

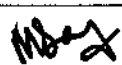
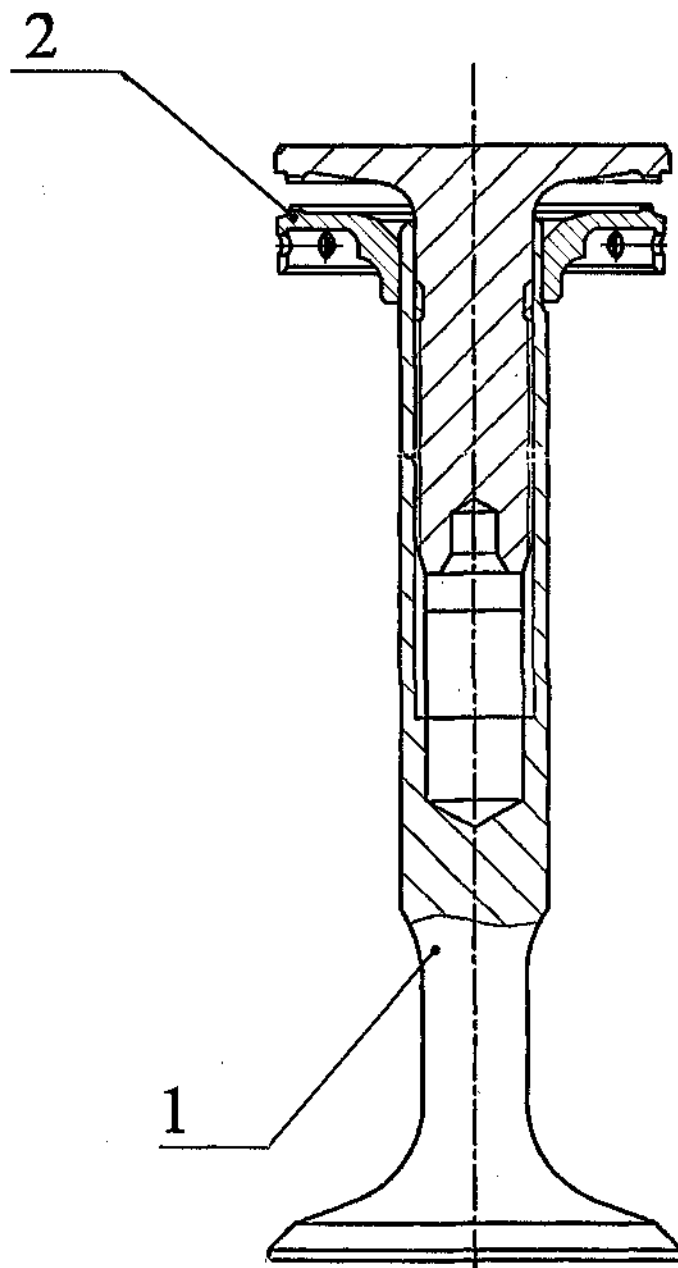


USED ON V92S2 ENGINE I/L CREATED BASED ON 11 TH ALT. COMM NEW POINT No.7	ZONE	ITEM NO	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION	QTY	REMARKS	
			CQA(HV) 506 614E & ITEM LIST		ASSY. EXHAUST VALVE WITH DISC LOCK			
		1	Cb 306-07-12 & I/L		EXHAUST VALVE ASSY.	1		
		2	306-48-7		VALVE DISC LOCK	1		
		ISSUE	DATE	NATURE OF AMENDMENTS		ISSUE	DATE	NATURE OF AMENDMENTS
	F-	DRN		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.				
	CHD		TITLE : ASSY. EXHAUST VALVE WITH DISC LOCK					
	APPD							
	DATE	09 JAN 2016	SHT. NO. 1 OF 1	D S CAT NUMBER	ITEM LIST FOR CQA(HV) 506 614E			

DRAWING NUMBER
CQA(HV) 506 614E

SHEET No. 1 OF 1



TECHNICAL REQUIREMENTS

1. CIRCUMFERENTIAL PLAY OF THE VALVE DISC LOCK 306-48-7 (ITEM No.2) ON FLATS OF THE EXHAUST VALVE STEM Cb 306-51-01 * SHOULD NOT EXCEED 0.3 ON 50 DIA.
2. VALVE DISC LOCK 306-48-7 SHOULD MATCH CLOSELY WITH VALVE DISC 306-47-2 * BY ALL THEIR SPLINES, 100% CHECKING IS TO BE ENSURED.
3. ASSY. EXHAUST VALVE WITH DISC LOCK IS TO BE PROCURED/ REPLACED AS A SET.
4. THE PARTS SHOULD BE CLEAN, FREE FROM DUST, DIRT AND OILED TO PREVENT RUST.

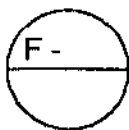
* PART OF ITEM No.1

DRG. CREATED BASED ON 11TH ALT. COMM. NEW POINT No.7

PILOT SAMPLE SHOULD BE APPROVED BEFORE BULK PRODUCTION.

EST. WT. (Kg) 0.420 Kg TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.



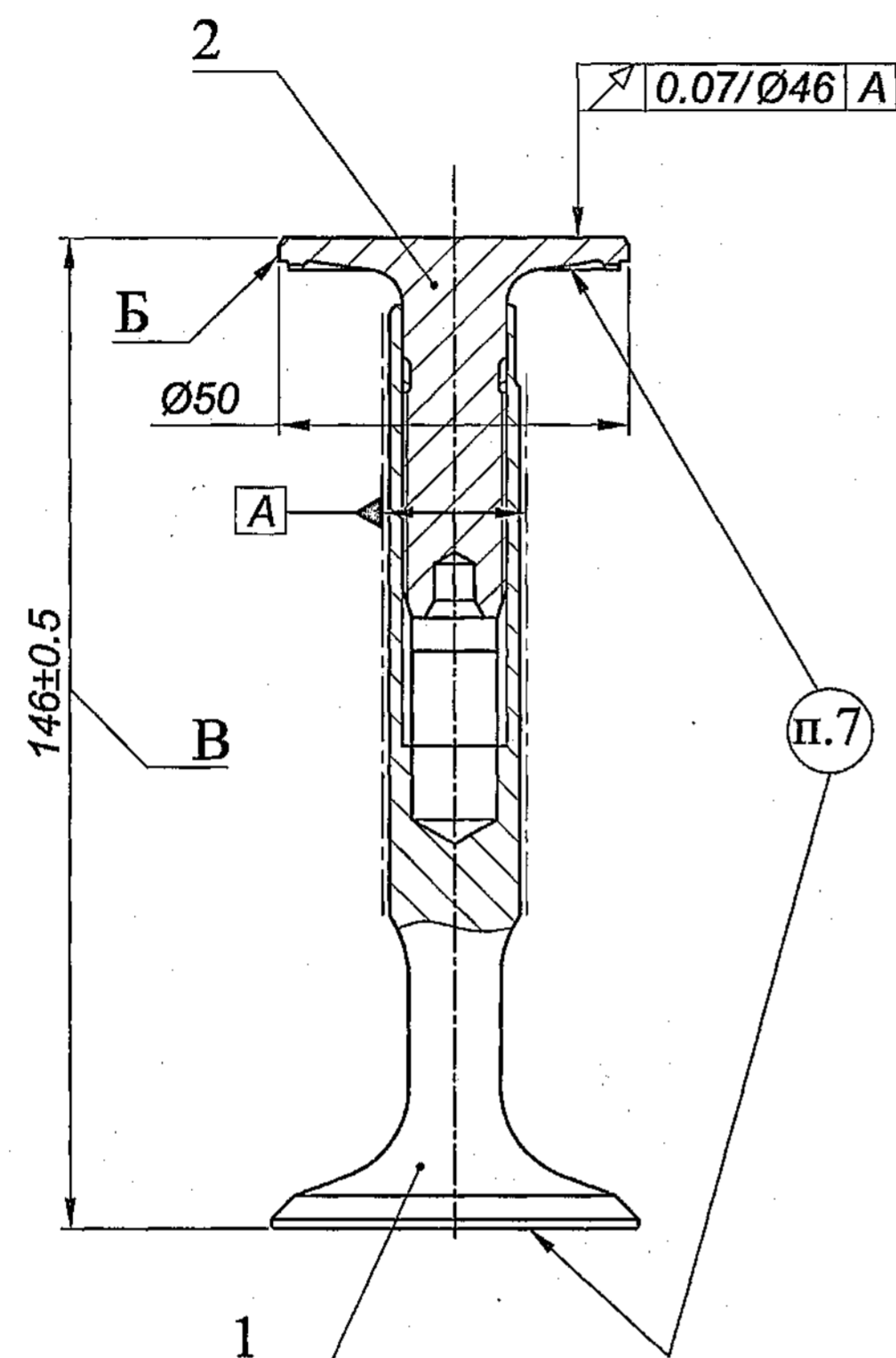
SIZE A3

			DRN	<i>[Signature]</i>	MATERIAL :-	USED ON :-	
			CHD	<i>[Signature]</i>	---	V92S2 ENGINE	
			APPD	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI		
			DATE	09 JAN 2016			
			SCALE:-	1 : 1	TITLE :- ASSY. EXHAUST VALVE WITH DISC LOCK		
			DIMENSIONS IN mm				
			TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		D S CAT NUMBER		
			ALL THREADS TO CONFORM TO IS:4218.PART-4				
			ISSUE	DATE	NATURE OF AMENDMENTS	DRAWING NUMBER CQA(HV) 506 614E	

USED ON	ITEM No.	DRAWING NUMBER	D S CAT NUMBER	DESCRIPTION		QTY	REMARKS	
Cb 406-16-15 Cb 406-17-15 I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - 2		Cb.306-07-12		EXHAUST VALVE ASSY				
		ITEM LIST						
	1	Cb.306-51-01 & I/L		EXHAUST VALVE ASSY		1		
	2	306-47-2		VALVE DISC		1		
		ISSUE	DATE	NATURE OF AMENDMENTS		ISSUE	DATE	NATURE OF AMENDMENTS
	F - 3 66/166	DRN	<i>[Signature]</i>	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.				
		CHD	<i>[Signature]</i>	TITLE : EXHAUST VALVE ASSY				
	APPD	<i>[Signature]</i>						
	DATE	14.5.07	SHT. NO. 1 OF 1	D S CAT NUMBER	ITEM LIST FOR Cb.306-07-12			

DRAWING NUMBER
Cb. 306-07-12

SHEET No. 1 OF 1



1. Before Assembly:
 - a). Valve (item 1) and valve disc (item 2) should be thoroughly washed and blow off with dry compressed air.
 - b). Disc thread should be lubricated with mixture of castor oil GOST 6757-73 and graphite ГЛС-2 as per GOST 5420-74 in the ratio of 5:1. It is permitted to use graphite as per GOST 5279-74.
2. The disc (item 2) should be screwed in to the valve stem (item 1) upto the dimension 'B'.
3. While screwing in the torque should be (2.5...12.5)Nm [(25...125)kgf.cm]
4. Shake in disc (item 2) with respect to valve stem (item 1) at the entire dimension 'B' is not allowed. Shake in disc while going in to guiding portion (Ø14.2 mm) of valve stem should not be more than 0.04 mm. Checking of disc shakness to be carried out on surface 'B' and datum surface 'A'.
5. Tolerance of end play is ensured in any position of disc with respect to valve stem while unscrewing it from the dimension 'B' by one turn.
6. Slight traces of rubbing and external oxidized surface are allowed on guiding portion of disc (item 2)
7. Pairing number to be marked by etching from 1 to 99. For every one hundred numbers to be marked with alphabetical letter.

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 2

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. (Kg)	TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
0.37	

ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

DRN	APPD	MATERIAL:-	USED ON:- C6 406-16-15 C5 406-17-15
CHD	DATE	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	AVADI
APPD	SCALE:- 1:1	TITLE:-	
DATE	DIMENSIONS IN mm	EXHAUST VALVE ASSY.	
SCALE:- 1:1	TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69	D S CAT NUMBER	DRAWING NUMBER
DIMENSIONS IN mm	ALL THREADS TO CONFORM TO		Cb. 306-07-12
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102-69	ISSUE	DATE	NATURE OF AMENDMENTS
ALL THREADS TO CONFORM TO			

F-3
67
168
SIZE A2

USED ON

ITEM No.

DRAWING NUMBER

D S CAT NUMBER

DESCRIPTION

QTY

REMARKS

Cb.306-51-01

EXHAUST VALVE ASSY

ITEM LIST

1

306-50-10

EXHAUST VALVE

N.D

STEEL 40X10C2M

TY 14-1-3092-81

1

2

306-52

ADDITIONAL RING

1

I/L CREATED BASED ON RUSSIAN ORIGINAL ISSUE - 4

Cb. 306-07-12

ISSUE

DATE

NATURE OF AMENDMENTS

ISSUE

DATE

NATURE OF AMENDMENTS

DRN

[Signature]

CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI.

CHD

[Signature]

TITLE :

EXHAUST VALVE ASSY

APPD

[Signature]

DATE

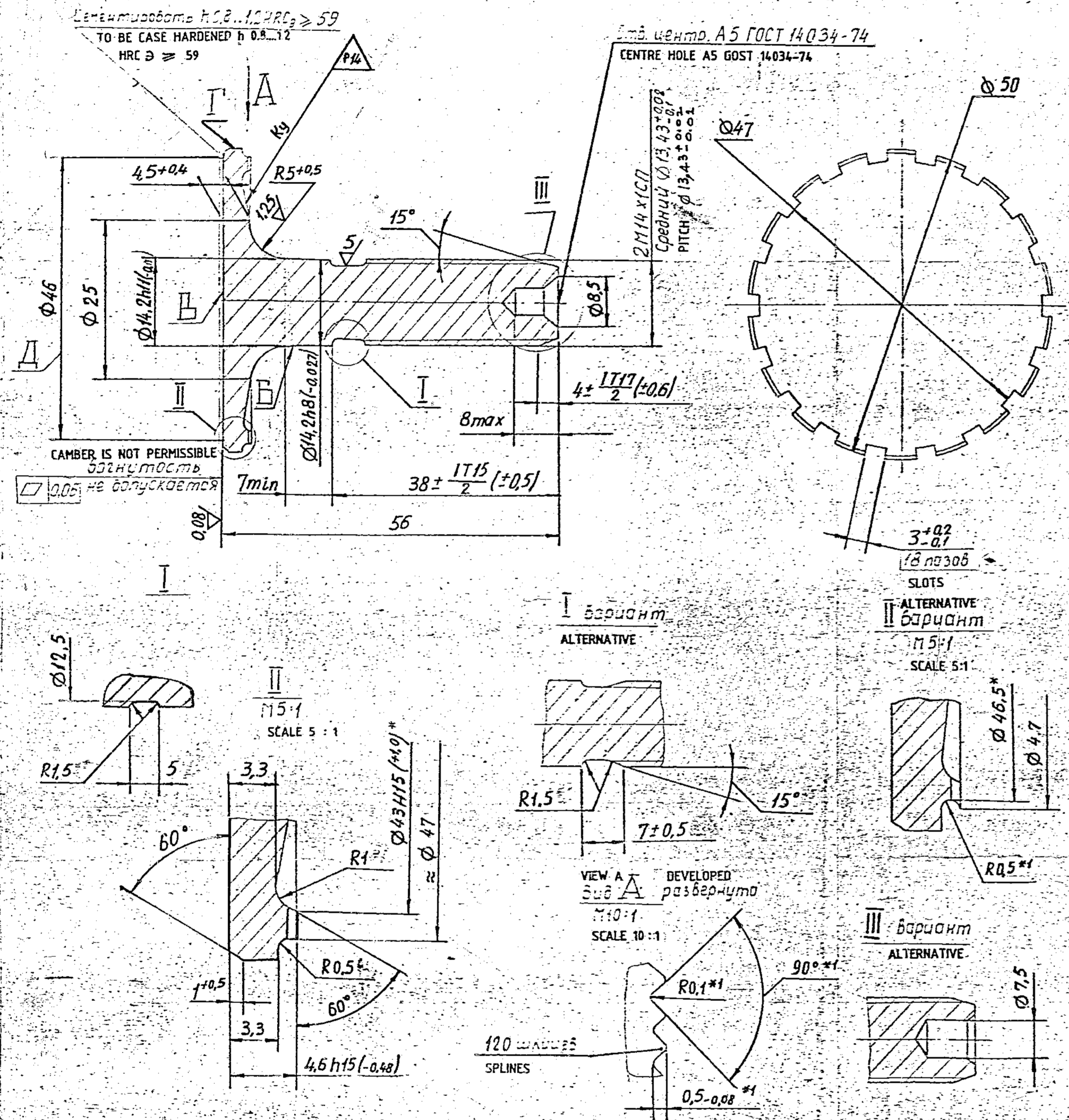
14.5.07

SHT. NO. 1 OF 1

D S CAT NUMBER

ITEM LIST FOR
Cb.306-51-01

F-3
90/166



1. Группа контроля III по ТТ-11.
2. HRC, 26...42, кроме места, обозначенного стрелой.
3. Неуказанные предельные отклонения размеров: отверстий по H14; валов по h14; остальных $\pm \frac{IT14}{2}$.
4. Технические требования на резьбу по нормали 82021-00.
5. Торцовые шлицы и расположение их относительно оси поверхности Б проверять специальным калибром в 3^х положениях через 120°. Прилегание должно быть плотным без ощутимой качки. Принимать по контрольному образцу.
6. Допуск торцового биения поверхности В относительно оси среднего диаметра резьбы не более 0,04 мм на диаметре Д.
7. Допуск радиального биения поверхности Б относительно оси среднего диаметра 0,03 мм, не более.
8. Допускается подкамливание остальных поверхностей.
9. Допускается при накатке резьбы закручение гребешков R=0,17 мм, не более.
10. Допускается цементация поверхности Г h=1,2 мм, не более.
11. Допускается отсутствие центрального отверстия.
12. На дне канавки выхода резьбы риски не допускаются.
13. Деталь проверить на магнитном дефектоскопе. Технические требования и правила приемки согласно ТТ. ИЗ-17.
14. Диаметр клейма 5 мм, не более.
- 15.* Размеры контролировать до накатки торцовых шлицев.
- 15.* Размеры обеспечить инструментом.
17. Покрытие хим. окс. прм.

- 1) INSPECTION GROUP III AS PER TT-11.
- 2) HRC 26...42 UNLESS OTHERWISE SPECIFIED.
- 3) UNSPECIFIED LIMIT DEVIATION OF DIMENSIONS OF HOLES AS PER H14, SHAFT PER h14 AND OTHER DIMENSIONS $\pm \frac{IT14}{2}$.
- 4) TECHNICAL REQUIREMENTS FOR THE THREAD ARE AS PER STANDARD 82021-00.
- 5) THE FACE SPLINES AND THEIR POSITION RELATIVE TO THE AXIS OF SURFACE B BE CHECKED WITH A SPECIAL GAUGE. THE CHECK SHOULD BE CARRIED OUT AT 3 POINTS EVERY 120°. THE ENGAGEMENT SHOULD BE FULL WITHOUT PLAY AND ACCEPTED ON TEST SPECIMEN.
- 6) THE RUNOUT OF SURFACE B RELATIVE TO THE AXIS OF THE DIAMETER OF THE THREAD SHOULD NOT EXCEED 0.04mm ON DIAMETER D.
- 7) THE RADIAL RUNOUT OF SURFACE B RELATIVE TO THE PITCH DIAMETER OF THE THREAD SHOULD NOT EXCEED 0.03mm.
- 8) THE REPEATED CARBURIZATION OF THE REMAINING SURFACE IS ALLOWED.
- 9) WHEN ROLLING THE THREAD THE CRESTS MAY BE BLUNTED TO A RADIUS NOT EXCEEDING 0.17mm.
- 10) SURFACE G MAY BE CARBURIZED THE DEPTH OF CARBURIZATION SHOULD NOT EXCEED h=1.2mm.
- 11) CENTRE HOLE MAY BE DRILLED.
- 12) MARKS ARE NOT ALLOWED ON THE BOTTOM OF GROOVE TO WHICH THE THREAD COMES.
- 13) THE COMPONENT SHOULD BE CHECKED FOR DEFECTS ON MAGNETIC FIELD FLAW DETECTOR. TECHNICAL REQUIREMENTS AND ACCEPTANCE RULES ARE IN ACCORDANCE WITH TECHNICAL REQUIREMENTS ИБ-17.
- 14) MARKING DIAMETER SHOULD NOT EXCEED 5mm.
- 15) DIMENSIONS SHOULD BE CHECKED BEFORE FORMING THE FACE SPLINES. MARKING DIAMETER SHOULD NOT EXCEED 5mm.
- 16) DIMENSIONS TO BE ENSURED BY TOOL.
- 17) COATING: CHEMICAL OXIDIZING OIL FINISHING.

Ⓐ ALT. MATERIAL BS: 970. STEEL GRADE En36B.

CHEMICAL COMPOSITION	MECHANICAL PROPERTIES
C = 0.12 TO 0.18	ULTIMATE TENSILE STRENGTH — 102 kg/mm ² (min)
Si = 0.10 TO 0.35	ELONGATION % — 13 (min)
Mn = 0.30 TO 0.60	IZOD IMPACT — 4.8 kgm/cm ² (min)
Cr = 0.60 TO 1.10	
Ni = 3.0 TO 3.75	
P = 0.05 (Max)	
S = 0.05 (Max)	

Ⓑ EQUIVALENT MATERIAL
EN 36B TO BS: 970/
13 Ni/13 Cr-3 TO IS: 4432-1988

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

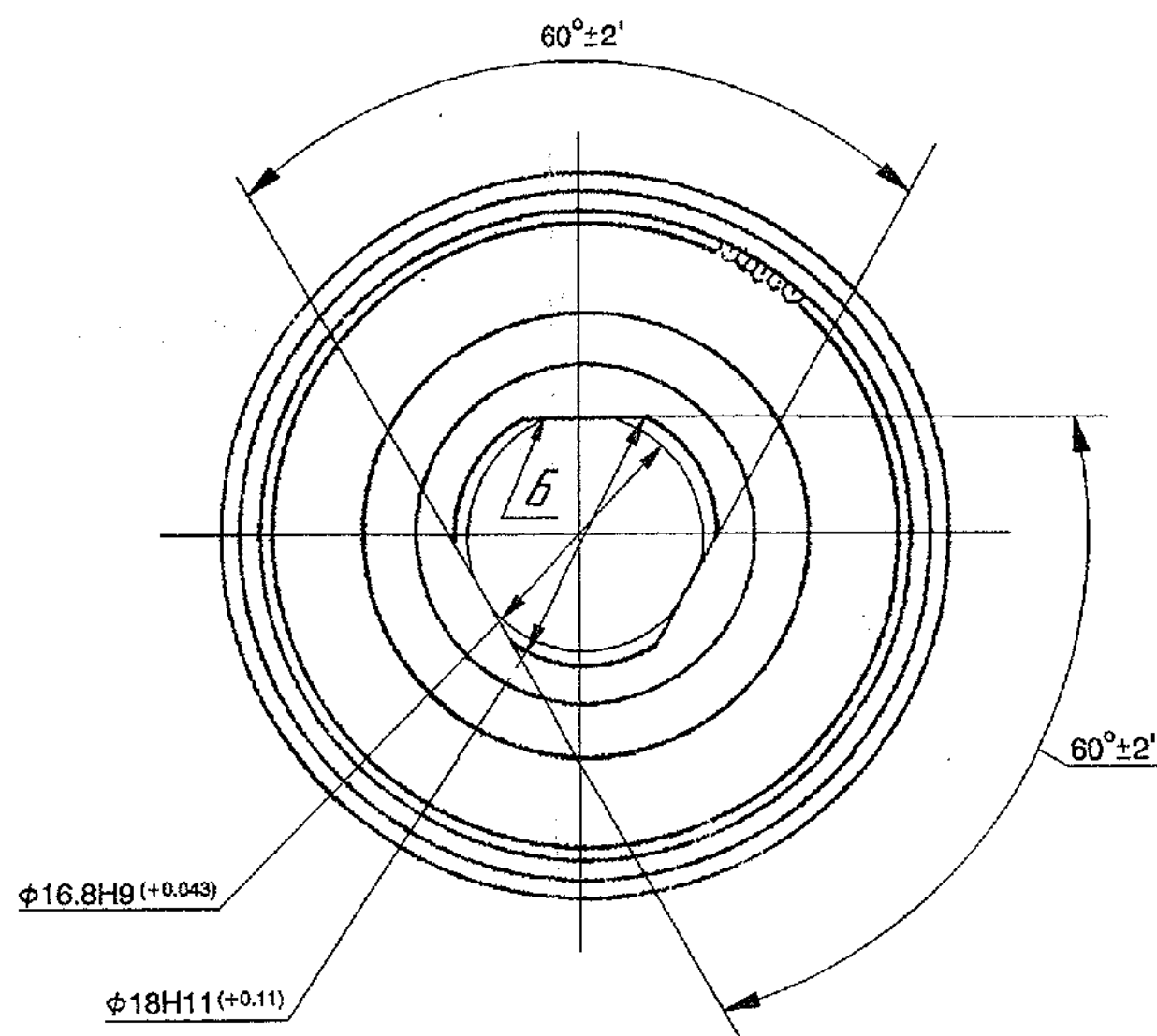
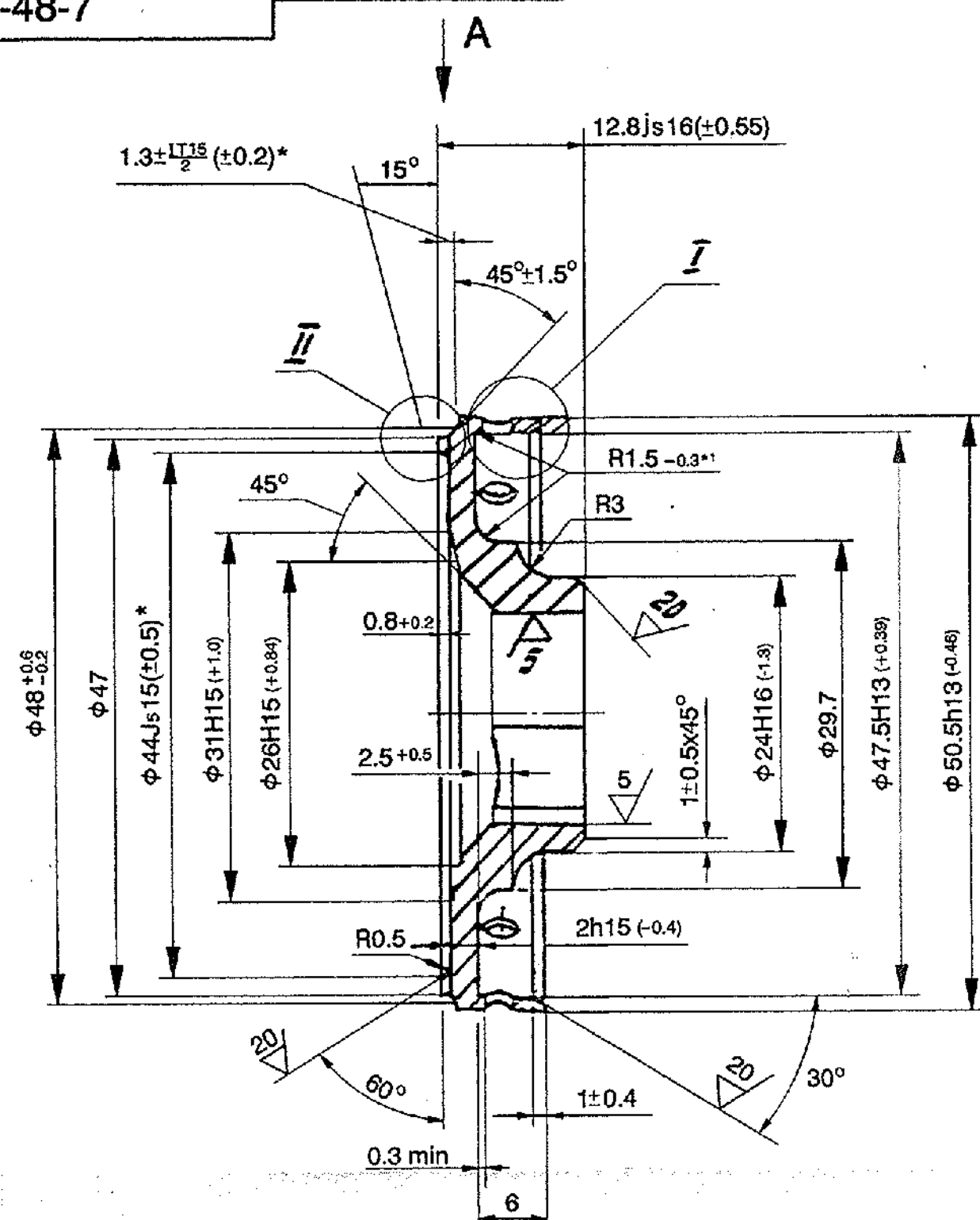
EST. MASS 0.15 Kg.
TO BE STAMPED OR MARKED WHERE INDICATED THUS # LETTERS!
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

GRN	ED	TY 14-1-381-72	MATERIAL - STEEL 12XH3A	USED ON - CB 306-06-36 CB
APPD	DATE 23-3-88	SCALE - 2:1	CONTROL RATE OF QUALITY ASSURANCE HEAVY VEHICLE	CB 306-07-3A
SCALE - 2:1			AVA 01	
TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS 2102-69			TITLE	VALVE DISC
ALL THREADS TO CONFORM TO	ISSUE DATE	NATURE OF AMENDMENTS	S EAT NUMBER	306-47-2

DRAWING NUMBER
306-48-7

SHEET No. 1 OF 1

10/ (✓)



1. INSPECTION GROUP III AS PER TT-11.
2. HRC₃ 28.....32.
3. UNSPECIFIED LIMIT DEVIATIONS OF DIMENSIONS HOLES AS PER H 14, SHAFTS AS PER h 14, OTHERS ± $\frac{IT_{14}}{2}$.
4. THE FACE SPLINES SHOULD BE CHECKED WITH A SPECIAL GAUGE IN 3 POSITIONS THROUGH 120° ON A MANDREL WHICH IS MADE TO SUIT MAXIMUM DIMENSION ON THE MATING COMPONENT.
5. ENGAGEMENT OF SPLINES SHOULD BE ACCEPTED AS PER TEST SPECIMEN.
6. RELATIVE POSITION OF SURFACE B IS TO BE CHECKED BY SPECIAL GAUGE. GAUGE MANUFACTURED AS PER MAXIMUM DIMENSIONS OF MATING COMPONENTS.
7. COATING: CHEMICAL OXIDIZING OIL FINISHING.
8. TO BE MARKED ON TAG FOR THE BATCH OF COMPONENTS WITH SEALING.
9. * DIMENSIONS TO BE CHECKED BEFORE ROLLING FACE SPLINES.
10. * 1 DIMENSIONS TO BE ENSURED WITH TOOL.
11. HARDNESS MAY BE CHECKED ON BLANK ON EACH HEAT TREATED BAR BHN 255 285.
12. SLOT MAY BE MADE AS PER ALTERNATIVE 2 INSTEAD OF ONE FROM HOLE B.

EXPLANATORY NOTE :

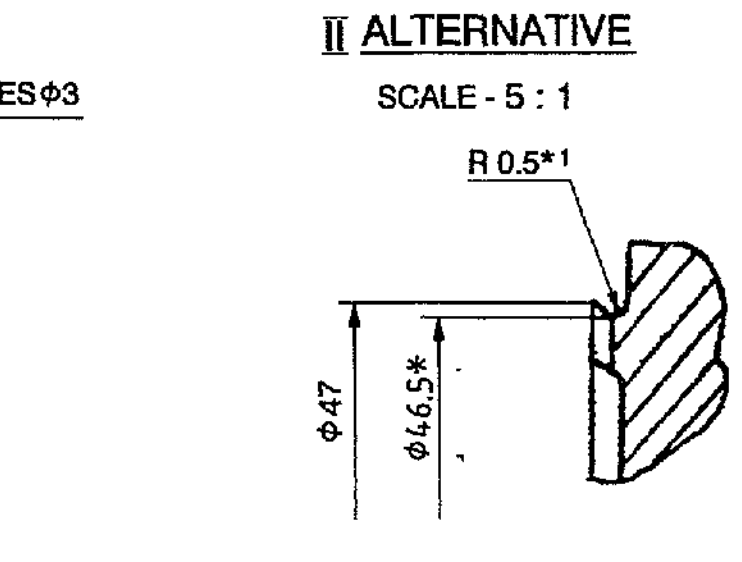
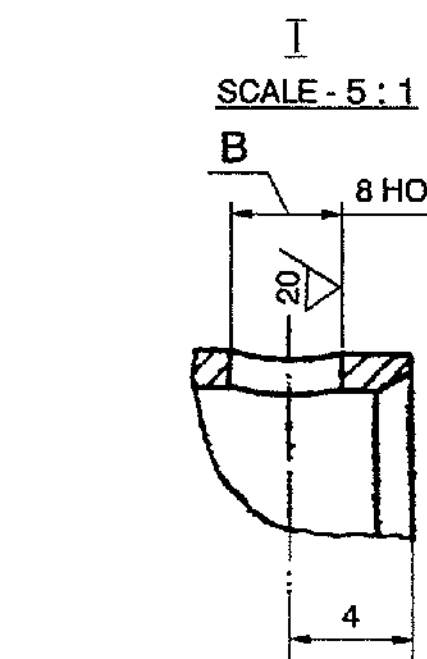
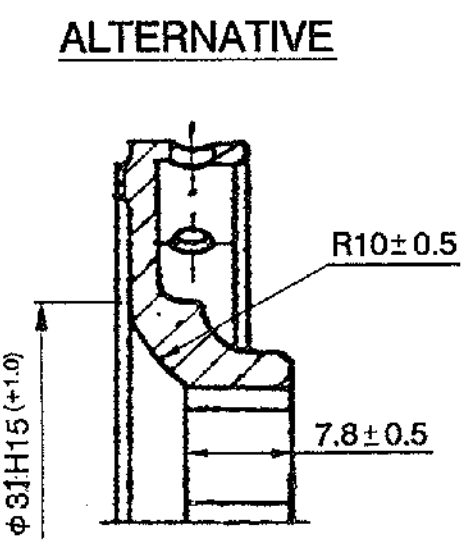
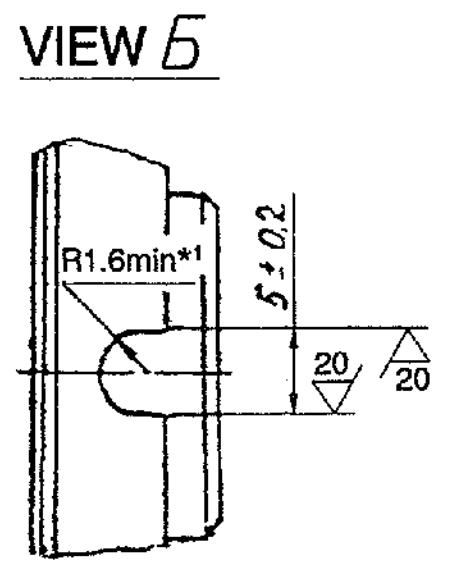
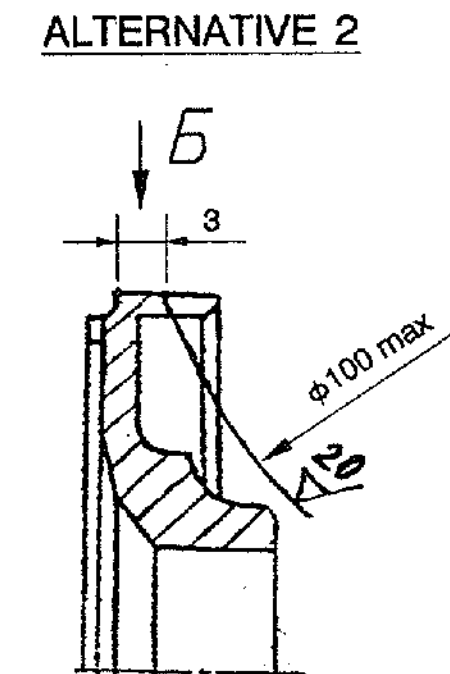
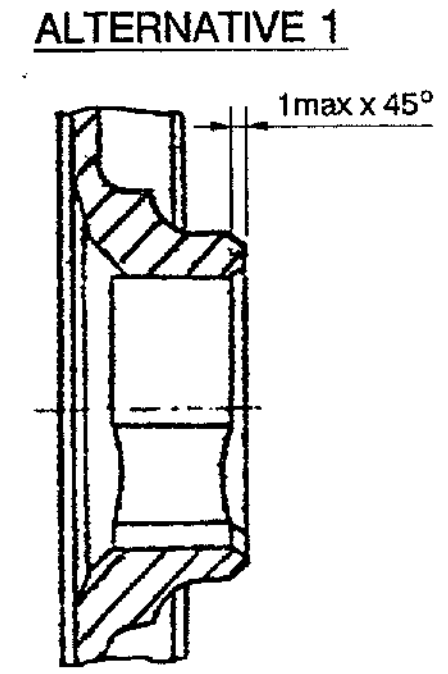
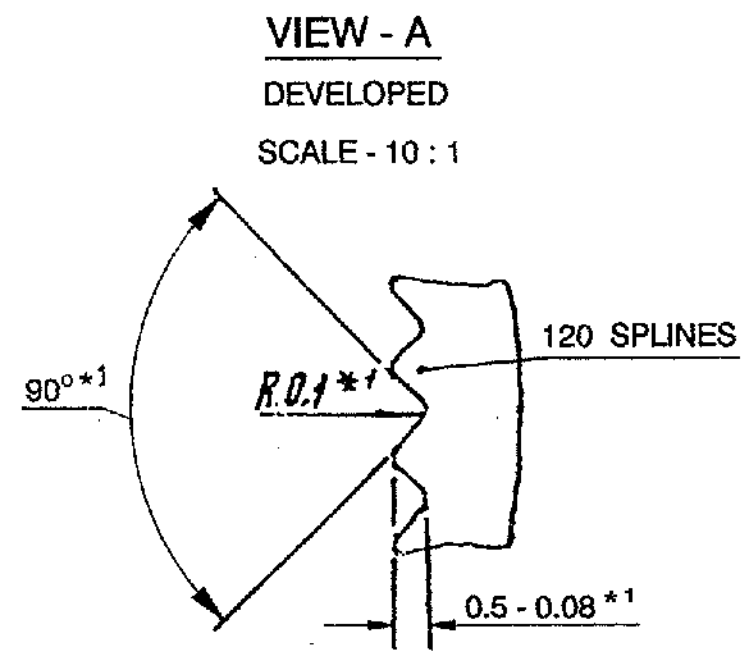
MATERIAL QUOTED : STEEL 38 X C
GOST 4543-71
38XC CHROMIUM SILICON QUALITY STEEL

CHEMICAL COMPOSITION:

GRADE OF STEEL	CONTENT OF ELEMENTS %							
	C	Si	Mn	Cr	P	S	Cu	Ni
38 X C	0.34 - 0.42	1.00 - 1.40	0.30 - 0.60	1.30 - 1.60	0.035	0.035	0.30	0.30

MECHANICAL PROPERTIES:

GRADE OF STEEL	YIELD POINT Kgf/mm ²	ULTIMATE TENSILE STRENGTH Kgf/mm ²	RELATIVE ELONGATION %	RELATIVE REDUCTION ALONG CROSS SECTION %	IMPACT STRENGTH Kgf/cm ² Kgf.m/cm ² (C)
38 X C	75	95	12	50	7



(A) ALT.MATERIAL: STEEL 709M40 (EN-19) TO BS-970 P1-1-1983

EST. WT. (Kg) 0.05
TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)
ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

ISSUE	DATE	NATURE OF AMENDMENTS
C	16.08.18	D.O.CORRECTION
B	04.04.16	USED ON NUMBER ADDED.
A	18.05.09	AUTHY : THIRD ALT.COMM.MINUTES POINT No.2 DATED 27-02-2009.

DRN	-sd-	MATERIAL:- STEEL 38xC	USED ON :- Cb406-16-2, CQA(HV)508 613E (B)
CHD	-sd-	GOST 4543-71	Cb406-17-2, CQA(HV)508 614E
APPD	-sd-	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
DATE	19-05-1989	TITLE:- VALVE DISC LOCK	
SCALE:- 2 : 1		D S CAT NUMBER	
DIMENSIONS IN mm		DRAWING NUMBER 306-48-7	
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			

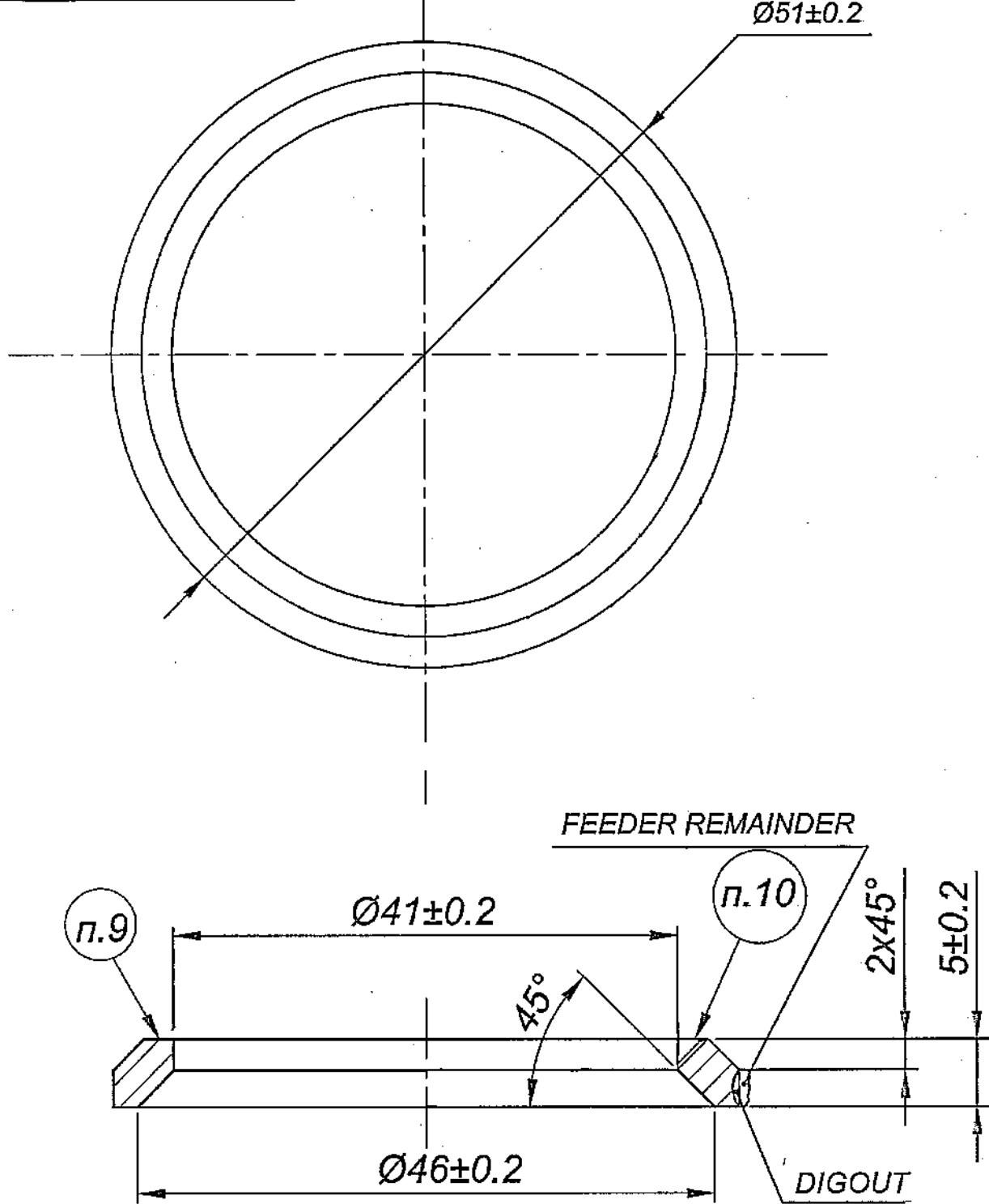
V. RAMESH
JTO(D)
Dt: 31. Mar 2018.

DRG.RE- INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 6

SIZE A2

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - 6

8	7	6	5	4	3	2	1
DRAWING NUMBER 306-52		SHEET No. 1 OF 1					



1. Casting as per pattern.
2. 43...51 HRC₃.
3. Unspecified casting radii upto 0.5 mm.
4. Unspecified casting draft upto 1°.
5. Casting accuracy 5T-5-8-5 GOST 26645-85.
6. The following are permitted:
 - a). Cutting -out of the body of casting in the place of runner with depth not exceeding 0.3 mm is allowed, remaining undressed runner should not be bigger than 0.5 mm.
 - b). Short-run of edges on Ø51 should not exceed 0.5 mm.
 - c). Clean sandy cavities occupying not more than 10% of a total surface of casting.
 - d). Separate clean cavities in quantity of 5 pieces not bigger than Ø1 mm and up to a depth of 0.5 mm maximum, distributed over a distance of 10 mm minimum from each other.
7. The following are not allowed:
 - a). Metal overflow and Burrs on the diameter 41 mm.
 - b). Deep cracks, non-homogenous body.
8. Surface of casting should be cleaned from the reminders of ceramics by sand blasting.
9. Stamp letter K on the tag with Letter type 3-Пp GOST 26.008-85.
10. Mark the seat number with Letter type 3-Пp GOST 26.008-85.
11. Remaining requirment are as per TY-7591-008-08629387-2000.

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. (Kg) 0.022 TO BE STAMPED OR MARKED WHERE INDICATED THUS # (LETTERS)

ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUT-SIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

		DRN		MATERIAL:- ALLOY B3K	USED ON:- CB 306-51-01
		CHD		TY 4591-008-08629387-2000	
		APPD		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI	
		DATE	02/2/07		
		SCALE:- 2 : 1		TITLE:- ADDITIONAL RING	
		DIMENSIONS IN mm			
		TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69			
		ALL THREADS TO CONFORM TO		D S CAT NUMBER	DRAWING NUMBER 306-52
ISSUE	DATE	NATURE OF AMENDMENTS			

F-3
98
166

SIZE A3