

Chardon
Rubber
Company

Memorandum

To: Virginia Loveland

Date Jan. 10, 1989

From: John Cross

Subject: Delco Quotation Request No. 07971

Enclosed is a quotation request from Delco to produce the
dunce cap out of thermoplastic nitrile PVC. Enclosed is a copy
of a letter that we are sending today to Mr. Landt.



pg
encl.

cc: Pete Bongiovanni
Norv Russell
Ken Shane
Dick Znidarsic ✓

CHARDO 00770

QUOTATION
REQUEST

No. 07971

DATE WRITTEN 1/5/89

Delco Remy

Division of General Motors Corporation

2401 Columbus Avenue

P. O. Box 2439

Anderson, Indiana 46018-9986

**THIS IS NOT
AN ORDER**

TO Chardon Rubber Co.
Industrial Rubber Goods Div.
373 Washington St.
Chardon, OH 44024

TO [REDACTED]

TO [REDACTED]

INSTRUCTIONS

- This quotation is Due January 27, 1988. WE RESERVE THE RIGHT TO REJECT ANY AND ALL QUOTATIONS.
- Direct all inquiries to Purchasing, ATTN: Mark Buffington, Rm. 18-105 Phone 317-646-3956
- Your quotation must be submitted on this form; you must complete sections A, B, C, and D.
- Your response to this quotation shall be considered acceptance of our Purchase Order terms and conditions on the reverse side hereof.
Delco-Remy holds Direct Pay Certificate 27235 - do not include Indiana Retail Tax in this quotation.
- The above quotation request number must appear on all responses to this quotation.

SECTION A PART NO. 1986848 DRAWINGS ATTACHED: ☒ FPA ATTACHED ☐ SPECIFICATIONS ATTACHED: ☐

PART DESCRIPTION: Seal
Statistical techniques to apply. Quote part using Thermo Plastic Nitrile V-6013.

• QUANTITY QUOTED 7,000,000/yr.

1) MATERIAL COST/UNIT				
2) LABOR COST/UNIT				
3) OTHER COST/UNIT				
4) TOTAL COST/UNIT	\$	\$	\$	\$

5) TOTAL LEAD TIME (WORKING DAYS) _____

SECTION B (Complete items 6, 7, 8, and 9 if tooling is required)

IF TOOLING OR GAGING IS REQUIRED TO PRODUCE THIS REQUEST, PLEASE QUOTE A ONE TIME CHARGE INCLUDING PERPETUAL MAINTENANCE AND REPLACEMENT AS REQUIRED IN THE PIECE PRICE

6) TOOLING DESCRIPTION	7) CAPACITY	8) COST	9) LEAD TIME (WORKING DAYS)
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SECTION C (Complete items 10, 11, 12, 13, 14, 15, 16)

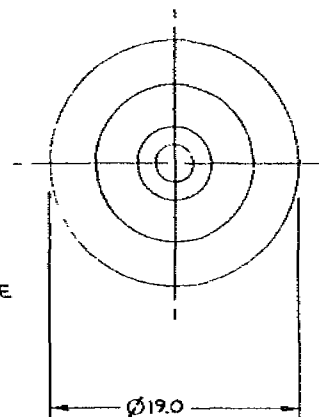
10) FOB _____ 11) TERMS _____ 12) WEIGHT/UNIT _____
13) RAW MATERIAL TYPE _____ 14) RAW MATERIAL COST/POUND \$ _____
15) WRITTEN QUALITY PLAN ATTACHED (Y/N) _____ 16) PROCESS FLOW CHART ATTACHED (Y/N) _____

SECTION D

Your Company Name: _____
Bidder's Name: _____ (TITLE) _____
Today's Date: _____ This offer expires: _____

CHARDO 00771

THE UNIVERSITY OF CHICAGO



⑤

1986848				DATE
DATE	SYM	REPORT NUMBER	APRN	DR
3/11/86		REPORT	821625	
3/16/86	1	FLASH NOTE REVISED	837628	7
7/17/86	2	APPLICATION VIEW REMOVED	840436	4
7/17/86	3	FLASH LOCATION REVISED	840413	4
12/11/86	4	THICKNESS UP/SHRINK NOTE ADDED	842619	5
2/25/87	5	ASTM D-3767-83 WAS ASTM D-412 EIT	847577	2K
12/6/85	G	13.5 WAS 14.4	845766	CY

	274
B-9	1
GA-H	7
W-11	4
1175	1
117	5
	6
3P1	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18

METRIC		FORD AERIDE PROJECTION																	
DIMENSIONS ARE IN MILLIMETERS.																			
SIZE: DIA. 10.3		<table border="1"> <tr> <td>10</td> <td>10</td> </tr> <tr> <td>10</td> <td>10</td> </tr> </table>		10	10	10	10												
10	10																		
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GEOMETRIC TOLERANCE SYMBOLS <table border="0"> <tr> <td> RAI</td> <td> RAI</td> <td> RAI</td> <td> RAI</td> </tr> <tr> <td> RAI</td> <td> RAI</td> <td> RAI</td> <td> RAI</td> </tr> <tr> <td> RAI</td> <td> RAI</td> <td> RAI</td> <td> RAI</td> </tr> <tr> <td> RAI</td> <td> RAI</td> <td> RAI</td> <td> RAI</td> </tr> </table>				 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI	 RAI
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APPROXIMATE DIMENSIONS (MAY NOT BE UP TO DATE) 1952396 EXC. SIZE																			
APPROX. SPECIFICATIONS																			
MADE IN THE U.S.A. SAE 2BA615F1723-4 (EPT) RUBBER PURCHASING SPEC N13R50C6																			
DATE 12/2/82 BY 12/2/82		DATE 12/2/82 BY 12/2/82																	
EXACT 4.0 TIMES EXACT 4.0 TIMES		EXACT 4.0 TIMES EXACT 4.0 TIMES																	
FREE 5.0 1956606 VAC. ACT.		FREE 5.0 1956606 VAC. ACT.																	
DATE SEAL		DATE SEAL																	
DATE 12/2/82 BY 12/2/82		DATE 12/2/82 BY 12/2/82																	
1986848		1986848																	



373 Washington Street
Chardon, Ohio 44024
Tel. No. (216) 285-2161
FAX No. (216) 286-8422

January 10, 1989

Mr. Pete Landt
Unimark Plastics Division
P. O. Box 2750
Greenville, SC 29602

Dear Mr. Landt:

Thank you for your Quotation No. 1288-16 on the Delco 1986844 diaphragm. We have discussed this with Delco and have an outside chance of being awarded a prototype mold in the next several weeks. Our problem with this part is that there are presently two production tools in existence.

We have now been asked to quote Delco Part No. 1986848 in the B6013 Nitrile/PVC material, a drawing is attached. The volume would be seven million pieces per year.

We again need prototype mold cost, prototype piece price, production mold cost, production piece price, based on seven million pieces per year. This is another part presently compression molded from EPDM.

We have a quote deadline at Delco of January 27, 1989. Naturally I would like to have your quotation a few days before that. If you wish to discuss this quotation with me before proceeding don't hesitate to call me.

Sincerely,

A handwritten signature in cursive script, appearing to read "John Cross".

John Cross
Vice President
Marketing and Materials

PG
cc: Mr. Heiner J. Schuerman

CHARDO 00773

2364-1

BALL ORDER
CUSTOMER ORDER

SPEC. NO.

CUSTOMER

AVM

PART NO.

XV0239

JOBBER

CRC

PRESS ROOM

PREP. WT. 14 gms NET WT. 1.08

COMPOUND NO. 13599

LAB MIXED ☒ FACTORY MIXED ☐

Mold No. 3898

No. of Cavities 4

Mold Shape Square

No. Plates 4

Outside Dimension $7\frac{1}{2} \times 7\frac{1}{2} \times 3\frac{3}{4}$

Compound No.

Dimensions

Compound No.

Dimensions

Type Lubricant

Coiled ☐
Straight ☐

CALENDER PREPARATION

Gauge
Width
Lubricant104 pcs of Special Cav
300 + pcs of Reg Cav
Completed 5-8-87
GG1 Special part wt. 1.08
3 reg parts wt ea. 1.18

PRESS NO.

Conventional ☐
McNeil ☐
French Cil ☐

TYPE SOAP

HIGH PRESSURE ☐ LOW PRESSURE ☐

Minutes Cure

Steam Pressure Temp. °F.

Post Cure Hrs. °F. Temp.

LAB TRIM ☐ FACT. TRIM ☐Dry Ice Tumble ☐ Pick Rind ☐Dry Tumble ☐ Wheelabrator ☐Hand Buffed ☐ Hand Punched ☐Machine Trim ☐

DIMENSIONS

Blueprint
Dimensions Checked By
Tolerances

INSERTS

Weight
Cleaning
Plating
Typl
Cover Coat

CHARDO 00774

OPERATOR GC-24

DATE 5-5-87

BALL ORDER
CUSTOMER ORDER

SPEC. NO.

PART NO. XV023-9

CUSTOMER AVM

JOBBER CRC

PRESS ROOM

PREP. WT. 20gms NET WT. _____

COMPOUND NO. 13599

LAB MIXED ☒ FACTORY MIXED ☐

Mold No. 3898

No. of Cavities 4

Mold Shape Square

No. Plates 4

Outside Dimension 7 1/2 x 4

TUBING PREPARATION

Compound No. _____

Dimensions _____

Compound No. _____

Dimensions _____

Type Lubricant _____

Coiled ☐

Straight ☐

CALENDER PREPARATION

Gauge _____

Width _____

Lubricant _____

1/8 thick
3 5/16 Dia.

PRESS NO. _____

Conventional ☐

McNeil ☐

French Oil ☐

TYPE SOAP None

HIGH PRESSURE ☒ LOW PRESSURE ☐

Minutes Cure 7

Steam Pressure _____ Temp. _____ °F.

Post Cure _____ Hrs. _____ °F. Temp.

LAB TRIM ☐ FACT. TRIM ☐

Dry Ice Tumble ☐ Pick Rind ☐

Dry Tumble ☐ Wheelabrate ☐

Hand Buffed ☐ Hand Punched ☐

Machine Trim ☐

DIMENSIONS

Blueprint _____

Dimensions Checked By _____

Tolerances _____

INSERTS

Weight _____

Cleaning _____

Plating _____

Typly _____

Cover Cost _____

OPERATOR _____

DATE _____

CHARDO 00775

BALL ORDER PROTECT 884
CUSTOMER ORDER NO. _____

SPEC. NO. _____

PART NO. XY023-9

CUSTOMER AVM

JOBBER _____

PRESS ROOM

PREP. WT. 20 GRAMS NET WT. 1.30 GRAMS EACH PART
(4 PARTS PER HEAT)

COMPOUND NO. 13312

LAB MIXED ☐ FACTORY MIXED ☒

Mold No. 3898

No. of Cavities 4

Mold Shape Square

No. Plates 4

Outside Dimension 7 1/2" WIDE 4" HIGH
TUBING PREPARATION

Compound No. _____

Dimensions _____

Compound No. _____

Dimensions _____

Type Lubricant _____

Coiled ☐
Straight ☐

CALENDER PREPARATION

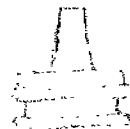
Gauge _____

Width _____

Lubricant _____

.125 (1/8") INCH THICK

3.3125 (3 5/16) INCH DIA



PRESS NO. _____

Conventional ☐
McNeil ☐
French Oil ☐
LAB ELECTRIC ☒

TYPE SOAP NONE

HIGH PRESSURE ☒ LOW PRESSURE ☐

Minutes Cure 8 MIN

Steam Pressure _____ Temp. 325 OF.

Post Cure _____ Hrs. _____ OF. Temp.

LAB TRIM ☐ FACT. TRIM ☐
Dry Ice Tumble ☐ Pick Rind ☐

Dry Tumble ☐ Wheelabrator ☐

Hand Buffed ☐ Hand Punched ☐

Machine Trim ☐
DIMENSIONS

Blueprint _____
Dimensions Checked By _____
Tolerances _____

INSERTS

Weight _____

Cleaning _____

Plating _____

Typly _____

Cover Coat _____

50 pcs - 1-9-86

OPERATOR J. Little

DATE 7-17-86

CHARDO 00776

DATE 7-11-86

SAMPLE WRITE UP

CUSTOMER AVM PROJECT 884

PART NUMBER XV023-9

MOLD NUMBER 3898 NUMBER OF CAVITIES 4

STOCK NUMBER 13599
13312 ADDITIONAL INFORMATION _____

PRINT NUMBER XV023-9

CERTIFIED LETTER ✓ SEE B/P

TEST REPORT _____

SLABS AND PLUGS _____

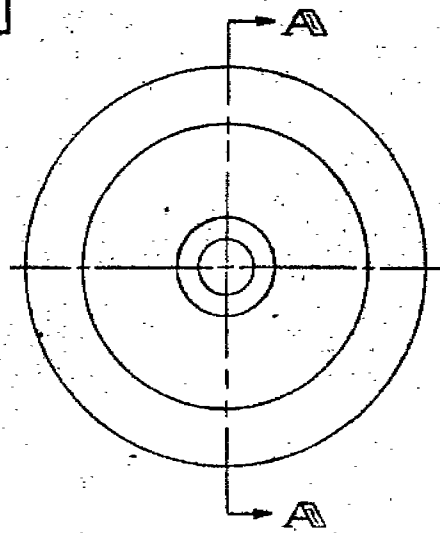
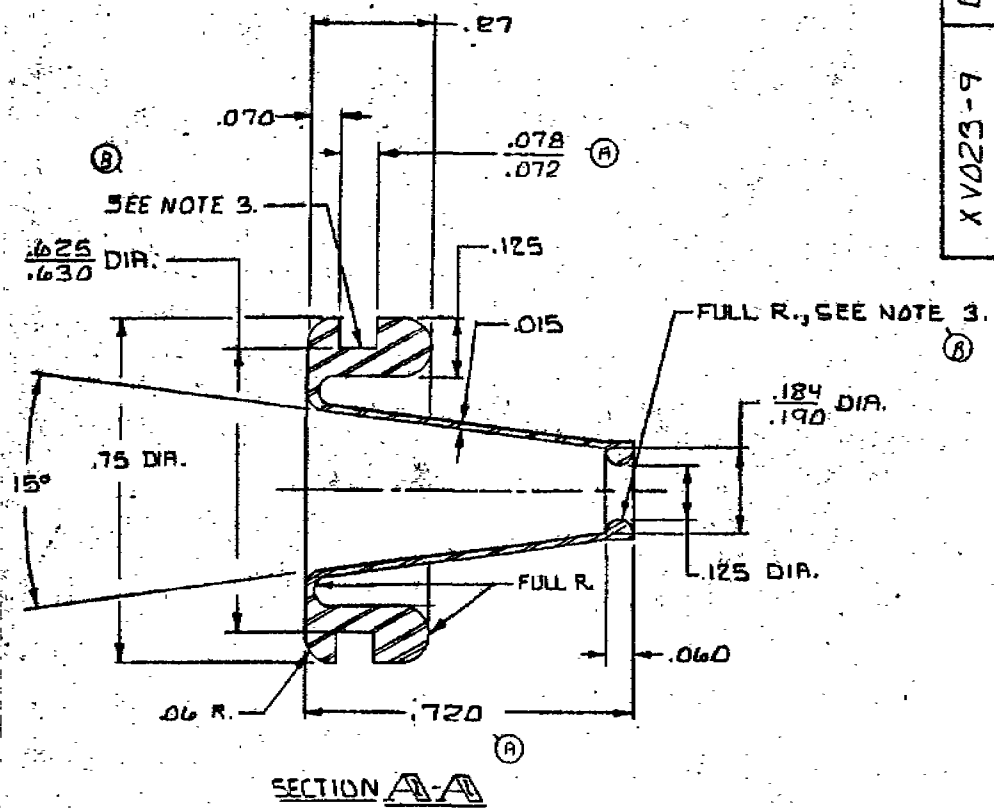
REMARKS SEE B/P - 4 CAVITY MOLD DEL. - 7/15/86

Del. - Bell. Fin. 615 ^{1500 Tons} 2500 Almost impossible 13312 Din 2700 Max

T-18-86 (11500) 13412
NEED 200 REG. SPEC. MAT'L SEE 50 pgs 107 RES. LUBE
100 LUBRICATED MAT'L 2% - 3/6 206 " WITHOUT LUBE 7 TO 8 TO
200 GRAMS IN 1000
J. J. Hoffman

XV023-9 B

NO.	CHANGE	ECN NO.	DATE & INITIALS
—	INITIAL RELEASE		
A	.078-.072 WAS .077-.083 .720 WAS .625		5-14-86 a.l.
B	ADDED NOTE 3. REVISED NOTE 1.		6-16-86



- 3) NO PARTING LINES ON THIS SEALING SURFACE.
 2) MATERIAL CERTIFICATION REQUIRED.
 1) MATERIAL TO BE EPDM RUBBER PER ASTM D-2000 3BA 625 A14 B13 C12 F17.

MIL-D-3898

NO. REQ'D PER NEXT ASSY		NEXT ASSEMBLY	
AUTOMOTIVE PRODUCTS DIVISION		MARION, S.C.	
PART NAME		ACTUATOR ROD SEAL	
DATE 12-3-85		DATE 6-16-86	

DIMENSIONS IN () ARE IN MILLIMETERS			
MATERIAL SEE NOTE 1.		FINISH NATURAL	
TOLERANCES UNLESS OTHERWISE SPECIFIED	DECIMAL XX ± .010 DECIMAL .XXX ± .005 ANGULAR ±	SCALE 4:1	DATE 12-3-85

NOTES

CHARDO 00778

BAIL ORDER PROJECT 884
CUSTOMER ORDER NO. _____

SPEC. NO. _____

PART NO. XY073-9

CUSTOMER AVM

JOBBER _____

PREP. WT. 20 GRAMS NET WT. 1.30 GRAMS EACH PART
(4 PARTS PER HEAT)

COMPOUND NO. 13312

LAB MIXED ☐ FACTORY MIXED ☒

Mold No. 3898

No. of Cavities 4

Mold Shape Square

No. Plates 4

Outside Dimension 7 1/2" WIDE 4" HIGH

TUBING PREPARATION

Compound No. _____

Dimensions _____

Compound No. _____

Dimensions _____

Type Lubricant _____

Coiled ☐

Straight ☐

CALENDER PREPARATION

Gauge _____

Width _____

Lubricant _____

.125 (1/8") INCH THICK

3.3125 (3 5/16) INCH DIA



PRESS ROOM

PRESS NO. _____

Conventional ☐

McNeil ☐

French Oil ☐

LAB ELECTRIC ☒

TYPE SOAP NONE

HIGH PRESSURE ☒ LOW PRESSURE ☐

Minutes Cure 8 MIN

Steam Pressure _____ Temp. 325 °F.

Post Cure _____ Hrs. _____ °F. Temp.

LAB TRIM ☐

FACT. TRIM ☐

Dry Ice Tumble ☐ Pick Rind ☐

Dry Tumble ☐ Wheelabrator ☐

Hand Buffed ☐ Hand Punched ☐

Machine Trim ☐

DIMENSIONS

Blueprint _____

Dimensions Checked By _____

Tolerances _____

INSERTS

Weight _____

Cleaning _____

Plating _____

Typly _____

Cover Coat _____

OPERATOR J. LITTLE

DATE 7-17-86

CHARDO 00779

BALL ORDER PROJECT 884
CUSTOMER ORDER NO. _____

SPEC. NO. _____

PART NO. XV073-9

CUSTOMER AVM

JOBBER _____

REP. WT. 20 GRAMS NET WT. 1.30 GRAMS EACH PART
(4 PARTS PER HEAT)

COMPOUND NO. 13312

LAB MIXED ☐ FACTORY MIXED ☒

Mold No. 3898

No. of Cavities 4

Mold Shape Square

No. Plates 4

Outside Dimension 7 1/2" WIDE 4" HIGH

Compound No. _____

Dimensions _____

Compound No. _____

Dimensions _____

Type Lubricant _____

Coiled ☐

Straight ☐

CALENDER PREPARATION

Gauge _____

Width _____

Lubricant _____

.125 (1/8") INCH THICK
3.3125 (3 5/16) INCH DIA



TRANSFER
MOLD

PRESS ROOM

PRESS NO. _____

Conventional ☐

McNeil ☐

French Oil ☐

LAB ELECTRIC ☒

TYPE SOAP NONE

HIGH PRESSURE ☒ LOW PRESSURE ☐

Minutes Cure 8 MIN

Steam Pressure _____ Temp. 325 OF.

Post Cure _____ Hrs. _____ OF. Temp.

LAB TRIM ☐ FACT. TRIM ☐

Dry Ice Tumble ☐ Pick Rind ☐

Dry Tumble ☐ Wheelabrator ☐

Hand Buffed ☐ Hand Punched ☐

Machine Trim ☐

DIMENSIONS

Blueprint _____

Dimensions Checked By _____

Tolerances _____

INSERTS

Weight _____

Cleaning _____

Plating _____

Typly _____

Cover Coat _____

OPERATOR J. Little

DATE 7-17-86

CHARDO 00780

DURO 55+-5

BLK EPDM AVM

01/28/87

BATCH FACTOR 1.6408

STOCK NO. 13599

COMPOUNDED BY

APPROVED BY

BANBURY VOLUME

CODE	MATERIALS	100 RHC	VOL.	100%	BANBURY BATCH WT
664	ROYALENE 525	50.00	58.14	18.23	82.04
757	ROYALENE X2914	87.50	98.31	31.90	143.57
480	N-220 ISAFLS	60.00	33.33	21.87	98.45
256	HI SIL 215	15.00	7.32	5.46	24.61
405	STAN LUBE 60	40.00	44.94	14.58	65.63
003	MBTS	1.50	.99	.54	2.46
304	E DITHIOCARBAMATE	4.50	3.24	1.64	7.38
046	STEARIC ACID RG	1.50	1.88	.54	2.46
055	ZINC OXIDE	10.00	1.80	3.64	16.41
357	UB(RM-S)80 SULFUR DISP	1.25	.75	.45	2.05
316	PARACIN 1	3.00	2.94	1.09	4.92

TOTAL	274.25	253.64	99.99	449.98
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.67

USE

REPLACES

REASON

COLOR BLK EPDM AVM

REQUIREMENTS TO MEET

-	PHYSICAL PROPERTIES
-	SPEC.
-	SPECIFIC GR. 1.0810
-	TENSILE
-	ELONGATION
-	DURO 55+-5
-	MODULUS @
-	MOONEY @
-	SCORCH
-	CURE
-	ACTUAL VOLUMES 416.26

STOCK CONTROL TEST

CHARDO 00781

