacturer to fit the damper nozzles exactly to the cylinder nozzles.		CO01	[API618-5]	S	2	All	3
120	N	API 618 5th Ed.	65	8.1.1	C	The extent of the purchaser's participation in the inspection and testing shall be as specified.	The extent of quality assurance and client inspector's attendance is as per vendor's "Inspection and Test Plan".		QN10	[API618-5]With this deviation all test requirements mentioned in the following paras are out of the game.	S	1234	All	3
121	N	API 618 5th Ed.	66	8.2.2	D	Testing according ASTM and ASME standards	Instead of the ASTM and ASME standards mentioned below, BCA may also use the relevant EN standards as applicable.		QN10	[API618-5]Similar to 6.15.4 As information from our API committee member (M. Tanner), the 6th Edition will also have to list EN material standards because the 6th Edition will be an ISO standard.	S	1234	All	3
122	N	API 618 5th Ed.	66	8.2.1.1	D	The vendor shall keep the following data available for at least 20 years: [list of quality documentation]	The documentation is stored for the period of time required by Swiss law		QN10	[API618-5]Deviation deleted because this cannot be discussed successfully with the client.	I	1234	All	3
123	N	API 618 5th Ed.	66	8.2.1.2	D	Pressure-containing parts shall not be painted until the specified inspection and testing of the parts is complete.	Main compressor castings are coated with 10µm wash primer as a rust inhibitor		QN10	[API618-5]We order castings for PL1 with 10um primer coating to prevent corrosion. To fulfill the requirement we would have to remove the primer by sandblasting which we cannot do in our shop. This results in a longer delivery!	S	13		3
124	Y	API 618 5th Ed.	66	8.2.1.3	C	In addition to the requirements of 6.15.7.1, the purchaser may specify the following: a. parts that shall be subjected to surface and subsurface examination; b. the type of examination required, such as magnetic particle, liquid penetrant, radiographic and ultrasonic examination	Refer to BCA's Inspection and Test Plans		QN10	[API618-5]If client specifies something under this paragraph it should be checked by QA	O	1234	All	3
125	Y	API 618 5th Ed.	66	8.2.2.1.1	D	Cast iron may be inspected only in accordance with 8.2.2.4 [magnetic particle inspection] and / or 8.2.2.5 [liquid penetrant inspection]	Both methods yield ambiguous results when used to inspect cast iron due to the porosity of the cast surface and are not employed by BCA for casting inspections.		QN10	[API618-5]PT and MT do not yield a clear result when used on rough surfaces like iron castings. If we are forced to MT or PT there will be lots of discussions about acceptance criteria.	O	1234	All	3
126	N	API 618 5th Ed.	67	8.2.2.3.1	E	Ultrasonic inspection shall be in accordance with the specified pressure code or ASME Section V, Articles 5 and 23.	UT will be done acc to EN standards.		QN10	[API618-5]Similar to 6.15.3.2 We order material according EN therefore the complete testing shall be according EN	I	1234	All	3
127	N	API 618 5th Ed.	67	8.2.2.3.3	E	All crankshafts shall be ultrasonically tested in accordance with ASTM A 503...	UT will be done acc to EN standards		QN10	[API618-5]Same comment as 8.2.2.3.1	I	1234	All	3
128	N	API 618 5th Ed.	67	8.2.2.4.1	D	Both wet and dry methods of magnetic particle inspection shall be performed in accordance with ASTM E 709	For magnetic particle inspection of crankshafts ASTM A275 and ASTM A 456 are used which are specifically written for crankshafts. For other parts refer to comment 8.2.2		QN10	[API618-5]ASTM E 709 is a general specification about MP testing, ASTM A275 and ASTM A456 apply specifically for crankshafts.	S	1234	All	2
129	N	API 618 5th Ed.	67	8.2.2.5.1	C	Liquid penetrant inspection shall be in accordance with the specified pressure code or with ASME Section V, Article 6 (see ASTM E 165)	ASME Sec. V is a general specification for liquid penetrant testing. BCA has developed their own standard for compressor parts, which is generally based on EN 571-1. For pressure vessels BCA's standard covers the requirements of ASME VIII App. 8, AD HP 5/3, SVDB 510.4 and CODAP I/24		QN10	[API618-5]Covered by deviation to 8.2.2	I	1234	All	3
130	Y	API 618 5th Ed.	67	8.2.3.2	D	When the oil system is specified to be run in the manufacturer's shop, (see 6.14.2.1.10) it shall meet the test screen cleanliness requirements specified in ISO 10438-1 or API 614, Chapter 1, and ISO 10438-3 or API 614, Chapter 3	Test screens are not used because the necessary mesh size produces unacceptable back pressures. Cleanliness is checked with the oil filter cartridge installed on the oil skid		QN10	[API618-5]Especially for oil systems with high pressure (K-type compressors with elevated suction pressure) the high pressure would lead to rupture of the test screen. For all our oil systems the filter is installed on the skid and after the testrun the filter cartridge is taken out and inspected for dirt.	O	1234	All	1

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
131	Y	API 618 5th Ed.	67	8.2.3.4	C	If specified, the hardness of parts, welds and heat affected zones shall be verified as being within the allowable values by testing. The method, extent, documentation and witnessing of the testing shall be mutually agreed by the purchaser and the vendor.	BCA follows the requirements of ASME VIII which requires hardness tests for thick plates or lethal service.		QN10	[API618-5]If client specifies other requirements the cost impact is minor and should be evaluated by QA together with other special requirements.	O	1234	All	2
132	N	API 618 5th Ed.	68	8.3.2.1	C	Pressure-containing parts (including auxiliaries) shall be tested hydrostatically with liquid ...	According ASME VIII, UG-100 in cases were it is impossible to drain the liquid from the part or where water would damage the parts a pneumatic strength test (1.1 times MAWP) can be carried out instead of the hydrotest. Using a pneumatic test may be required for skid mounting or for site testing of assembled piping that cannot be dried properly afterwards.		QN10	[API618-5]In addition to the reasons given in the comment, pneumatic testing reduces the time required for skid mounting because the skidder does not need to dismantle the piping for the hydrotest, dry and clean it and then mount it again. For BCA piping it is almost always possible to dismantle the piping and do a hydrotest. However clients might wish to do a pneumatic test of site erected piping when they are under time pressure.	I	1234	All	3
133	N	API 618 5th Ed.	68	8.3.2.2	D	The leakage tests shall be conducted with the components thoroughly dried and unpainted.	Refer to 8.2.1.2		QN10	[API618-5]See 8.2.1.2	S	134		3
134	N	API 618 5th Ed.	69	8.3.2.7	C	Test gaskets shall be identical to those required for the service conditions.	Gaskets on closures (e.g. blind flanges) that are installed only for the test are temporary gaskets that might not be identical to those required for the service condition.		QN10	[API618-5]The piping side flanges should be standard to avoid having to buy expensive gaskets and to be sure they are available at the test in sufficient number (e.g. one gasket might have to be replaced because it is not tight) Never a problem during execution (vessel inspector does not care about API 618).	I	1234	All	3
135	Y	API 618 5th Ed.	69	8.3.3.3	C	If specified, packaged units, including integral auxiliary system packages, shall undergo a 4-hour mechanical running test prior to shipment. The test shall prove mechanical operation of all auxiliary equipment, as well as the compressor, reduction gear, if any, and driver as a complete unit. The compressor need not be pressure-loaded for this test. The procedure for this running test shall be agreed upon by the purchaser and the vendor.	BCA test only individual equipment.		QN10	[API618-5]Mechanical running test of packaged units is not feasible because the foundations at packagers' shops are not built for the forces and moments emitted by a reciprocating compressor. Instead BCA mechanically tests the compressor in the workshop with a shop motor prior to shipment. Other parts such as lube oil skid are workshop tested separately. BCA can test the following: - oil skid - coolant skid (only with pumps); should be avoided because cleaning of skid after test is difficult (water will not be removed completely leading to rust) - air coolers	O	1234	All	3
136	N	API 618 5th Ed.	69	8.3.3.4	C	All oil pressures, viscosities, and temperatures shall be within the range of operating values recommended in the vendor's operating instructions for the specific unit being tested	This is not possible for compressors with elevated pressure in the crankcase.		QN10	[API618-5]For gastight D- and K-type compressors it is impossible to have the same oil pressure during the test as during operation in case the suction pressure is not atmospheric. Also during the oil unit test run the process gas is not available which would be required to simulate effects of the gas on the oil viscosity. No client deviation because this can be explained to the inspector if he should ever realize the deviation.	I	13		3
137	N	API 618 5th Ed.	69	8.3.3.5	D	If replacement or modification of bearings, or dismantling to replace or modify other parts are required to correct mechanical or performance deficiencies, the initial test shall be deemed not acceptable and the final shop tests shall be run after these deficiencies are corrected.	If a bearing has to be replaced after the dismantling (after the mech. running test) the cause will be found out. The bearing will be replaced by a new one and no additional running test will be done.		QN10	[API618-5]It was decided that although this deviation would be required, BCA would have practically no chance in the sales phase to push through our standard. Practically if a client inspector sees a failed bearing he will request a retest and BCA will do a retest.	I	1234	All	3
138	Y	API 618 5th Ed.	69	8.3.3.7	C	The purchaser shall specify if dismantling for inspection (other than that required by evidence of malfunctioning during testing) is required.	Dismantling inspection is according BCA standard. In case of evidence of malfunctioning the cause will be found and corrected.		QN10	[API618-5]The following KVs are applicable: PL1: KV5002, 5003, 5004 or 5005 PL2: KV5009	O	123	All	2
139	N	API 618 5th Ed.	69	8.3.4.1	E	The final bar-over test shall be performed with all compressor cylinder valves in place to demonstrate no piston interference.	Bar over test is done without installed valves because interference between valve and piston is prevented by the design.		QN10	[API618-5]Bar over test is never done with valves installed. The bar-over test is combined with the clearance check and for the clearance check you need to access the compression room via the valve openings. No client deviation because if client insists on installation of valves, then we just do it with minor cost / schedule impact.	I	1234	All	3
140	N	API 618 5th Ed.	69	8.3.4.1	D	Vertical and horizontal piston-rod runout (cold) at packing case flanges shall also be measured during this test	Piston rod runout is not measured for vertical Laby® compressor, but on compressors with horizontal cylinders only.		QN10	[API618-5]A vertical compressor does not have proper guidance, therefore measuring rod runout is not applicable. Instead clearances are checked. For PL2 no deviation because 6.3.1 specifies "For horizontal compressors...". Left in for Laby for advertisement reasons.	S	13	CS	3

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Comments to API 618 5th Edition

Se	Bullet	Spec	pg.	Item	Type	Requirement	BC Comment	Rev. Offer	Faculty	INTERNAL Remarks	Comment Type	Product Line	Model	Aggressiveness Factor
Set Filter							Select Row for Copying							
141	N	API 618 5th Ed.	69	8.3.4.1	D	Vertical and horizontal piston-rod runout (cold) at packing case flanges shall also be measured during this test.	Horizontal piston-rod runout is not measured.		QN10	[API618-5]There is no proper guidance in the horizontal plane therefore this measurement is meaningless. Comment deleted for practical reasons.	I	2	BS,BA,BX,BC	3
142	Y	API 618 5th Ed.	69	8.3.4.2	D	If specified, all machine-mounted equipment, prefabricated piping and appurtenances furnished by the vendor shall be fitted and assembled in the vendor's shop. The vendor shall be prepared to demonstrate that the equipment is free of harmful strains.	The bare compressor only will be tested, accessories like dampers etc. will not be assembled in our workshop		QN10	[API618-5]Space constraints, delivery impact, fitting of equipment at site will be required anyway. Although bullet point treated as Standard Deviation because if missed in a project it is a potential killer.	S	123	All	3
143	N	API 618 5th Ed.	69	8.3.4.3	D	All compressor suction and discharge cylinder valves shall be leak-tested in accordance with the vendor's standard procedure.	Leak testing is only useful for plate valves.		QN10	[API618-5]All valves with plastic elements are not tight in the beginning. They have to be run-in during operation and only after several hours of operation they will be tight. Therefore leak testing of such valves can lead to discussions about what the acceptable leakage is. No client deviation because if client insists, we just make a leak test with sufficient tolerances.	I	123	All	3
144	Y	API 618 5th Ed.	69	8.3.4.4	D	If specified, the compressor shall be subject to a performance test in accordance with ISO 1217 or the applicable ASME power test code	Performance test is not possible in the workshop. A site performance test will be carried out using contract delivered instruments and shall be witnessed by a nominated BCA representative.		QN10	[API618-5]Additional nozzles required for instruments, space for flow measurement to be foreseen,... All these measures need to be taken care already during engineering! Furthermore these measures add substantial cost.	O	1234	All	3
145	Y	API 618 5th Ed.	70	8.4.1	C	The preparation shall make the equipment suitable for 6 months of outdoor storage from the time of shipment.	The duration of storage must be agreed upon. Immediately after arrival at site packages must be stored as a minimum under roof giving adequate protection against rain and sun radiation. The packages must not be opened before final erection.		SA01	[API618-5]	S	1234	All	3
146	N	API 618 5th Ed.	70	8.4.4	C	Equipment shall be completely free of water prior to any shipment preparation.	Confirmed		QN10	[API618-5]This para. can be used to argue against clients that want the water skid to be tested. It is practically impossible to dry the skid completely.	I	1234	All	3
147	N	API 618 5th Ed.	70	8.4.7	E	The interior of the equipment, including pulsation suppression devices, shall be ... sprayed or flushed with a suitable rust preventive that is oil soluble or can be removed with solvent	Gas effected parts and cooling water skids (if applicable) are shipped with nitrogen blanket or the parts will be closed and VCI mats will be inserted to prevent corrosion.		QN10	[API618-5]To put grease or other rust preventative on piping or other gas affected parts is old fashioned and gives big headaches to reach the cleanliness after removal of these preventatives. Putting oil onto gas affected parts may even be forbidden for some gases (O2). Other parts (e.g. unpainted coupling guards, crankshaft end are treated with rust preventative (Tectyl). No client deviation because N2 filling is higher quality preservation than what is described by API 618	I	1234	All	3
148	N	API 618 5th Ed.	71	8.4.18	D	Immediately after cleaning, external surfaces [of pulsation suppressors, piping and vessels] shall be painted with at least one coat of lead and chromate free primer.	Stainless steel parts are only painted if mentioned in BCA's quotation.		CO01,QN10	[API618-5]Can be done, but costs some money and time. Frequently required by clients for insulated vessels / piping.	I	1234	All	3

Abbreviations:
C: Comment, D: Deviation, E: Exception (D can be corrected against cost, E fixed by design cannot be changed)
S: Standard Deviation, O: Option item (bullet point, "if specified"), I: for internal information

Search Functions

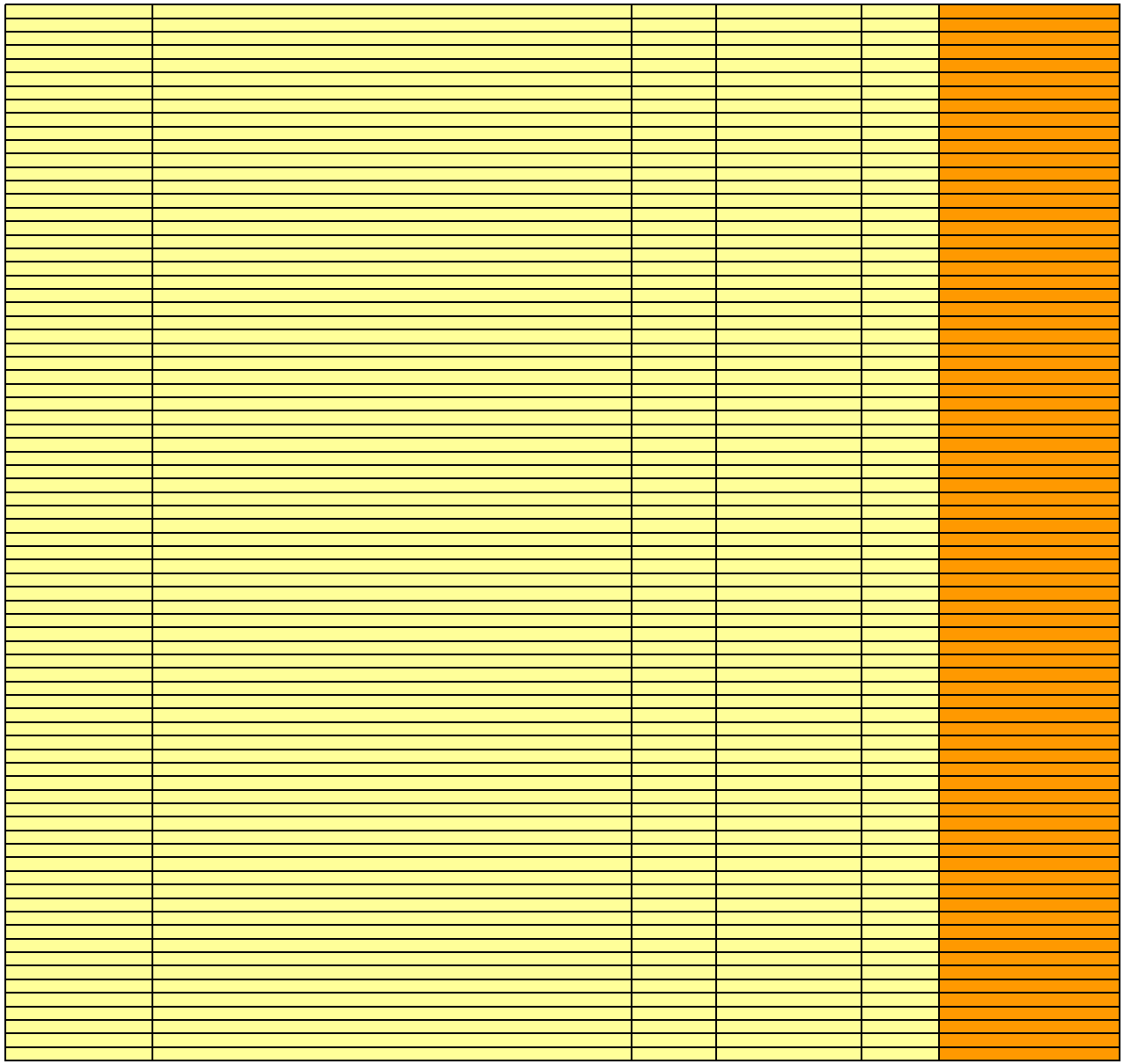
Reset Filters

Target File for Copying: M:\Sales Team\Fux M\SabicSpecs\SpecOverview.xls

Copy to Master

Project Number: 2005.715

Specification Number	Specification Title	Rev.Spec	Remarks	Rev Offer	Link to Spec
API 618 5th Ed.	API 618 5th Edition December 2007	0			



Document revised:
- XLSM created, actual version
- Macros signed

16.09.2024 M. Moser QN11