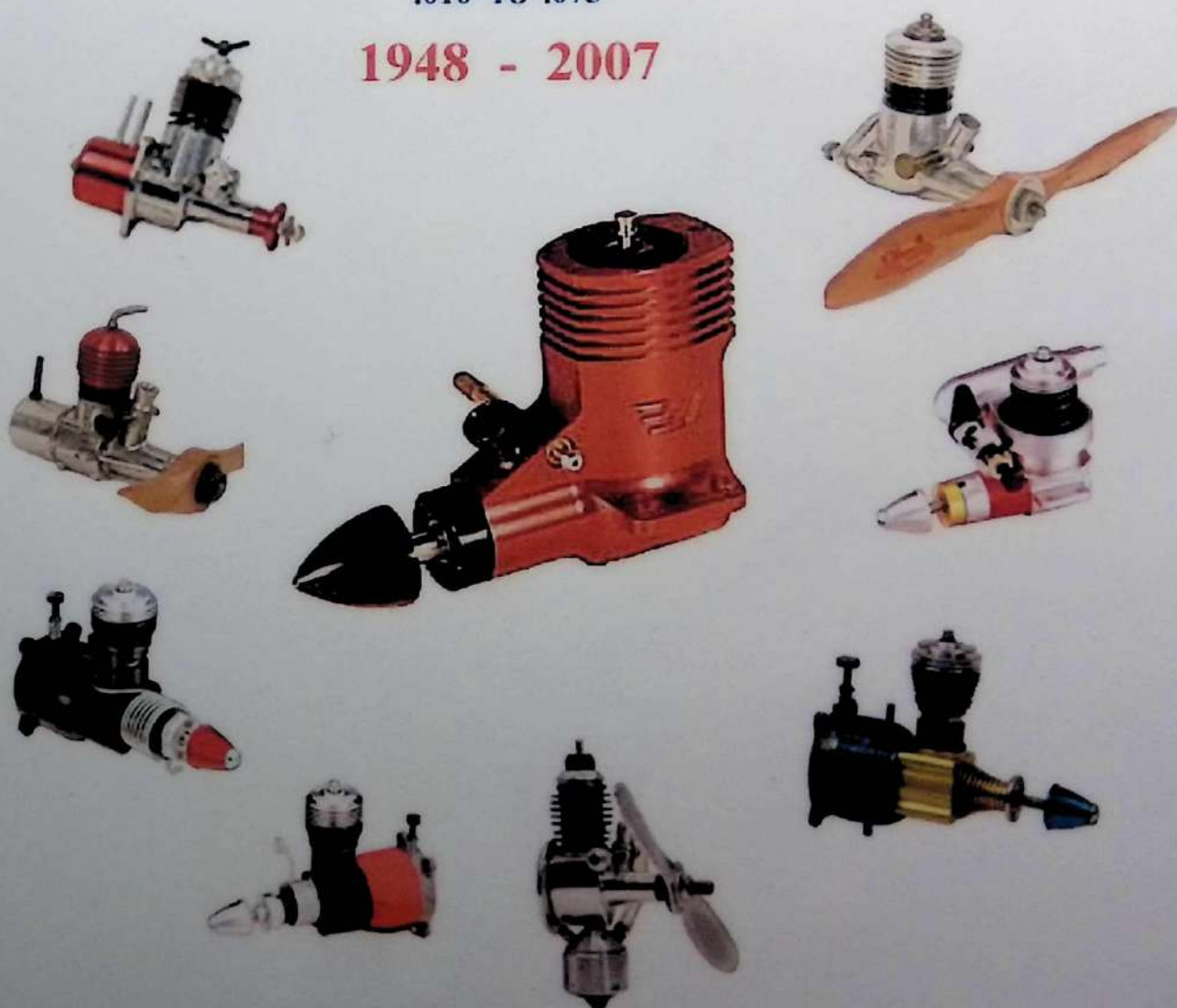


ANDERSON'S BLUE BOOK
'1/2 A'
MODEL AIRPLANE ENGINE
GUIDE

FOR
AMERICAN 'SMALL ENGINE' COLLECTING
.010 TO .075

1948 - 2007



Over 55 Pages About Collectible '1/2A' Model Airplane Engines
More than 250 Model Engine Listings - Over 150 Pictures
Pricing is based on the bi-monthly MECA Swap Sheets
and recent sold prices from the Internet

THE HISTORY OF THE AMERICAN 1/2A MODEL AIRPLANE ENGINE



Model Airplane 1/2A Engine Collector's Listings
and price Guide, with Photos and Drawings

ANDERSON'S BLUE BOOK

'1/2 A'
MODEL AIRPLANE ENGINE GUIDE

By **Frank & Vicki Anderson**

1948 - 2007

American 'Small Engine' Collecting
Glow And Diesel Engines
Up to .075 cu.in.

Includes MECA Asking Prices
Plus
Internet eBay Sold Prices
Plus Articles

Testors Plastic Engines
The Cox Story
Wen-Mac
Thornburg At Large
Shuriken - The Manufacturer
Shuriken

Website: andersonsbluebook.com ---- eMail: fvanderson@sympatico.ca

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without the prior written permission
(Except for purposes of review)
from Frank H. Anderson

Dedicated to my wife Vicki, my closest friend Co-Writer/Author
for over 40 years without whom most of this couldn't have happened.

ALL OUR CONTRIBUTORS

Fred Baldwin	Coolie Reynolds
Bud Brautlecht	Darrel Peugh
Glen Lee	Sue Ann Silva-Baldwin
Ken Morrissey SMAE	

Excerpts From:

Gas Toy Collector - Danny Bynum
Thornburg at Large & His Book
American Modeler Annual - Cox
Testors Plastic Engine - Peter Chinn
Wen-Mac - American Modeler
Engine Collectors Journal - Tim Dannels

Front Cover - Engines

Left Side - O.K. Diesel	Right Side - Atwood .05
Baby McCoy	Tee Dee t/C .05
Black Widow	Cox RR #1
Texaco .049	K&B Infant
Center - Shuriken	

Back Cover - Engines

Top - 2 After-market 2007 Shurikens by Glenn Lee
(heads changed, no Glo-Bee Plugs available)
Center - Fred Baldwin's personal red 1991 Shuriken sized
next to his old favorite Hornet .051
Left - Fred Baldwin's 1991 red side-exhaust Shuriken
Right - Bud Brautlecht's rare 1964 Cox RR-1
(with non-ribbed blue tank)
Bottom - Ken Morrissey's (British) 1991 Record Holder

INTRODUCTION by DARREL E. PEUGH - Engine Collector Since 1943

I want to repeat some of my Introduction from the 3rd Edition of the Blue Book:

Since its' introduction in 1996, Anderson's Blue Book has become recognized worldwide as the "Bible" for American Model Engines prior to 1965. The Second Edition built on that base by correcting errors in the First Edition, filling in holes, particularly in the early part of the century, and updating and increasing the coverage of the price guide. The Third Edition further increased the accuracy and scope by correcting errors in some of the listings and by adding to the listing some newly identified engines. In addition more and better pictures have been provided in a number of cases.

Anderson's Blue Book has been found to be valuable to a wide variety of users:

For the collector who knows everything about all engines, it provides a check on what others think.

For the experienced collector who has a lot of knowledge and files where he can find information, it provides a convenient, time-saving reference for identification and pricing.

For the beginning collector, it has proven to be an invaluable reference as an introduction to what engines to look for and their value.

For those saddled with the task of disposing of a collection due to death, change of interest, or financial necessity, it provides the basis for realizing the true value of the collection.

For the collector who needs to protect his investment, it provides, together with a meticulous inventory, documentation of value for insurance purposes.

In my case, I have found the Blue Book to be the single most important document to assist me in evaluating my collection and providing a quick reference for identification.

Now let's get on with my Introduction to this 1/2A Edition of the Blue Book.

This 1/2A edition has two significant additions over and above the expected update of the eBay and M.E.C.A. pricing information.

First, all the 1/2A North American engines produced from 1965 to 2007 have been added. This is another forty-two years of coverage from the last edition. As a result, for the first time there is only a single reference for all 1/2A engines produced from 1948 to 2007.

Second, each engine has been given a unique 'A' number. The numbering system allows for expansion to accommodate insertions and to make it easy to locate the engine from the number without a tedious cross-reference table. Frank & Vicki made a few insertions.

It is hoped that the numbers associated with each entry will be adopted as a quick means of providing a unique identification for engines in much the same way as the Scott stamp catalogue number has become for stamps.

This has the potential of providing a unique identification for the use of buyers and sellers with only the condition of the engine left for description.

This book has been a growing work right up to date (2007) and will continue to be a dynamic, growing work which will only get better as the users provide more Prices and Better Information.

March 18, 2007

FOREWORD 1/2A EDITION by Frank & Vicki Anderson

We believe Collectors of 1/2A engines deserved their own complete book on American engines (up to .075) from 1948 - 2007 and this is it ! Separate from the big engines in our Anderson's Blue Book 4th Edition.

Our research of engines after 1965 in our last 3rd Edition Blue Book provided us with information on Cox, Wen-Mac, Testors and a more recent engine called Shuriken in the '90's which by itself, set U-control speed records in 3 countries, Canada, Britain and of course in the U.S. Further to the Shuriken, we've provided more on Testors, who provided the first 'plastic' engine while Bill Netzeband was chief Engineer for them (see the article on page 20) through 1981.

We said in our 3rd Edition of Anderson's Blue Book (which included 1/2A engines and our 4th did not) that one of the most important 'happening' since the 2nd Edition of Anderson's Blue Book was the escalation of the use of Internet Sales primarily eBay. This is much more true today in 2007 because MECA Collectos are much in the way of displays and get-togethers now rather than sales or swap meets. The Model Engine Collector's Association (MECA) is a truly International Organization and provides a Swap Sheet/Bulletin every two (2) months. Membership is \$35. (U.S. & Canada) \$50. for all others, in U.S. Funds only, payable to Model Engine Collector's Association (MECA), sent to: Morris E. Leventhal, 1788 Niobe Avenue, Anaheim, CA 92804 or by PayPal - email address is mecadues@aol.com. We highly recommend joining MECA, for the bi-monthly newsletter containing, Collecto Date Listings, Member Sales Listings and Bulletin Articles on interesting engine topics (with pictures) from members.

We've added A #'s to our engine listings to make buying and selling much easier, similar to B #'s in our 4th Edition of the Blue Book.

Many of those who have purchased our 4th Edition of the Anderson's Blue Book still seem to be non-members of MECA and we're still not sure why. Perhaps it's because MECA members get their free ads in the bi-monthly Swap Sheet and think they don't need our 'expensive' guidance. Our Blue Books are currently in use in more than 30 countries throughout the world and we believe this 1/2A Blue Book will end up in those countries too; a most knowledgeable group of Collectors.

Make sure your estate knows what you've got; list it all with approximate value.

We trust you will enjoy our efforts in the 1/2A engine field.

Frank & Vicki Anderson

INDEX

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20	Testors Plastic Engines
21-22	The Cox Story
23-24	Wen-Mac
25-28	Thornburg at Large
29	Shuriken the Manufacturer
30-31	Shuriken

ENGINE INDEX

NAME	PAGE	REFERENCE
A - J AIRCRAFT CO. (JIM WALKER)	11/7	FIRECRACKER
A. C. GILBERT	8	GILBERT (A.C.)
ALLYN SALES CO. INC.	10	K & B MFG. CO.
AMERICAN MACH. & FOUND. CO.	17/18/19	WEN-MAC div/AMF
ANDERSON (MEL) MFG.	1	
ATWOOD MOTORS	2	ATWOOD MFG. CO.
ATWOOD MFG. CO.	2	
AURORA PLASTICS	11	K & B MFG. CO.
AURORA TORNADO	11	K & B MFG. CO.
BABE BEE	4	COX
BABY MAC	11/12	McCOY
BABY SPITFIRE	1	ANDERSON (MEL) MFG.
BLACK WIDOW	5	COX
BV COMPETITION ENGINES	15	SHURIKEN
CADET	2	ATWOOD MFG. CO.
CANUCK (CANADIAN)	3	
COMET	7/13	FOX & O.K.
COX (L.M.) MFG. CO. INC.	3/4/5/6	
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DAVIS/COX	6	COX
DRAGONFLY	6	COX
DURO-GLO	11/12	McCOY
DUROMATIC PRODUCTS CO.	11	McCOY
DYNAMIC MODELS INC.	9	HOLLAND
ESTES-COX CORPORATION	7	COX
FIRECRACKER	1/7	ANDERSON (MEL) MFG.
FOX MFG. CO.	7/8	
GILBERT (A.C.)	8	
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HORNET	9	HOLLAND ENG.
HOT SHOT	17	WEN-MAC div/AMF
HUSTLER	17	WEN-MAC div/AMF

NAME	PAGE	REFERENCE
INFANT 020	9	K & B MFG. CO.
JIM WALKER	1/7	FIRECRACKER
K & B MFG. CO.	9/10/11	
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LARSEN	11	
MAR FURY	10	K & B (ALLYN) MFG. CO.
MARINER (MITE)	14	O & R CHEMINOL
McCOY	11/12	
McCOY 5	12	McCOY
MEDALLION	5	COX
MEL ANDERSON MFG.	1	ANDERSON (MEL) MFG.
MIDJET	14/15	O & R CHEMINOL
MITE	14/15	O & R CHEMINOL
O-FORTY-FIVE	1	ANDERSON (MEL) MFG.
OHLSSON & RICE CHEMINOL	14/15	
O K ENGINES	12/13/14	
0-SIXTY	1	ANDERSON (MEL) MFG.
PEE WEE	4/6	COX
Q R/C	6	COX
QUEEN BEE	6	COX
QUIET ZONE	5	COX
R R 1	4	COX
ROTO-MATIC	17	WEN-MAC div/AMF
ROYAL 05	11	LARSEN
ROYAL BABY SPITFIRE	1	ANDERSON (MEL) MFG.
ROYAL BABY SPITFIRE	1	ANDERSON (MEL) MFG.
ROYAL SPITFIRE	1	ANDERSON (MEL) MFG.
SEA FURY	10	K & B (ALLYN) MFG. CO.
SHRIEK	2	ATWOOD MFG. CO.
SHURIKEN	15	
SIGNATURE	2	ATWOOD MFG. CO.
SILVER BEE	4	COX
SKY FURY	10/11	ALLYN & K & B
SPACE BUG	3	COX
SPACE BUG JR.	3	COX
SPACE HOPPER	4	COX
SPITZY	1	ANDERSON (MEL) MFG.
SPITZY DELUXE	1	ANDERSON (MEL) MFG.
SPITZY SENIOR	1	ANDERSON (MEL) MFG.
STALLION	11	K & B MFG. CO.
STRATO BUG	4	COX
SUPER BEE	4	COX
SUPER CADET	2	ATWOOD MFG. CO.
SURE START	7	COX
TEE DEE R/C	6	COX
TEE-DEE	4/5	COX
TESTORS	18/19	WEN-MAC/AMF/ McCOY
TEXACO	6	COX
TEXACO JR.	6	COX
THERMAL HOPPER	3/4	COX
THUNDERHEAD	8	GILBERT (A.C.)
TORNADO	11	K & B MFG. CO.
TORPEDO	9/10	K & B MFG. CO.
TULSA SIGNATURE ENG. INC.	3	ATWOOD MFG. CO.
VENOM	7	COX
VIVELL MOTORS	15/16	
WASP	1/8/9	ATWOOD/HOLLAND
WEN-MAC	16/17/18/19	

PRICE GUIDE ... Ebay ... INTERNET AUCTIONS ... MECA
Small or 1/2A Engines

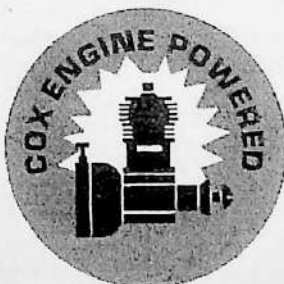
We'd like to start off by paraphrasing what John Krickel (author of the '049 Newsletter' in 1966) said, "once your collection has reached 100 to 150 large engines, your chances of getting new models decreases, steadily, ... so ... come on over to the 1/2A side - just for the fun of it!"

Now we have 1/2A's fairly well covered including most of the Wen-Mac/Testors ... if we can get Bill Netzeband to finalize our work, next time out!

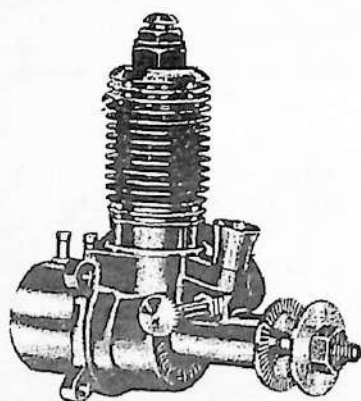
The Shuriken is a shocker with its' initial pricing on the Internet, but this may change ... if you recall the original N.I.B. pricing over \$500. on eBay for the R.R.1 Cox.

I personally believe the Wen-Mac's are still the sleepers, specially the last Testors versions.

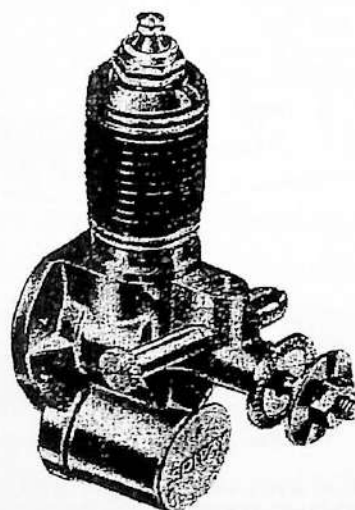
Most Collectors seem to have ignored 1/2A's with all of their improved technology which happened before it happened on the 'big' engines ... i.e. AACe, CNC crankcases, and Self-contained Starters. Now is the time to get on board Collecting 1/2A's.....



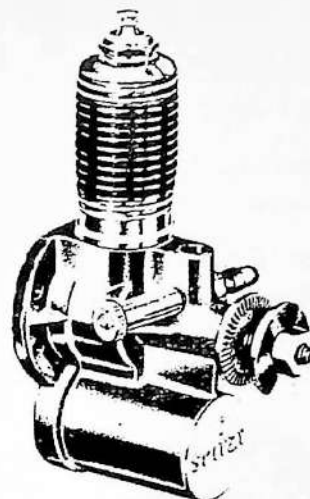
MEL ANDERSON
Manufacturing Co.



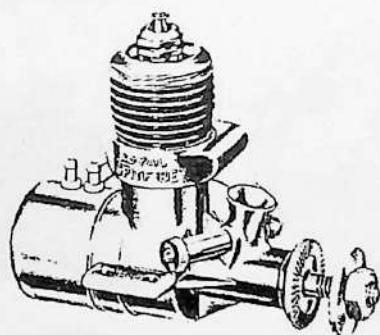
1949 - 1950
BABY SPITFIRE
'045'



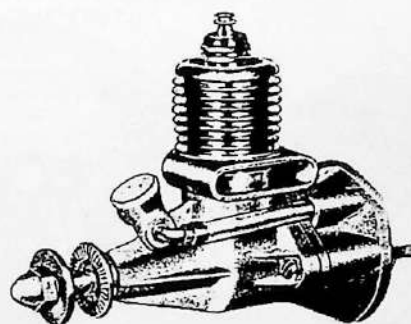
1950 - 1954
SPITZY
'045'



1951 - 1955
SPITZY SENIOR
'045'

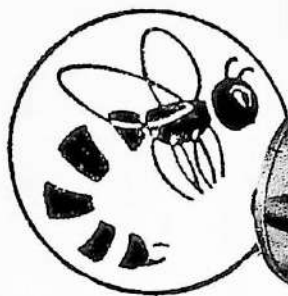


1951 - 1955
ROYAL SPITFIRE
'065'

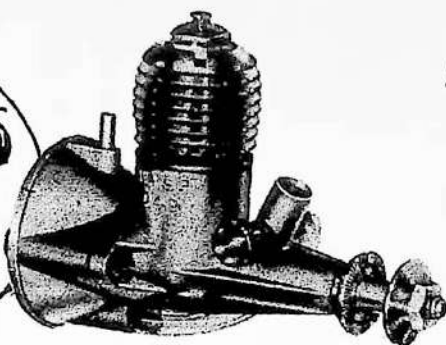


1952 - 1955
ROYAL
BABY SPITFIRE
'049'

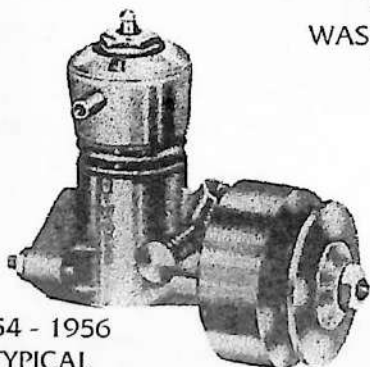
MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
ANDERSON MFG. COMPANY (MEL ANDERSON)	'49	BABY SPITFIRE	.045	PRE-PRODUCTION/ SAND CAST PROTOTYPES SEEN	PROTOTYPES		1
"	'49	O-FORTY-FIVE	.045	CYLINDER AND PISTON FOR COX RACE CAR			2
"	'49	O-SIXTY	.060	CYLINDER & PISTON FOR COX RACE CAR WITH DIFFERENT PROFILE HEAD THAN O-FORTY-FIVE			3
"	'49	BABY SPITFIRE	.045	ALUMINUM OR BRASS HEAD/ NAME ON TANK/ REMOVABLE VENTURI/ DIE CAST CASE/ SPECIAL MOUNT SOLD AS ACCESSORY	45	49 65	4
"	'49	BABY SPITFIRE	.045	ORANGE ANODIZED ALUMINUM HEAD AND BYPASSING/ RED-BLUE-PURPLE-GREEN/ ONLY A FEW ADDITIONAL COLORS MADE FOR MODEL AND HOBBY INDUSTRY PACKAGING COMPETITION FOR PROMOTION / ALSO YELLOW HEAD USED ON MORGAN MODELS 'BUSTER' READY-TO-FLY	35 40	105 61	5
"	'50	BABY SPITFIRE	.045	ALUMINUM HEAD AND BYPASS/ SOME WITH LONGER TANK AND NO NAME	45 40	65 47	6
"	'50	BABY SPITFIRE	.045	AS PREV/ WITH HEAVIER CRANKPIN & CON. ROD			41 37
"	'50	BABY SPITFIRE FOR 'FIRE-BABY'	.045	MADE FOR AMERICAN 'JR' FIRE-BABY SEE PAGE 7/ HAS SPITZY-TYPE FLUSH MOUNT BACKPLATE WITH NO PROVISION FOR ATTACHED FUEL TANK	45		
"	'50	BABY SPITFIRE FOR WEN-MAC AEROMITE	.045	MADE FOR WEN-MAC/ LONG RIGID TANK STUD/ LONG TANK WITH BRASS FILLER VENTS/ PAGE 16	50		
"	'50	SPITZY	.045	SHORT TANK BELOW CASE/ #'s ON ALL TANKS ONLY INDICATE DIE #'s/ PLAIN ALUMINUM HEAD	40 38	72 68	10
"	'51	SPITZY SENIOR	.045	AS SPITZY/ LONGER TANK/ BRASS OR ALUM. HEAD	50 37	69 67	11
"	'51	SPITZY 'DELUXE'	.045	AS PREV./ALUM.HEAD/ LARGE ALUMINUM SPINNER	48		
"	NOTE:	SPITZY		VARIATIONS INCLUDE SCREW-IN BACKPLATES SOME MACHINED FOR 'O'-RINGS/ LONGER NEEDLE VALVES			13
"	'51	ROYAL SPITFIRE PRE- PRODUCTION	.065	EXHAUST STACK/ BEAM MOUNTS/ NAME ON SIDE/ SAND CAST CASE/ LIKE A BIG ENGINE SCALED DOWN			14
"	'51	ROYAL SPITFIRE	.065	AS PREV./ WITH DIE CAST CASE/TANK ATTACHED TO BACKPLATE/ NUMBERS ON CASE ONLY DESIGNATE MANUFACTURER'S DIE #'s	50 45	70 LNIB 30 31 25	15
"	'52	ROYAL BABY SPITFIRE	.049	SIMILAR TO ROYAL SPITFIRE INCLUDING EXHAUST STACK AND REAR TANK WITH RADIAL MOUNTING/ PALE BLUE FINS AND HEAD/ SOME SOLD WITH PLAIN ALUMINUM HEAD AS LAST PRODUCTION	40	97 70 53	16
"	LEW MAHIEU PRODUCTION	ROYAL BABY SPITFIRE	.049	AS PREV./ REGULAR ALUMINUM OR BLACK ANODIZED HEAD/ MANUFACTURED BY LEW MAHIEU AFTER HE ACQUIRED MAIN PLANT	35	38	17
"	'55	SPITZY SENIOR	.045	AS PREVIOUS/ LONG TANK/ ALUMINUM HEAD	50		
"	NOTE:	FIRECRACKER ROYAL SPITFIRE	.065	PRODUCED LATER FOR J. WALKER - PAGE #7 JIM WALKER ON BYPASS	38	26	19
"	'55	FIRECRACKER 'THROTTLED' ROYAL SPITFIRE	.065	PRODUCED LATER FOR J. WALKER - PAGE #7 JIM WALKER ON BYPASS	45 175-NIB		



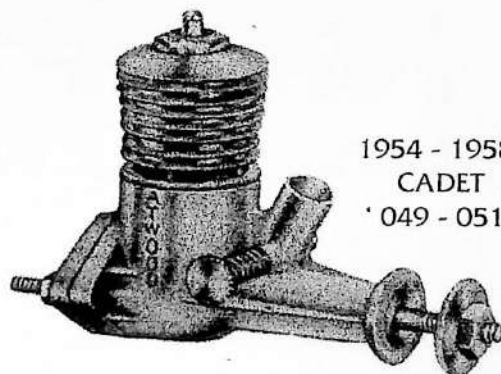
ATWOOD MOTORS
3716 Park Place, Montrose, Calif.



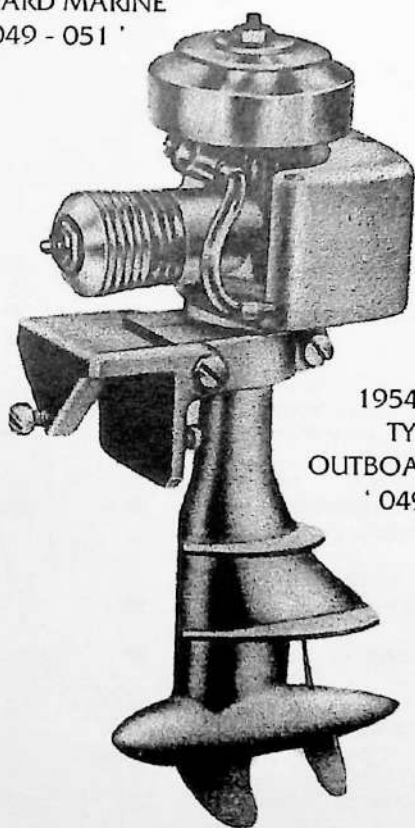
1950 - 1954
WASP AND ATWOOD
' 049 - 051 '



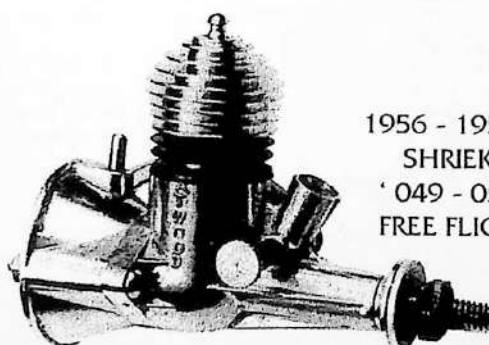
1954 - 1956
TYPICAL
INBOARD MARINE
' 049 - 051 '



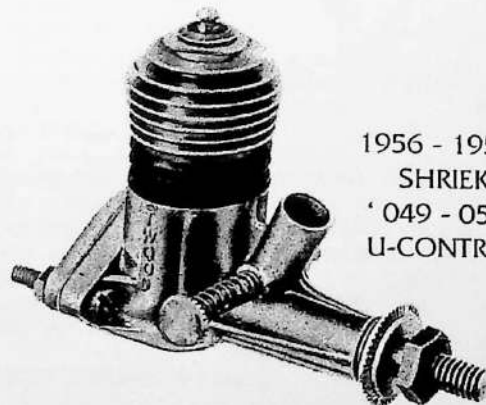
1954 - 1958+
CADET
' 049 - 051 '



1954 - 1956
TYPICAL
OUTBOARD MARINE
' 049 - 051 '



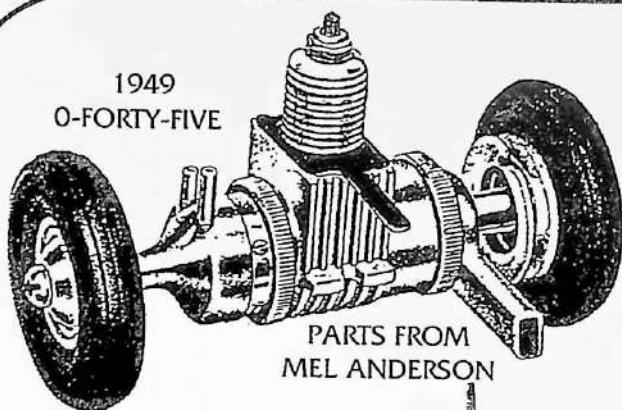
1956 - 1958+
SHRIEK
' 049 - 051 '
FREE FLIGHT



1956 - 1958+
SHRIEK
' 049 - 051 '
U-CONTROL

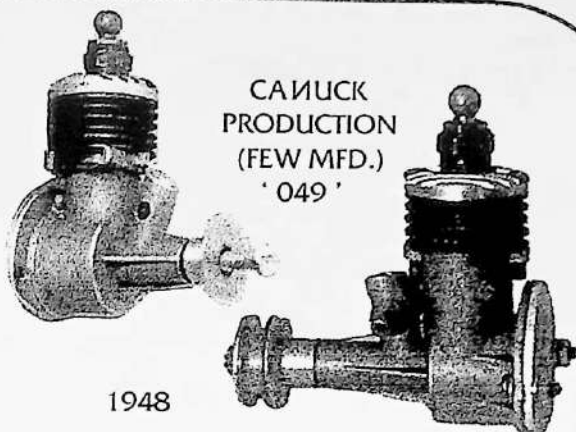
MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
ATWOOD MFG. CO. (BILL ATWOOD)	---	-----	----	CELEBRATED 20 YRS. AS PIONEER IN '53 - SOLD WASP & BECAME ATWOOD MOTORS FOR OTHER ENGINES. BILL ATWOOD WAS VERY PROLIFIC WITH HIS ENGINE DESIGNS, 'SPECIALLY HIS MARKETING TECHNIQUES OF THESE 1/2A's USING DIFFERENT BOXES AND NUMEROUS MINUTE DIFFERENCES OF THEIR NAMES - DESCRIPTIONS TO KEEP UP MODELLERS INTERESTS. BILL ATWOOD BECAME DESIGN ENGINEER FOR COX			
" "	'50 TO '51	WASP .049 ALSO FOR WEN-MAC AEROMITE WASP .049 MODIFIED	.049	'WASP' OVER .049 ON BOTH SIDES OF CASE/ ROUNDED FIN PROFILE/ 'WASP' SOLD TO HOLLAND ENGINEERING IN LATE '52 EARLY WASPS SOLD WITHOUT TANK AND HAD A REAR COVER ONLY/ TIMER TANK AND REAR COVER WAS OPTIONAL/ ALSO SOLD MOD. WASP TO WEB-MAC FOR 'AEROMITE' / SEE PAGE 16	45 40	53 51 50	21
" NOTE:	'52	HOP-UP-KIT	.049	NEW LOWER CRANKCASE AND SHAFT FOR WASP .049			22
" NOTE:	'52	HOP-UP-KIT .049	.049	FREE FLIGHT VERSION/ RED HEAD/ WITH TANK	22		23
" NOTE:	'52	HOP-UP-KIT .051	.051	YELLOW ANODIZED HEAD/ INCREASED BORE			24
" "	'53	ATWOOD .049	.049	AS WASP/ NAME 'ATWOOD' ON RIGHT SIDE - .049 ON LEFT SIDE OF CASE/ STRAIGHTER FIN PROFILE/ BACK COVER TANK	35	36 43 91-NIB	25
" "	'53	ATWOOD .051	.051	AS ATWOOD .049/ .051 ON CASE/ INCREASED BORE/ NO TANK/ PLAIN REAR COVER	40	45 49	26
" "	'53	ATWOOD .051	.051	AS PREV. ATWOOD .049/.051/ YELLOW HEAD			27
" "	'53	ATWOOD .049	.049	U-CONTROL VERSION/ BLUE HEAD/ NO TANK	38	33	28
" "	'53	ATWOOD .049		FREE FLIGHT VERSION/ RED HEAD	40	51	29
" NOTE:	'54	WASP/ATWOOD L.H. SHAFTS	----	ALSO SOLD COLORED SPINNERS WHICH DO NOT DESIGNATE DIFFERENT MODELS			
" "	'54	INBOARD & OUTBOARD	BOTH	ATWOOD BUILT INBOARD AND OUTBOARD ENGINES UNLISTED HERE			
" "	'54	ATWOOD .049/.051	BOTH	USED MARINE CRANKCASES WITH TAPER TO TAKE PROP DRIVE/ SCREW-IN PROP SHAFT/ SOLID SPINNER/ CRANKCASE MACHINED SHORTER/ ANGLED VENTURI/ PLAIN OR BLACK CYLINDER FINs	25	23	30/31
" "	'54	CADET .049/.051	BOTH	AS '53 MODEL/ PLAIN HEADS/ NO TANKS/ LOW PRICED LINE-NO OBVIOUS DIFFERENCE FROM PREVIOUS ATWOODS EXCEPT SHORT CASES AND SCREW-IN PROP SHAFTS	28		32/33
" "	'54	SIGNATURE .049/.051	BOTH	CUSTOM HIGH PERFORMANCE/ MARINE CRANKS/ SOME WITH LIGHT GREEN HEADS/ HAND SELECTED FOR PERFORMANCE	40 175-NIB		34/35
" "	'56	SHRIEK .049/.051 F/F	BOTH	FREE FLIGHT/ BIG COUNTERBALANCED SHAFTS/ TIMER TANK ON .049 AND NOT ON .051/ HAVE LONGER CRANKCASES/ GLOW HEADS INTRODUCED HERE AND SUBSEQUENT 1/2 A's	38	57	36/37
" "	'56	SHRIEK .049/.051 U/C	BOTH	U.C./ BIG COUNTERBALANCED SHAFTS/ HEAVY STIFF WEB UNDER SHAFT/ NO TANK/ BACK PLATE ONLY/ GLOW HEAD	42	46 60	38/39
" "	'56	ATWOOD SUPER CADET .049/.051	BOTH	AS FREE FLIGHT SHRIEK/ STEEL SHAFT BEARINGS/ GLOW HEAD	58	83	40/41

1949
O-FORTY-FIVE



PARTS FROM
MEL ANDERSON

CANUCK
PRODUCTION
(FEW MFD.)
'049'

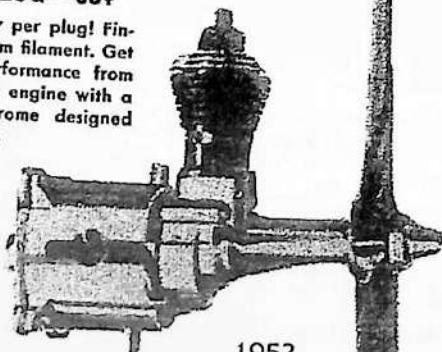


1948

EXTRA PRODUCTION AT AVRO PLANT

**HOT SPOT
GLOW PLUG—65¢**

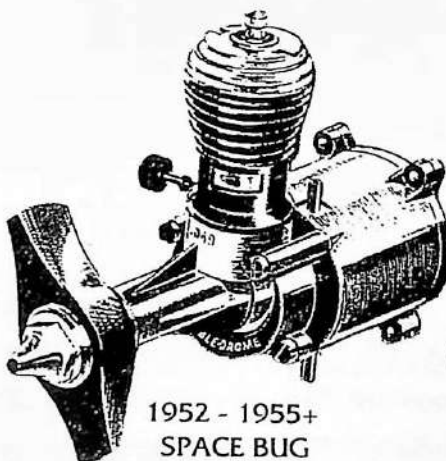
More glow per plug! Finest platinum filament. Get better performance from your 1/2 A engine with a Thimble-Drome designed glow plug.



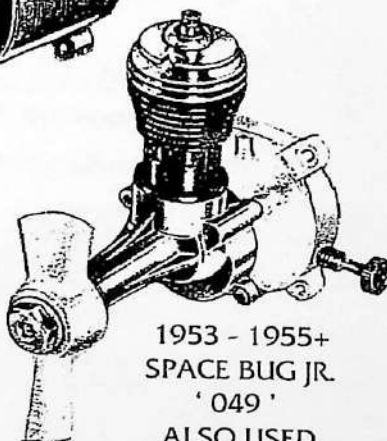
1952
FIRST
SPACE
BUG
'049'
ADV.
IN
1952-3

HOP-UP KIT—\$3.50

Flash! Special cyl. head and carburetor comb. to soup up your Space Bug into the hot-test racing job on the field.

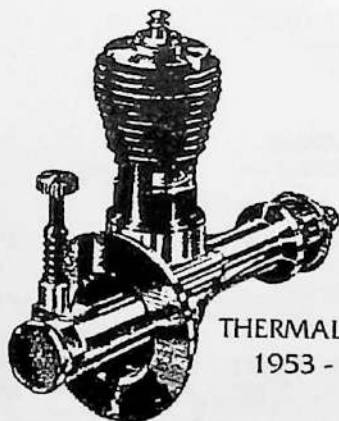


1952 - 1955+
SPACE BUG
'049'

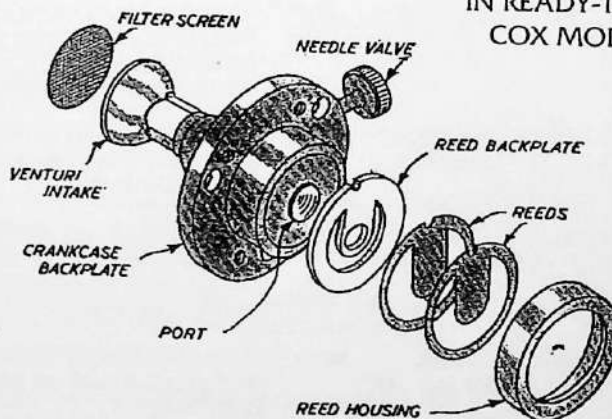


1953 - 1955+
SPACE BUG JR.
'049'

ALSO USED
IN READY-TO-FLY
COX MODELS



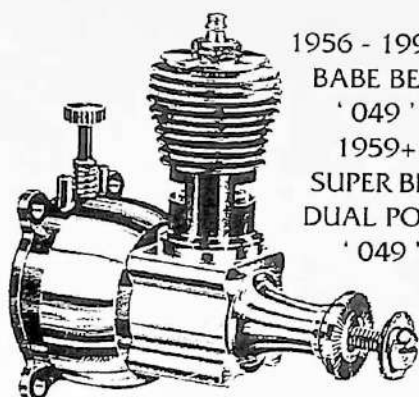
THERMAL HOPPER
1953 - 1955+



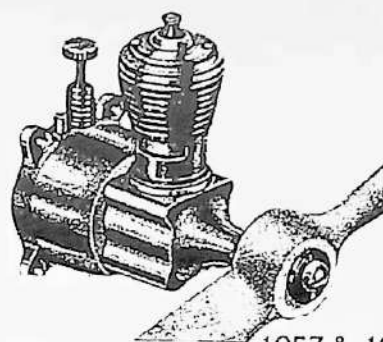
THERMAL HOPPER
REAR CARBURETOR

L. M. COX MFG. CO. INC.
P. O. BOX 476, SANTA ANA, CALIFORNIA

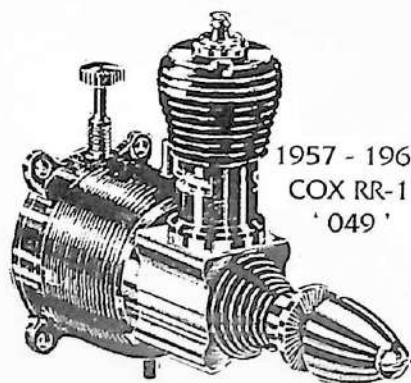
MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
ATWOOD - CON'T	'56	SHRIEK .049/.051	BOTH	USED SHRIEK PARTS/ OLD STYLE HEADS & PLUGS SOME HAD NO NAME IDENTITY	34		42/43
" NOTE:	'58	TULSA SIGNATURE ENGINE INC.	.049 & .051	PARTS & DIES FOR ATWOOD SHRIEKS/ CADETS WERE SOLD TO A SMALL MANUFACTURER IN TULSA OKLAHOMA. A VARIETY OF PARTS WERE ASSEMBLED INTO ENGINES WITH ADDITIONS SUCH AS GOLD PROP SPINNERS AND MODIFIED TIMING. THERE ARE NO ACCURATE LISTINGS TO BE MADE DUE TO MIXING AND MATCHING OF ALL PARTS.	28 40		44/45
" NOTE:	'87	R.J.L. -CURRENT 2007	---	ATWOOD SHRIEKS HAVE BEEN AND CAN BE ASSEMBLED FROM EXISTING PARTS BY R.J.L. INDUSTRIES, CA WHO PURCHASED ALL DIES AND PARTS FROM 'TULSA' MFR. IN 1987			
CANUCK - "CNDN." (LIONEL GAY AND KEITH WOOLEY)	---	-----	----	MFD. IN TORONTO - DURING MANUFACTURE OF 'AVRO ARROW' AIRCRAFT AT AVRO PLANT			
	'48	CANUCK	.049	FRONT INTAKE "CAI IUCK" (WITH BACKWARD 'N') ON CASE/ OTHER MODELS - NO NAME ON CASE AND EXTRA CYLINDER FIN/ APPROX. 12 MADE	125		46
COX (L.M.) MFG. CO. INC. (LEROY COX)	'49	O-FORTY-FIVE	.045	CYLINDER AND PISTON / SUPPLIED BY MEL ANDERSON MANUFACTURED FOR COX RACE CAR	115		47
"	'50	O-SIXTY	.060	AS .045/ LARGER CYLINDER AND PISTON/ DIFFERENT HEAD THAN .045/ SUPPLIED BY MEL ANDERSON MANUFACTURED FOR COX RACE CAR	120		48
"	'52 & '53	SPACE BUG	.049	WITH LARGE DIE CAST TANK/ STEPPED LOWER PART CRANKCASE/ SMALL DIAMETER EARLY ENGINES USED GLOW PLUG AND VERY LARGE EXHAUST PORTS (IN HEIGHT)/ LATER ENGINES USED GLOW HEADS	50 275-NIB	71 52 45 55	49
" NOTE:	'53	SPACE BUG HOP-UP-KIT	.049	HOP-UP-KIT/ SPECIAL GLOW HEAD & TANK - PLUS SPECIAL CARBURETOR			50
"	'53	THERMAL HOPPER	.049	SIMILAR TO SPACE BUG / RADIAL MOUNT/ NO TANK/ SPACE FRAME MOUNT SOLD AS EXTRA PLUS DUAL NEEDLE VALVE AND MUFFLER - THROTTLE UNITS	60	55 71	51
"	'53	SPACE BUG JR.	.049	AS PREVIOUS/ SEMI-TRANSPARENT CLEAR NYLON TANK/ SINGLE BYPASS PORT/ MOUNTING BOLTS GO THROUGH TANK/ USED ON T/D READY TO FLY SERIES	30	36 33 31	52
" NOTE:-1	'53	1st FAMILY COX PRODUCT .049 ENGINES (SPACE BUG JRS.)	.049	THERE APPEAR TO BE UPPER AND LOWER NEEDLE VALVE POSITIONS IN SPACE BUG JR.'S. COX USED .049 SPACE BUG JR.'S FOR THEIR 1ST 'PRODUCT ENGINES' AND WERE USED IN THE COX T/D AIRPLANE SERIES FOLLOWED IN 1961, STARTING WITH THE SERIES 190. SEE 1961 - NOTE 3, (PER D. SITTER PRINTED IN E.J.C. #129 NOVEMBER 1997) THESE PRODUCT ENGINES WERE ALSO SOLD SEPARATELY, AS SPACE BUG JRS.	15 18		53+
"	'54	SPACE BUG JR.	.049	AS PREVIOUS/ RED NYLON TANK USED ON 3 - COX READY TO FLY/ BLUE & YELLOW NYLON TANKS USED ON STANZEL'S READY TO FLY/ SOME BLACK TANKS	45	69 51 55 47	54
" NOTE:	'55	GLOW PLUGS	---	ALL ENGINES USED SMALLER DIAMETER THREADED GLOW HEAD 'TIL 1955, AND LATEST LARGER HEAD DIAMETER USED UNTIL LAST COX's			
"	'55	SPACE BUG	.049	AS PREV./ NEW STANDARD LARGER DIAMETER GLOW HEAD/ REDUCED OPENING HEIGHT IN EXHAUST PORTS/ RED, YELLOW, BLUE & WHITE DELRIN TANKS FOR COX READY TO FLY AIRPLANES/ SOME BLACK TANKS	50	45 54 49 78	55



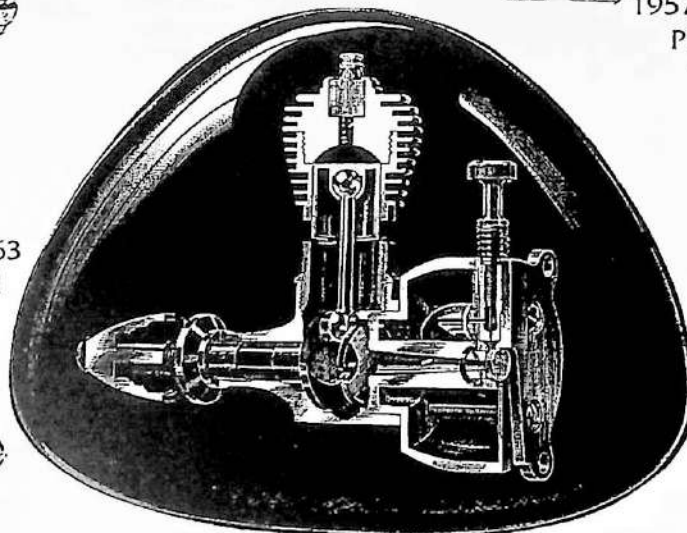
1956 - 1995+
BABE BEE
'049'
1959+
SUPER BEE
DUAL PORTS
'049'



1957 & 1958+
PEE WEE
'020'

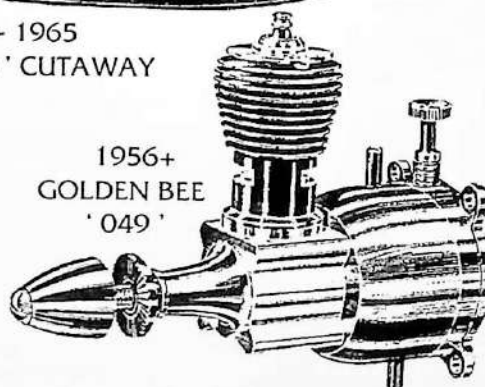
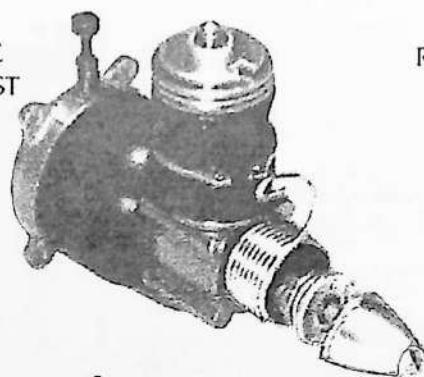


1957 - 1963
COX RR-1
'049'

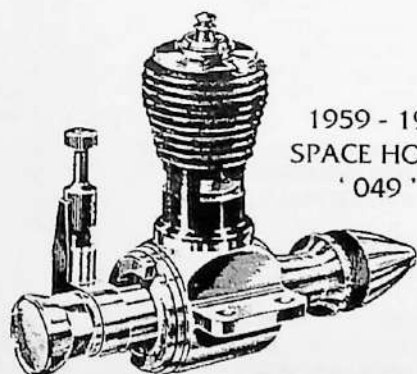


1957 - 1965
RR-1 '049' CUTAWAY

1970's+
GOLDEN BEE
WITH EXHAUST
THROTTLE
'049'



1956+
GOLDEN BEE
'049'

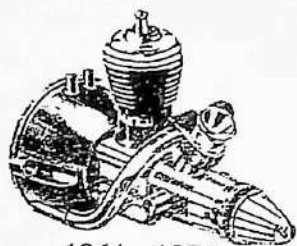


1959 - 1960
SPACE HOPPER
'049'

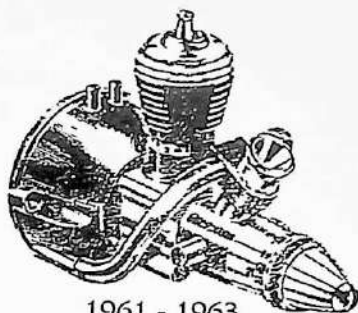


1960 - 1963
TEE DEE
'049'

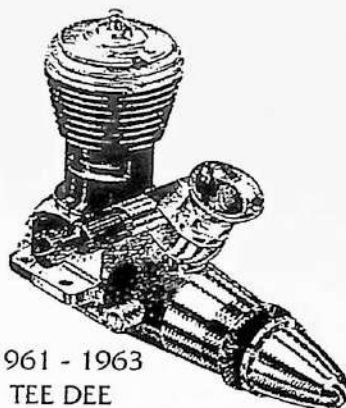
MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
COX (L.M.) - CON'T	'55	STRATO BUG	.049	SHORT SPUN ALUMINUM TANK VENTED FOR STUNT/ RED NYLON TANK BACK/ SPACE BUG CASE/ DUAL BYPASS PORTS	72	286-NIB	56
"	'55	THERMAL HOPPER	.049	AS PREVIOUS/ ONLY CHANGE IS LATEST CURRENT LARGER DIAMETER GLOW HEAD SIZE	80	56 103	57
" NOTE:	'56 TO '95+	BABE BEE	.049	MACHINED CASE FROM EXTRUDED ALUMINUM BAR STOCK/ SPUN ALUMINUM METAL TANK/ 'THIMBLE DROME' STAMPED ON SOME FUEL TANKS/ ZINC BACK PLATES ON EARLY ENGINES & GLASS FILLED NYLON BACK PLATES ON LATER ENGINES/ PRODUCED FOR APPROXIMATELY 40 YEARS WITH A MULTITUDE OF MINOR VARIATIONS SUCH AS; OCCASIONAL SCREEN IN INTAKES - NEEDLE VALVES - COLORED BACK PLATES - CRANKCASE NOSE VARIATIONS ETC.(PER ECJ)	35-NIB 15 25	23 41 21 31-NIB	58+
"	'57 TO '58	RR - 1	.049	MACHINED PLAIN CASE WITH RIBS ON FRONT OF CRANKSHAFT HOUSING/ RIBBED AND ANODIZED BLUE METAL TANK/ DRUM ROTARY INTAKE VALVE	135	510-NIB 154 210	59
"	'57+	PEE WEE .020	.020	SCALED DOWN BABE BEE/ RED ANODIZED TANK AND DRIVE WASHER/ NO NAME ON TANK/ SOLD IN BUBBLE PACK WITH SPRING STARTER	65-NIB 50-NIB 25	59-NIB 41-NIB 41	60
"	'58+	PEE WEE .020	.020	AS PREVIOUS/ NO COLORED PARTS/ 'THIMBLE DROME' NAME AROUND TANK/ WHITE RUBBER SPINNER/ MOST USED IN "LIL STINKER" READY TO FLY	41-NIB 41	20 25	61
" NOTE: 2	'58 - TO '79	2nd FAMILY COX PRODUCT .020 ENGINES (PEE WEES)	.020	COX USED THE FOLLOWING SERIES (FAMILY) OF PRODUCT ENGINES; 90, 90-1, 100, 100-2 & 100-4 IN COX RED KNIGHT AND RED BARON PITTS AIRPLANES ETC. PLUS HELICOPTERS. THESE ENGINES WERE MADE PRIMARILY FROM A SERIES OF SLIGHTLY MODIFIED .020 PEE WEE CRANKCASES WITH A VARIETY OF CYLINDERS, CAST AND PLASTIC BACKPLATES, DELRIN TANKS & STARTERS ETC. (PER D. SITTER PRINTED IN ECJ - #108 - DECEMBER 1993) SEE OTHER PRODUCT ENGINES IN NOTES 1 & 3.	25		62+
"	'58/ '63	RR - 1	.049	AS PREVIOUS/ GOLD ANODIZED RIBBED CASE WITH RIBBED AND ANODIZED BLUE TANK	95	156 120	63
"	'64	RR - 1	.049	AS PREVIOUS/ GOLD ANODIZED RIBBED CASE WITH PLAIN 'NON RIBBED' ANODIZED BLUE TANK SEE PICTURE ON BACK COVER			64
"	'58 TO '76	GOLDEN BEE & THROTTLE MODEL	.049	LONG TANK VENTED FOR STUNT/ MACHINED GOLD ANODIZED CASE AND TANK/ SPINNER GOLD ANODIZED/ DUAL BYPASS PORTS WITH LONG PROP SCREW/ SOME HAD BLACK TANKS AND PROP DRIVERS/ LATER T/D TYPE SPINNER/ LATER MODEL IN EARLY 1970's HAD THROTTLE	35 45	45 42 36 122-NIB 133-NIB	65
"	'59	SILVER BEE	.049	AS GOLDEN BEE/ ALL NATURAL ALUMINUM/ VENTS IN BACK PLATE - NONE IN LONG TANK	53	67	66
"	'59	SUPER BEE	.049	DUAL BYPASS PORTED BABE BEE/ 'P-40'ON CYLINDER/ 'THIMBLEDROME' ON TANK	46		67
"	'59	SPACE HOPPER .049	.049	THERMAL HOPPER REPLACEMENT/ BEAM MOUNTS/ MACHINED CASE/ REED VALVE/ NO COLOR	65 375-NIB	60 123	68
"	'60 TO '63	TEE DEE .049	.049	FIRST COX FRONT ROTOR / BLACK CRANKSHAFT PLASTIC COVER/ (ATWOOD DESIGN)/ GOLD PROP DRIVER AND CARBURETOR/ THIN WALL CYLINDER/ DUAL BYPASS PORTS/ SOME GOLD CARBS LEFT IN PLAIN ALUMINUM	35 50 60 85-NIB	56 77 82-NIB	69
" NOTE	'60	T/D's	----	ALL T/D's DESIGNED BY BILL ATWOOD			



1961 - 1974
TEE DEE
'010'



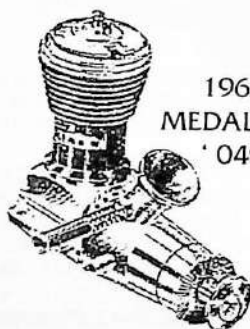
1961 - 1963
TEE DEE
'020'



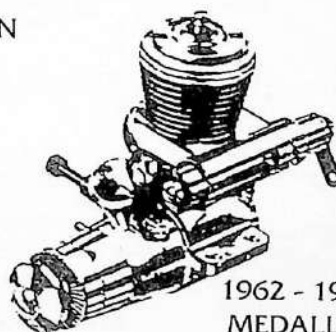
1961 - 1963
TEE DEE
'051'



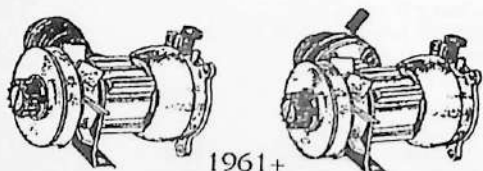
1962 TEE DEE
'010' WITH
GOLD PLATED TIE CLIP



1962+
MEDALLION
'049'



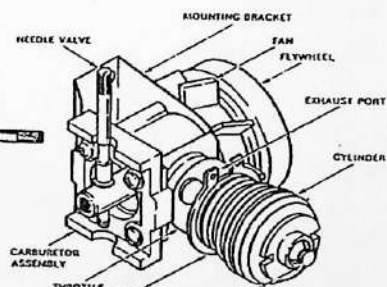
1962 - 1992+
MEDALLION
'049 R/C'



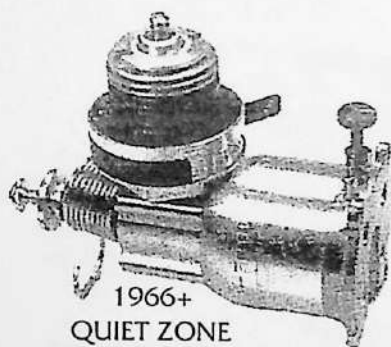
1961+
PRODUCT ENGINES
'049'



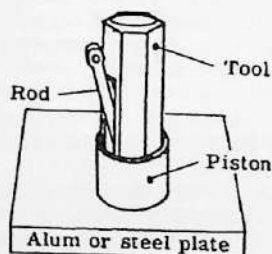
1961+
PRODUCT ENGINES
'049'



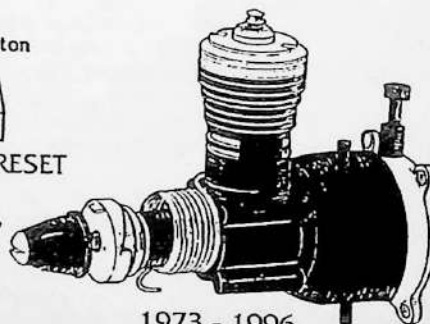
1961+
ANOTHER PRODUCT ENGINE
'049'



1966+
QUIET ZONE
'049'



TYPICAL PISTON/ROD RESET
TOOL FOR
'020 - 049 - 051'



1973 - 1996
BLACK WIDOW
'049'



COX *Thimble-Drome Products*

MFR./ENG.NAME	YR	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
COX (L.M.) - CONT	'61 TO '73	TEE DEE .010	.010	<i>SMALLEST TRUE PRODUCTION ENGINE EVER MADE/ MINI OF .049/ RED FRONT END/ RED PLASTIC TANK OR RED PLASTIC REAR COVER - MOUNT</i>	130-NIB 95-NIB 65	92-NIB 91 85-NIB	70
"	'61/63	TEE DEE .020	.020	<i>SIMILAR TO .010/ LARGER WITH SAME FEATURES</i>	125-NIB 86	86 77-NIB	71
"	'61/63	TEE DEE .051	.051	<i>SIMILAR TO TEE DEE .049/ RED PLASTIC CRANKSHAFT COVER/ BORE LARGER/ NUMBER '5' ON CYLINDER</i>	60-NIB 45-NIB	33	72
"	NOTE:	'61+ 3rd FAMILY COX PRODUCT .049 ENGINES (BABE BEES)	.049	COX USED THE FOLLOWING SERIES (FAMILY) OF PRODUCT ENGINES; 190, 191, 290, 350 & 450 IN COX CARS, AIRPLANES, ETC. THESE ENGINES WERE MADE PRIMARILY FROM A SERIES OF SLIGHTLY MODIFIED .049 BABE BEE CRANKCASES WITH A VARIETY OF CYLINDERS, TANKS, AND BACKPLATES (MOSTLY DELRIN RECTANGULAR) THESE PRODUCT ENGINES USED A VARIETY OF GEARS, SPECIAL MOUNTS, THROTTLES, SPECIAL STARTERS ETC. (PER D. SITTER PRINTED IN E.C.J.-#129 - NOVEMBER 1997) SEE OTHER PRODUCT ENGINES, SEE PREVIOUS NOTES 1 & 2.	20		73+
"	'62	TEE DEE .010 .010	.010	<i>AS ORIGINAL/ NO TANK/ SIMPLE BACKPLATE ADVERTISED WITH 24K GOLD PLATED TIE CLIP!</i>	100-N	95	74
"	'62+	MEDALLION .049	.049	<i>DETUNED TEE DEE .049/ RED (PLASTIC) DELRIN FRONT HOUSING AND INTAKE COMBINED/ SPORT USE</i>	75-NIB 50-NIB		75
"	'62 to '92+	MEDALLION .049 R/C	.049	<i>STANDARD .049 MEDALLION WITH EXHAUST THROTTLE ONLY</i>	30	79-NIB 36-NIB	76
"	'63+	'290' SPOOK .049	.049	<i>INTERCHANGEABLE WITH '190' PRODUCT .049 ENGINE SERIES/ CAST ALUMINUM BACKPLATE/ YELLOW PLASTIC OR BRASS NEEDLE VALVE EXTENSION/ SOLD SEPARATELY FOR 'SPOOK' AND AS REPLACEMENT FOR HELLDIVER STUKA AND MUSTANG PLASTIC MODELS</i>	20 35-NIB		77
"	'64+	TEE DEE .020	.020	<i>AS PREVIOUS/ THICKER LINER - STEPPED</i>	100-NIB	71 78 111-NIB	71.5
"	'64+	TEE DEE .049	.049	<i>AS PREVIOUS/ THICKER LINER - STEPPED</i>	55 45	148-NIB 52	78
"	'64+	TEE DEE .051	.051	<i>AS PREVIOUS/ THICKER LINER - STEPPED</i>	60-NIB 50-NIB	41 40	79
"	'64+	PEE WEE .020	.020	<i>AS '59/ TANK PLAIN ALUMINUM/ THICKER LINER - STEPPED/ LATER ADDED STARTER SPRING</i>	45-NIB 25	24 25	80
"	'64+	MEDALLION R/C .049	.049	<i>AS PREV. MEDALLION .049/ WITH R/C COUPLED EXHAUST AND INTAKE THROTTLE</i>	35	38	81
"	'66	QUIET ZONE .049	.049	<i>STANDARD BABE BEE WITH MUFFLER AND STARTER SPRING/ SOLD IN BUBBLE PACKAGING</i>	32	27	82
"	NOTE:	'67- TO '89+	-----	THROUGHOUT THE YEARS COX PRODUCED A NUMBER OF ENGINES FOR OTHER COMPANIES, I.E. TESTORS R/C READY TO FLY/ PENNY'S DEPT. STORES/ SANWA & KYOSHO/ JEROBEE R/C CARS/ LITE MACHINE CORP./ TISSAN HEIFA (ISRAEL)/ AND PRESUMABLY OTHERS UNIDENTIFIED (REF. DAN SITTER IN E.C.J. - ISSUE #156).			
"	'73 TO '96+	BLACK WIDOW .049	.049	<i>AS PREVIOUS GOLDEN BEE/ BLACK ANODIZED CASE AND FUEL TANK/ DUAL BYPASS PORTS/ RED RUBBER PROP SPINNER AND LATER PRODUCTION WITH RED ANODIZED ALUMINUM PROP SPINNER</i>	125-NIB 35-NIB 50-NIB	56 39	83
"	'74 +	TEE DEE .010	.010	<i>SIMILAR TO ORIGINAL '61/ BLACK FRONT END AND PLASTIC TANK WITH BACK PLATE - SAME</i>	75-NIB 55-NIB 45-NIB		70.5



HI-COMPRESSION

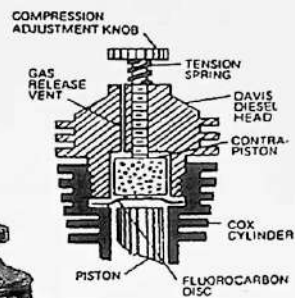
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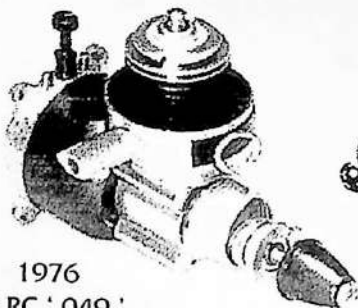
STANDARD

#302

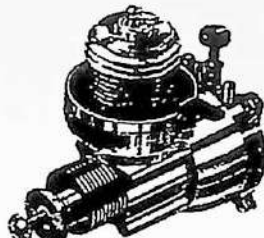
'049' COX HEADS



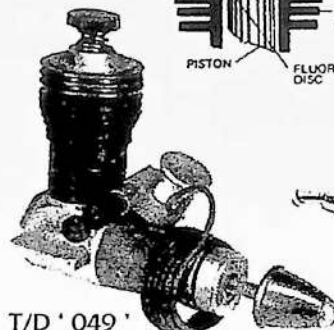
1975
DAVIS
DIESEL
CONVERSIONS
FOR COX



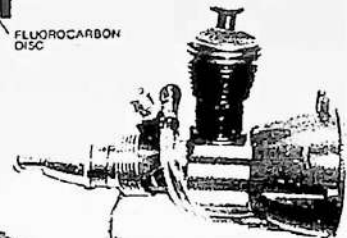
1976
Q RC '049'



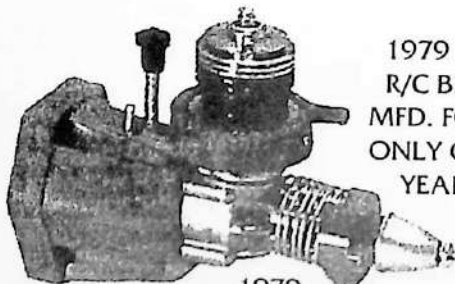
1975
PEE WEE
R/C '020'



T/D '049'
DAVIS DIESEL



T/D '020'
DAVIS DIESEL



1979
R/C BEE
'049'

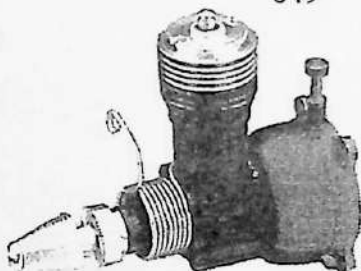
1979
R/C BEE
MFD. FOR
ONLY ONE
YEAR



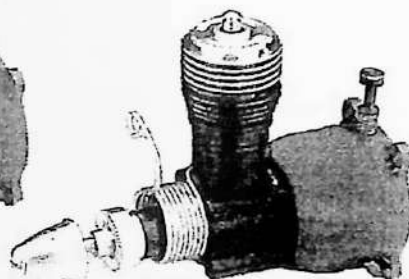
1982
DRAGONFLY
'049'



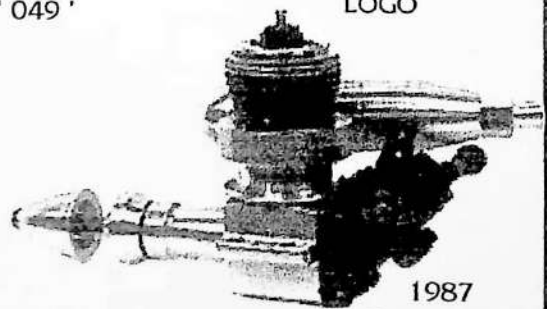
KUSTOM
KRAFTSMANSHIP
LOGO



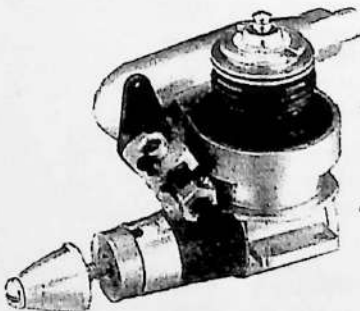
1989
TEXACO JR
'049'



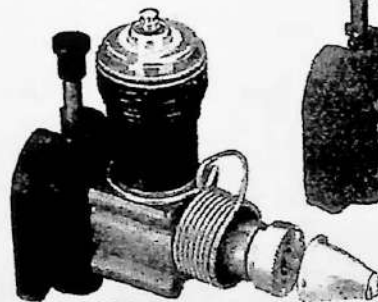
1989
TEXACO
'049'



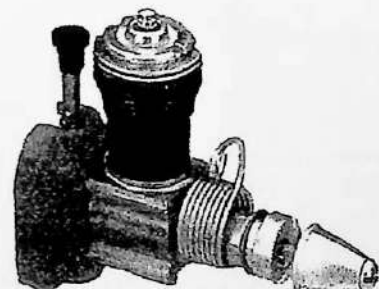
1987
QUEEN BEE
'074'



1994
T/D
R/C
'051'

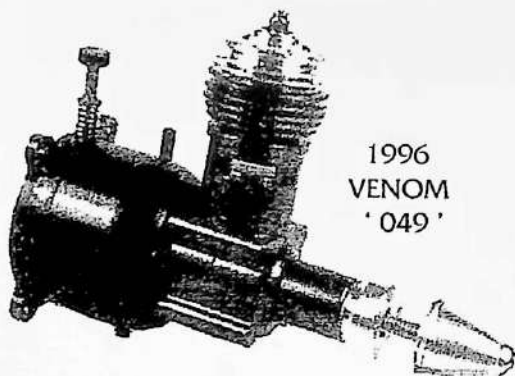


1995
KILLER BEE '049'



1995
KILLER BEE
'051'

MFR./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES U.S. \$4	MECA ASKING	EBAY SOLD	A #
COX (L.M.) - CONT	'75	DAVIS/COX .049	.020 .049	DAVIS STARTED DIESELIZING A VARIETY OF COX PRODUCTS AS SHOWN - INTRODUCED IN 1975	40		
"	'75	PEE WEE R/C .020	.020	AS PREV. PEE WEE WITH EXHAUST THROTTLE	55-NIB		80.5
"	'76	QRC .049	.049	AS PREVIOUS BABE BEE/ FUEL TANK RED ANODIZED/ 2 VERTICAL STUNT VENTS/ PROP SPINNER ANODIZED BLUE OR PLAIN ALUMINUM/ HAS MOVEABLE EXHAUST STACK EXTENSION AND SPRING STARTER	75 50-NIB 75-NIB		84
"	'79	R/C BEE .049	.049	NEW DIE CAST CRANKCASE WITH BABE BEE MOVING PARTS AND GLOW HEAD/ LARGE RED DELRIN FUEL TANK WITH 'CLUNK' TYPE FUEL FEED/ ALUMINUM OR BRASS PROP DRIVERS/ ONLY MADE FOR 1 YEAR DUE TO HIGH SCRAP RATE FROM 'TAP' OPERATIONS (PER ECJ)	50-NIB 30	31	85
"	NOTE:	'81 KUSTOM KRAFTMANSHIP	-----	WAS MAJOR SUPPLIER OF COMPETITION 049 PARTS (i.e. SCHNEURLE PORTED 049 RACING OR STUNT VERSION)	(15 PARTS)		
"		'82 DRAGONFLY .049	.049	THIS REPLACES THE 1979 R/C BEE BECAUSE THE CAST ALUMINUM CRANKCASES PREVIOUSLY USED HAD A VERY HIGH FACTORY SCRAP RATE/ HAS BLACK DELRIN FUEL TANK WITH 'CLUNK' TYPE FUEL FEED/ USES BABE BEE CRANKCASE WITH HEX PROP DRIVE AND SPUN ALUMINUM PROP SPINNER AS T/D	90-NIB 35-NIB		86
"		'87 QUEEN BEE .074 R/C	.074	SPECIAL ENGINE WITH CRANKCASE, PROP DRIVE AND SPINNER ALL MACHINED FROM BAR STOCK ALUMINUM/ CYLINDER HEAD HAS REGULAR GLOW PLUG/ MACHINED MUFFLER CUT AT ANGLE WHICH HAS EXHAUST PIPE/ ANGLED REAR INTAKE R/C CARBURETOR USING AIR BLEED	125-NIB 60-NIB 55-NIB 40	81-NIB 69 63 45	87
"		'89 TEXACO JR. .049	.049	SIMILAR TO BLACK WIDOW/ BLACK ANODIZED CRANKCASE WITH RED ANODIZED FUEL TANK/ DUAL BYPASS PORTS/ SPUN PROP DRIVER AND ALUMINUM PROP SPINNER SAME AS T/D/ SPECIAL 5 FIN GLOW HEAD/ DEVELOPED FOR SPECIAL FREE FLIGHT EVENTS/ LATER - HAD SPRING STARTER	42	37	88
"		'89 TEXACO .049	.049	SIMILAR TO BLACK WIDOW/ BLACK ANODIZED CRANKCASE WITH RED ANODIZED FUEL TANK WHICH IS LONGER THAN TEXACO JR./ NO SPRING STARTER/ SPECIAL 5 FIN GLOW HEAD/ DEVELOPED FOR SPECIAL FREE FLIGHT EVENTS/ LATER - HAD SPRING STARTER	65 50-NIB 40-NIB	31 25	89
"		'94 T/D R/C .051	.051	REGULAR T/D .051/ BARREL CARBURETOR ALLOWING TINY IDLE ADJUSTMENTS/ MUFFLER SURROUNDS CYLINDER AND EXTENDS INTO A TYPICAL BARREL EXHAUST/ DUAL BYPASS/ NO SPRING STARTER	38	47	90
"	NOTE:	--- OCT. 1996	-----	MODEL BUILDER ADVERTISED COX'S " CHOOSE YOUR WEAPON" WITH THE FOLLOWING ENGINES IN CURRENT PRODUCTION PRIOR TO COX BEING PURCHASED BY ESTES: .049 COX TEXACO AND TEXACO JR./ TEE DEE R/C .05/ KILLER BEE .049 AND .051/ DRAGONFLY .049/ VENOM .049/ BLACK WIDOW .049 ... NOW ALL WITH 'SNAP STARTER (SPRING)' EXCEPT THE TEE DEE R/C .05.			
"		'95 KILLER BEE .049	.049	SIMILAR TO BABE BEE/ GOLD ANODIZED CRANKCASE/ BLACK DELRIN BACKPLATE AS USED ON COX PRODUCT ENGINES WITH STIFFENING RIBS/ THIN VERTICAL NEEDLE VALVE THROUGH REAR BACKPLATE INTO REAR INTAKE IN CRANKCASE/ DEVELOPED FOR NOSTALGIA FREE FLIGHT EVENT/ CYLINDER USED FROM T/D WITH DOUBLE SLIT EXHAUST/ USED SAME BALANCED CRANKSHAFT AS IN 1996 VENOM/ SNAP SPRING STATER	50-NIB 45-NIB 35-NIB	46 50-NIB 54-NIB	91
"		'95 KILLER BEE .051	.051	SIMILAR TO .049 KILLER BEE/ RED DELRIN BACKPLATE/ GOLD ANODIZED CRANKCASE/ BORED OUT VERSION OF .049 KILLER BEE/ SNAP SPRING STARTER	45-NIB		92



1996
VENOM
'049'



2007
SURE
START
'049'

Cox sold to Estes on January 4, 1996

Information from Dan Sitter's article in the October 2002 Engine Collector's Journal (by Tim Dannels) agrees to some extent with our comments on the engine listings page opposite this picture page as being probably correct since these engines were no longer manufactured after the 'Cox sale to Estes', or were simply short runs as follows:

T/D .049 & .051

Killer Bee .049 & .051

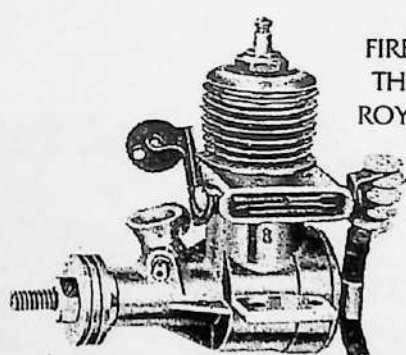
Texaco Jr. .049

Texaco .049

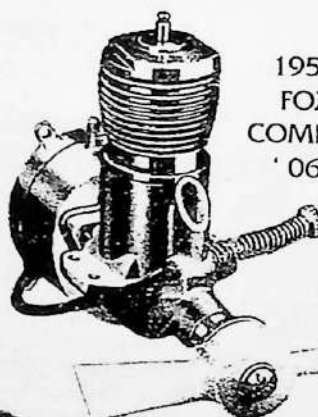
T/D .051 R/C - 2000 (2 Runs)

Venom .049 - 1000 (1 Run)

There are probably others no longer manufactured that were not as well known by us but, manufacturing remains cloudy at Estes due to a letter sent to Charles Reich ('Ol Charlie') at SAM in '98; "the Cox Texaco engine would remain in production, however the Texaco Jr. with the 1/2 ounce tank would be discontinued from Brian Eberwein". Confusion over Estes production from 1996 to 2007 remains one day we may get it,yet !



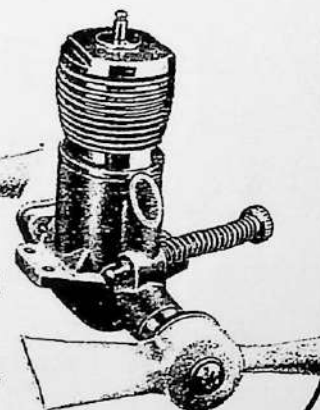
1955
FIRECRACKER
THROTTLED
ROYAL SPITFIRE
'065'



1959
FOX
COMET 07
'069'



1959
MINI 18
PRE-PRODUCTION '018'

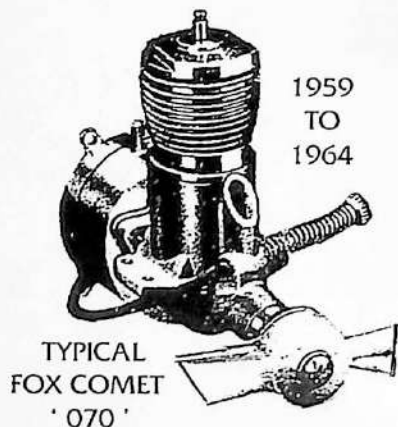


1959 - 1961
TYPICAL
FOX
COMET 07
'069'

MFR./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES U.S. \$	MECA ASKING	EBAY SOLD	A #
COX (L.M.) - CONT	'96	VENOM .049	.049	<i>SIMILAR TO .049 BABE BEE/ THICK WALL CYLINDER/ RED ANODIZED CRANKCASE/ BALANCED CRANK- SHAFT WITH THICK WEB/ HIGH COMPRESSION GLOW HEAD (ONLY 1,000 ENGINES PRODUCED - PER E.C.J.)</i>	149		93
" NOTE:	---	EARLY 2000 ESTES-COX	----	ESTES INDUSTRIES IN PENROSE, COLORADO BOUGHT UP REMAINDER OF COX MANUFACTURING FROM CALIFORNIA (APPARENTLY INVENTORY AND NAME, SINCE MOST OF THE EQUIPMENT HAD WORN OUT) AND BY 2003 HAD RENAMED ITSELF ESTES-COX CORPORATION. SINCE 2000, ESTES HAD BOUGHT AND COMBINED PICA INC. MODEL KITS (DUELLIST 2/40; WACO, T-28 ETC.) AND NUMEROUS COX READY-TO-FLY MODELS (T-6 TEXANS WITH RADIO CONTROL AND ELECTRIC POWERED COMMANCHE HELICOPTERS AND GLOW POWERED HYPER-VIPER CONTROL-LINE AIRPLANES PLUS MANY OTHER MODELS AND KITS.			
" NOTE:	'04	- LATE -	----	COX HOBBY DISTRIBUTORS - NEW NAME FOR ESTES-COX			
" NOTE:	'07	SURE START .049	.049	SURE START 'PRODUCT' ENGINE COX #8901 FOR THE SPECIAL PRICE OF \$6.99 PLUS S&H. HAS A BABE BEE CRANKCASE, PISTON AND LINER AND PLASTIC BACK PLATE, VERTICAL NEEDLE VALVE TO INTAKE AND COX GLOW HEAD PLUS SPRING STARTER. THE LAST COX !		\$7.00 NEW	94
" NOTE:	---	2007	----	IT SEEMS THAT COX HOBBY DISTRIBUTORS LEARNED A LESSON THAT COX's RETIRED PRESIDENT BILL SELZER LEARNED SOME YEARS AGO; INSURANCE COMPANIES FORCED WALMARTS, TOYS-R-US & K-MARTS ETC. TO STOP HANDLING POTENTIALLY EXPLOSIVE FUELS AND KIDS MODEL ENGINES THAT COULD CAUSE INJURIES. LEAVING THAT MARKET TO HOBBY SHOPS WHICH DON'T HANDLE THE 'MASS' MARKET, THEREFORE MINIATURE COX ENGINES LOST THEIR SALES WHICH ARE NOW ELECTRIC MOTORS/AIRPLANES. 'END OF COX ENGINES' .			
FIRECRACKER (MEL ANDERSON) FOR A.J. AIRCRAFT	---	-----	----	MFD. FOR A-J AIRCRAFT CO. - JIM WALKER			
	'50	FIREBABY BABY SPITFIRE	.049	<i>ANDERSON PRODUCED FOR 'JIM WALKER' - PAGE 1</i>	45		8
"	'55	FIRECRACKER ROYAL SPITFIRE	.065	<i>MODIFIED ROYAL SPITFIRE .065 WITH 'JIM WALKER' ON BYPASS/ PAGE 1</i>	38	26	19
"	'55	FIRECRACKER 'THROTTLED' ROYAL SPITFIRE	.065	<i>AS PREVIOUS/ REGULAR ENGINE FITTED WITH PNEUMATICALLY OPERATED EXHAUST BAFFLE AND A VENTURI CAP FOR SPEED CONTROL/ NO TANK SUPPLIED/ PRIMARILY USED IN U-CONTROL/ PAGE 1</i>	175-NIB 45		20
FOX MFG. CO. (DUKE FOX)	'57	'MINI .59' PROTOTYPE .049	.049	<i>PROTOTYPE SAND CASTINGS OF VERY SMALL FOX .59 (ONE FINISHED MODEL STOLEN FROM FOX COLLECTION) ONE IS PARTIALLY COMPLETE/ ONE CASTING LEFT BLANK</i>	PROTOTYPE		95
" "	'59	MINI 18 PRE- PRODUCTION .018	.018	<i>6 - PRE-PRODUCTION ENGINES/ CASE SIMILAR TO COMET BUT SMALLER/ FOR COX COMPETITION BUT 1/2A SALES STARTED DROPPING OFF SO NO PRODUCTION (NOW OWNED BY R. WILKINSON)</i>	PROTOTYPES		96
" "	'59	COMET 07	.069	<i>NO EMBLEM ON ENGINE/ EXHAUST DEFLECTOR OPTIONAL/ DIE CAST TANK</i>	25	31	97
" "	'59	COMET 07	.069	<i>AS PREV./ ALUMINUM SPACER RING MACHINED TO FIT UNDER BASE OF CYL./ HEAVIER DIECAST TANK</i>	20		98
" "	'60	COMET 07	.069	<i>AS PREV./ EXHAUST DEFLECTOR ON CYLINDER CALLED 'DISHPAN' - A MODIFIED CUP/ ADDED 'COMET' SHOOTING STAR EMBLEM/ GROOVE ON DRIVE WASHER</i>	35	56	99

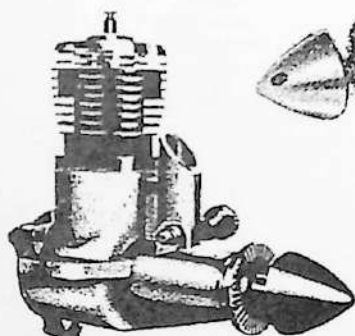


FOX
CONTINUED

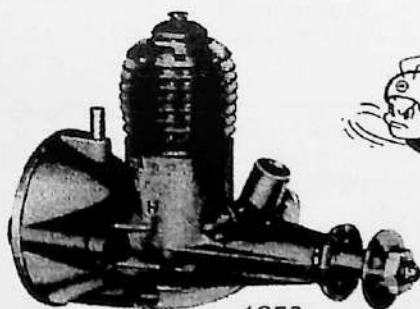


1959
TO
1964

TYPICAL
FOX COMET
'070'



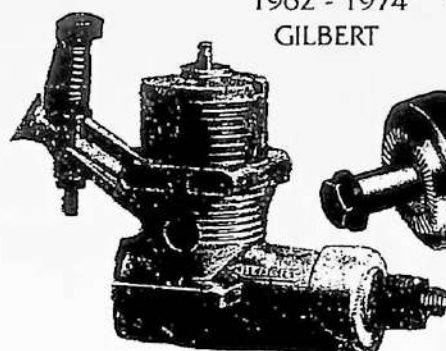
1964
FOX F.A.I.
'049'



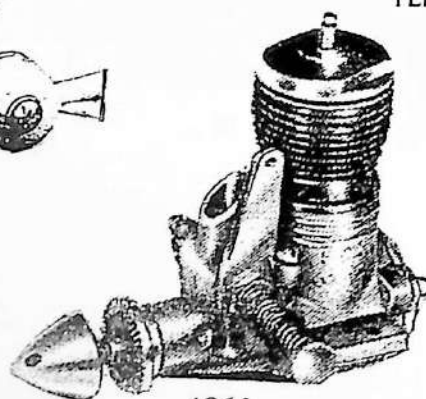
1953
HOLLAND WASP 'H'
'049'



WASP



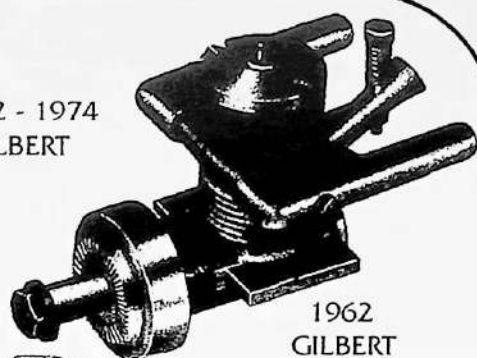
1962 GILBERT '074'
FLIP START



1964
FOX R/C
'070'

1974
GILBERT
ASS'B'D
BY
POLKS

1962 - 1974
GILBERT



1962
GILBERT
'074'
WITH MUFFLERS
AND RECOIL START

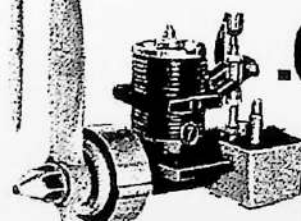
Thunderhead ENGINES

INCLUDE: TANK • EXTRA
GLOW HEAD • WRENCH
(PROP NOT INCLUDED)



.074

FLIP START



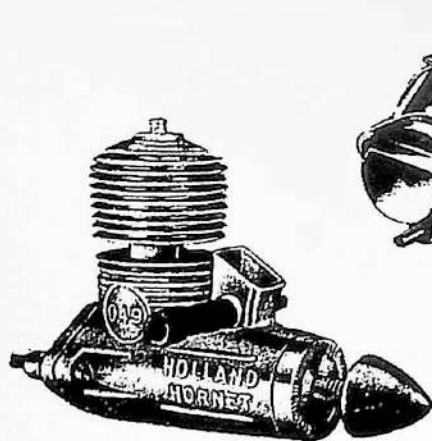
.074

RECOIL START

WRITE: POLKS 346 BERGEN AVE.
JERSEY CITY, N.J. 07304

POLKS HOBBIES
314 Fifth Ave., NY., N.Y. 10001 Dept MB

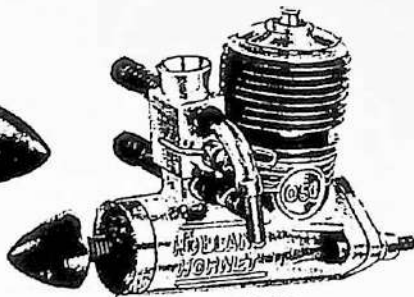
MFR./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
FOX MFG. - CON'T	'61	COMET 070	.069	AS PREVIOUS / WITH COMET OUT OF BUSINESS- NAME GROUND OFF CASE/ NO TANK/ SOME MINOR DIFFERENCES (ENGINES SOLD TO HOBBY SHOPS FOR \$1.00 EACH)	30	37	100
" "	'61	FOX 070	.069	MADE FROM LAST COMET DIES WITH EXHAUST DEFLECTOR OFF & COMET EMBLEM MACHINED OFF/ INTAKE BEVELLED AT 45 / DIE EXTRACTOR TAB BEVELLED/ ALUMINUM PROP DRIVE FASTENED ON SPLINED STUB CRANKSHAFT WITH PROP SCREW/ REAR COVER WAS CRUDE MANUFACTURED FROM 'MACHINED DOWN' COMET TANKS.	20	29	101
" "	'61	FOX .049	.049	SMALLER VERSION 07/ REDUCED BORE/ SAME CASE/ TANK MOUNT AS COMET/ 4 - MINOR VARIATIONS WITH & WITHOUT MOUNTING HOLES IN BEAMS	40 25	37 34	102
" "	'62	FOX .049	.049	AS PREVIOUS/ WITH AND WITHOUT TANK/ BEAMS DRILLED/ DIE TAB MACHINED OFF TO LEAVE 'BARB' AS ON .07 CASES/ SHORT DRIVE WASHER FITTED TO CONVENTIONAL CRANKSHAFT/ NO MARKINGS ON THE ENGINE	35	49	103
" "	'62	FOX 070	.069	LAST RUN WITH CONVENTIONAL CRANKSHAFT/ NO 'BARB' AS ON OTHER .07's	25		104
" "	'64	FOX .049	.049	CHANGED/ 'FOX .049' ON LEFT SIDE OF POLISHED FINNED CRANKCASE WITH HEAVY DIE CAST TANK MOUNT/ CONVENTIONAL CRANKSHAFT/ DUAL EXHAUSTS/ SINGLE BYPASS	40		105
" "	'64	FOX 070 R.C.	.069	HEAVY FINNED POLISHED CASE/ WITH FOX OVER .07 RC CAST ON SIDE/ INTAKE THROTTLE/ CON- VENTIONAL CRANKSHAFT WITH THREADED POLISHED SPINNER	25	43	106
" "	'64 TO 2007	FOX .049 FAI	.049	DIFFERENT CASE CASTING/ NO CASE FINS/ MATTE FINISH/ FOX RESEMBLANCE ONLY/ ADVERTISED IN '63-UNAVAILABLE TIL LATE '64 NOW BEING SOLD BY H & R ENGINES (N.I.B.@\$55) WHO PURCHASED ALL PARTS FROM FOX	70	86 71 61	107
GILBERT, A.C., CO. (DESIGNED BY BOB HOLLAND & HI JOHNSON MFD. BY DYNAMIC & GILBERT (LATER)	---	-----	----	AMERICAN FLYER / POLKS - N.J. (LAST)			
"	'62	THUNDERHEAD I READY TO FLY	.074	DOWNDRAFT REAR INTAKE/ SIDE PORT TYPE/ RECOIL START/ TWIN MUFFLERS SUPPLIED FOR READY TO FLY ALSO WITHOUT MUFFLERS/ ' 7 ' IN CIRCLE ON CASE	15	56	108
"	'62	THUNDERHEAD I	.074	AS PREVIOUS/ NO MUFFLER OR STARTER/ MODIFIED PROP DRIVE/ FLIP START/ ' 7 ' IN CIRCLE ON CASE	30-NIB 25-NIB	17	109
"	'63	THUNDERHEAD I	.074	AS PREVIOUS '62/ BRONZED OR GOLD ANODIZED/ ' 7 ' IN CIRCLE ON CASE	35	51	110
" NOTE:	---	-----	----	ALL GILBERTS HAVE SHORT AND LONG MUFFLERS DEPENDING ON APPLICATION			
HOLLAND ENGINEERING	---	-----	----	MFD. BY DYNAMIC MODELS INC.			
"	'52	HOLLAND "WASP"	.049	1ST ATWOOD UNDER HOLLAND OWNERSHIP "H" STAMPED UNDER "WASP" ON SIDE OF CASE	55	60	111
"	'53	HOLLAND "WASP"	.049	AS PREV./ VENTURI MACHINED OFF 1/16/ CRANKCASE MACHINED OFF UNTIL BARELY ABOVE NAME/ OFFERED WITH 2 SECTION TIMER TANK OR BACK COVER PLATE (NO 'H')	45	105	112



TYPICAL HORNET
1957 - 1963
' 049 '



HORNETIMER
TANK



1960
HORNET 2 SPEED
' 049 '



HOLLAND
GLOW PLUG CLIP



20 CENTS !

Clip seconds off your starting time with HOLLAND Instant-Action Glow Plug Clip. One hand does the trick when you use the Holland Glow-Plug clip. Clip it on — snap it off — you're in the air.

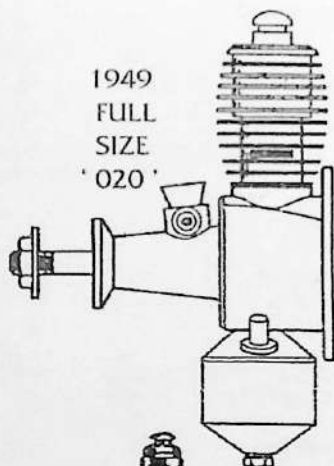
Lud **K&B** *Johnny* **K&B** *rodbeck*

Here it is

WORLD'S SMALLEST
PRODUCTION-MADE
GLOW IGNITION ENGINE

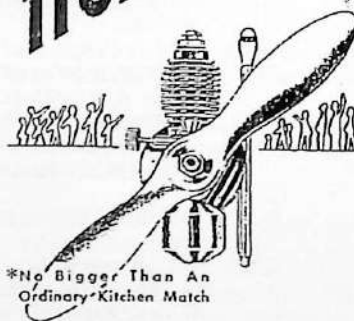


Infant
TORPEDO

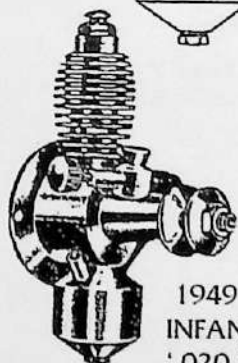


1949
FULL
SIZE
' 020 '

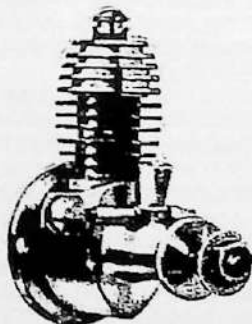
APPROX.
30,000
INFANTS
MFD.



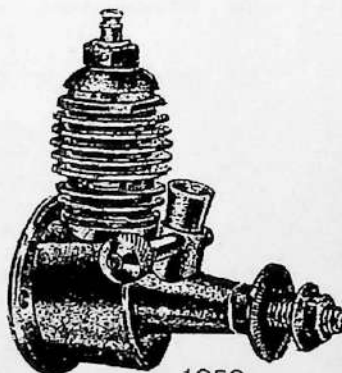
*No Bigger Than An
Ordinary Kitchen Match



1949
INFANT
' 020 '



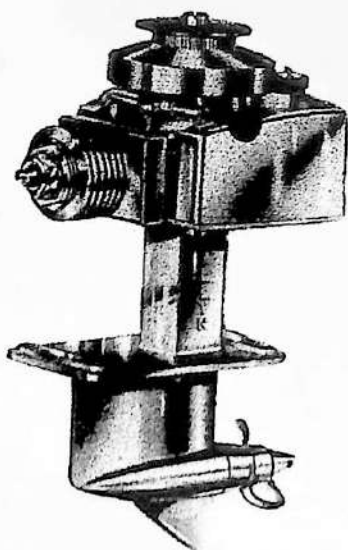
1950
TORPEDO JR.
' 035 '



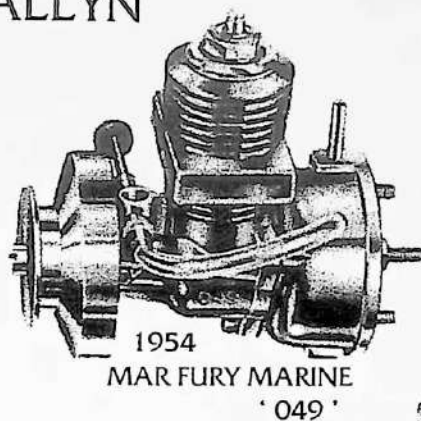
1950
TORPEDO
' 049 '

MFR./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
HOLLAND - CONT	'53	HOLLAND 'WASP'	.049	AS PREV./ MORE SHAVED OFF TOP OF CRANKCASE INTAKE FURTHER SHORTENED / BLACK OXIDE TREATED CYLINDER/ SOME SPINNERS ANODIZED IN RED, BLUE, GOLD (NO 'H')	55	94-LN 76	113
"	'57	HORNET	.049	NEW DIE CAST CASE/ TOTALLY DIFFERENT FRONT ROTARY - FIRST HOLLAND MODEL/ BLUE ANODIZED SPINNER	65	94 85	114
"	'57	HORNET	.051	SAME AS .049/ ALSO NO INTAKE RESTRICTOR	75	90 81	115
"	'57	HORNET MK I	.049	AS PREV./ ANODIZED ALUMINUM RESTRICTOR IN INTAKE/ PLAIN SPINNER/ OPTIONAL TIMER TANK	65	65 103 86	116
"	'57	HORNET MK I	.051	AS .049 MK I / BORED OUT CYLINDER/ OPTIONAL TIMER TANK	60 55	91	117
"	'59	HORNET MK II	.049	MK II ON CASE WITH DISPLACEMENT IN CIRCLE / METAL INTAKE RESTRICTOR/ ANODIZED RED OR BLUE BLUE SPINNER AND PROP DRIVER/ OPTIONAL T-TK	70	122-NIB 83	118
"	'59	HORNET MK II	.051	AS .049 MK II/ BORED OUT CYLINDER/ OPTIONAL T-TK	110-NIB 53	135 112 63	119
DYNAMIC MODELS INC	'60	HORNET 'MODIFIED'	.049	AS MK II/ FACTORY HOP-UP/ STAMPED 'M' NEAR INTAKE/ OPTIONAL TIMER TANK	90	131 113	120
"	'60	HORNET 'MODIFIED'	.051	AS MK II/ FACTORY HOP-UP STAMPED 'M' NEAR INTAKE/ OPTIONAL TIMER TANK	85	105	121
"	'60	HORNET 2 SP.	.051	2 SPEED/ LONG VENTURI/ 2 NEEDLE VALVES/ NO .049 VERSION/ FEW MANUFACTURED	95	100 82	122
" NOTE:	'62	VARIATIONS	BOTH	ALL ALUMINUM/ NO COLOR/ .051 PARTS OCCASIONALLY ANODIZED WITH COLOR	65		123+
" NOTE:	'63	VARIATIONS	BOTH	THICK TOP CYLINDER FIN/THICK ALUMINUM 'STEPPED' GLOW HEAD FINS (2 STYLES)/ NO SPINNER	65		124+
K & B MFG. CO. (LUD KADING & JOHN BRODBECK)	---	-----	-----	PURCHASED ALLYN PRODUCTS IN MAY 1955/ MERGED WITH AURORA PLASTICS IN '60 AND REVERTED BACK TO K & B NAME			
" "	'49	INFANT .020	.020	1ST 1/2A NATIONALLY AVAILABLE/ 6 HEAD FINS/ GLOW PLUG INSERT INSIDE HEAD/ BRASS WRIST PIN ON FIRST RUN AND REVERTED TO BALL SOCKET ON REMAINING MANUFACTURING RUNS AFTER FIRST 5000 MFD./ APPROX. 30,000 TOTAL INFANTS MFD.	125 80 50	119-NIB 90-NIB 78 62 56	125
" " NOTE:	'49 TO '52	INFANT .020 VARIATIONS	----	VARIATIONS IN GLOW PLUG INSERTS/ VARIATIONS IN TANK ATTACHMENTS/ STUDS WITH NUTS OR 2-56 LONG SCREWS/ DIFFERENT NEEDLE VALVES/ BRASS SPRAY BARS/ LONGER VENTURIS/ 5 HEAD FINS	100 97		126
" "	'50	TORPEDO JR .035	.035	SIMILAR TO INFANT IN SIZE/ 4 HEADFINS/ HEAVIER AND SLIGHTLY LARGER CRANKCASE/ BALL SOCKET CONNECTING ROD TO PISTON/ SAME TYPE GLOW PLUG INSERTS/ VERY LIGHT GOLD ANODIZED CYLINDER HEAD ON EARLY .035's/ REGULAR ALUMINUM COLOR ON LATER MODELS/ WITH TANK	60 50	119 93 67 66 61	127
" "	'50	TORPEDO .049	.049	SIMILAR TO INFANT/ LARGER ALL OVER/ CON- VENTIONAL GLOW PLUG & HEAD/ BALL SOCKET CONNECTING ROD/ NO TANK IN FIRST MODELS	70	120 75 52	128
" "	'50	TORPEDO JR .035 SPECIAL	.035	AS PREV./ PLUS A SPECIAL LONG TANK - SPECIAL PREMIUM ENGINE FOR 'L.A. EXAMINER' NEWSPAPER AS A 'GIVE-AWAY'/ UNAVAILABLE THRU HOBBY SHOPS	90		129
" "	'50	TORPEDO .049	.049	AS PREVIOUS WITH LIGHT YELLOW HEAD	70		130

1954
SEA FURY INBOARD
'049'

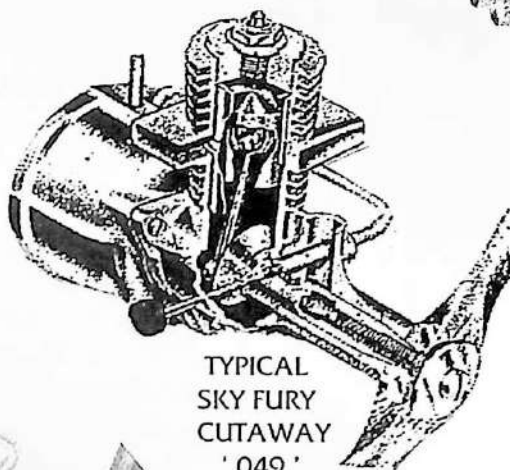
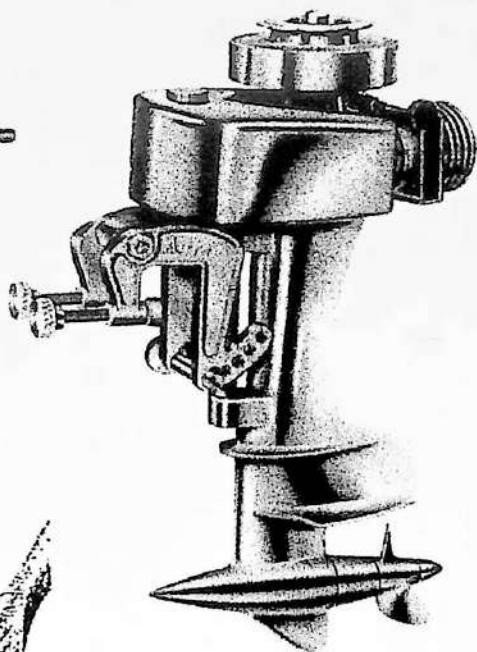


ALLYN



1954
MAR FURY MARINE
'049'

1954
SEA FURY OUTBOARD
'049'

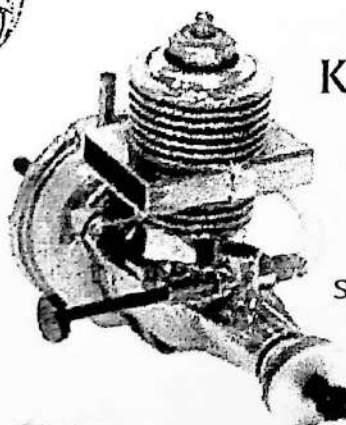


TYPICAL
SKY FURY
CUTAWAY
'049'

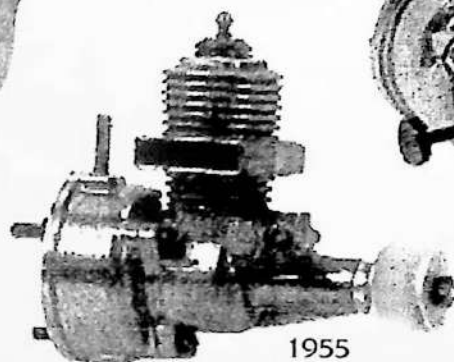


1953
ALLYN
SKY FURY
'049'

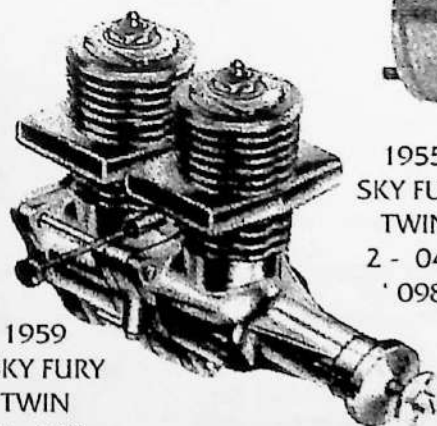
K & B



1955
SKY FURY
'049'

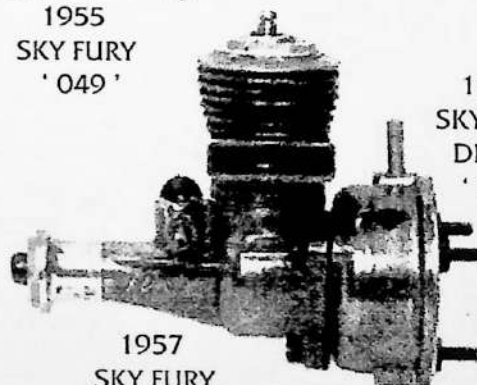


1955
SKY FURY
'049'



1955
SKY FURY
TWIN
2 - 049
'098'

1959
SKY FURY
TWIN
2 - 049
'098'



1956
SKY FURY
DELUXE
'049'

1957
SKY FURY
'075'

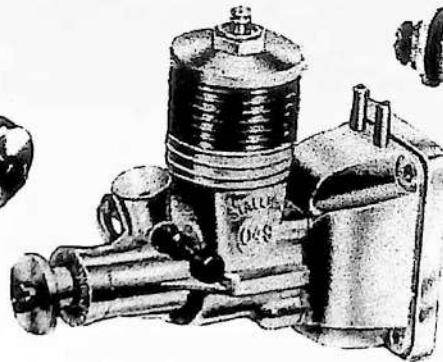
ALL TWINS SIMILAR
SEE LISTINGS

MFR./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
K & B - CONTINUED	'50	TORPEDO .049	.049	LATER MODELS HAD FLAT TANK BOTTOM/ LAST MODELS HAD NO TANK AND CASE NOT DRILLED OR TAPPED FOR TANK STUD TO REDUCE COSTS AND COMPETE WITH OTHER MANUFACTURERS	70		131
" "	'52	INFANT .020	.020	LAST VARIATION OF INFANT HAS STEEL GLOW PLUG AND .035 SIZE VENTURI WITH ONE PIECE PRESSED IN BRASS SPRAY BAR	75		132
" " NOTE:	---	-----	----	TOTAL OF TORP JR. .035 AND .049 SMALL ENGINES APPROXIMATELY 25,000 NOT INCLUDING INFANTS (30,000)			
ALLYN SALES CO. (PERIN CULVER)	'53	SKY FURY ALLYN .049	.049	".049" CAST ON SIDE OF CASE/ INITIALLY SUPPLIED WITH DIECAST BACKPLATE FOLLOWED BY LARGE DIE CAST TANK-MOUNT/ SMALL INTAKE/ SHORT PROP DRIVER	55	81-NIB 52 46	133
" "	'54	SKY FURY .049	.049	SMALL PORTS IN SLEEVE/ STANDARD PLUG	50	131-NIB 52	134
" " NOTE:	'54	-----	----	K & B/ ALLYN SALES CO. (PERIN C. CULVER) MERGED (1955) ALLYN SALES (PRIOR TO THE K & B MERGER) PRODUCED AT THEIR OWN FACILITY AN .049 SKY FURY AIRCRAFT ENGINE; ALSO PRODUCED THEIR OWN SEA FURY .049 OUTBOARD ENGINE; THEIR OWN MAR FURY .049 MARINE (INBOARD - ALL BASED ON THEIR SKY FURY; AND THEIR OWN SEA FURY .049 INBOARD ENGINE. WE HAVE EXCLUDED MARINE ENGINES TO AVOID ANY FURTHER CONFUSION OVER NAMES AND INCLUDED BOTH SINGLE SKY FURYS BY ALLYN HERE ALONG WITH THE REMAINDER OF THE K & B ALLYNS.; J. BRODBECK SR. WAS A MARINE MODELER PERSONALLY AND NO DOUBT CONTINUED ALLYN'S LINE WITH ENTHUSIASM.			
" "	'55	SKY FURY .049	.049	DOES NOT HAVE NUMBER .049 ON NEW CASE	40		135
" "	'55	SKY FURY .049	.049	AS PREVIOUS/ DIE CAST/ GROOVES FOR TANK SCREW IN CASE	50		136
" "	'55	SKY FURY TWIN .049 .098	.049 X 2 .098	IN-LINE (ALLYN) SKY FURY TWIN/ FROM 2 - .049's WITH NEW FRONT & MIDDLE CRANKCASES/ HEADS NATURAL ALUMINUM / REGULAR GLOW PLUGS/ CENTER CASTING HAS INTAKE W/NEEDLE VALVE NO KNOWN DIFFERENCE FROM K & B AFTER TAKEOVER	125 120	133	137
" "	'55	SKY FURY TWIN .074 .148	.074 X 2 .148	AS .098 TWIN/ GOLD ANODIZED CYLINDER HEADS & PROP DRIVER / .074 PISTONS AND LINERS/ THIS LARGER ENGINE LISTED BECAUSE IT DOUBLES 1/2A PARTS	125	138	138
" "	'55	MAR FURY SINGLE .060 TWIN .120	.060 .120	MAR FURYS WERE APPARENTLY NEVER SOLD AS AIRCRAFT ENGINES BUT THE MARINE FURY .060 WAS USED BY MODELERS IN MAKE-UP ENGINES. DUE TO INTERCHANGEABILITY THE .060 COULD HAVE BEEN USED AS 'CHEATER' FREE FLIGHT ENGINE IN 1/2A	122	141	139
" "	'56	SKY FURY DELUXE .049	.049	HAS GLOW HEAD & LARGER PORTS/ NO .049 ON CASE/ EXTENDED PROP DRIVE/ GLOW HEAD STAMPED .049 (MFD. BY IRWIN OHLSSON)/ '59 MODELS FINISHED WITH OLD STYLE HEADS AND REGULAR GLOW PLUGS	38	40	140
" "	'57	SKY FURY .075	.075	SAME AS .049/ BORED OUT CYLINDER/ LARGER DIAMETER GLOW HEADS NOT STAMPED/ NO EXTERNAL DIFFERENCE FROM 'DELUXE' .049 OTHER THAN THIN SLEEVE HERE	49	83-NIB 26	141
" "	'59	SKY FURY DELUXE TWIN .098	0.049 X 2 .098	AS PREV./ THIS MODEL FINISHED WITH OLD STYLE HEADS AND REGULAR GLOW PLUGS USING UP INVENTORY OF PARTS	105	130	142

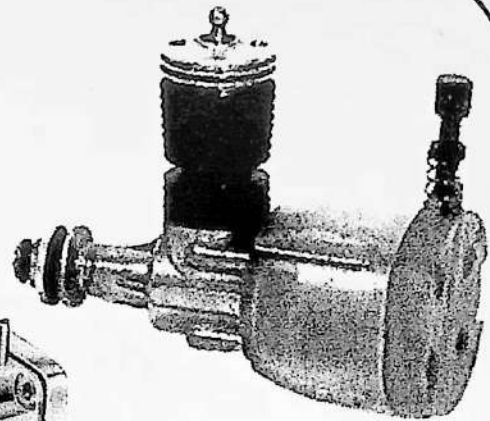
K & B



1960 - 1963
K&B
TORNADO
'049'

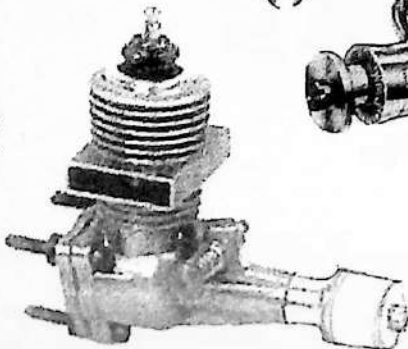


1963 K&B
STALLION '049'



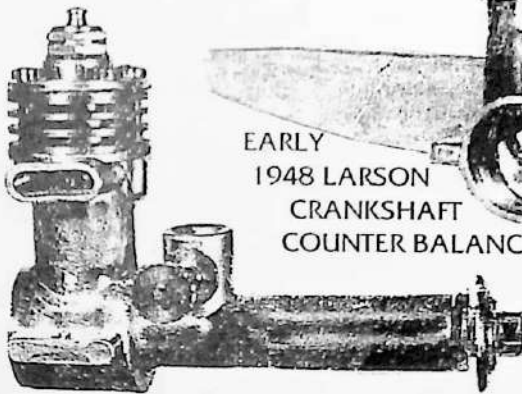
1960 - 1963
K&B
TORNADO
'061'

1965
LAST K&B
SKY FURY
DELUXE
'049'
SOLD IN
BUBBLE
PACKS

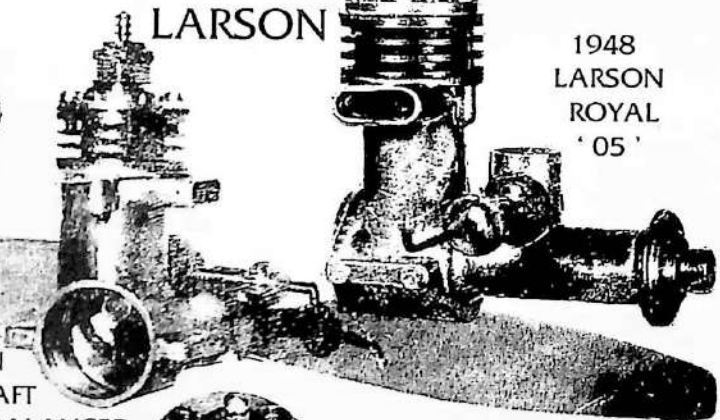


LARSON

1948
LARSON
SCALE
ROYAL
'50'



EARLY
1948 LARSON
CRANKSHAFT
COUNTER BALANCED

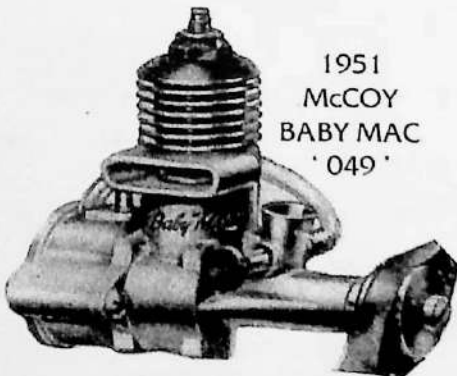


1948
LARSON
ROYAL
'05'

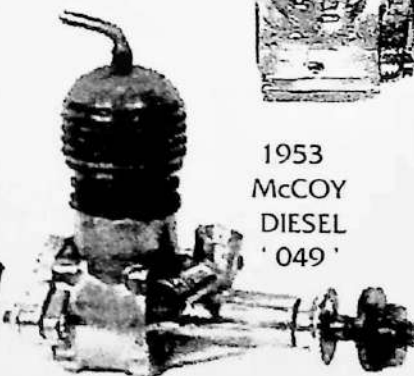
1947 LARSON
PUP '064'



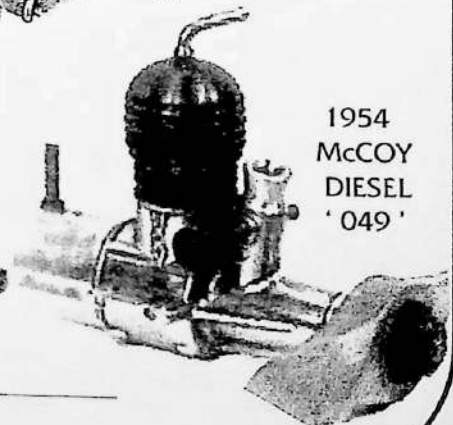
1951
McCOY
BABY MAC
'049'



1953
McCOY
DIESEL
'049'



1954
McCOY
DIESEL
'049'

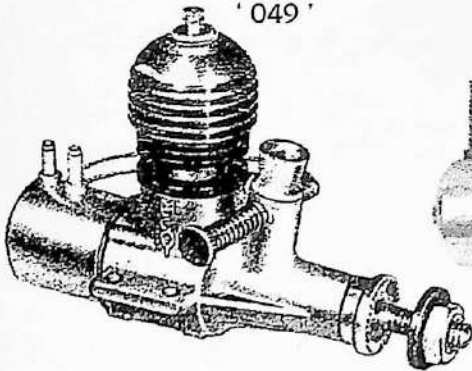


McCOYS

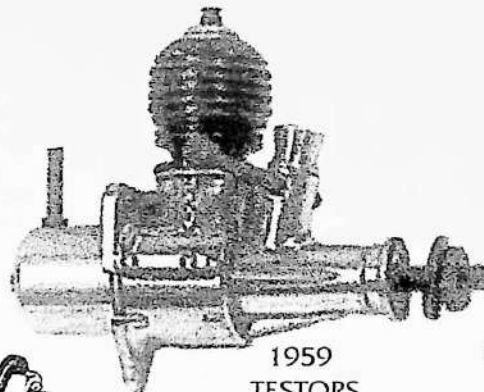
MFR./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
K & B - CONTINUED	'59	AURORA TORNADO .049	.049	NEW REED VALVE .049 FOR AURORA RTF MODELS DIE-CAST ALUM.CASE/ BLACK CYL. FINS/ LARGE CLEAR DELRIN TANK/ "AURORA TORNADO ".049" " ON BOTTOM OF CASE/ REMOVABLE GLOW HEAD	33	35 76-NIB	143
AURORA PLASTICS	'60	-----	----	K & B MERGED WITH AURORA PLASTICS - AND THEN RETURNED TO K&B NAME - DROPPING ALLYN NAME			
" "	'60	K&B TORNADO .049	.049	AS PREV./ K & B .049" ON BOTTOM OF CASE/ REED VALVE INTAKE/ CLEAR DELRIN TANK AND RED BACK COVER OR RED TANK AND WHITE BACK COVER FOR AURORA PLASTIC MODELS	40		144
" "	'60	K&B TORNADO .061	.061	BORED OUT .049 WITH "K&B .060" STAMPED ON BOTTOM OF CRANKCASE/ GOLD HEAD/ WHITE DELRIN TANK AND RED BACK COVER OR RED TANK AND WHITE COVER FOR AURORA PLASTIC MODELS	55		145
" "	'63	K&B TORNADO .061	.061	AS PREVIOUS/ GOLD HEAD/ RED NYLON TANK SOLD IN BUBBLE PACK AS AN INVERTED ENGINE/ ONLY 5% OF ALL .061 ENGINES HAD GOLD HEAD	35		146
" "	'63	K&B TORNADO .049	.049	AS PREV. .049/ CLEAR TANK/ RED TANK BACK ONLY USED IN L-19 BIRD DOG PLASTIC MODEL	37	31 29	147
" "	'63	STALLION .049	.049	MINI SIZE OF STALLION 35/ WITH OR WITHOUT DIE CAST TANK/ RADIAL MOUNT	36	42	148
" "	'64	STALLION .049	.049	AS PREV./ WITH "AUTO-FLIP" STARTER/ SIDE MOUNTED TANK FOR READY TO FLY "TRI-PACER" / UPRIGHT TANK SOLD WITH ENGINE AND STARTER SEPARATELY (PER JOHN BRODBECK)	40		149
" "	'65	SKY FURY DELUXE .049	.049	USED UP PARTS ON HAND WHEN CONTRACT WITH COMET FINISHED/ OLD STYLE PLUG AND HEAD/ SOLD IN BUBBLE PACKS	38		150
LARSEN 1ST U.S. .049 (ELMER LARSEN)	---	-----	----	LARSEN ALSO PROTOTYPED A.19 & 1.125 PLUS A PLAN FOR A "PUP" .064 PLUS OTHERS SUCH AS .19 & .29 SPEED ENGINES - LARSEN SPENT TIME AT "BOEING" WITH BILL WISNIEWSKI (INSPIRATION ?)	PROTOTYPES		
"	'48	LARSEN ROYAL .05	.049	BEAM MOUNT/ EXHAUST STACK/ 4 HEAD BOLTS/ COUNTER BALANCED CRANKSHAFT/ STAMPED "ROYAL .05"/ SOLD IN THE SEATTLE AREA PRIMARILY	135		151
"	'48	LARSEN ROYAL 05	.049	AS PREV./ NO NAME STAMPED/ 6 HEAD BOLTS	130		152
"	'48	ROYAL 05 SCALE	.049	AS PREV./ LONG SHAFT TO GO THROUGH COWLS	160		153
McCOY PRODUCTS (DICK McCOY- DESIGNER)	---	-----	----	MFD. BY DURO-MATIC & LATER BY TESTORS			
"	'51	BABY MAC (1 st) .049	.049	EXHAUST STACK/ 2 BOLT RADIAL MOUNT/ RED HEAD/ STANDARD GLOW PLUG/ WITH OR WITHOUT TANK MOUNT/ 2 STYLES RED ANODIZED HEADS - 1 STYLE HEAD HAS FLATS FOR WRENCH & OTHER HAS SLOTS	68	103	154
"	'53	DURO-GLO DIESEL .049	.049	FIRST McCOY DIESEL/ 2 BOLT RADIAL MOUNT/ RED ANODIZED HEAD/ "DURO-GLO" ON SIDE OF CASE/ USED "O" RING ON CONTRA PISTON/ SHINY FINISH	50 45	40 61 81	155
"	'54	DURO-GLO DIESEL .049	.049	"DIESEL" LATE YEAR MODEL/ BEAM MOUNT/ RED ANODIZED HEAD/ SHINY & MATTE CASES/ 2 CYLINDER LINER TYPES/ ONE LINER WITH EXTRA FIN ABOVE EXHAUST PORT	55 50 45	102 78 61	156

McCOY

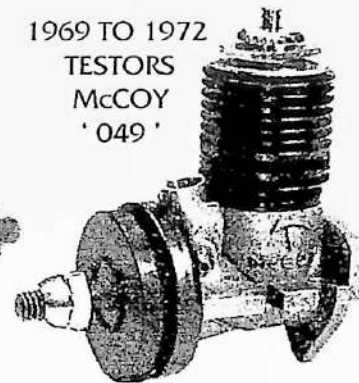
1955
McCOY GLO
'049'



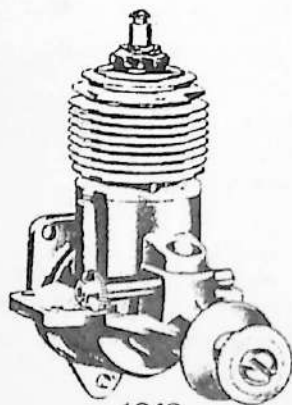
1959
TESTORS
McCOY 5
'049'



1969 TO 1972
TESTORS
McCOY
'049'

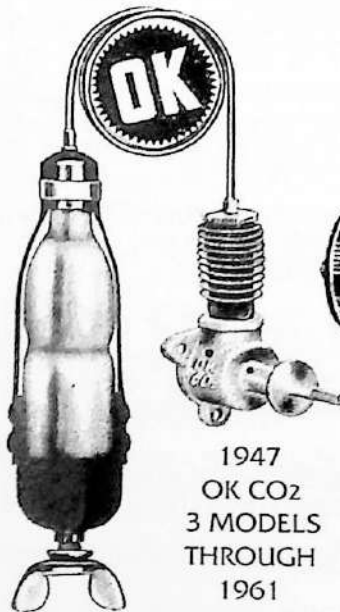


TESTORS McCOY
THUNDERBOLT
SERIES
(SEE PAGE 14)

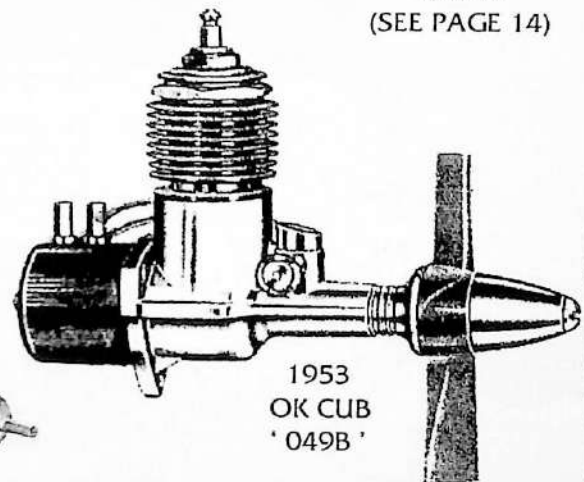


1949
OK CUB
'049A'

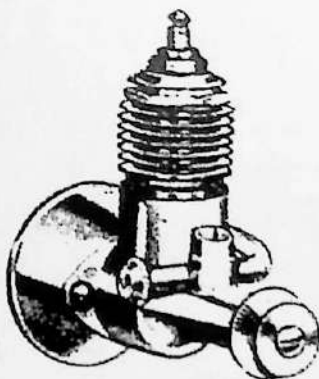
NOT LISTED



1947
OK CO2
3 MODELS
THROUGH
1961

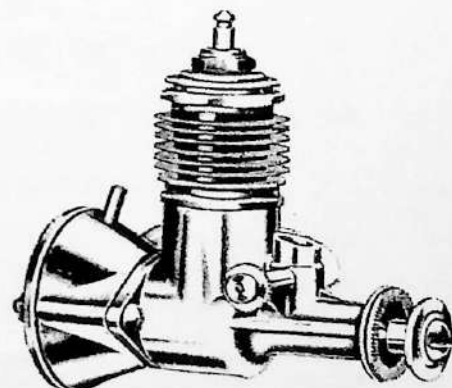
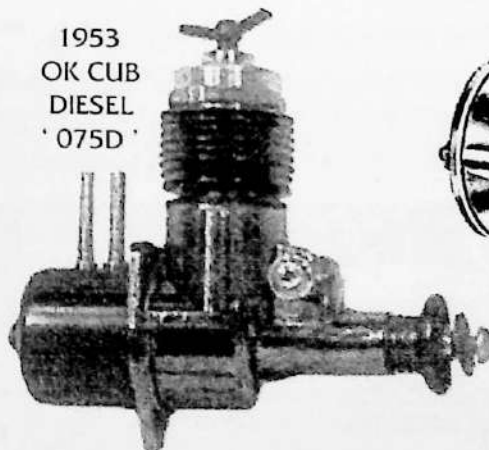


1953
OK CUB
'049B'



1950
OK CUB
'039'

1953
OK CUB
DIESEL
'075D'



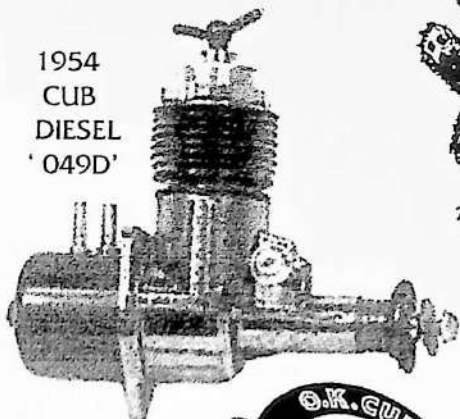
1953
OK CUB
'049X'

MFR./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
McCOY - CONT	'54	McCOY GLO PROTOTYPE .049	.049	CRANKCASE MACHINED FROM ALUMINUM EXTRUSION-INCLUDING TANK/ COX BABY BEE APPEARANCE WITH CYLINDER & HEAD/ PROTO- TYPE FOR TESTORS/ 8 BUILT	PROTOTYPE		157
"	'55	McCOY GLO (2nd BABY MAC) .049	.049	AS .049 DIESEL/ BEAM MOUNT/ RED ANODIZED HEAD WITH INSERT GLOW PLUG/ NO EXHAUST STACK AS '51	50	53	158
"	NOTE:	'56	TESTORS	-----	STARTING TESTORS SERIES OF McCOY ENGINES		
"	NOTE:	'58	McCOY .020 TESTORS	-----	'TESTORS TOPICS', NEWS LETTER STATED THAT DURO- MATIC PRODUCTS CO., DIVISION OF TESTORS ', IS IN THE ENGINEERING-DESIGN STATE OF AN .020 McCOY ! "		
"	'59	McCOY 5 .049 TESTORS	.049	BEAM MOUNT & 3 POINT RADIAL/ "5" ON CASE/ RED ANODIZED HEAD WITH INSERT GLOW PLUG/ DIES MODIFIED FROM PREVIOUS GLOW TO ADD RADIAL MOUNTING FLANGES	45	61	159
"	NOTE:	---	TESTORS 1969 TO 1972 '049 '	-----	McCOY THUNDERBOLT .049 WITH BUILT-IN STARTER. THIS IS THE SAME ENGINE AS THE FINAL DEVELOPMENT OF THE WEN-MAC .049 THUNDERBOLT MADE BY AMF (TESTOR DIV). HOWEVER IT HAS THE McCOY NAME UNDER THE STYLIZED 'T' OF TESTORS. - "SEE WEN-MAC"		
MORTON AIRCRAFT CORP. (MORTON BROTHERS) (GLEN MORTON)	---	-----	-----	SOLD BY AVIATION IND. & HUNGERFORD DESIGNED BY GLEN MORTON OF MORTON BROS. & MFD. AS AVIATION INDUSTRIES			
"	'38	NEW HURRICANE .066	.066	LOW PRODUCTION MINIATURE SPARK IGNITION - DOES NOT BELONG IN 1/2A BOOK - SEE MORTON LARGER ENGINES/ KIT OR ASSEMBLED IN REGULAR BLUE BOOK 4TH EDITION	RARE		
O. K. ENGINES (CHARLES BREBECK)	---	-----	-----	MANUFACTURED BY HERKIMER TOOL WORKS. ALSO SEE LARGE ENGINE LIST IN 4th BLUE BOOK			
"	'49	CUB .049A	.049	NEW SMALL ENGINE FROM O.K. ENGINES/ LARGE CASE/ RADIAL OR BEAM MOUNTING/ 'CUB' CAST IN BOTTOM OF CASE/ ORIGINALLY USED ARDEN GLOW PLUG/ NO TANK/ SERIAL NUMBERED IN '49 - NONE IN FOLLOWING RUNS	35-NIB 20	35 25	160
"	'49	CUB .074	.075	SIMILAR CASE TO .049A/ LARGER CYLINDER/ 'CUB' CAST IN BOTTOM OF CASE/ FIRST YEAR OF MODEL ONLY HAD SERIAL #'s/ NO TANK ATTACHED TO ENGINE - BRASS TANK SUPPLIED IN ENGINE BOX/ LATER ENGINES WITH DIECAST TANK ATTACHED	85-NIB 35	17 16	161
"	'50	CUB .039	.039	NEW DIECAST CASE/ RADIAL -2- BOLT MOUNTING/ WITH TANK/ .039 ON BOTTOM OF CASE	70-NIB	50 45	162
"	NOTE:	'50	CUB TANKS	-----	DIE CAST TANK MOUNTS OFFERED FOR 049 & 075		
"	NOTE:	---	SERIAL #'s	-----	ALL CUB SERIAL #'s DROPPED IN LATE 1950		
"	'53	CUB .049 X	.049	BORED OUT VERSION OF .039/ SLIGHTLY LARGER/ WITH TANK/ .049X ON BOTTOM OF CASE/ EXTENDED PROP DRIVE ON LATER ENGINES	50-NIB 45	50 27	163
"	'53	CUB .049 B	.049	SMALLER VERSION OF ORIGINAL .049A/ ANODIZED RED TANK/ EXTENDED PROP DRIVE/ SPINNER USED ON LATER ENGINES	40-NIB 20	30 36	164
"	'53	CUB DIESEL .06D	.060	PROTOTYPE BASED ON ORIGINAL HEAVIER .049B/ SOLD VERY FEW	PROTOTYPE		165
"	'53	CUB DIESEL .075D	.074	DIESEL VERSION OF .074/ RED ANODIZED PROP DRIVE AND TANK/ CONTRA PISTON HAS SHOCK SPRING	57-NIB 35	58 47	166

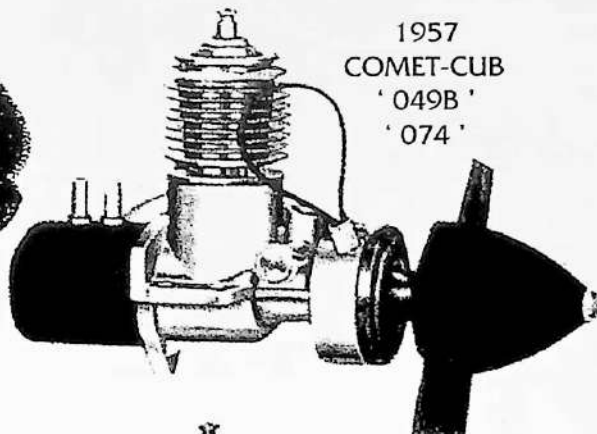
O.K. ENGINES



1954
CUB
DIESEL
'049D'



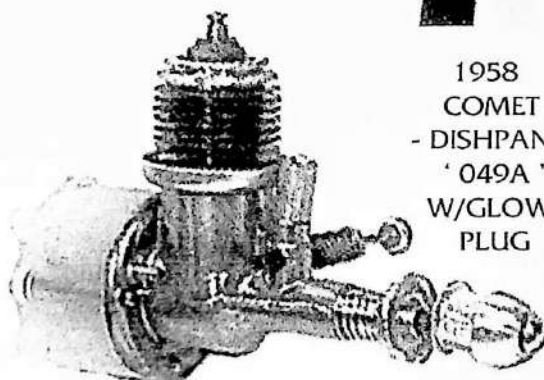
1957
COMET-CUB
'049B'
'074'



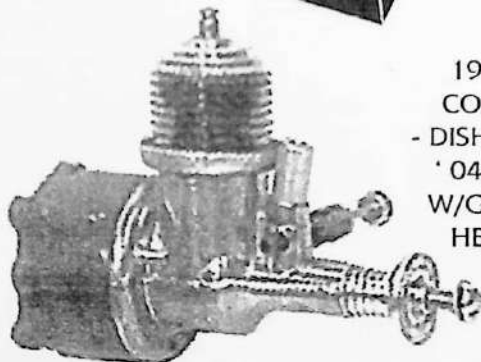
1956
CUB KIT
'049B'



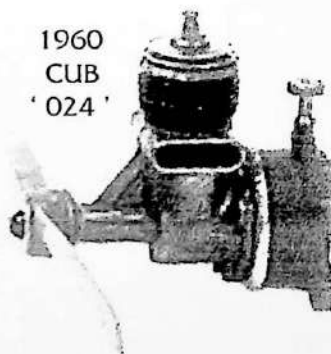
1958
COMET
- DISHPAN -
'049A'
W/GLOW
PLUG



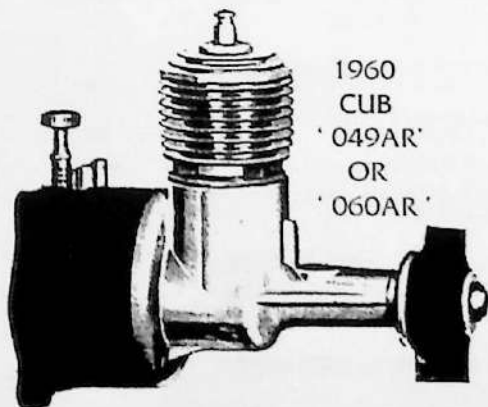
1959
COMET
- DISHPAN -
'049A'
W/GLOW
HEAD



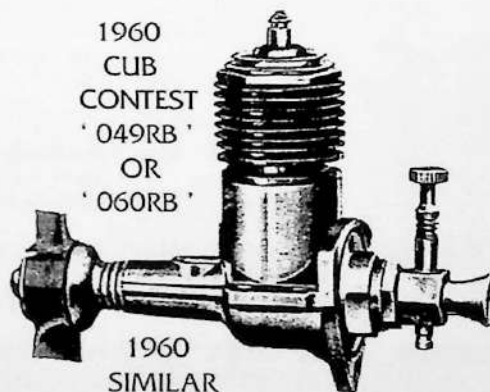
1960
CUB
'024'



1960
CUB
'049AR'
OR
'060AR'



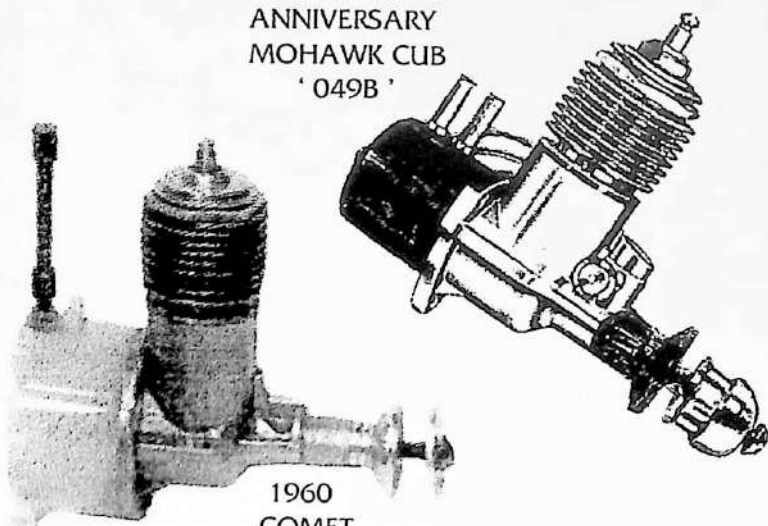
1960
CUB
CONTEST
'049RB'
OR
'060RB'



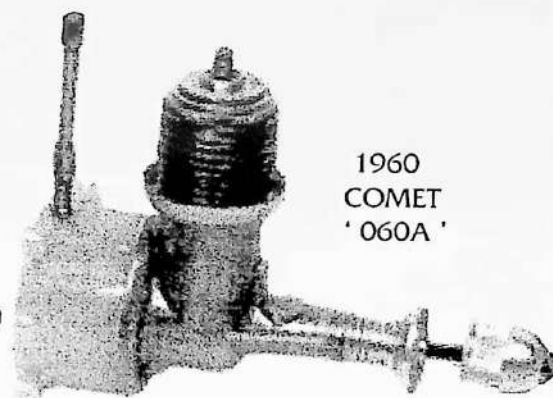
1960
SIMILAR
'049RA' OR '060RA'
NO BEAM MOUNTS

MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
O. K. ENGINES - CONT	'54	CUB .049B	.049	SIMILAR TO PREVIOUS CUBS WITHOUT BEAM MOUNTS/ RADIAL MOUNT ONLY/ NO TANK	20		167
" "	'54	CUB .049D DIESEL	.049	NEW DIESEL VERSION OF .049B/ RED EXTENDED PROP DRIVE/ RED ANODIZED TANK/ RADIAL OR BEAM MOUNTS	62		168
" "	'55	CUB .049 A	.049	AS PREV./RED PLASTIC 'BABE BEE' TYPE TANK/ FRONT ROTARY/ ALUM. SPINNER/ NO BEAM MOUNTS	25	41	169
" "	'56	COMET/CUB .049 B	.049	FOR READY-FLY COMET SABRE 44/ 1ST MODELS STOCK .049B/ LATER MODELS USED INTAKE EXTENSION/ SILVER TANK/ LONG N.V./ LARGE PULLEY PROP DRIVE/ ALUM. EXHAUST DEFLECTOR	25	22 18 13	170
" "	'56	CUB .049 B (KIT)	.049	.049B/ (KIT) SEMI-ASSEMBLED WITH KNURLED PULLEY STARTER SPINNER (KIT)	43		171
" "	'57	COMET/CUB S .049 B	.049	WITH PULL CORD STARTER/ NO INTAKE EXTENSION/ RED ANODIZED TANK	30	21	172
" "	'57	COMET/CUB S .074	-----	AS .049 COMET-CUBS .074 PULL START/ RED PLASTIC SPINNER IN PACKAGE	30	46	173
" "	'57	COMET/CUB .049 B	.049	AS '56 COMET-CUB/ STARTER/ SILVER TANK	30		174
" "	'58	COMET .049 A	.049	AS 'COMET'.049 B/ INTAKE EXTENDER HAS PINHOLE INTAKE/ LARGE DIAMETER ALUMINUM PROP DRIVE WITH NARROW GROOVE FOR STARTER STRING/ ENGINE MOUNTED USUALLY ON THE SIDE	27	24 18	175
" "	'58	COMET .049 A	.049	AS PREV. 'COMET'.049A/ SOME HAD A TRI-PACER 'DISH'AN' STAMPED EXHAUST DEFLECTOR/ REGULAR SIZE PROP DRIVE WASHER/ NO STARTER/ RED OR WHITE PLASTIC FUEL TANKS ATTACHED TO ENGINES	21	16 14 12	176
" NOTE:	'59	VARIAION GLOW HEADS	.049	ALL .049 MODELS HAD GLOW HEADS FROM '59 BUT DIDN'T SHOW UP IN SOME DEALERS 'TIL '61			
" "	'59	CUB .049A	.049	AS PREV. '58 MODEL WITH CUB GLOW HEAD	35-NIB 30	38	177
" "	'59	CUB .049B	.049	AS PREV. '53 .049B MODEL WITH CUB GLOW HEAD	40-NIB 25	26	178
" "	'59	COMET .049B	.049	MADE FOR COMET P-40/ INTAKE EXTENSION/ LARGE SILVER TANK WITH UNIQUE VENT SYSTEM/ FLYWHEEL DRIVE/ CUB GLOW HEAD	35	49	179
" "	'60	CUB .024	.024	SCALED DOWN LARGE CUB .29/ REED VALVE/ TWIN EXHAUST/ UNSUCCESSFUL ENG. WAS LATER IN 1960 EQUIPPED WITH FLYWHEEL TO MAKE IT RUN AT ALL/ DAMAGED DIES MADE O.K. CHANGE LOGO TO LEFT SIDE ON ALL ENGINES PRODUCED AFTER 1975 (REF.E.C.J.)	41	67 60	180
" "	'60+	CUB .024	.024	AS PREVIOUS/ EQUIPPED WITH FLYWHEEL			181
" "	'60	CUB .049 AR	.049	OLD 'A' CASE DIES MODIFIED TO ELIMINATE FRONT ROTARY/ NOW REAR REED VALVE/ RED PLASTIC TANK	36	51	182
" "	'60	CUB .060 AR	.059	AS PREVIOUS .049 AR - LONGER STROKE	40	45	183
" "	'60	CUB .049 RB CONTEST CUB .049 RA	.049	ADVANCED CONTEST ENGINE WITH CASE FROM .049B / PRE-PRODUCTION ONLY - NONE OFFERED GENERALLY FOR SALE/ .049 RA USES 'A' CASE	PROTOTYPES		184 185
" "	'60	CUB .060 RB CONTEST CUB .060 RA	.060	AS PREV. 049RB/ LONGER STROKE/ HAS A ROUND ROTARY MOUNT/ NONE OFFERED GENERALLY FOR SALE/ .060 RA USES 'A' CASE	PROTOTYPES		186 187

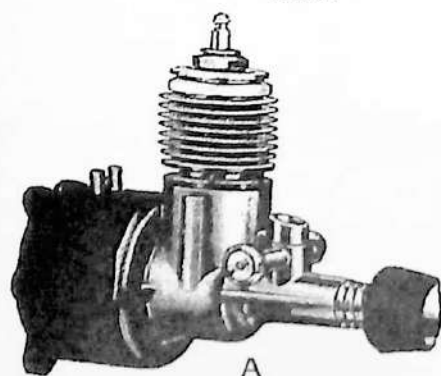
1978
ANNIVERSARY
MOHAWK CUB
'049B'



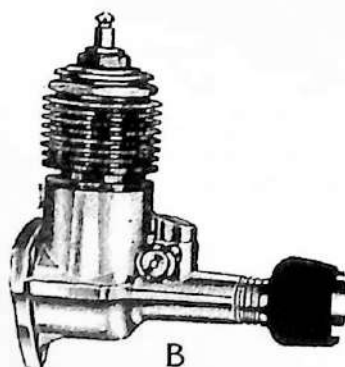
1960
COMET
'060A'



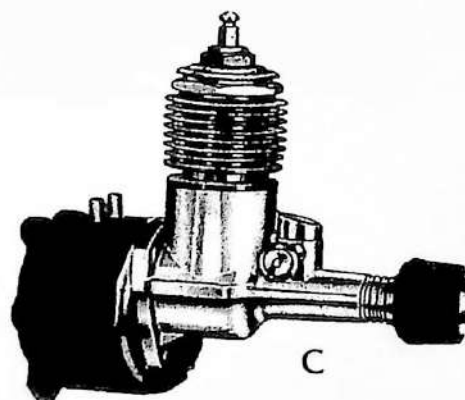
1960
COMET
'060B'



A

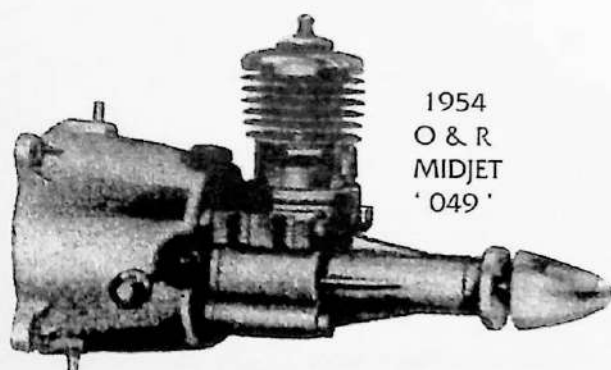


B

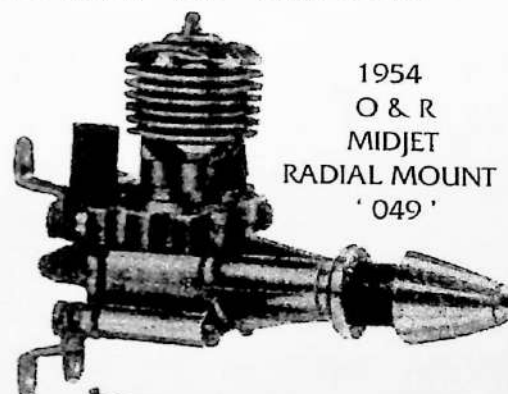


C

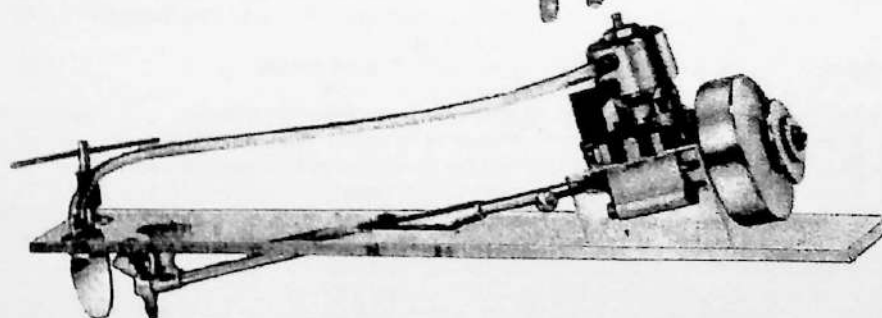
----- 1999 NEWSLETTER 'O.K. WAY' FOR FINAL '049' CUBS -----



1954
O & R
MIDJET
'049'

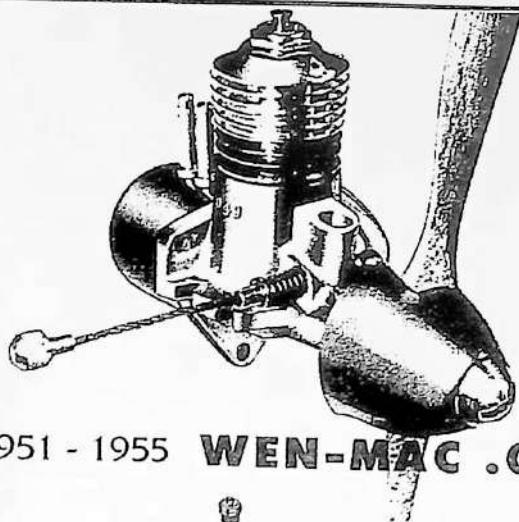


1954
O & R
MIDJET
RADIAL MOUNT
'049'

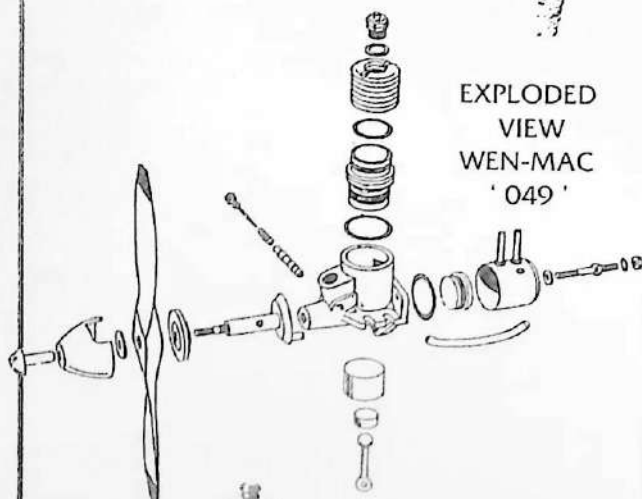


1955
O & R
MARINER
(MITE)
'049'

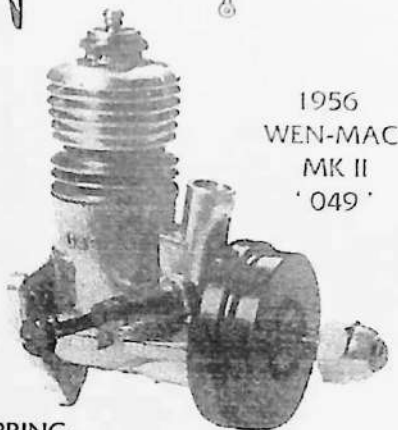
MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
O. K. ENGINES - CONT	'60	COMET .060 B	.059	STROKED .049B CONVERTED TO REED VALVE AND GLOW HEAD/ 8 CYLINDER FINS PRODUCED FOR COMET READY TO FLY T-38 WITH PUSH BUTTON STARTER AND TANK/ ROUND RADIAL MOUNT/ ALSO SOLD FROM FACTORY WITHOUT PUSHBUTTON	20	16	188
"	'60	COMET .060 A	.059	STROKED .049A REED VALVE/ WHITE NYLON TANK/ LONG NEEDLE VALVE/ GLOW HEAD/ TALLER-8 FINS/ STAMPED 'DISHPAN' EXHAUST DEFLECTOR/ FOR COMET MODELS	25	28 26 16	189
"	'64	CUB .059 A CUB .059 B	.059	ASSEMBLED FROM COMET PARTS AFTER COMET WENT OUT OF BUSINESS/ LESS STARTER/ CRANKCASE MACHINED TO ACCEPT STARTER PARTS	15	16	190 191
"	NOTE:	---	-----	THE ABILITY TO EASILY MIX AND MATCH CUB PARTS HAS ALLOWED UNIQUE COLLECTOR ADAPTATIONS THAT ARE NOT - REPEAT NOT 'FACTORY' MODELS !			
"	'78	ANNIVERSARY MOHAWK CUB .049B	.049	STOCK .049B's ASSEMBLED BY TED BREBECK (GRANDSON OF ORIGINAL BREBECK) WITH BLUE ANODIZED FUEL TANK AND MACHINED LONG PROP DRIVER/ SMALL VENTURI EXTENSION/ ENGINE BOX HAS SERIAL NUMBERS AND SPECIAL DISPLAY	40-NIB		192
"	---	1978 - 1990's	-----	PARTS WERE MADE INITIALLY AVAILABLE BY WEIGHT (IN LBS.) AND THEN SORTED OVER THE YEARS INTO GROUPS WITH IDENTITIES THEN PROMO SHEETS WERE MAILED OUT TO MODELERS AND COLLECTORS.			
"	---	1999 O.K. WAY	-----	WE RECEIVED A NEW NEWSLETTER, THE "O.K. WAY" ON FEBRUARY 4th 1999. IT COVERED TED BREBECK'S INTEREST IN HO GUAGE MODEL TRAINS, A NEW CO2 AIR ENGINE, A NEW O.K. TRAIN HISTORY BOOK TO BE PRINTED AND MORE INFO ON THE O.K. CUB 'FED' .049 AIRPLANE ENGINE, PLUS SPECIAL DISCOUNTS. ATTACHED WAS A SHEET IDENTIFYING 3 - O.K. CUB .049's, A-B-C, VARYING IN PRICES FROM \$14.95 TO \$18.95.			
"	---	2006	-----	WE RECEIVED A LETTER DATED MARCH 1, 2006 STATING TED BREBECK'S DESIRE OF DISPOSING OF WHAT HE HAD REMAINING OF O.K. ENGINE PARTS AND TURNING HIS ATTENTION TO THE MODEL TRAIN MARKET; WHICH HE SAID OUTSOLD MODEL AIRPLANE PRODUCTS 8 TO 1. THE ENGINE DEPARTMENT HAS BEEN UP FOR SALE AND HE ATTENDED THE 'MECA' EXPO THIS YEAR.			
"	---	2007	-----	'MODEL WINGS OVER THE WORLD' IN DVD-VHS SHOULD BE AVAILABLE COVERING THE MODEL AIRPLANE HOBBY IN 1949-50 PLUS NBC's FOOTAGE OF THE SHOW FOR \$29.95 POST PAID IN DVD OR VHS - SEND TO: O.K. ENGINE STREAMLINERS, P.O. BOX 355, MOHAWK, N.Y., U.S.A. 13407			
O & R CHEMINOL CORP. (HARRY RICE ONLY FROM 1951)		NOTE:		MIDGETS AND MITES WERE SUCH INTERESTING ENGINES WE HAD TO INCLUDE ALL THE VARIATIONS, INCLUDING MARINE.			
"	'54	O&R MIDJET	.049	LONG CRANKSHAFT/ LARGE DETACHABLE DIE CAST TANK MOUNT/ COPPER OHLSSON EAGLE EMBLEM ON FRONT/ DISTINCT BOSS IN CENTER OF BACKPLATE WITH SHALLOW HOLE/ BOSS WITH HOLE DESIGNED FOR MARINE VERSION	75-NIB 70	66 52	193
"	'54	O&R MIDJET	.049	AS PREV./ NO TANK MOUNT/ PROVIDED WITH 4 SEPARATE RADIAL MOUNTING LUGS	60		194
"	'55	MARINER (MITE)	.049	O&R MITE ENGINE AS INBOARD/ SOLD WITH MARINE DRIVE & PROP ACCESSORIES/ SHORTER CRANKSHAFT/ ALL BRONZE PARTS 24 CARAT GOLD PLATED BLACK WATER JACKET/ BLACK LINER/ BLACK FLYWHEEL	140	153-NIB	195



1951 - 1955 **WEN-MAC .049**



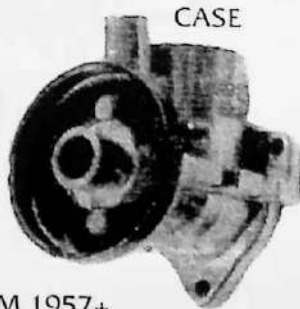
EXPLODED
VIEW
WEN-MAC
'049'



1956
WEN-MAC
MK II
'049'

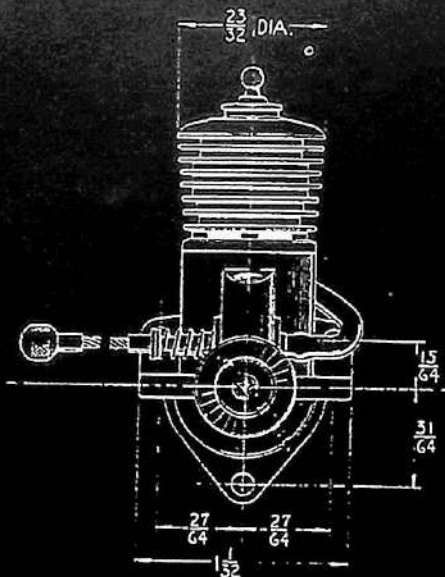


SPRING

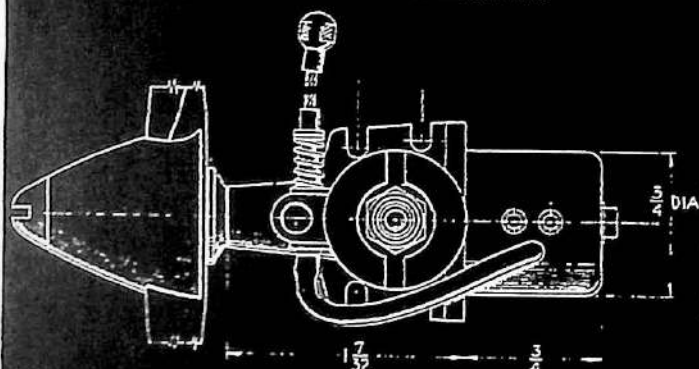


CASE

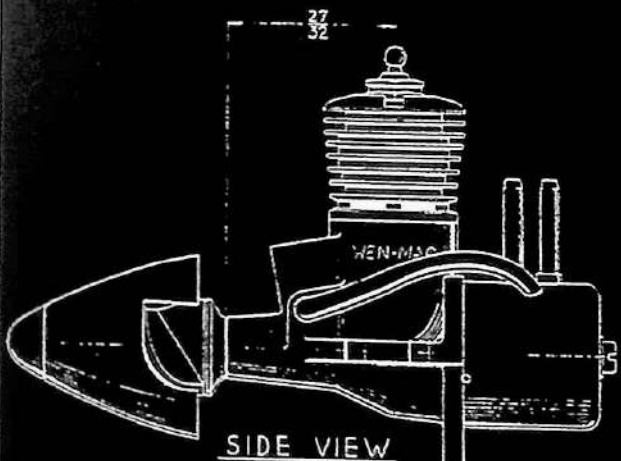
FROM 1957+
ROTOMATIC STARTER



FRONT VIEW
PROP & SPINNER NOT SHOWN
WEN-MAC .049 ENGINE

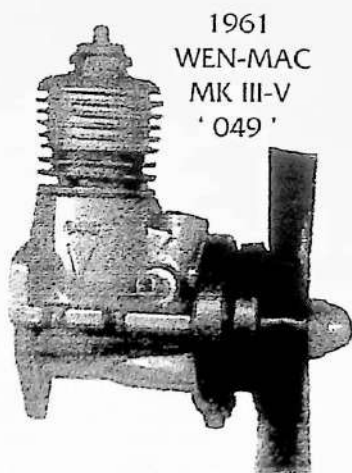


TOP VIEW
WEN-MAC .049 ENGINE



SIDE VIEW
WEN-MAC .049 ENGINE

MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
VIVELL MOTORS - CONT	'48	DIESEL .035V	.035	HIGHER HEAD WITH CONTRA PISTON IN IT/ ('DAVIS' STYLE) VARIABLE COMPRESSION ALLEN KEY ADJUSTMENT/ MACHINED FROM BAR STOCK	110		210
" "	'49	GLOW .035	.035	AS PREV. .035/ CYLINDER CADMIUM PLATED/ BOLT ON FINNED HEAD WITH REGULAR GLOW PLUG	85		211
" "	'51	GLOW .020	.020	MACHINED FROM BAR STOCK WITH REAR TANK/ RADIAL MOUNT/ FRONT ROTARY/ PROTOTYPES ONLY BUILT TO ORDER	PROTOTYPE		212
WEN - MAC CORP. (BILL ATWOOD DESIGNER)	---	-----	----	STARTED BY BROTHERS LEN & JACK McROSKY BECAME DIVISION OF A.M.F. IN 1962			
	'50	FOR AEROMITE ANDERSON .045 READY TO FLY	.045	FIRST SPECIAL BABY SPITFIRE .045 BY ANDERSON/ LONG FUEL TANK WITH 2- TALL BRASS VENTS/ MOUNTED BY LONG TANK STUD AT REAR/ FASTENED WITH NUT & LOCKWASHER/ WEN MAC ON LEFT SIDE OF CASE/ .049 ON RIGHT/ RED PLASTIC SPINNER/ PG.-1	50		9
"	'51 TO '53	WEN-MAC ATWOOD .049	.049	SOME HAD RED AND LATER SILVER HEADS/ TANK AND SPINNER/ BEAM RADIAL (DESIGNED AND MANUFACTURED BY ATWOOD WITH SOME PARTS INTERCHANGING WITH WASPS '51-'53) SEE PAGE - 2	30		213
"	'54	WEN-MAC MK II	.049	AS PREV./ MK II ON CASE/ SOME HAD LEFT RADIAL MOUNT DRILLED OUT FOR FUEL LINE	12		214
"	'55	WEN-MAC MK II	.049	AS PREVIOUS. PROP SHAFT SIZE INCREASED TO 8-32/ OPTIONAL PULL CORD STARTERS BEGIN WITH THIS MODEL	14		215
"	'56	WEN-MAC MK II	.049	AS PREV./ SMALL CIRCULAR 'PAD' ADDED TO INTAKE TO TAKE STARTER HOLDING PIN	10		216
"	'56	WEN-MAC MK II	.049	AS PREV./ INTAKE BLOCK HAS HEAVY PADS ADDED TO OFFSET NEEDLE VALVE AWAY FROM PROP/ PULL CORD STARTER OPTIONAL - ALSO SOLD LATER INTO MK III MODELS WITH NEOPRENE O-RING STARTER	8		217
"	'56	WEN-MAC MK II	.049	AS PREV./ THROTTLE ON EXHAUST STACK WITH SPRING LOADED BAFFLE FOR SPEED CONTROL/ PULL CORD STARTER THROUGH EARLY '57 AND THEN THE BLUE CASE ROTO-MATIC STARTER ACCEPTED / LARGE CRANKSHAFT	14	24-NIB	218
"	'56	WEN-MAC MK II	.049	AS PREVIOUS/ TALL CAST-IN INTAKE/ SHORT BEAM MOUNTS AS ALL MK II's/ STARTER OPTIONAL/ NO THROTTLE/ ALUMINUM CASED PULL CORD STARTERS OR LATER MODELS WITH BLUED STEEL ROTOMATIC STARTER / SOME VARIATIONS USED COMBINATION OF PARTS FROM EARLIER STARTERS TO USE UP STOCK	12		219
"	'58	HELICOPTER MK II - 'V'	.049	AS '56 'V' STAMPED UNDER RIGHT ENGINE MOUNT/ TANK CUT DOWN/ SPECIAL RADIAL MOUNT/ ALUMINUM SLIP-RING ATTACHED OVER TANK/ ALLOWS ENGINE TO ROTATE WHILE STRAIGHT UP - USED IN FREE FLIGHT HELICOPTER MODEL	25		220
"	'58	WEN-MAC MK II - 'V'	.049	AS PREV. 'V'/ EXHAUST STACK MACHINED OFF/ ROTO-MATIC STARTER OPTIONAL/ VARIETY OF PREVIOUS PARTS	10		221
"	'59	WEN-MAC MK II - 'V'	.049	AS PREV. 'V'/ ONE SHORT & ONE LONG BEAM MOUNT ROTOMATIC STARTER OPTIONAL	10		222
"	'60	WEN-MAC MK II - 'V'	.049	AS PREV. 'V'/ 'V' BELOW .049 ON CASE/ MODEL USED TO PROMOTE EASY STARTING BY SALESMEN, TO HOBBY SHOPS - WITH ROTOMATIC STARTER	14		223



1961
WEN-MAC
MK III-V
'049'



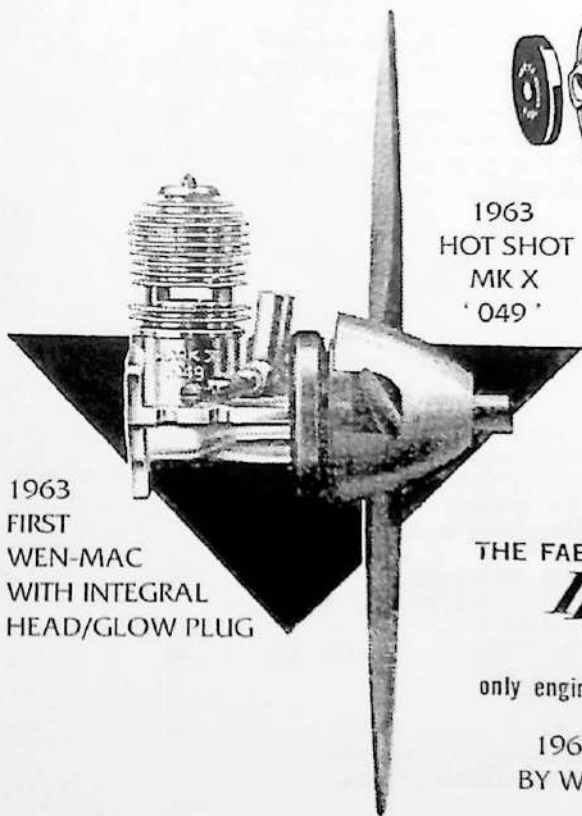
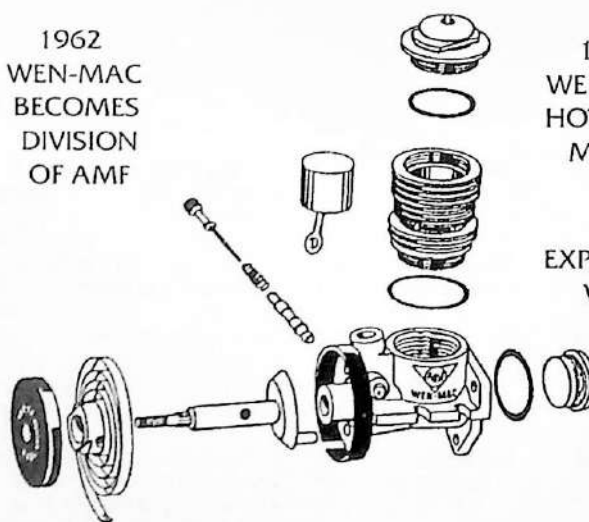
1961
WEN-MAC
MK III
'049'



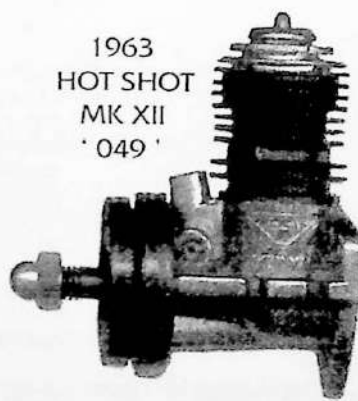
1962
WEN-MAC
BECOMES
DIVISION
OF AMF

1963
WEN-MAC
HOT SHOT
MK XII

EXPLODED
VIEW



1963
HOT SHOT
MK X
'049'



1963
HOT SHOT
MK XII
'049'

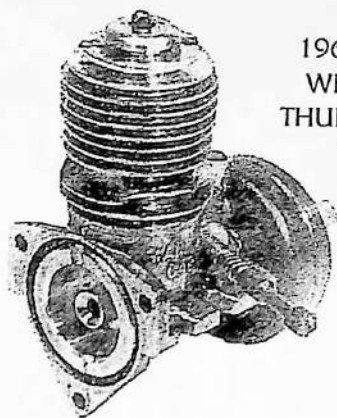
1963
FIRST
WEN-MAC
WITH INTEGRAL
HEAD/GLOW PLUG

THE FABULOUS
Hot Shot ENGINE!

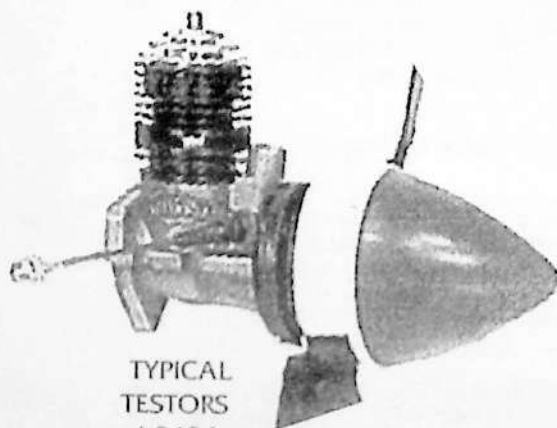
only engine with a 3-year guarantee.

1963 NEW GUARANTEE
BY WEN-MAC DIV. OF AMF

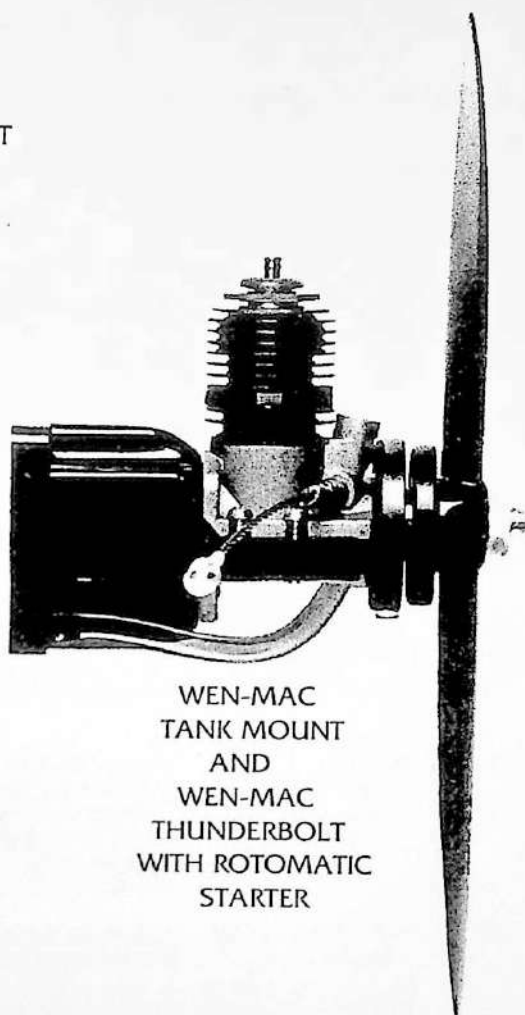
MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
WEN-MAC - CONT	'60	WEN-MAC MK II - 'V'	.049	AS PREVIOUS/ LONG CAST-IN INTAKE/ ' V ' MODEL	10		224
"	'61	WEN-MAC MK III - 'V'	.049	AS PREV./ 'V'.049/2 LONG BEAM MOUNTS EXTENDED TO REAR OF STARTER/ STARTER OPTIONAL	8		225
"	'61	WEN-MAC MK III - 'V'	.049	AS PREVIOUS/ LAST ' V ' MODEL/ INTAKE LENGTHS VARY BETWEEN LONG AND SHORT/ SHORT RUN	8		226
"	'61	WEN-MAC MK III	.049	AS PREV./ NO 'V' ON CASE/ LONG CAST-IN INTAKE	10		227
DIVISION OF AMF	'62	-----	----	WEN MAC BECAME A DIVISION OF AMERICAN MACHINE AND FOUNDRY COMPANY			
"	'62	WEN-MAC MK IV	.049	THIS IS THE FIRST AMF ENGINE/ AS PREVIOUS/ INTAKE SHORT/ STRAIGHT MAIN BEARING BOSS/ ' MARK IV ' OVER .049 AND ' AMF ' MARKING OVER ' WEN-MAC ' / SOME HAD BLACK CYLINDERS/ SIGNIFICANT REDESIGN OF CASE/ RETAINS TWO LONG BEAM MOUNTS	10	11	228
"	'63	WEN-MAC MK V	.049	SIMILAR TO MAKR IV/ AMF ON CASE/ MARK 'V' OVER.049/ BLACK FINISHES ON MOST CYLINDERS/ LAST ENGINE WITH STANDARD GLOW PLUG/ LAST ENGINE WITH SCREW-IN CYLINDER ' MUFF ' / STARTER OPTIONAL	10		229
WEN - MAC ENGINE GUARANTEES	'63	HOT SHOTS	----	ADVERT - ALL 'HOT SHOTS HAD 3 YR. GUARANTEE !!'			
"	'63	HOT SHOT MK X	.049	NEW CASE FOR WEN-MAC/ ROTOMATIC STARTER MODEL/ MARKED WITH ' X ' OVER .049/ WEN-MAC NAME OVER TRIANGLE OF CIRCLE WITH AMF NAME/ INTEGRAL HEAD AND GLOW PLUG WITH 2 - FINS AND WRENCH SLOTS/ CASE IS CUT MUCH LOWER TO USE NEW CYLINDER	12	10	230
"	'63	HOT SHOT MK XI	.049	AS PREV./ MARK XI OVER .049/ INTAKE HAS CRUDE FLAT AT REAR/ CRUDE CRANKCASE DIE	8		231
"	'63	HOT SHOT MK XII	.049	AS PREV.MARK XI / CLEANER AND BRIGHTER CASTING/ STARTER MODEL/ MARK XII OVER .049 IN SMALLER LETTERS/ WEN-MAC BELOW AMF TRIANGLE/ GLOW HEAD NOW HAS FLATS FOR WRENCH	10		232
"	'63	HOT SHOT MK XII	.049	AS PREV. MARK XII/ STARTER MODEL/ BLACK CYLINDER/ 'BAR' BELOW .049/NEW STYLE HEAD WITH 'FLATS' FOR WRENCH/ OCCASIONALLY OLD STYLE HEADS USED	8		233
"	'64	HOT SHOT MK XIII	.049	AS PREV. MARK XII/ MARK XIII OVER .049/ NO 'BAR' ON SIDE OF CRANKCASE	8	16	234
"	'64	HOT SHOT MK XIII	.049	AS PREV. MARK XIII/ LINE OR BAR BELOW .049 ON SIDE	8		235
" NOTE: 1	ALL	HUSTLER CYCLOMATIC ROTOMATIC	.049	NO STARTER MODELS ENGINES CALLED 'HUSTLERS'/ STARTER MODEL ENGINES CALLED 'ROTOMATIC' OR 'CYCLOMATIC' DEPENDING ON STARTERS USED			
"	'65	THUNDERBOLT MK XII	.049	SIMILAR TO '63 - 4TH HOT SHOT/ BLACK CYLINDER/ NEW TYPE HEAD/ THROTTLE OPTIONAL/ TINY HOLE DRILLED IN SIDE OF INTAKE/ SMOOTH THICK RING AROUND CYLINDER AT EXHAUST PORT FOR THROTTLE/ FRONT OF BEAM MOUNTS THICKER FOR RIVETTING STARTER INTO BEAMS RATHER THAN INTAKE AND BOTTOM OF CASE/ LOWER 2 FINS BEING LARGER THAN THOSE ABOVE PORTS TO TAKE EXHAUST THROTTLE APPEARS ON MOST SUBSEQUENT ENGINES	12		236



1965 - 1966
WEN-MAC
THUNDERBOLT
'049'

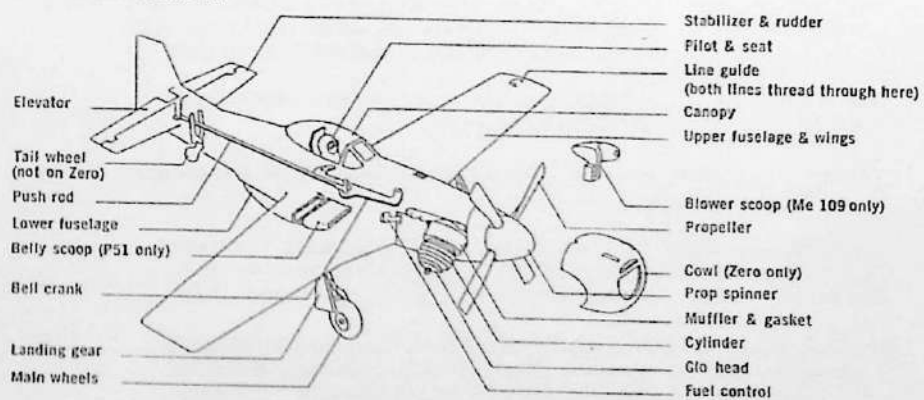


TYPICAL
TESTORS
'049'



WEN-MAC
TANK MOUNT
AND
WEN-MAC
THUNDERBOLT
WITH ROTOMATIC
STARTER

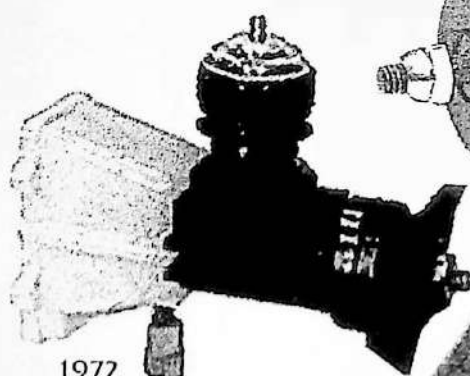
FLY 'EM AIRCRAFT PARTS LIST



EARLY TESTORS 'FLY EM' MODEL WITH THUNDERBOLT ENGINE

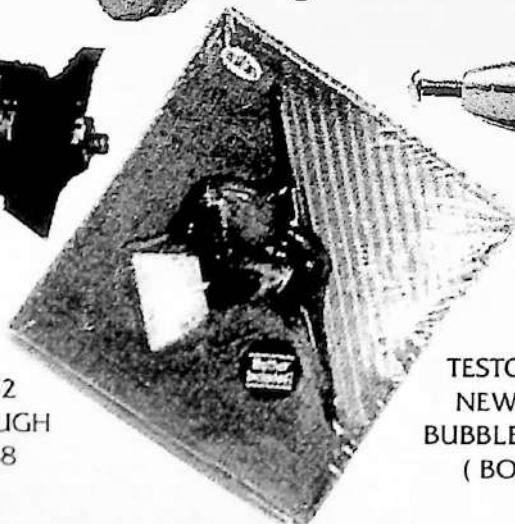
MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
WEN-MAC - CONT	'65	THUNDERBOLT MK XII	.049	AS FIRST THUNDERBOLT '65 - MK XII / MARKING 'XII' IS LARGER ON RAISED PATCH/ BAR UNDER .049/ WITH OR WITHOUT THROTTLE	8		237
"	'65	THUNDERBOLT MK XIII	.049	AS PREV./ SIMILAR TO 1964 HOT SHOTS/ THROTTLE OPTIONAL/ HAS 'BAR' CAST UNDER .049 ON CASE	8		238
"	'66	THUNDERBOLT MK XIII	.049	AS SECOND THUNDERBOLT '65 - MK XII/ MARKING XIII IS LARGER ON RAISED PATCH/ THROTTLE OPTIONAL	8		239
" NOTE: 2	ALL	RACE CAR AND MARINE	.049	RACE CAR & MARINE ENGINE VERSIONS OF FORE- GOING NOT NOTED IN THESE LISTS. SEE ALSO ENGINE COLLECTORS JOURNAL FROM #87 THROUGH #94			
" NOTE: 3	ALL	NEEDLE VALVES	.049	THE PROPER NEEDLE VALVE FOR ENGINES IS CONFUSING SINCE BOTH FLEX, RIGID AND SOLID NEEDLE VALVE USE VARIED CONSIDERABLY OVER THE YEARS DEPENDING ON THEIR USE FOR BOATS, CARS OR AIRPLANES OR IN PULL START ENGINES			
" NOTE: 4		LATER VARIATIONS	.049	SOME MODELS HAD MORE DEPENDABLE WINDUP FLAT SPRING STARTERS (ROTOMATIC) RATHER THAN PULL CORD STARTER USING SIMILAR PARTS. SEE ENGINE COLLECTOR JOURNALS FOR WEN-MAC AUTOMITE, AQUANITE AND SPECIAL HELICOPTER ENGINES. WEN-MAC MARINE APPARENTLY HAD AN EXCELLENT INBOARD BRASS UNIT SUPPLIED BY STERLING MODELS (PER E.C.J.)			
" NOTE: 5	'68	WEN-MAC TO TESTORS UNDER AMF'S MODEL DIVISION	----	WEN-MAC ACQUIRED BY THE TESTORS CORPORATION UNDER AMF'S MODEL DIVISION. WEN-MAC ENGINES WERE STILL MADE AT THE WEN-MAC ORIGINAL LOS ANGELES PLANT BUT NOW UNDER THE TESTOR NAME FOR THEIR READY-BUILT MODELS, AND UNDER THE McCOY LABEL (OWNED BY TESTOR) SO FAR AS 'ENGINES' ARE CONCERNED			
" NOTE: 6	'69	FROM AEROMODELLER JULY 1969	----	THE WEN-MAC THUNDERBOLT ENGINE IS NOW BEING MADE BY A DIVISION OF THE TESTOR CORPORATION. THE WEN-MAC NAME HAS, OF COURSE, BEEN WELL KNOWN SINCE THE EARLY NINETEEN-FIFTIES IN CONNECTION WITH PLASTIC READY-TO-OPERATE MODELS. THE VERY FIRST WEN-MAC MODELS WERE POWERED BY AN .049 ENGINE MADE BY BILL ATWOOD. SOON AFTERWARDS, JACK AND LEN McROSKEY, THE FOUNDERS OF WEN-MAC, SET UP THEIR OWN ENGINE MANUFACTURING PLANT AND, BY THE EARLY 1960's, THE WEN-MAC .049 ENGINE WAS BEING PRODUCED AT THE RATE OF FOUR THOUSAND PER DAY, POSSIBLY THE LARGEST DAILY PRODUCTION RATE ACHIEVED IN THE MODEL ENGINE INDUSTRY BY ANY ONE DESIGN. THE McCOY THUNDERBOLT .049 IS THE SAME AS THE FINAL DEVELOPMENT OF THE WEN-MAC .049 MADE BY AMF. IT REMAINS A SHAFT ROTARY-VALVE ENGINE WITH PROVISION FOR BEAM OR RADIAL MOUNTING. IT HAS A ONE-PIECE STEEL CYLINDER WITH INTEGRAL FINS, TWO OPPOSED EXHAUST PORTS AND TWO OPPOSED INTERNAL TRANSFER FLUTES. THE SCREW-IN CYLINDER-HEAD INCORPORATES A BUILT-IN GLOW FILAMENT. WEN-MAC WERE THE PIONEERS OF THE INTEGRAL STARTER SYSTEM ON COMMERCIAL MODEL ENGINES AND THE THUNDERBOLT ENGINES CONTINUE TO USE THE WELL PROVEN WEN-MAC ' ROTOMATIC ' STARTER.			

1969 - 1972
TESTORS
McCOY
THUNDERBOLT
'049'

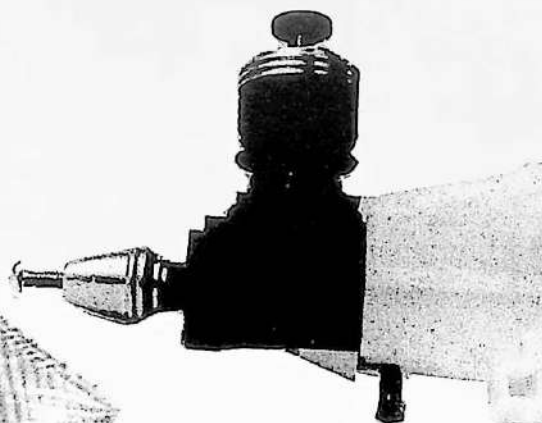


1972
TESTORS
BLACK
PLASTIC
'049'

1972
THROUGH
1988



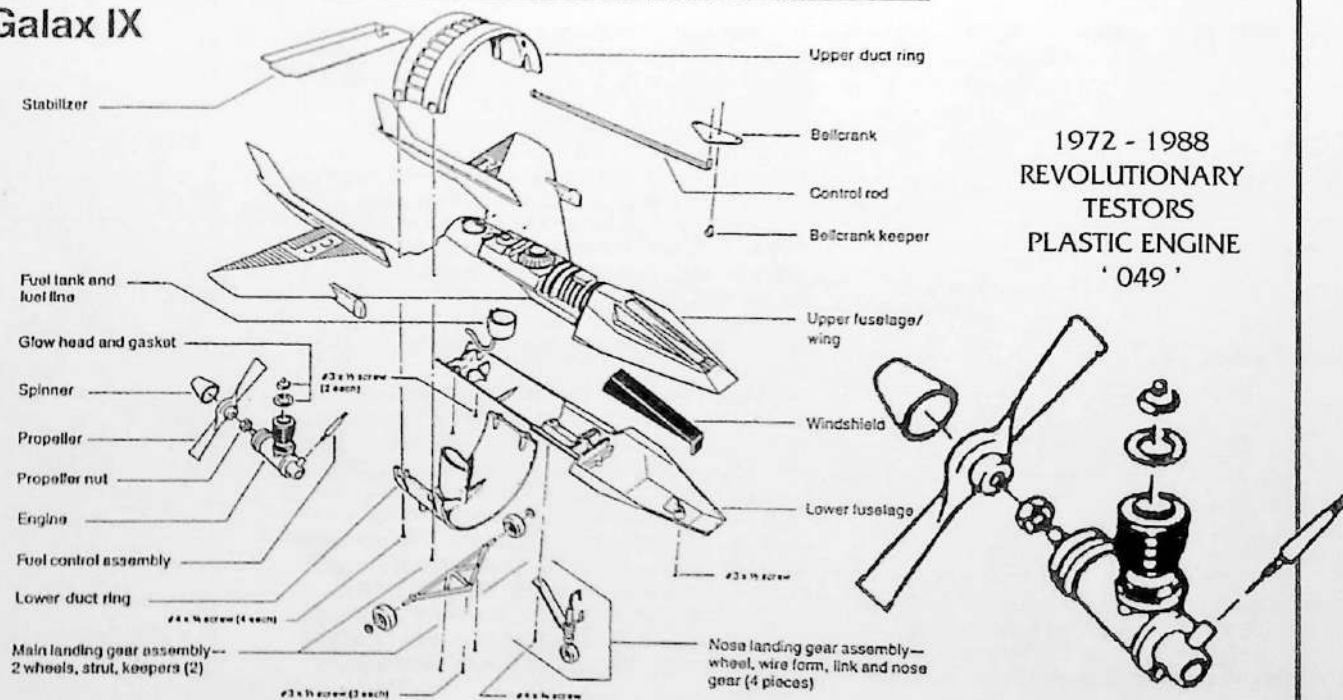
TESTORS
NEW IN
BUBBLE PACK
(BOX)



1977 TESTORS
BLACK ' PLASTIC '
'049'
WITH
DAVIS DIESEL
CONVERSION

ONE OF TESTORS '049' POWERED PLANES - THE GALAX IX IN 1979

Galax IX



TESTORS BEGAN SELLING HOUSEHOLD CEMENTS IN 1929 AND IN 2007 HAS A FINE COLLECTION OF HOBBY FINISHING MATERIALS, INCLUDING PAINTS, CEMENTS, TOOLS AND PLASTIC MODEL KITS. TESTORS CURRENTLY STAFFS TWO LARGE MANUFACTURING FACILITIES IN ROCKFORD, ILLINOIS AND TORONTO, CANADA ! SEE www.testors.com - WEBSITE.

MFG./ENG.NAME	YR.	ENG. NAME	DISP.	DESCRIPTION --- ENGINE PRICES IN U.S. \$	MECA ASKING	EBAY SOLD	A #
WEN-MAC - CONT	'69	FROM AEROMODELLER JULY 1969 - CONTINUED -		AT THE PRESENT TIME, PRODUCTION OF THE McCOY THUNDERBOLT .049 IS BEING RESERVED FOR THE TESTOR READY-MADES BUT THE ENGINE WILL BE PACKAGED EVENTUALLY AS A SEPARATE UNIT FOR GENERAL SALE. IN ALL PROBABILITY IT WILL THEN BE PROVIDED WITH A BACKPLATE MOUNTED FUEL TANK, IN ADDITION TO A PROP, TO MAKE IT A SELF-CONTAINED POWER UNIT.			
"	'69	McCOY THUNDERBOLT	.049	AS PREVIOUS WEN-MAC THUNDERBOLT MK XIII/ CONTINUED USE OF THE WELL-PROVEN WEN-MAC ' ROTOMATIC ' STARTER/ CURRENTLY RESERVED FOR THE TESTOR READY-MADES/ ' T ' OVER McCOY ON CASE SIDE AND NO.1 OPPOSITE CASE SIDE	10		240
"	'70	McCOY THUNDERBOLT	.049	' T ' OVER McCOY ON CASE SIDE/ RED GLOW HEAD/ LARGE BLACK PLASTIC TANK/ WIND-BACK STARTER/ LONG FLEXIBLE NEEDLE VALVE/ SOLD IN HOBBY SHOPS IN BUBBLE PACKAGES	12	17-NIB	241
"	'70	McCOY THUNDERBOLT	.049	' T ' OVER McCOY ON CASE SIDE AND NO. 2 ON OPPOSITE CASE SIDE/ NATURAL ALUMINUM GLOW HEAD/ NO TANK/ REAR CASE COVER HAS CENTER THREADED BOSS/ WIND BACK STARTER/ LONG STIFF NEEDLE VALVE	10		242
"	'70	McCOY THUNDERBOLT	.049	' TESTOR ' ON CASE SIDE IN ' OVAL ' AND ' McCOY ' OVER ' .049 ' OPPOSITE SIDE/ NATURAL ALUMINUM GLOW HEAD/ NO TANK/ REAR CASE COVER HAS CENTER THREADED BOSS/ WIND BACK STARTER/ LONG FLEXIBLE NEEDLE VALVE	10	15	243
"	'71	McCOY THUNDERBOLT	.049	' TESTOR ' ON CASE SIDE IN ' OVAL ' AND ' McCOY ' OVER ' .049 ' ON OPPOSITE SIDE/ STARTER HAS NO INTERNAL PARTS FOR USE/ NATURAL ALUMINUM GLOW HEAD/ NO REAR COVER BOSS/ NO TANK/ LONG FLEXIBLE NEEDLE VALVE	10		244
"	'72	McCOY THUNDERBOLT	.049	' TESTOR ' ON CASE SIDE IN ' OVAL ' AND ' McCOY ' OVER ' .049 ' ON OPPOSITE SIDE/ NATURAL ALUMINUM GLOW HEAD/ LONGER INTAKE/ ROUNDED FIN PROFILE ABOVE EXHAUST/ ONE LARGE FIN ABOVE EXHAUST PORTS/ WIND BACK STARTER/ LONG FLEXIBLE NEEDLE VALVE	12	21-NIB	245
" NOTE:	'72	TESTORS BLACK PLASTIC .049	----	NO MORE McCOY NAMES USED ON READY-TO-USE ENGINE MODELS ONLY 'TESTOR' NAME USED SEE OPPOSITE PAGE			
"	'77	TESTORS DIESEL .049	.049	DAVIS DIESEL PRE-PROD. CONVERSION OF TESTORS 'PRE-PRODUCTION' LATER REMOVED FROM MARKET			
"	'72/ '88	TESTORS .049	.049	TESTORS EXAMPLES SOLD WELL INTO 1980's/ THE ' REVOLUTIONARY ' PLASTIC ENGINE '	35 15	18-NIB	246
"	'80's	TESTORS PLASTIC AIRPLANES	----	PLASTIC READY-TO-FLY MODELS WERE THE RAGE IN THE 70's APPARENTLY INTO THE 80's. THE WELL KNOWN (TO WE OLDER MODELLERS THAT IS) BILL NETZEBAND SENT A LETTER TO DANNY BYNUM, EDITOR/PUBLISHER OF THE GAS TOY COLLECTOR, AND WAS PUBLISHED IN THE MARCH'93 ISSUE; BILL WAS THE CHIEF ENGINEER AT TESTORS THROUGH 1981. BILL AND AND JOHN BARR DESIGNED THE NEW COSMIC WIND TRAINER WHICH WAS THE FIRST NEW PLANE TO COME OUT OF TESTORS AFTER THEIR PURCHASE OF WEN-MAC IN 1968. IT SEEMED THAT THE NEW OWNERS OF THE OLD WEN-MAC LINE OF PRODUCTS WERE VERY ANXIOUS TO PHASE OUT ANYTHING THAT RESEMBLED WEN-MAC PRODUCTS, 'THUS THE LACK OF INFORMATION AVAILABLE TODAY ABOUT WEN-MAC OR EVEN THE TESTORS LINE'. BILL WENT ON TO SAY THAT THEY EVEN RE-WORKED SOME OF THE ORIGINAL WEN-MAC MOLDS TO PRODUCE NEW MODELS, SUCH AS THE GALAX's ETC. THE AUTHORS OF THIS PUBLICATION FONDLY RECALL HIS WORK WITH US AT THE CANADIAN NATIONAL CHAMPIONSHIPS IN THE LATE '60s WHEN HE CO-DIRECTED, WITH VICKI, THE U-CONTROL PART OF THE CHAMPIONSHIPS. BILL WAS A PROLIFIC WRITER IN A VARIETY OF MAGAZINES FOR MANY YEARS AND MAY BE ABLE TO ENLIGHTEN US ON HIS WORK AT TESTORS FOR AN UPDATE !			

TESTOR'S PLASTIC ENGINE - by Peter Chinn
 Editor's Note: This could have been the breakthrough to larger 'Plastic' engines, however no one has seen any evolution to a mass-produced larger plastic engine since the late 1980's!
 (Peter Chinn in 1973 wrote this excellent 'Plastic Engine' review).

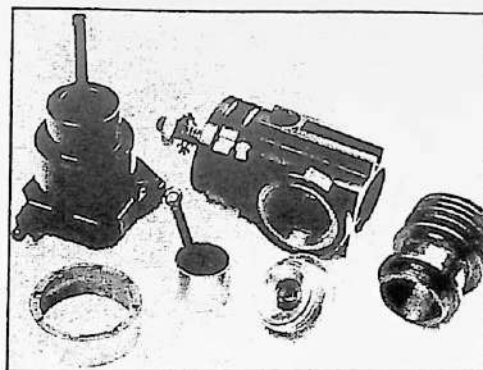
The use of non-metallic materials in model engine construction (apart, that is, from the more obvious applications such as fuel tanks and electrically-insulated parts) has been with us now for more than twenty years. As long ago as 1949, for example, the Dooling Brothers began using moulded valve rotors of thermo-setting plastic for their .29 racing engine and the majority of rear disc-valve engine since then have used valves that have been either moulded in materials such as nylon or glass fibre-reinforced nylon, or machined from, for example, Tufnol. Carburetor bodies and even complete backplate assemblies have also successfully used plastics in place of the more familiar metal alloys. Until now, however, no manufacturer has gone so far towards a completely 'non-metallic' engine as the American Testor Corporation with the special power unit produced for their 'Fly 'Em' ready-made plastic 'toy' control liners.

The engine illustrated is of an early type that was produced in limited numbers a couple of year ago. It has now been redesigned to incorporate a more orthodox induction system but is, we feel, well worth inspection in its' original form as an example of how close one manufacturer has come to producing the 'expendable' model engine. Built to merely slot into the 'Fly 'Em' models and with no mounting lugs (it would, therefore, be difficult to fit into any conventional model) the only spare parts offered are glowhead, muffler and fuel control stem. A damaged shaft or worn piston and cylinder assembly would, presumably, call for replacement of the complete unit.

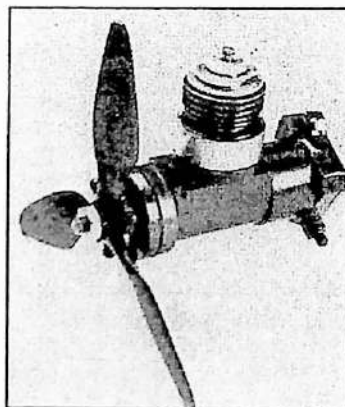
The basic design of the 'Fly 'Em' engine is clearly a development of the current Testor McCoy .049 shaft-valve motor which, itself, was originally a Wen-Mac product; the Testor Corporation having purchased the Wen-Mac plant from the American Machine and Foundry Company in 1968. It has a one-piece screw-in cylinder with twin diametrically-opposed exhaust ports and internal flute-type transfer ports, a ball joint small-end, hardened steel connecting-rod, shaft rotary-valve induction and a self-engaging integral spring starter assembly. The hardened non-counterbalanced crankshaft has a 7/32 in.dia. journal, 1/8-in. i.d. gas passage and 0.190-in. dia. crankpin and the same type of screw-in cylinder head with truncated cone-shaped combustion chamber and integral glow filament is used.

Here, however, the similarity ends. The engine crank-case, instead of being pressure diecast in aluminum alloy, is moulded in what appears to be a reinforced nylon-type material. It has a moulded-in aluminum main bearing bush and a steel thread insert for the screw-in cylinder. The air intake to the crankshaft valve port is repositioned to the side of the engine and has no needle-valve assembly.

No screws or screw threads are used to attach the one-piece plastic backplate/tank assembly; it merely plugs into the crankcase and the two snap together! Forming an integral part of the tank is a long, forward-facing fuel feed tube on the right-hand side.



Partially dismantled Testor 'Fly 'Em' motor showing all-plastic backplate/tank unit and plastic crankcase. Cylinder/piston assembly and crankshaft are all-metal however!



The original Testor 'plastic' engine with the 4-inch diameter 3-blade prop supplied for use with the Testors 'Fly 'Em' toy control liner

This passes through a channel in the side of the crankcase and projects into the air intake to serve as a fuel jet. The amount of fuel metered to this tube is regulated by a white, nylon stem or peg which plugs into a housing at the rear of the tank. This peg can be rotated between four basic positions; (1) fuel shut-off position (to prevent fuel from flooding the intake when the tank is being filled), (2) prime position, (3) rich idle position and (4) running position. All very basic and, to simplify handling still further, there is the familiar Wen-Mac clutch-type spring starter mounted on the crankcase nose; one simply rotates the prop backwards 1-1/2 turns and releases it to start the engine.

An additional item, not found on the McCoy .049, is the silencer unit. This consists simply of a collar (apparently a sintered iron moulding) that forms an annular chamber between the bottom cooling fin and the cylinder base flange. Exhaust gases are allowed to escape via eight small slots spaced equidistantly around the top of the collar.

The engine has the same bore and stroke as the McCoy .049; 0.420 in. by 0.360 in., giving a swept volume of .0499 cu.in. or 0.817 c.c. It weighs 55 grams. (1.94 oz.) including silencer and, of course, fuel tank. This engine has since been redesigned to use a normal needle-valve, plus reed-valve induction in place of the shaft intake.

From around '72 - '88 these Testor Corporation .049's were sold in bubble packs for hobby use, with specialty fuel tanks that provided radial mounting.

" THE COX STORY "

from the 1962 American Modeler Annual

Consider this: 4,650 gas model engines came off his production lines each day during a three-month peak period last year. At least half of these engines went into completed, ready-to-fly plastic model planes.

Production figures like these make Leroy Cox the largest manufacturer of engines and plastic models in the world. He needs from 150 to 300 employees to maintain this production, with peak schedules in the September-October pre-Christmas months.

Everything about the Cox manufacturing operation is geared toward production. His company has between \$750,000 and \$1,000,000 invested in screw machines, various other equipment, and special adaptations of existing machines to keep the man hours of production down to an average of 12 minutes per engine.

"Only through the most modern mass production techniques can we, or any other American manufacturer, keep our costs down to the spot where we don't have to worry about low-labor-cost imported products," said Leroy Cox. "Only as we are able to expand the scope of our marketing will we be able to turn out an even better product for less money."

Cox engines retail throughout the United States, starting at \$3.95. "With a price tag like that, no foreign manufacturer seems interested in doing business in the small engine field. Even today, there are virtually no Japanese imports of .049 engines. Last year, we exported and sold at least 5,000 engines in Japan, mostly through the Armed Forces PX outlets."

The Santa Ana, California, mass production specialist sees gas engine "noise" as the prime problem for the American modeler. Cox engineers have been at work for over three years checking-out various muffler systems. They found the best available system is the old cylindrical chamber with an adjustable outlet. Such a muffler is being produced as standard equipment on the new 13-3/4 inch Grand Prix racer.

"This muffler cuts the noise to a point where it can't be heard in a house across the street," said Cox.

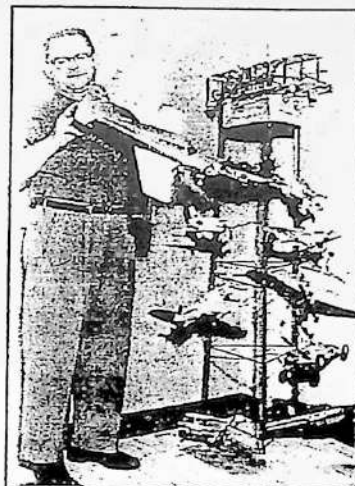
The muffler system forces the exhaust gasses to build up in a chamber and leak out during the time it takes another stroke to fire. The gasses leak out evenly, cutting down objectionable barking. When the adjustable opening of the muffler is closed all the way down, some back pressure develops that will cut power output from 5% to approaching 10%.

The Cox muffler is made up of only three parts, two round metal cups and a piece of spring steel wrapped around the open ends of cups. The unit attaches directly to the exhaust port and can be adjusted to lower the noise level by closing the slot between the two cups.

"We are conducting continuing experiments with this same type of muffler, and several other designs, for our aircraft kits," said Mr. Cox. "Our sales research has indicated that the 're-occurring noise of model engines is the largest single reason' why modeling has not grown larger than it is today. Unlike the motorcycle, hot-rod car or low-flying aircraft, the noise from

tethered model engine keeps going on, and on, and on."

Merely by keeping the noise down to a respectable level, I am sure that we could double the interest in powered model flight within a year. And with this increase in volume of business for the manufacturer, all of us in the industry could present an even better product to the customer."

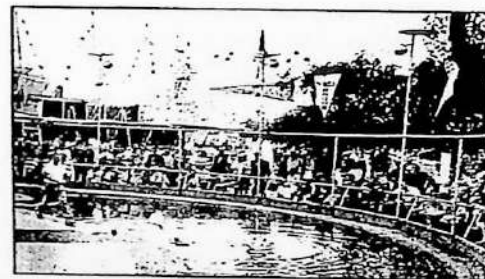


Leroy Cox with his production models.

"I believe that the industry as a whole should establish acceptable minimums for the noise level of model engines. When the manufacturers can produce an efficient engine muffled to meet industrywide specifications, then modelers throughout the country will have a workable tool with which to 'sell' City Councils, Playground Directors and the like, on permitting model flying in populated areas."

Perhaps the most successful model engine demonstration in this country is Leroy Cox's Thimble Drome at Disneyland, just five miles from the Cox manufacturing buildings. Because of the natural open-air surroundings, noise is no problem. Here visitors from all over the world can view model boat, car and plane demonstrations every 60 minutes. As a sales stimulator for the industry as a whole, Disneyland fliers take at least one non-modeler from the audience at every show and "check him out" on the simple Cox PT-19 flight trainer.

Part of
Thimble-Drome
activity area at
Disneyland
in California



"It's surprising that quite a number of these first time fliers purchase kits right at Disneyland, even though they have to carry them around the remainder of their tour of the big park," said Cox. "We have no way of knowing how many more purchase kits the next time they pass a hobby store, but I really believe that this initial exposure to modeling brings many new converts to the industry."

"With an operation geared toward more and more mass production, Cox has specialized in detailed, brightly colored complete kits. He uses various types of plastics to do different jobs.

The Cox Story - continued

Propellers, for instance, are of tough nylon; spinners of vinyl, wings and fuselage of two or three different grades of styrene and delrin, a new DuPont plastic in areas exposed to repeated wearing.

The latest addition to the eleven engine line is the tiny .010 (.163cc) Tee-Dee engine that develops peak horse-power at 27,000 rpm. Tolerances on the .010 and other Cox engines, must be maintained to 7/1,000,000ths of an inch. Automatic air gauges reject parts that are not within these tolerances. An air conditioned room with temperature controlled between 73 and 75° F is used in microfinishing operations.

"We had the same problems with the new .010 that we have with all the other engines, only more so," said Cox. "This is the smallest engine on the market today. We actually designed it, looking for something for indoor flying. However, it still has too much power for smaller indoor areas. we could reduce its size only slightly. If we get it much smaller it becomes a jewelers job, requiring a great deal of special equipment that would run the cost way out of line. We hope that it will pave the way for a whole new line of tiny models."

Cox also produces a line of four competition engines, built primarily for prestige purposes; 26 of 45 top places in the 1960 Nationals were picked up with Cox competition engines.

Bill Atwood, a modeler since 1927 and a gas engine designer since 1935, is in charge of Cox's engine development. He explained that the competition engines differ from production-line powerplants in ... "all the parts you can't see. We fit the competition engines up a little looser and build up the compression ratio a little higher. The carburetor is altered to allow more fuel and air to enter the intake and porting is opened up more carefully. We pay more attention to lubricating and even heat-treat some parts against structural fatigue. Naturally, we must sacrifice something to get the extra performance out of competition and we pay for this with higher fuel consumption and ease of starting."

Cox found that the key to engine reliability was in the development of precision production methods and meticulous quality control. Cox maintains a 22 man tool shop that takes over the products of Engineering and adapts them for production. An example of this work can be found in the Cox "home made" adaptation of an indexing machine. This one machine performs all the following operations, completely automatically, on the back plate of the Space Bug and Pee Wee engines; machines the fit for the fuel tank, drills out the venturi, machines the venturi for size and shape, faces the front to a fit, cleans out the filler and vent tubes, cleans and reams the needle-valve insert hole, machines the head on the hose fitting and drills the nozzle. A completely machined part comes out of this indexing fixture every ten seconds!

It takes the Cox organization from nine months to a year to design and tool up for a new plastic item.

The Engineering section must first come up with a fairly accurate scale model, yet one that will be completely flyable by new modelers. The most popular model over the years has been the 20-inch span Flying Tiger P-40, with an estimated one-third million units sold since 1958.



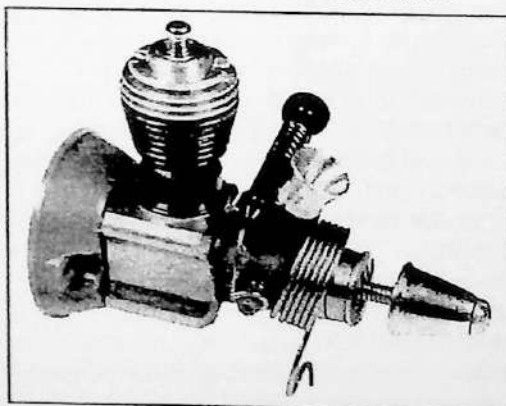
PT-19 trainer assembly line at Cox Mfg. plant in Santa Ana, Calif. Cox founded his firm in 1944 to manufacture wooden popguns. After the war he started producing toy cars. He hit a real winner in 1947 with a swing-powered toy racer.

Cox's trademark, the "Thimble-Drome", comes from the European name of airport (air drome) and the diminutive size of the model powerhouse, similar to a "thimble".

Where does modeling go from here? Cox believes that there will be little or no deviation from the present good basic designs in the foreseeable future. Miniature jet and turboprop engines do not seem to be too practical in the near future because of the high RPM's; over 100,000 are needed to establish combustible pressure. Ram jets, he believes, must solve the extremely high noise level, before they can become acceptable except in isolated areas.

"No matter what powerplant is used, efficient mufflers will become an absolute necessity," said Cox.

Cox has plans for an 80,000 square foot office and production building adjoining the Orange Airport. Here, with facilities tailor-made for the mass production of precision miniature engines and aircraft, he is sure that he can increase production, and at the same time decrease costs to the customer.



Cox T/D .010 the smallest production engine in the world

"WEN-MAC"

From American Modeler Sept./Oct. 1964

In the custom molding business producing plastic parts for others for some time (since 1952); the McRoskey brothers, Len and Jack figured it might be less hectic if they did some of it for themselves. Pre-fabbed all-aluminum model airplanes that sold for \$75 caught their eye. They felt a comparable affair could be done better and cheaper in plastic. Some molds were made and sales of the planes were good from the start. At first they used only 100 engines a week, but soon got up to 1000 per day; by this time they were obtaining powerplants from three different makers, but still couldn't get enough.

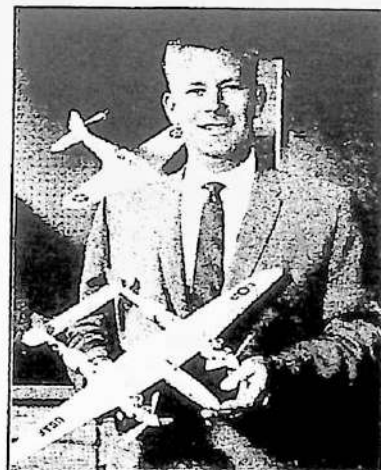
Only answer was to make their own. Bill Atwood designed an .049 for them, and with production and quality control in their own hands, things went lots better. Then they decided that starting any small engine was the biggest hurdle for the purchaser. A pullcord starter was developed, which worked fine. But there was still a problem ... the cord was designed for a 4" pull and when some users yanked it a foot or more, the starter was out of business. So the present Roto-Matic starter has no cord but depends upon self-contained spring action to flip the engine. This first came out in '57, has been used ever since. (Patented !)

By this time Wen-Mac had accumulated quite a few firsts in the hobby field. They had made the first ready-to-fly all-plastic model planes, introduced window packaging to better display them, marketed the first complete model plane outfit which included fuel, starting battery and all other accessories needed to fly and maintain the model. Since then still more firsts include bomb dropping, parachute ejection in flight and rocket firing.

Perhaps we'd better explain how the company name originated. The "Mac" part is obvious; the "Wen" came from Adolph Wenland, an early partner in the model manufacturing. Though Wenland left the organization many years ago, it was felt the name was too well known in the field than to change it.

Six thousand .049's are turned out per day by Wen-Mac. Some 15% of these, picked at random from production, are test run; if any trouble shows up in this sampling, the production line is stopped to find out what's wrong. Line stoppages have ranged from 1/2 hour to several days (but there have been no serious hold-ups). There are 6 test stations in the engine testing building, and there are usually several engines being run 8 hours per day, for as much as 30 days or more, as a check on overall endurance.

During our trip through the plant, parts were picked at random from bins and when enough had been accumulated, two complete engines were assembled as we waited. These were taken to the test stands and both were started on the first flip.



Len McRoskey

The gal who did the running handled the engines with all the aplomb of a top grade Team Racing mechanic. Engines are normally tested only for easy starting and peak RPM; they are run for just long enough to peak them out.

For the volume of engines they turn out, Quality Control has to be tops at Wen-Mac. Pistons are held to tolerances of 15 millionths of an inch for size, roundness and taper. Each machine operator spot checks a certain percentage of the parts she produces (women do most of the engine manufacture), there are several further checks before engine parts and assemblies leave the department, and an overall factory check on top of this. Such care is one reason Wen-Mac can give a 3 year guarantee on their engines. Company salesmen offer to take a Wen-Mac engine from a hobby shop shelf, promise to have it running in 15 seconds after it's mounted and fueled, or they will close their order books and leave.

Successful high volume production requires close control over every manufacturing process, by doing every job themselves Wen-Mac has such control. They grind 5000 engine parts per hour (on grinders normally used for precision gage making). They do their own heat treating. They make their own glow plugs; one operator sitting at a rotary table turns these out at tremendous speed. The last step is an electrical and high pressure air test. The concern mixes and cans all its own premium grade fuel. Ingredients cost more, but this makes Wen-Mac engines run better and last longer.

That first plane at the start of the business was called Aeromite - remains a good seller (1000,000 per year). Only change has been substitution of trike landing gear for the original 2-wheeler. All planes in the line come fully assembled and read to fly. There are some 10 basic designs, but various modifications and different color schemes more than double this. Most of the planes are scale - with such favorites as the Cessna 175, Airacobra and Corsair.

Wen-Mac - continued

For such an extensive line of plastic planes, you expect a large molding department. Largest are three 48 oz. "spiral feed" machines. There are many smaller machines of various types. Both vacuum forming and injection molding are handled in this department, and in three main materials. High impact polystyrene which is employed for most parts comes in many bright colors. For part that must be clear such as canopies butyrate is favored. And for toughness and wearing qualities (props, bearing surfaces) nylon is used.

Metalizing, a specialty process in its own right, is handled in one of the five Wen-Mac buildings. This process which consists of vaporizing aluminum foil in large vacuum chambers is most spectacular to watch. For proper adherence and protection, plastic parts to be metalized are sprayed with special lacquers before and after the vapor has been deposited. Needless to say, the last cost must be both tough and fuel proof. The aluminum skin is about 2 ten thousandths of an inch thick. The entire building where this work is accomplished is slightly pressurized so any dust in the air is blown outward at doors and crevices.

For the sort of high volume production Wen-Mac does the most modern handling methods used. We saw many overhead conveyor lines supplying parts to the assembly area while moving belts carried along models as more and more pieces were added to their assembly. Packaging and sealing is done automatically. Employment at the five buildings (all within a few hundred feet of each other) varies from 180 to 450; peak employment is in mid-summer, while low tide comes around New Years - all typical of this rather seasonal business.

Wen-Mac turns out premiums for various outfits. Many readers will recall seeing sleek marine oil tankers at just about every Texaco gas station in the country some years ago. Well, all those tankers - to the tune of some 9,000 per day and over a million a year - came from Wen-Mac. Wen-Mac fire engines, later premiums for Texaco, were over a foot long, mostly of metal, and went out of the plant at the rate of 10,000 per day.

Practically all models, toys and other items produced in the plant are designed and engineered right there. One exception was the Wen-Mac R/C package, which consists of super-het receiver and a compact but potent hand-held tone transmitter - both all transistor. The transmitter was certainly the first in our field, the super-het one of the very first. These units, designed to strict Wen-Mac specs by Packard-Bell, sold in very large volume. A line of Space-Age action toys are large units easily assembled without



Jack McRoskey

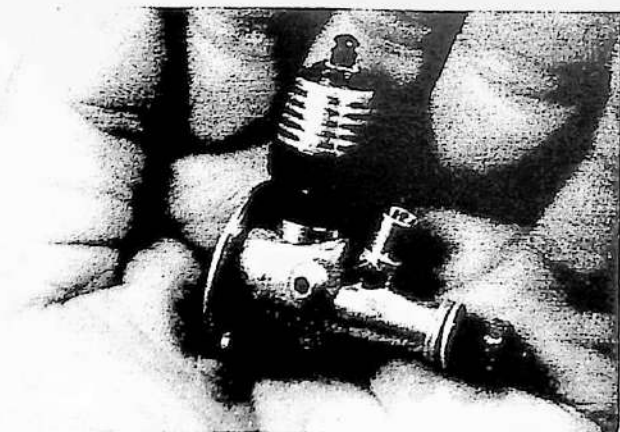
nuts, bolts, screws, rivets, cement or other adhesive by youngsters aged 4-9. All have moving parts powered by an electric motor.

It comes as no surprise to learn that Jack and Len McRoskey were avid model builders as youngsters. Both seem to be getting more and more active in this line now. Jack quite often rounds up a group of plant associates, heads out in the country for a day of model flying.

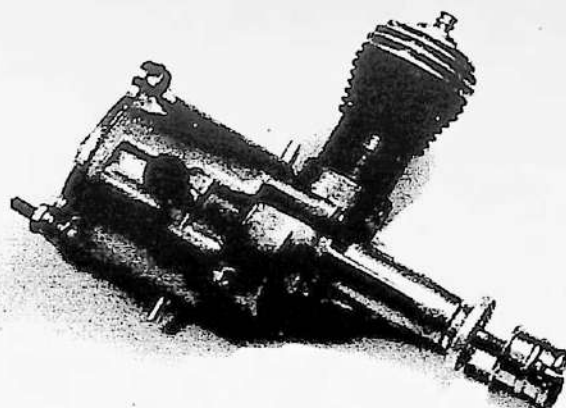
Jack McRoskey is President of Wen-Mac, Len is Chairman of the Board. The titles appear only a formality, since both can and do handle administration, sales, finance, manufacturing design and other problems in a very flexible arrangement. Wen-Mac is a division of American Machine & Foundry Co., a complex covering such diverse fields as the well-known AMF bowling pin spotters, automatic cigar and cigarette making equipment, nuclear reactors, golf clubs, precision tools and meters, bicycles, oil field drilling equipment.

And what about future products? Here we drew a complete blank. In large volume hobby and top business, competition is extremely keen. So a strict security setup is one of the facts of life. Under these conditions of operation, you can be sure Jack McRoskey wasn't about to discuss with us his future products!

(Editors Note) The modeling fraternity seemed to have largely ignored Wen-Mac over the years, simply because the competition modelers had been missed by Wen-Mac. Their engines were primarily used for plastic models; however, Wen-Mac engines were also sold separately into hobby shops with a 3 year guarantee and virtually instant starting by their company Sales Reps in the hobby shop! Great sport engines for beginners.



"As our story opens . . ." The K&B Infant .02, America's first production 1/2A, missing its tank.



That big, ugly, old-fashioned engine that began the reed revolution . . . a Cox Space Bug from 1952.

DAVE THORNBURG AT LARGE

from "Model Builder" magazine - June 1982

By Dave Thornburg author of numerous articles and well known for his "Old Buzzard's Soaring Book" and his more recent "Do You Speak Model Airplane" the story of Aeromodeling in America (Albuquerque New Mexico)

• I sing the praises of the rotary-valve 1/2A; those cranky, loveable, sometimes crudely-built little engines that flooded the American market during the long, fat decade following WW II.

Ray Arden was the father of them all, yet Ray Arden never sold an engine smaller than an .099. But he invented the glow plug, and freed us forever from the burden of coil, condenser, points and battery. "Simplify and add lightness," Henry Struck advised airframe designers; Arden applied this dictum to the engine.

The result was a trickle, then a stream, finally a flood of miniature engines. Before the glow plug, the .099 was a "small" motor. Before the glow plug, the smallest free flights were around 36 inch span . . . and they carried a five to

six ounce payload up front, for power. If you wanted to build smaller and lighter, you used CO₂ engines, little gutless wonders that ran on compressed air, when they ran at all. Or you used rubber.

Then, in the spring of 1948, came the K&B Infant .02. With only 1/5 the displacement of the Atoms and Ardens then considered "miniature," the Infant was dismissed by most folks as a novelty. Bill Winter and Cal Smith, writing a "future trends" article for *Model Airplane News* that year fail to mention the Infant at all; just another fad from Hotel California, land of the fruits and nuts.

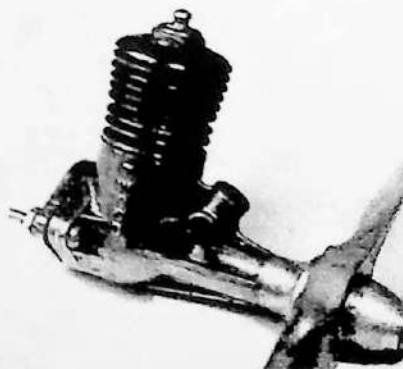
But Berkeley began to produce kits for the little beggar, and the kits began to sell. Other manufacturers started perking up their ears. Maybe .02 was a bit too small to be practical. (The Infant wasn't exactly a screamer, after all; kit instruc-

tions usually called for "one K&B .02, or two strands of 1/4 inch flat rubber.") Maybe a slightly larger engine could be made, something with a better power-to-weight ratio. Maybe something about .04 in size. . .

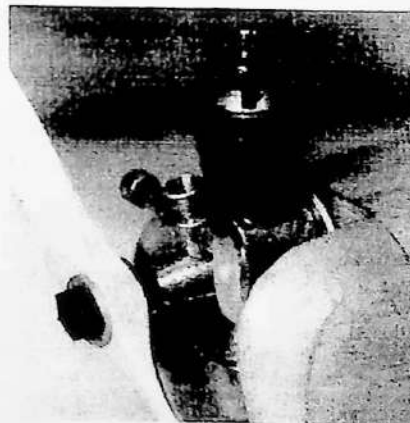
Meanwhile, the Infant had the field to itself. For over a year, K&B ground them out, and America's Hobby Center sold them . . . often in "combo deals" with kits like Berkeley's "Profile Powerhouse," a 24 inch version of Korda's pylon free flight. For over a year, the Infant was king. Then in midsummer of '49, came Mel Anderson's Baby Spitfire .045, followed quickly by the Cub .049, first of a long series of small engines produced by the Herkimer Tool & Model Works, makers of the "O.K." line of ignition engines (Bantam, Super 60,



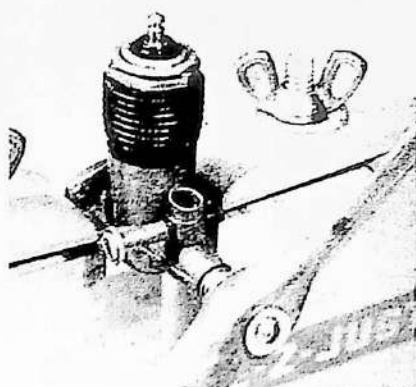
Second 1/2A on the market . . . Mel Anderson's Baby Spitfire .045. It went on sale in the summer of 1949.



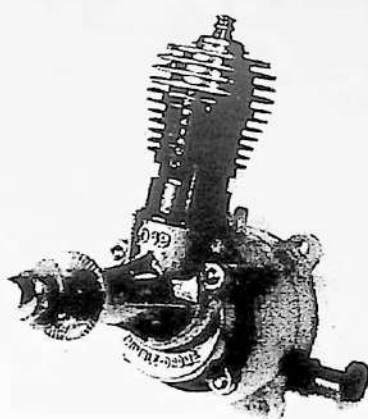
An early Atwood, built after he sold the Wasp rights to Bob Holland in 1953. A light and powerful F/F engine.



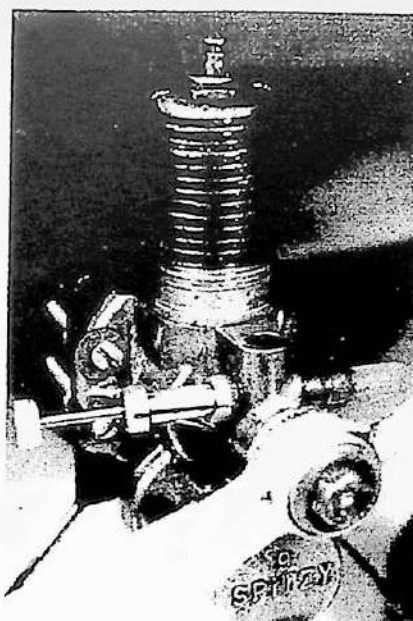
K&B Torpedo .049 (1951-1955), mounted in the nose of a 36-inch Luton Minor free flight. Will it pull it? Just barely.



An .049 Cub, made by Herkimer. Author says his Cubs ran best on test stand, seldom started in field. Sudden launch would pull away fuel.



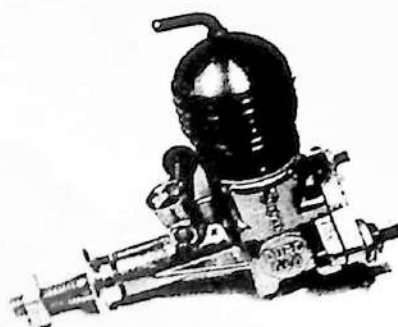
The nylon-tanked Space Bug Jr., engine that broke the low-price barrier in 1953 . . . \$3.95 complete!



A Spitzy .045, built somewhere between 1951 and 1955. Sold for as little as \$3.95



Bob Holland's Hornet came out in 1956, the first rotary valve engine to rival the Thermal Hopper in power.



A cherry little McCoy .049 diesel the author gave \$20 for in 1981. Almost too nice to run!

1949) to create a new class, from zero to .05 cubic inches, and call it "Half-A." Thus any engine from .051 to .20 would be "Class A," and anything smaller would fall into a different competition category.

This seemed like a tidy division. However, it didn't stop Herkimer from introducing, a year later, the O.K. Cub. .039. But it did influence K&B; its next engine in the Half-A market was the Torpedo .049, introduced late in 1950.

The Torpedo .049 was a lovely little

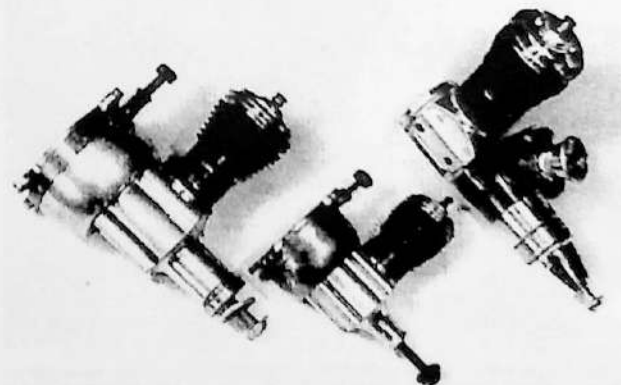
sport engine, just like its elder brothers, the .02 and the .035. All three of them looked something like scaled-down Ardens, with their rounded cylinder heads and underslung gas tanks. The Spitfire, by contrast, had the "stovepipe look" of the early Browns. And the Cubs . . . every one ever produced, from .039 to .099, including even the .075 diesel . . . looked something like a miniature O.K. Bantam.

But the Torpedoes and the Cubs and the Spitfires were basically sport engines, and the AMA had just created a new competition class. Pylon gassies were being scaled down to fit this new "Half-A" class; the ukie boys were already talking about Half-A speed. The time was 1951, and ripe for a horsepower race.

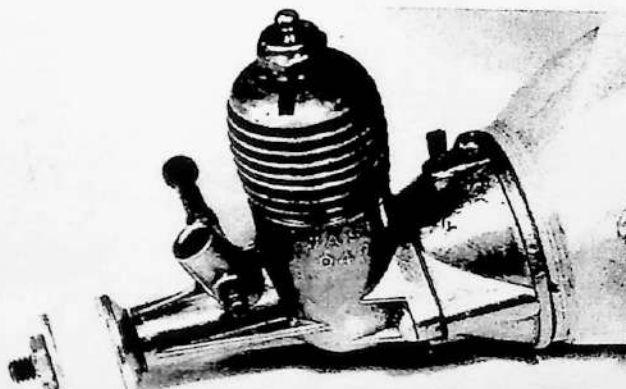
Enter Bill Atwood, with his Wasp .049.

The Atwood Wasp was the first engine to reverse the "stovepipe" design trend

Continued



Cox's 1-2-3 punch that killed the 1/2A market in the late '50's (l to r): Babe Bee .049, Pee Wee .02 (each \$3.95), and Tee Dee .049.



Wasp .049 (1951-1956) on the nose of a "Californian", a C.P. Moody free flight from August 1957 *Flying Models*.

in Half-A's. Instead of a long stroke and small bore, the Wasp had a short stroke and a large bore. The result was a squat, racy-looking little engine that fitted comfortably into a tight cowling... and screamed! The short stroke meant more RPM, and more RPM was just what was needed for competition. Never mind that Atwood had jumped the \$5.95 price barrier for half-A's... if you wanted to win, you lined up and paid your \$6.50 with the rest of the hotshots.

The only engine that could touch the Wasp was the new Royal Baby Spitfire, by Anderson, and they wanted a whopping \$7.95 for it. (By comparison, the Cub and Torp .049's sold from \$5.95, the Infant .02 was still \$4.95, while the Spitfire .045 and Torp .035 sold for \$5.50.) Who would pay eight dollars for an .049 in 1951? Lots of folks, and they got a pretty hot engine for the money, though not as consistent in quality as the Wasp.

While folks were recovering from the shock of the \$7.95 price tag on the top-of-the-line Spitfire, Mel Anderson hit them with another surprise: a sport engine priced 10% below anything on the market. It was the Spitzzy .045, at \$4.45. Same stovepipe cylinder as the Baby Spitfire; new underslung tank that was part of the crankcase casting. I have a great fondness for the Spitzzy, and for Mel Anderson, whom I've never met. At a time of 25¢-a-week allowances, that \$4.45 price tag got me a new engine two to four weeks earlier than any other manufacturer. And two weeks is an eternity to a nine-year-old!

The year 1952 saw only one new engine of interest. It came from a manufacturer of race cars and car engines, and it looked like a real dud. It had a huge, old-fashioned stovepipe cylinder, and a great gray gas tank on the back that made the motor over three inches long. It didn't have any venturi at all... yes it did, but the thing stuck out the back of the gas tank, so you had to drill a special hole through the firewall for it. What a bore!

And the needle valve! Why, it came out the side of that huge gas tank. No more fingers in the prop when adjusting the needle valve. What's that? No more cut fingers? Hmmm... there might be something to this engine, after all. But does it run?

Run, indeed. This great, clunky, old-fashioned looking engine... it was called the "Space Bug"... would out-rev and out-pull anything on the market in the year of our Lord 1952!

"I can dig it!"

"Ike and Mamie!"

Seems this Space Bug had a new-fangled kind of carburetor called a "reed induction," built right into that big gas tank. And this new carburetor was what made it turn so fast.

Or was it the precision with which the engine was produced? They said you could interchange the pistons among any of the engines, and they'd still run. And so of course everybody who could afford two engines tried it, and by gum it was true!

Too bad this Space Bug was so big and awkward... it would have made a fine ukie speed engine. Too bad it had that integral tank... no way to time it accurately for a free flight engine run. That race car feller... what was his name, Leroy Cox... had gone and made the world's hottest sport engine. Just wouldn't never work for competition. Too bad.

The next year, 1953, Bob Holland bought the rights and the machinery to produce the Wasp, and Bill Atwood came out with an even hotter .049... and one of the two bright ideas of the year. He bored out the .049 cylinder, turned a new piston, and presto, the .051 was born.

What made the .051 so special? Just this, now you could build one free flight and enter it in both Half-A and A classes. All you had to do was switch two externally identical engines. But what about the power difference between the .049 and the .051? There wasn't any; and there still isn't today.

The second bright idea of '53 came from Bob Holland, the guy who inherited Atwood's Wasp. By inserting a baffle in a standard Wasp "u-control" tank, and adding a short piece of spring-loaded brass tubing, Holland came up with the "Timer-tank," a device that gave reliable 20-second engine runs (well... accurate to a second or two, at least) without pneumatic timers and a lot of plumbing.

Oh, lots of things happened in 1953, yes indeed. And not all of them were good. The Wen-Mac hit the market, for example. And the Allen Sky Fury .049. But then, to balance the picture, McCoy put its lovely little red-headed diesel on the market. And Herkimer kept adding to its line of Half-A's; by December they were selling the .039, the .049, the .049B, and the .049X... as well as an .06 and an .075 diesel. I was always a sucker for the Cubs, even though they seemed to run best on test stands. I seldom got them to start on the field. Rumor had it that Cubs were afraid of heights: they would all run fine in boats and cars...

And meanwhile, what about that fellow Roy Cox, with his Space Bug? Had he tucked in his tail and gone back to race cars, where he so clearly belonged? He had not.

Instead, he had created a market for his "sport" engine by building it into a plastic ready-to-fly ukie, called the Thimble-drome TD-1. Now the TD-1 was not the first plastic RTF on the market. But it was so far superior to all the others that its quality has never been equalled since. Only its fuselage and empennage were plastic; the wing was made of two extruded aluminum shells, joined to form a fully symmetrical, elliptical wing of 24 inch span, a wing that would fly the TD-1 through the full stunt pattern, pilot willing.

And that was not all. He had stripped the obnoxious tank from some of his Space Bugs and created the Thermal Hopper, a lighter and more practical engine for both FF and controlline.

And that was not all. Mr. Cox had detuned some other Space Bugs, and fitted them with an inexpensive nylon tank, and marketed them for the unheard-of price of \$3.95, under the name "Space Bug Jr." Just to show folks that he understood the meaning of the word sport.

By the summer of 1954, the handwriting was on the wall for most of the half-A engine manufacturers. Competition engines, it's true, get all the publicity, but it's the sport engines that sell by the thousands. And who could compete with a \$3.95 price tag? Atwood tried, with the "Cadet," a detuned contest .049, but soon had to raise the price a dollar to make it worth his while. Cub put out the .049B as a kit... build it yourself from a box of parts... for the magic \$3.95 price tag. And Anderson dropped the price of the Spitzzy Senior to the magic number. But no one's heart was in it.

Not even Leroy's, it turned out. After K&B stopped production of the .035 and .049, and the McCoy .049 glow came and went, Cox raised the Space Bug Jr. to a solid \$4.95, where it stayed until production ceased in 1957.

But this is a story about rotary-valve half-A's, not about the reed valves that killed them. And we left the rotary valves in late 1954, obviously losing to the reeds in the sport market, but still battling in the contest market. Atwood introduced the Signature, a hopped-up .049. Then the Shriek. Then the Super Signature. Holland dropped the Wasp in favor of the Hornet, a potent little low-profile screamer that was all venturi. My first one, in fact, sucked so much air that it would lean out and quit whenever it was tilted into a nose-up attitude.

Apparently others had the same problem, because the Hornet became the Hornet II, with a round brass restrictor in the venturi. The Hornet II was the only engine I had that would outperform a Thermal Hopper.

All this in an attempt to stop Cox from boasting each fall, "Thimble-drome... winner of more first places, winner of more second places at the Nationals than all other half-A engines combined!"

Couldn't anyone come up with a rotary valve half-A that would stop those damn reeds? Were the reeds, which had already taken over the sport market, destined to win all the contests, as well?

Someone did, finally, build a rotary valve to beat the Thermal Hopper. But it didn't happen until 1960, long after the close of our magic postwar decade, long after the Spitfires and the K&B's and the Atwoods had faded into history. The new engine was the Tee Dee, another product of the ingenious Mr. Cox. The Cub line was almost dead by then, a victim of the Babe Bee .049 and the Pee wee .02, a pair of \$3.95 reed engines Cox introduced in 1958. The Holland Hornet took one look at the Tee Dee and expired immediately, leaving the American 1/2A market in the hands of a single company. Where it still is today.

Dave Thornburg - continued

If I sound sentimental over the early 1/2A rotary valves, it's because I am. My first engine-powered plane was a Berkeley Yank, a profile version of Struck's American Ace/New Ruler. Power was a Torp Jr., and it was lost out over Galveston Bay in the spring of 1951.

Lately, in an effort to correct some of the errors of my early youth, and exercise my middle-aged body, I've been reflying some of these early free flights. (Gatsby: "Can't relive the past, old chap? Don't be silly. Of course you can!") Reflying them in the relative safety of the New Mexico desert, a thousand miles from Galveston Bay.

And the problem with the desert is this: it eats reed valves. If Roy Cox had lived in Albuquerque he would

have dropped the reed like a hot potato. Reeds only function reliably in dust-free environments; grassy schoolyards, padded cells, and the like. To fly on dirt you need rotary valves ... engines that can be blown out occasionally without total disassembly.

And that means Cox Tee Dees ... engines that have too much speed, too much power, too little romance. So I've been hounding my friends for their old rotaries. Not collectors' quality, what the MECA people call "New In Box." Just the funky old used Cubs and K&B's and Wasps and Spitfires that have occasional broken lugs, bent cooling fins, missing needle valves. I like these old clunkers. They're gentle, slow-revving little beasts that are just right for sport free flight.

You can see some of the better ones in the pictures. They all run ... some as poorly as they did when they were new! But they're still great for sport free flight or small control line, provided you design around their limited power capabilities. I'd like to see more of these old clunks dragged out of drawers and put back into the air.

To rehabilitate them, just soak 'em overnight in gasoline or methyl-ethyl-ketone (MEK), and scrub 'em down with an old toothbrush. (Beware: MEK eats some plastics and rubber.) Then mount 'em on something simple, apply fuel and battery, and start flipping ... until you're blue in the face.

Whee! Just like old times!

Ain't nostalgia great?

* * * *

Excerpts from: "DO YOU SPEAK MODEL AIRPLANE" - by Dave Thornburg, Author

BRING ON THE MIDGETS

When Arden introduced the glow plug in the summer of '47, his own .09 was the only 'small' engine in most people's heads. True, the prewar Atom .09 was still on the market, and a few people were flying those little .09 Mite Diesels, produced over in Jersey by a sometimes-editor of model mags named Walt Schroder. But to most folk, the Arden was the only .09, and .09 was as small as engines got - unless you counted those miniature CO₂ jobs, which nobody did.

It took a little over a year for the glow plug to change all that. By Christmas of 1948, the west coast team of Lud Kading and Johnny Brodbeck - K&B - were shipping their first production run of an engine that was just one-fifth the displacement of the Arden: the K&B Infant Torpedo .02. Including its optional underslung gas tank, the Infant Torpedo was almost exactly the size of your thumb. "A watchfob," people sneered when they first saw the Infant. "A tie-tack! A tie-tack with a propeller!"

Was it a powerhouse, this K&B .020? Well - no. But that was actually a plus. There weren't any gas kits for engines that size, anyway, but since it was so gutless, and weighed a mere

ounce, you could slip it into just about any small rubber job. And dealers' shelves, in December of '48, were full of small rubber jobs.

At first the other engine manufacturers dismissed the K&B Infant as a novelty. But it sold like crazy right from day one, and within a year it had three companions in the under-.09 class; the O.K. Cub .049, the Baby Spitfire .045, and a slightly larger K&B model of .035 displacement.

Half-A

By the time 1950 rolled around, these midget engines - they kept multiplying like rabbits - had their very own AMA contest classification: "Half-A". The word had spread like prairie fire: *little engines are fun!* They opened up a whole new world of apartment-sized models - scaled down versions of those C and D monsters that most people could only build in their heads. With a 1/2A, you could build a 30" Zipper, a 20" Madman: models of models!

Half-A engines were so small and harmless they could be flown indoors, in gyms and armories and basements, using either U-Control or just a simple tether. (Guys at the '49 Nats went nuts

sticking Cubs onto Jim Walker dime gliders and racing them round-the-pole in the Navy work hangar: greasy little blue streaks going e-e-o-w, e-e-o-w, e-e-o-w, all night long.)

Half-A engines gave free flight an instant shop in the arm; within twelve months after the first Infant .02 hit the market, the most popular event in every major contest had become 1/2-A FF gas. In March of '51, June Dyer, secretary of the newly - formed Northern California Free Flight Council, reported that 1/2-A entries, during the NCCFFC's 1950 contest season, had exceeded all other categories by a margin of four to one.

The magazines jumped on the small engine fad - partly because they could print 1/2-A plans full-size, but mostly because their readers just loved these little models - couldn't get enough of 'em.

Editors loved them, too. Small, cheap motors dovetailed perfectly with the "typical-reader" myth of the fifties magazine editors - the myth that painted America's model builders as bright, creative, twelve- to-fifteen-year-olds, kids who financed their hobby on a two-bit weekly allowance plus the occasional lawnmowing job.

FLY-FOR-FUN

The glow plug and the 1/2-A engine go far in explaining another phenomenon of the postwar renaissance; the wild explosion of fly-for-fun models published in the magazines during the late forties and fifties. This was the era of Roy Clough's free flight and control-line flying saucers and his curious, lifting-body *Martian Space Ship*; of Paul Del Gatto's deltas and Donald Brogini's flying wings; of Don McGovern's long, skinny seaplanes and Parnell Schoenky's helicopters and Earl Cayton's bat-shaped ukies and bird-shaped chuck gliders. It was a time of autogyros, both free and tethered - a time of ornithopters and engine-powered boomerangs - a time of Jetex canards and pusher free flights and balloon-powered stick-and-tissue rocket ships. Every magazine, during this period, carried four to five construction articles per issue, and a high percentage of these models were - in the beatnik jargon of the day - "far out". There were controlliners with a second engine mounted on the wingtip and pulling outward at 45°, to allow flight on 200-foot lines. There were 'captive' free flights with bridle strings (walk them in the park just like you would your dog!) and escapement-controlled models sans radios, that went puttering about overhead dragging a pair of thread-thin control wires behind them, just like the German 'guided bombs' of early WW II.

SHURIKEN - THE MANUFACTURER: Fred Baldwin

You've all been inundated over many years, in a variety of model magazines about all of the numerous 1/2A (and larger) engine manufacturers; Mel Anderson, Lew Mahieu, Bill Atwood, Duke Fox, Bob Holland, Hi Johnson, Lud Kading - John Brodbeck, Dick McCoy, Charles Brebeck and Harry Rice most of whom are deceased, or certainly retired. In this book we've provided information on the McRoskey Brothers on Wen Mac, Roy Cox's work and some good words from a friend of 1/2A's, Dave Thornburg; plus a following write up on Fred Baldwin and his work with Competition Shurikens, .050 (1/2A) and .061 (F1J) produced in the early '90's.

Our write up on Fred Baldwin is primarily from information, tests and reports from magazine writers such as Chris Chianelli (MAN) and Mike Billinton (2- British Publication and MAN) etc. which he provided us, personally. A well known Speed Flyer, Glen Lee, provided our initial contact with Fred and we found Fred to be quite open and very helpful in placing this work on the Shuriken into our hands.

Following are a few words written by Fred Baldwin.

FRED BALDWIN BIO - by Sue Ann Silva-Baldwin

I came from a large family in Chicago, with seven sisters ! I worked hard through school and because I was big and strong, worked in a junkyard at 16. By this time I'd become interested in racing cars.

As a young adult I traveled to Pennsylvania and met Ray Heppenstall who was the designer of the Howmet turbine-powered racing cars. I found the field of work interesting and decided to accept a mechanic's position with Mr. Heppenstall. As part of my position I maintained two RP 9 Supervue Royale Race Cars for two well known drivers, Tom Bagley and Michel Jourdain Sr. It was during this time that I had a chance to experience working on race car engines. From that experience I developed my love of engine design and my quest for the next step in valve train technology.

Research on various engines led to my interest in the dual overhead rotary valve designs. During my research on components for my own design, I came in contact with Indy 500 race car driver, Eldon Rasmussen. He became interested in my rotary valve engine technology and offered me a permanent position as Engine Chief Mechanic. I accepted the position and moved to Indianapolis, Indiana.

Over the next several years I designed and developed the Baldwin Dual Overhead Rotary Valve V-6 racing engine. While the engine was in its final stages of development, rule changes lowering turbo boost pressure were put in place. Since my engine was designed for high turbo boost pressure it would not meet the new regulations of lower pressure. Funds were not available to redesign the engine to meet the Speedway's new engine specifications.

In time, other opportunities presented themselves as a friend of mine, Ned Morris, re-introduced me to 1/2A U-Control model airplane racing. I attended several events and the need for a new 1/2A engine became apparent. I set about designing my 1/2A, which I named the Shuriken after the Ninja throwing star. With support from Ned Morris, Dale Kern, Charlie Legg, Harry Roe (Glo Bee Glow Plug Designer) and several other 1/2A legends, I was able to achieve my design goal.

BV Competition Engines was formed along with Jim Van Arsdall for the sole purpose of manufacturing the Shuriken engine. When the partnership was dissolved, production of the Shuriken Engine, which met with great success at various competitions was, with much regret discontinued. The "little engine that could" and "did" was shelved after 2,000 units were produced.

Most recently, in 2005 Baldwin Wilson Development Corporation was established based upon my '360 brake' design. See us at www.360brake.com. It is my hope that revenues generated from this company will allow me to personally pursue several of my design projects.

SHURIKEN

The last great American .050 and .061

- by Frank Anderson, Publisher

Fred Baldwin and Jim Van Arsdall were active users of Cox 1/2A engines for some time. In 1990 they took time out from their 'Rasmussen Racing Parts' production for the 'real' Indy Race Cars, and put Fred's design ability and Jim's shop equipment (C.N.C. etc.) into producing the first Shurikens. Experience was added from some very committed competitors in the model world such as; Dale Kern, Warren Kurth, Harry Roe and Al Stegens in speed; plus the young (in 1991) Bobby Fogg who set a 122 MPH record in Junior 1/2A with a Shuriken and, oh, yes at the '91 Nats Warren Kurth also dominated 1/2A Profile Proto, setting another record at 107 with another Shuriken.

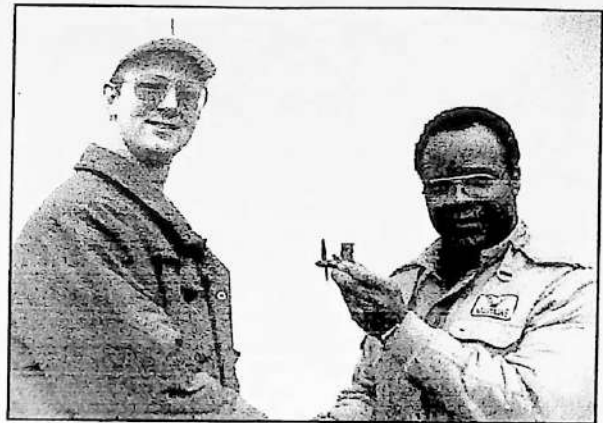


Warren Kurth and 1/2A Profile Proto

Records: A Canadian Speed Record was set at 112 MPH by Bruce Duncan, Toronto, in 1/2A Speed in 1991. Not to be outdone, Ken Morrissey set a British Class I open Speed 1/2A Record also in 1991.

We're told by Mike Billinton in a 1991 report that Fred Baldwin was, "apprehensive in the presence of his .061 on tuned pipe showing 45,000 RPM and a likely .5 hp!"

The Shuriken metallurgy has also benefited from their 'Indy' operations with the same very high grade metal specs incorporated. The cylinder liner is chromed brass with schnuerle porting and the piston (1 gram) is from 17% silicon aluminum alloy (ABC set-up). The piston (wrist) pin is from a high quality alloy steel this pin is only 60% of the piston diameter and is inserted into a blind bored hole with a tiny circlip securing it on the open



Jim Van Arsdall & Fred Baldwin

side. The case head held a "Glo-Bee R 5x" button into the case and on to the liner with a clamping screw-in of the head with 8 holes for a special (supplied) wrench to tighten it. Fred Baldwin told us he'd gone back to the Fusite Div. of Emerson Electric to resurrect the Glo-Bee plugs (they'd stopped production in 1990) and now continued for a few years Nelson and other plugs appear to have replaced them currently. Open throat carburetors were also available in several sizes.

AACe liners had been initially determined by Fred to allow the aluminum liner to move more quickly away from the rapidly expanding aluminum alloy piston. Note that the designation Ce is for a "diamond ceramic film" applied to the aluminum liner for wear resistance. Regular cylinder liners of aluminum or brass are usually chrome plated for most racing engines except the later Shuriken produced by Fred Baldwin. This AACe, developed by Fred proved in tests on the Shuriken that it really would run in the 45,000 + RPM range for speed fliers!

Unfortunately Baldwin and Van Arsdall broke up their partnership in 1992 with each going their own way; and both producing Shuriken engines for a while, Baldwin with his red Shuriken and Van Arsdall with his gold Shuriken. It seems that Van Arsdall had problems with his gold Shurikens since most were apparently returned with peeling chromed liners and he didn't continue production.

Fred Baldwin kept selling red Shurikens and doing other design-engineered full size race car parts projects "can't make a living just selling Shurikens."

Fred Baldwin, in 1998, became interested in manufacturing a 'real' light Turbojet and in 1999 while researching this design visited Jim Bede at the 'Bede Rally' in Marion Ohio and became more convinced of selling his 'Turbojet' into the Experimental Aircraft Industry. There isn't a light Turbojet in the Industry at this time.

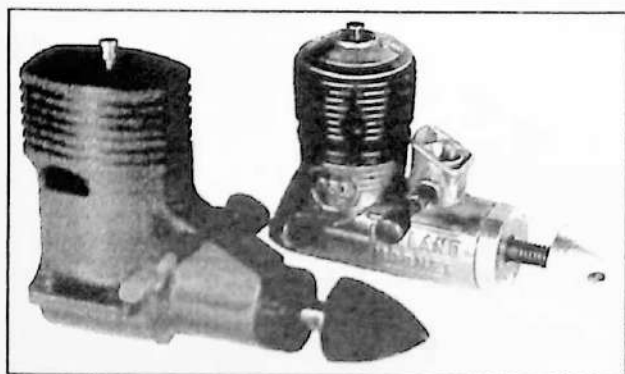
Today Fred Baldwin with his partners in the Baldwin Wilson Development Corporation is currently providing "Special Brake Systems" for many of the Custom Motorcycle Builders. Magazines available such as;

Race car Engineering; Motor tech; race Tech and specially Hot Bike in its' March issue (More Bling, Less Rotor) provides information on the Baldwin Wilson Brake Systems.

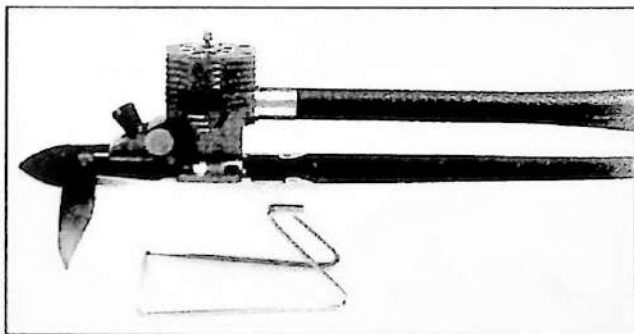
Cycle Source The grass roots motorcycle publication shows us the '06 Source Award BEST PRODUCT 2006: Baldwin-Wilson 360 Braking System this was in their '2006 Year In Review Issue!' Think we can coax Fred Baldwin back to model engines ?

We look forward to meeting again with Fred and his wife at Toledo in 2007 because he showed us a blue .40 mock-up at Toledo many years ago and perhaps we can add this as a new .40 Shuriken to our "Anderson's Blue Book Appendix" in late 2007 or 2008 !

Visit the Baldwin Wilson Development Corp. Web Site at "www.360brake.com" and see for yourself how unique their thinking is!



Shuriken compared to the Holland Hornet



.051 Shuriken in 1/2A speed pan



Fred Baldwin with his mock-up .40 at the Toledo show in the 1990's