



**PRODUCT MANUAL FOR
LIQUID OFF- TAKE VALVE FITTINGS TO GAS CYLINDERS OR
TANKS (MOBILE OR STATIC) FOR LIQUID PETROLEUM GAS
(LPG)
ACCORDING TO IS 16484: 2017**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 16484: 2017
	Title	:	Liquid Off-Take Valve fitting to Gas Cylinders or Tanks (Mobile or Static) for Liquid Petroleum Gas (LPG)
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	a) Brass Components – Mercurous nitrate test: IS 2305 b) Valve Body – Cl. 4.2 of IS 16484 c) Non-Metallic Materials- Cl. 4.3 of IS 16484 d) Springs - IS 4454(Part 4)
b)	Grouping guidelines	:	Each Variety of valve shall be tested for GoL/CSoL.
c)	Sample Size	:	Please refer ANNEX- A
3.	List of Test Equipment	:	Please refer ANNEX-B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX- C
5.	Possible tests in a day :	:	Please refer ANNEX- D
6.	Scope of the Licence :	:	Please refer ANNEX- E

ANNEX A

Sample Size

- (i) Rubber parts - 5 pieces
- (ii) Moulded valve seal – 5 pieces
- (iii) Springs - 5 Pieces, Spring wire – 3 X 1Mtr for mechanical tests as per IS 4454 (Part 4)
- (iv) Tensile test pieces (dumbles) – 3 no.
- (v) Izod Impact pieces -3 No.
- (vi) Chemical Composition : 5 pieces of Dia 28. mm min ,Thickness 20 mm
- (vii) LOT Valves : 20 No.

ANNEX B**List of Test Equipment***Major test equipments required to test as per the Indian Standard*

Sl.No	Tests used in with Clause reference	Test Equipment
1.	Tensile strength and Elongation, 4.2.2.1	Universal Testing Machine
2.	Impact strength , 4.2.3	Impact Testing Machine
3.	Mercurous nitrate test, 4.1.1	Chemical
4.	External and Internal Tightness- High and Low temperature, 8.15	Environment Test Chamber Covering High Temperature to Low Temperature
5.	Hydraulic Pressure , 8.1	Hydraulic Pressure Proof Test Bench
6.	Pneumatic test (External & Internal leak Tightness), 8.2, 8.9, 8.10, 8.14, 8.15	External & Internal leak Tightness Test Bench
7.	Valve Closure ,8.3	Valve Closure Test Bench
8.	Valve Stem Over Torqueing Deformation, 8.4	Valve Stem Over Torqueing Deformation Test Bench
9.	Hand wheel Fire Exposure ,8.5	Hand wheel Fire Exposure Test Bench
10.	Impact Test, 8.6	Impact Test Bench
11.	Resistance to Excessive Closing Torque, 8.7	Resistance to Excessive Closing Torque Test Bench
12.	Resistance to Excessive Opening Torque 8.8	Resistance to Excessive opening Torque Test Bench
13.	SRV Performance ,8.11	SRV Performance Test Bench
14.	SRV flow capacity, 8.12	SRV flow capacity Test Bench
15.	Cycle Test ,8.13	Cycle Test Bench
16.	Vibration Test, 8.17	Vibration Test Machine
17.	Corrosion resistance, 8.18	Salt Spray Test Chamber

18.	Excess Flow Device (Flow Limitter), 8.19	Excess Flow Device Test Bench with flowmeter
19.	Performance Test, 8.20	Performance Test Bench
20.	Filling Trial Test, 8.21	Filling Trial Test Bench
21.	Dimensions, minimum thickness and thread checking, 5, 7	Vernier caliper, Inside pistol caliper, complete set of Gauges
22.	Pneumatic tests, 8	Pressure gauges and Dead weight calibrator for periodic in-house calibration of pressure gauges

The above list is indicative only and may not be treated as exhaustive.

ANNEX C
Scheme of Inspection and Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments. The following equipments shall be calibrated at a frequency shown against each and records kept:

1.1.1 Universal Testing Machine - Once in a year

1.1.2 Impact Testing Machine- Once in a three years

1.1.3 Pressure Gauges - At least once in a month

1.1.4 Master gauges against which inspection gauges are checked periodically shall be sent for rechecking in an independent laboratory once in three years. Pyrometer for heating furnace shall be calibrated once in six months.

1.1.5 The firm shall procure a set of certified gauges for inspection of different components. A typical set of these gauges is given in Annex - I for guidance only.

1.2 **QUALITY CONTROL**- All units manufacturing and supplying Valves shall obtain and hold valid Quality Management System certification in accordance with IS/ISO 9001 from BIS to ensure that the manufacturer adheres to various steps during each stage of manufacturing process constantly

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity. Records of all the tests made at the valve manufacturer's work shall be kept and copies of test certificates shall be forwarded to the purchaser of the valve and the inspecting authority.

3. LABELLING AND MARKING – As per the requirements of IS 16484: 2017.

4. CONTROL UNIT – For the purpose of this scheme, the control unit shall consist of a lot of forged valve blanks of the same type and size manufactured in a day/different days from the material of the same supplier or blanks from the same heat number whichever is later under similar process of production.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 Each control unit of finished valves shall be offered for inspection to BIS before dispatch (See Table 3). Valves failing to meet the requirements of the specification shall not be marked with the BIS Standard Mark.

5.2 A certificate as per Annexure -VI shall be issued by the BIS Inspecting Officer in respect of every batch/inspection lots of cylinders marked with BIS Standard Mark.

5.3 Valve without threaded outlet connections shall be fitted with suitable security caps and inlet shall be fitted with a thread cap before dispatch.

5.4 The manufacturer shall maintain a system of works inspection at all stages of manufacture to ensure that the individual valve fittings are free from all manufacturing defects and comply in all respects with the requirements of the Indian Standard Specification.

5.5 FORGING & MACHINING

The licensee shall possess all the requisite infrastructure for the forging and machining of the valve housing in their own premises. Under no circumstances, the forgings of valve housing (body) or machining there of shall be permitted to be sub-contracted or bought from outside.

5.6 BOUGHT OUT COMPONENTS

All other components manufactured/bought from outside shall be inspected by the licensee as per details given in Table 2 and records maintained. Guidelines indicated in Annex-V shall be followed during component/assembled valve inspection.

5.6.1 Each consignment of rubber components received shall be subjected to the following tests at the frequency given in Table 2:

- (i) Shore hardness (as given in approved drawing)
- (ii) Immersion test as per Annex D of IS 16484

6 Design and Fabrication – The valve shall conform to all the requirements given in *clauses 5, 6 & 7* of IS 16484.

6.1 At the time of design approval the valve shall be checked for conformity to all the requirements of the specification and those given in the approved drawing including the cycle test. Whenever there is a change in material or design of the valve, it shall be retested for conformity to all the requirements of the specification.

6.2 The relevant specification for the raw material for other components shall also be declared by the manufacturer and clearly indicated in their drawings and scheme of manufacture.

7. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement Required (R) or Sub-contracting permitted (S)	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
5, 6	Design and Drawing	5, 6, 7	IS 16484	--	--	--	Drawings shall be approved by statutory authority.
4	Material						
	Components	4.1, 4.1.1	IS 16484	S	--	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked. The approved material as per drawing shall only be used.
	Valve Body	4.2	IS 16484	--	--		No further testing is required, if accompanied with test certificate or ISI marked.
	Chemical composition	4.2.1	IS 16484	S	One		
	Tensile Strength and Elongation	4.2.2	IS 16484	R	As per Annex B of IS 16484		If any of the sample fails, twice the number of samples of the original sample size shall be tested from the same control unit. If any of the sample fails to meet the requirement, the entire control unit shall be rejected and scrapped.
	Impact strength	4.2.3	IS 16484	R	As per Annex B of IS 16484		
	Non- Metallic Materials	4.3	IS 16484	R	One		Ozone Ageing test can be sub-contracted.

	Springs	4.4	IS 16484	S	--		No further testing is required, if accompanied with test certificate or ISI marked.
5	Screw Threads on the Valve Stem and in Cylinder Neck (Valve Inlet Threads)						
	Thread checking	5	IS 16484	R	One	Every 15 minutes production from each machine	The threads shall be checked with the help of certified gauges (L1 & L8) and truncation gauges. Valve threads having burrs shall be cleaned for burrs and then checked. In case of failure all the valves produced in preceding 15 minute shall be checked.
6	Valve outlet connection	6	IS 16484	R	Each Valve		Valves failing in any of the critical dimensions shall be rejected (Please see <i>Annex-IV</i> of STI also)
7	Minimum Construction Requirements						
	Dimensions	7.1 to 7.5	IS 16484	R	Each Valve		As per the approved drawing. In case of any failure the valve shall be rejected.
	Control dimensions on assembled valves	7	IS 16484	R	As per Annex B	Each Control unit	In case of any failure, two samples shall be tested. Repeat failure shall result in rejection of the Control unit.
	Excess Flow Check Valve	7.6	IS 16484	R	One	Each Control Unit	As per the approved drawing. In case of any failure, two samples shall be tested. Repeat failure shall result in rejection of the Control unit.
	Minimum finished wall thickness	7.8	IS 16484	R	One	Each Control Unit	In case of failure, two samples shall be tested. Repeat failure shall result in rejection of the lot.
	Valve body seat profile	7	IS 16484	R	One	Each Shift	As declared/given in the drawing Longitudinal section will be cut and seat profile checked with the help of shadowgraph or templates In case the profile is not as per drawing double the number of sample shall be tested. Repeat failure shall result in rejection of the lot.
	Dimensions and profile						
	Visual smoothness free from cuts and burrs,	7	IS 16484	R	Each Valve		Valve housings having cuts, burrs or other defects on the seat shall be rejected.

	General Checking with magnifying glass					
8	Type Approval Test (For approval of new valve or if there is change in drawing of valve)					
	Hydraulic pressure Test	8.1	IS 16484	R	One	
	External & Internal Tightness Test	8.2	IS 16484	R	One	
	Valve Closure Test	8.3	IS 16484	R	One	
	Valve Stem over Torqueing Deformation Test	8.4	IS 16484	R	One	
	Hand Wheel Fire Exposure Test	8.5	IS 16484	R	One	
	Impact test	8.6	IS 16484	R	One	
	Resistance to Excessive Closing Torque test	8.7	IS 16484	R	Two	
	Resistance to Excessive Opening Torque test	8.8	IS 16484	R	Two	
	External Tightness	8.9	IS 16484	R	Four	
	External and Internal tightness after ageing	8.10	IS 16484	R	Five	
	Performance test of Safety relief Valve	8.11	IS 16484	R	Five	
	SRV Flow Capacity	8.12	IS 16484	R	Five	
	Cycle Test	8.13	IS 16484	R	Two	25000 Valves of same type or three months whichever is earlier

	External and Internal tightness test -High temperature	8.14	IS 16484	R	Two	
	External and Internal tightness test-Low temperature	8.15	IS 16484	R	Two	
	Examination of dismantled valves	8.16	IS 16484	R	Two	
	Vibration test	8.17	IS 16484	R	One	
	Corrosion resistance	8.18	IS 16484	R	One	
	Excess flow device (Flow limiter)	8.19	IS 16484	R	One	
	Performance test	8.20	IS 16484	R	One	
	Filling trial	8.21	IS 16484	R	One	
Annex C- Routine tests						
	Hydraulic pressure test	8.1	IS 16484	R	Two	Each control unit In case of failure, all the valve housing shall be rejected.
	External tightness and internal tightness test	8.2	IS 16484	R	Each Valve	
	Safety Valve working (Start to leak and release pressure)	8.11	IS 16484	R	Each Valve	
	Working of excess flow device	8.19	IS 16484	R	Each Valve	

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.

TABLE 2
LEVELS OF CONTROL

(Para 5.6 of the Scheme of Inspection and Testing)

TEST DETAILS			LEVELS OF CONTROL			
Cl.	Requirement	Test Methods Clause Reference	No. of samples	Lot Size	Frequ ncy	Remarks
	INTERNAL COMPONENTS					
(i)	Rubber and other Moulded Components					
(a)	Immersion test (Resistance to hydrocarbons)	Annex D IS 16484	One	1000 pieces or less	-	-
(b)	Shore hardness Test	As per approved Drawing	1% with a minimum of 10 pieces or on test slab.	Each Consignment		-
(c)	High temperature test	Annex H IS 9798	4 finished valves	One control unit	Once in a Week	-
(d)	Low temperature test	Annex H IS 9798	4 finished valves	One control unit	Once in a Week	-
(ii)	Spring (Cl. 4.4 of IS 16484)- Conformity to be assessed on the basis of Supplier's test certificate/test report from approved lab.					
(a)	Load test	As per approved Drawing	1% with a minimum of 5 pieces & maximum of 20 pieces.	Each Consignment	-	Counter check at assembly stage
(b)	Permanent set test	Annex II of STI	5 pieces.		-	
(c)	Nitric Acid Immersion test	Annex III of SIT	5 pieces		-	

(d)	Dimensional check	As per approved Drawing	1% with a minimum of 5 pieces & maximum of 20 pieces.		-	
(iii)	Security (protection) cap spring					
(a)	Nitric Acid Immersion test	Annex III	1% with a minimum of 5 pieces. & maximum of 20 pieces.	Each Consignment	-	Counter check at assembly stage
(b)	Dimensions	As per approved Drawing			-	
(iv)	Brass Components- Acme Connector, Poppet, Check Nut ,Hand Wheel ,Lock Pin, Piston, Adjustment Nut, Packing Holder, EFD Body, EFD Screw, EFD Block					
(a)	Mercurous nitrate test	IS 2305	1% with a minimum of 5 pieces & maximum of 20	Each Consignment	-	As per approved drawing using Certified gauges
(b)	Dimensions	As per approved drawing			-	

Table 3**INSPECTION OF FINISHED LOT:**

After testing and inspection by the firm, each lot shall be offered to BIS for release. Numbers of valves shall be selected by BIS officer as per sampling plan given below. The selected valves shall be tested for outside threads on valves inlet (clause 6), hydraulic pressure test (clause 8.1) and Pneumatic Test (clause 8.2), Safety valve working (Clause 8.11 & 8.12), Working of excess flow device (Cl. 8.19) as specified in IS 16484 and all other dimensions shall be checked as per approved drawings for particular valve The valves shall also be tested for control dimensions (See Annex-IV). The sampling plan will be as under:

Sl. No.	Number of Valve Blanks in the Lot	Sample to be drawn.
(1)	(2)	(3)
i)	Up to 500	10
ii)	501 to 3 200	14
iii)	3 201 to 10 000	20
iv)	10 001 to 35 000	32
v)	35001 and Above	50

Hydraulic Pressure Test shall be carried out on two valves from each control unit.

Safety valve working (Clause 8.11 & 8.12), Working of excess flow device (Cl. 8.19) shall be carried out on 5 valves from a lot.

Note: In case during inspection by BIS officer valves are found with defects like burrs on valves inlet/outlet connection etc. which may likely to affect the result of inspection, the firm may be advised to segregate/rectify such valves and reoffer for inspection. Any repeat failure shall result in the rejection of the whole lot. Lot can be reoffered only once. All rejected valves shall be scrapped.

ANNEX – I

(Clauses 1.1.5 of the Scheme of Inspection and Testing)

LIST OF GAUGES FOR VALVE HOUSING & SPARES:

Sl. No.	Gauges	Type of gauge	Limits	Remarks
1.	¾” NGT (Inlet Thread)	Standard Thread Ring Gauge Standard Transaction Gauge		
2.	1.1/4” ACME (Outlet ACME Thread)	Thread Ring Gauge		
3.	16.69 ± 0.48 (Poppet Height from outlet face)	Depth Gauge / Vernier	H = 17.17 L = 16.21	
4.	M18 X 1 (SRV Internal Thread for Adjustment Nut)	Standard Thread Plug Gauge (Go & No Go)		
5.	M18 X 1 (SRV Adjustment Nut External Thread)	Standard Thread Ring Gauge (Go & No Go)		
6.	M10 X 1 (Internal Thread for EFD assembly)	Standard Thread Plug Gauge (Go & No Go)		
7.	M10 X 1 (External Thread on EFD Inlet)	Standard Thread Ring Gauge (Go & No Go)		
8.	M17 X 1.25 (Internal Thread for Handwheel Assembly)	Standard Thread Plug Gauge (Go & No Go)		
9.	M17 X 1.25 (External Thread on Handwheel)	Standard Thread Ring Gauge (Go & No Go)		
10.	5/8” BSP (LH) (Internal Thread for cartridge assembly)	Standard Thread Plug Gauge (Go & No Go)		
11.	5/8” BSP (LH) (External Thread on cartridge Inlet)	Standard Thread Ring Gauge (Go & No Go)		
12.	Ø6.5 ± 0.05 mm (Internal Diameter of SRV Seat)	Standard Plug Gauge (Go & No Go)	Go = 6.45 No Go = 6.55	
13.	Ø16.00 ± 0.1 mm (Internal Diameter of Inlet Side)	Standard Plug Gauge (Go & No Go)	Go = 15.9 No Go = 16.1	
14.	3.5 + 1 /-0 mm (Minimum Poppet Travel)	Dial Gauge (3.5 + 1 /-0 mm)	H = 4.5 L = 3.5	
15.	5 kg-cm (Minimum unscrewing torque for adjustment Nut at SRV)	Torque Wrench (5 Kg-cm)		

ANNEX – II

(Table 2 of Scheme of Inspection and Testing)

Test Method for Permanent Set Test

The purpose of set test is to ascertain the loss in compression load after being compressed for 24 hours and maintaining a gap of 0.1 to 0.3 mm in between the coils.

Test Method:

1. Test the spring for the compression load on a spring tester as per requirements given on the drawing and record the load observed.
2. The spring shall kept between two parallel plates and then compressed in such a way that there is a gap of 0.1 and 0.3 mm between the coils. The gap may be checked with the help of a feeler gauge (Strips of wax paper of known thickness may be inserted in between the coils for uniformity).
3. The spring shall be kept in the compressed condition for 24 hours after which the load shall be released. It shall then be kept for 5 hours in Free state.
4. The spring shall be checked again for load test as in (1) above.
5. The difference in the two values of the load applied in (1) and (4) above shall not be more than 100 grams.

NOTE: The spring under test should never be compressed to its solid length since it may spoil the spring and affect the results. Springs compressed to solid length shall be rejected.

ANNEX – III

(Table 2 of Scheme of Inspection and Testing)

Test for Rust-Proofness of springs (Stainless Steel)

(Nitric Acid Immersion Test)

Each lot of springs shall be subjected to rust proof test as per details given below:

1. The spring shall be degreased and buffed with a fine abrasive paper.
2. These shall then be kept immersed in a 2% Nitric Acid solution for one minute.
3. The result can be observed immediately when the material has been taken out of the Nitric Acid solution. If the material is still bright it is rust-proof; if it is black, the material is not rust-proof.

ANNEX – IV

(Table 2 of Scheme of Inspection and Testing)

CONTROL DIMENSIONS TO BE INSPECTED ON ASSEMBLED VALVES:

1. Poppet height 16.69 ± 0.48 mm to be measured from outer face with dial gauge / Vernier. **C**
2. Minimum Poppet travel $3.5 + 1$ mm / -0 mm to be measured with the dial indicator. **C**
3. Adjustment Nut at the SRV of the Valve to be tightened at set pressure of $20.0 (+0.0/-1.0)$ kgf/cm². **C**
4. Open & Close Marking with direction to be marked on Handwheel of Valve. **C**
5. Special Tool to be used for assembling & disassembling of outlet cartridge. **C**

STRENGTH SPECIFICATION:

1. The riveting of the adjustment Nut at the SRV of the valve should be checked for unscrewing torque which should be 5 kg-cm minimum.

NOTE: **C** – Critical Dimension

ANNEX – V


(Para 5.6 of Scheme of Inspection and Testing)

1. Before inspection all rubber components shall be cleaned of all the moulding wax by washing them in hot water at 65 °C.
 - 1.1 After washing, the rubber components should be completely air-dried.
2. Rubber components with fins, burns, moulding defects, loose particles, cavities or having rough surface shall be rejected.
3. Stampings of markings on the square flats shall be effected in such a way that the internal bores of the valve housings do not get deformed. This shall be ensured with the help of certified gauges.
4. An approved drawing of all the components shall be made available to the BIS Inspecting Officer for reference.
5. Hydrostatic test shall be carried out on samples of valve housing before assembly and these may be counter checked by BIS.
6. Valve housing with pits, burrs, black spots, cracks, cavities and other defects shall be rejected.

ANNEX – VI

(Para 5.2 of the Scheme of Inspection and Testing)

Test Certificate for Valve Fittings for use with LPG Cylinders IS 16484

Name of the Manufacturer	IS 16484 CM/L----- 		
Certificate No:	Date:		
Purchaser:			
Order No.			
Control Unit No:	Batch No		
Quantity offered for inspection			
VALVE FITTINGS DESCRIPTION			
This is to certify that the valve fittings as mentioned below were inspected at M/s. ----- and these meet the requirements of IS 16484 : 2017 and Drawing. No:			
RESULTS OF INSPECTION			
Test with clause reference	No. of		
	Inspected	Passed	Rejected
a) Visual inspection			
b) External threads on Valve inlet, Cl. 5			
c) Valve outlet connection, Cl. 6			
d) Hydraulic Pressure Test, Cl. 8.1			
e) Pneumatic Test, Cl. 8.2			
f) Safety Valve working (Start to leak and release pressure), Cl. 8.11, 8.12			
g) Working of excess flow device, Cl. 8.19			
(f)From the test records of manufacturer			
(i)Tensile Strength			
(ii) % Elongation			
(ii) Impact strength			
QUANTITY PASSED :			
Rejected valve fittings and the method for their disposal			
Signature:	Signature:		
Name & Designation of the representative of Licensee	Name and Designation Inspecting Officer of Bureau of Indian Standards		
NOTE: A copy of the certificate may be sent to PESO, Nagpur			

Annex D

Possible tests in a day

1. Hydraulic pressure Test (Cl. 8.1)
2. Pneumatic Test (Cl. 8.2)
3. Valve Closure Test (Cl. 8.3)
4. Valve Stem Test (Cl. 8.4)
5. Hand Wheel Fire Exposure Test (Cl. 8.5)
6. Impact test (Cl. 8.6)
7. Resistance to Excessive Closing Torque test (Cl. 8.7)
8. Resistance to Excessive Opening Torque test (Cl. 8.8)
9. Performance Test (Cl. 8.11)
10. Flow Capacity Test (Cl. 8.12)
11. External Internal Tightness- High Temperature Test (Cl. 8.14)
12. External Internal Tightness- Low Temperature Test (Cl. 8.15)
13. Examination of Dismantled Valves Vibration Test (Cl. 8.16)
14. Excess Flow Device (Flow Limiter) (Cl. 8.19)
15. Performance Test (Cl. 8.20)
16. Filling trial (Cl. 8.21)

ANNEX E

Scope of Licence

“Licence is granted to use Standard Mark as per IS 16484: 2017 with the following scope:	
Name of the product	Liquid Off-Take Valve fitting to Gas Cylinders or Tanks (Mobile or Static) for Liquid Petroleum Gas (LPG)
Variety	
Any other aspect required as per Standard	PESO approved drawing number and approval number