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310 Dalehurst Dr.
Nepean, Ont
K2G 4E4

HANGARS MEETING WED 14 OCT 12 CLARKSON CRES KANATA

Carb Heat

Hot Air and Flying Rumours

NEWSLETTER

Published by EAA Chapter 245 (Ottawa) P.O. Box 8412 Main Terminal, Ottawa, Ontario, Canada, K1G 3H8

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Oct."87

Landuse Committee
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NEXT MEETING: SIR GUY CARLETON HIGHSCHOOL, OCT. 16, 8:00 P.M., IN THE WELDING SHOP. (See map elsewhere in the Newsletter).

Cliff North will be demonstrating the Dillon Mk. III welding and cutting system as seen in ads in numerous flying magazines. Cliff invites our members to bring samples of stainless, aluminum, 4130, white metal, cast, etc., to show what the Dillon system and he can do. Members will get the chance to try the Dillon torch and some of the troublesome metals that may have defeated our attempts with conventional oxy-acetylene equipment. Don't miss this golden opportunity for a hands-on assessment.

4000
2000
20
$100.00
$170

AIRSHOW:

At the National Capital Airshow, John Perrins took about 200 phtographs. These photographs are available for viewing on meeting nights and copies may be ordered from John Perrins at 820-8812. The number codes are on the backs of the photos.-Roman Numerals then number.

EAA CHAPTER 245 (OTTAWA) SEPTEMBER MEETING

DATE: Friday 18 Sept. 1987
LOCATION: Chapter Hangar at Carp Airport
ATTENDANCE: 30 Members -- 11 Guests
TIME: 1930 hrs.

Doug Richardson had done a very good job of running lights in the main hangar. The area was adequately lit for inspection of his superbly constructed Zenair CH250 which is in its final stages of assembly.

Eric Taadda noted the excellent turnout and introduced the guests. The guests and visitors will be put on the complimentary mailing list for the November newsletter.

Roger Fowler indicated the for the November meeting we will try to get the Dillon Torch representative to give a demonstration of welding "exotic" materials. (The meeting place will be at the workshops at Sir Guy Carleton High School - arranged by Ted Chambers.

Eric then introduced long time Chapter member Ted Slack who was here to talk about building chapter hangars. Ted spoke about the pole and beam construction methods and concrete block construction. He priced both systems and he indicated that the somewhat more expensive and labour intensive concrete block T-hangars was in his estimation, the way to go for a number of reasons including increased five protection per T-bay and a more solid structure overall. A handwritten proposal was passsed around for member inspection.

He then read out a point by point proposal of how to operate the hangars - this is reporduced latter in this newsletter. Due to the short notice - we are giving our members an opportunity to submit counter proposals or other suggestions to discuss - these can be presented in the November newsletter. Contact the Editor - Dick Moore or Secretary Andy Douma.

A hangar committee consisting of peole who wish to construct units within the next year needs to be formed. A show of hand indicated that 6 people were interested in building within the next year. 5 more people were interested in building within the next 5 years.

Ajourned for coffee and donuts at 2110 hrs.

The meeting re-convened at 2150 hrs after people had had chance to take a good look at Doug Richardson's CH250.

Doug Richardson took the next half hour to talk about the frails and travails of final assembly of the CH250.

He acquired the partially started kit in October 1985 and has spent up to 40 hrs per week on the project for the last two years - most of the work was done in his one car garage at home.

Some points:
- -the aircraft is generally easy to build.
- -the first bends and holes drilled ar the hardest.
- -Resist the inevitable tendency to strengthen and overbuild - it is not necessary and only makes the aircraft heavier.
- -After a while, you know when the job you are working on is "right" - you get an instructive fee for the metal your working with instinctive feel.
- -The metal work becomes easier, the manuals also yield their secrets more readily as time goes on.
- -Don't try to pre-plan systems installations and line routings - Put in the control systems and build everything else around it. One system at a time. Too much time and effort was spent on useless preplanning.
- -The instrument panel access cover is strongly recommended - saves countless hours of playing controtionist from underneath.
- -Doug used aircraft fittings and supplies throughout he feels more confortable with them.
- -Doug feels however that he would go with an automobile power system if he were to do it again - aircraft engines and accessories are enormously expensive.

He would like to wrap it up before winter and he would like to fly before snowfall. He intends at this time to keep the snow cleared and hopes others will help with snow clearing and keep their aircraft operating from the Chapter lot through the winter.

T-shirts, golf-shirts etc.

Andy Douma circulated order forms for those interested in T-shirts, golf-shirts, caps and cress with Chapter logo -

Meeting Ajourned 2230 hrs

Submitted by A.G. Doma Secretary

INDIVIDUAL HANGAR TENANCY: A PROPOSAL

1. The structure will be owned by EAA Chapter 245.

2. In return for supplying materials and labour, the tenant will be granted personal (i.e., non-commercial) use of the hangar until the year 2010 without a rental charge.

3. With the approval of the chapter executive, the agreement may be transferred to another immediate family member.

4. Each tenant will pay a cost-of-living-adjusted membership fee of $100 per year (1988 dollars) and his share of the actual costs of operating and maintaining the lot and building.

ESTIMATED PERTINENT COSTS:

Membership	$100
Building insurance	$125
Taxes	$125
Airport maintenance	$150
Grounds maintenance	????
TOTAL	$500

5. Capital improvements to an individual hangar will only be undertaken with the approval of the chapter executive and the cost will be borne by the tenant (e.g., floor, door, insulation, etc).

6. General improvements to the facility will be undertaken with the approval of a majority of the tenants and the consent of the chapter executive (e.g., running power in). The costs will be shared by the tenants.

7. Item 2 is not intended to prohibit a tenant from temporarily sub-leasing his unit or from selling his rights. These may be carried out under the following conditions:

   a. **sub-leasing**

   A tenant who is temporarily not using his hangar may, with the approval of the chapter executive, sub-lease it. All profits from sub-leasing (i.e., after deducting the pro rata operating expenses listed in item 4 will be shared equally by the chapter and the tenant.

   b. **sale of tenants' rights**

   With the approval of the chapter executive, a tenant may sell his rights to use the hangar. Revenue from the sale of a tenant's agreement will be disbursed in the following order:

(1) to the chapter: any money the tenant owes to the chapter.
(2) to the old tenant: any prepaid expenses.
(3) to the old tenant: a sum equal to the cost-of-living-adjusted depreciated value of the unit. (Table A is an example of the depreciated value of a T-hangar without door or floor and with an inflation rate of 6% per year).
(4) any revenue in excess of item (1), (2), or (3), will be shared equally by the old tenant and the chapter.

8. The chapter will bill each tenant for his membership and his share of the operating costs. Accounts will be 30 days net and thereafter will bear interest at the rate of 1% per month. Any tenant's account which is in excess of $500 for 6 consecutive months will be grounds for the chapter to cancel said tenant's agreement. The provisions of this article may be modified, in exceptional circumstances, by a majority of the chapter executive, but all such modifications must be communicated in writing to the tenant and a copy kept in the chapter executive's files.

9. Where, in the majority opinion of the chapter executive, the tenant's lack of maintenance of his hangar necessitates repairs which he refuses to perform, these will be done by the chapter and the cost charged to said tenant. The recovery of this debt will follow the provisions of article 8. Where all reasonable means of recovering this debt fail, the chapter executive may consider selling the delinquent tenant's hangar and disbursing the money as per article 7b.

TABLE A

YEAR	DEPRECIATED VALUE
1989	5000
1990	5035
1991	5060
1992	5060
1993	5050
1994	5020
1995	4965
1996	4890
1997	4780
1998	4645
1999	4480
2000	4270

2001	4025
2002	3735
2003	3390
2004	2995
2005	2540
2006	2020
2007	1425
2008	755
2009	0

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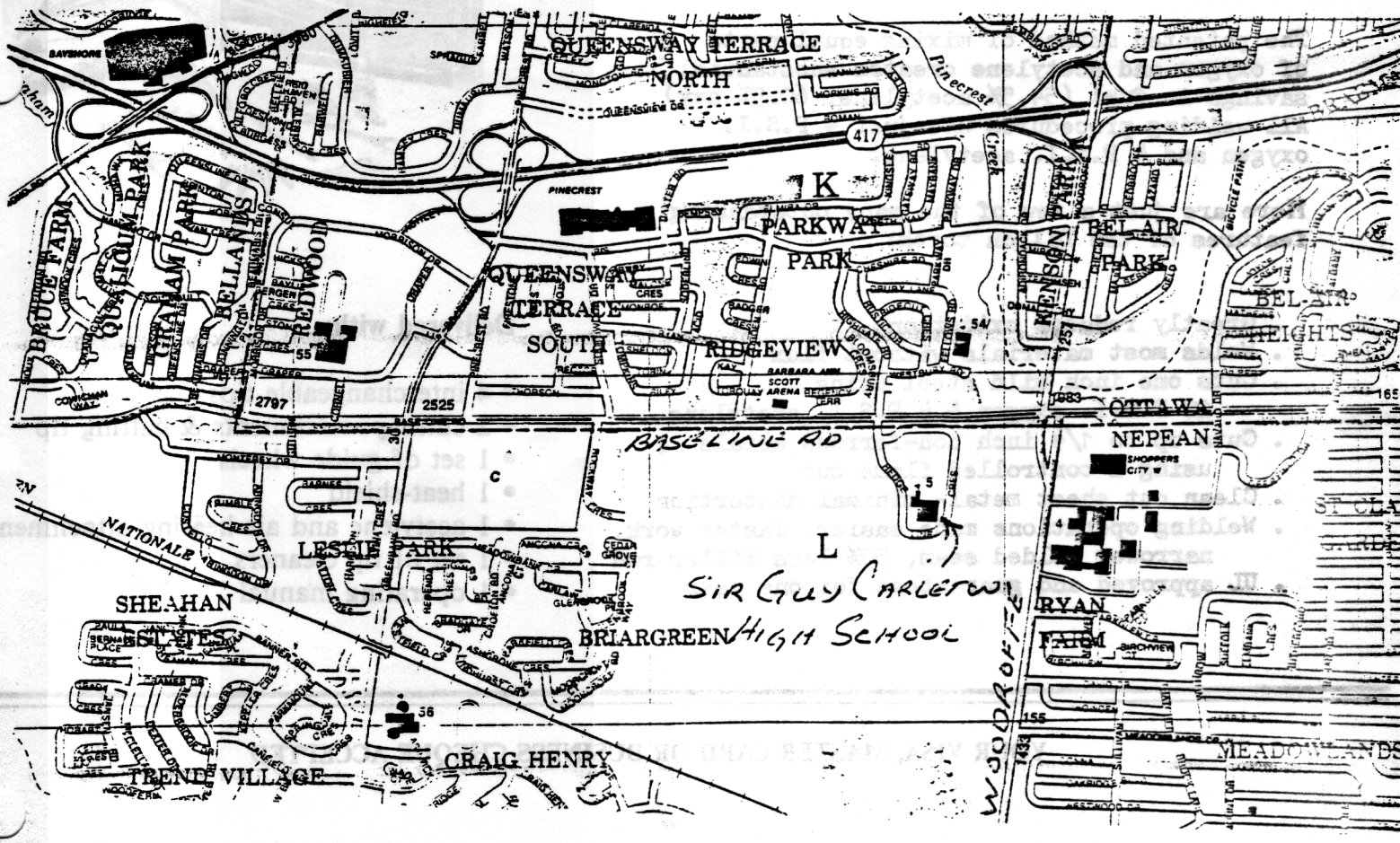


DILLON

SUPERTORCH

R.R. 1, KEMPTVILLE, ONT.
K0G 1J0

CLIFF NORTH
(613) 258-2039
or (613) 724-8136

DILLON *MkIII*

The unique oxy-acetylene welding & cutting pistol

An exciting new addition to the art of gas welding!

This award-winning torch welds:

- Aluminum
- Stainless Steel
- Cast Iron (without pre-heating or post-heating)
- Copper, brass and other metals

The patented method of mixing equal parts of oxygen and acetylene creates substantial savings in fuel (54.5% acetylene, 60.5% oxy) All welding procedures use just 4 P.S.I. oxygen and 4 P.S.I. acetylene.

Here are just a few of the many outstanding features of the Dillon torch:

- Greatly reduces oxidation
- Welds most materials without flux
- Cuts one inch mild steel using 20 P.S.I. oxygen & 4 P.S.I. acetylene
- Cuts up to 1/4 inch non-ferrous metals using a controlled flame cut
- Clean cut sheet metal- minimal distortion
- Welding operations made easier, faster work, narrower welded seam, 50% less filler rod
- UL approved and guaranteed for one year

Delivered with:

- 4 interchangeable tips
- 2 cutting attachments & cutting tip
- 1 set of guide wheels
- 1 heat-shield
- 1 acetylene and air heating attachment
- 1 set of tip cleaners
- 1 operating manual

YOUR VISA, MASTER CARD OR BUSINESS CHEQUE ACCEPTED

★ REGULAR PRICE OF $444. INCREASES TO $499. ON OCT. 1, 1987

ADVANTAGES OF USING A DILLON Mk III OVER A CONVENTIONAL TORCH (X)

(based upon tests undertaken by five independent testing labs in Switzerland)

A) ECONONY:

1. Saves 53.5 % acetylene and 60.5 % oxygen.
2. Fewer gas cylinders, less rental charges, smaller tanks may be used.
3. None or little flux required.
4. A 50 % reduction in filler rod consumption (smaller weld bead).
5. Flux coating of rods eliminated for most jobs, saves time.
6. Less time required for pre and post-welding operations.
7. No pre cleaning of work area or coating of joints with flux and no post cleaning except for aluminum and stainless.
8. Concentrated heat - minimal distortion - 50 % reduction in heat zone.
9. Less total time required for maintenance / repair welding and brazing, including preparation and cleaning.
10. Lower pressure reduces hose fatigue - less expansion and contraction.
11. Cool burning tips increase tip life - no internal oxidation.
12. No "O" rings in mixing chambers - less maintenance.

B) Flame Setting: The operator need only have knowledge of one setting, "just off feather", ie: neutral flame cone. Once the regulators are set at 4psi, no need to alter.

C) Fewer Tips: Only 4 tips are required whereas torch (X) requires anywhere from 6 to 16 tips to cover the normal welding range.

D) Lower Pressure: 4psi maximum for welding, both gases.

E) Lower Velocity: Up to 4 times lower ranging from 25 to 200 meters per second. Torch (X) operates at between 100 & 200 meters per second.

F) Reduced Distortion: Concentrated heat in the weld area only.

G) No Oxidation: No excess, unburnt oxygen in the weld area (similar to a blast furnace). Protects the weld area in a similar way as a T.I.G. or M.I.G.

H) Very Little Flux: A little flux is required only to weld aluminum and very dirty metals. Most welding and brazing is done without flux.

I) Mobility Increased: Smaller cylinders can be used, as less gas is consumed.

J) Pistol Grip Form: Made to fit the hand; better control for close precise work.

K) Cutting Thick Material: Very narrow cut, edges are clean and non oxidized. No machining required before welding. Excellent clean cut up to 30mm. Cuts 1" steel using 4psi acetylene and 20 psi oxygen.

L) Cutting Thin Materials: Special sheet-metal cutting attachment enables thin sheet metal to be cut with little or no distortion or slag. Galvanized material can be cut and brazed without destroying the coating and breathing the fumes.

M) Cutting Non Ferrous Metals: Aluminum; cast iron, brass, copper, stainless steel, etc... can be flame cut using a controlled melting process, thereby creating a non-oxidized edge which can be welded without machining.

Welding With Ease

Ed Dillon's Mk III torch welds metal and cuts the learning curve.

BY DAVE MARTIN

Weld: to unite (metallic parts) by heating and allowing the metals to flow together.

Webster's Seventh New Collegiate Dictionary makes welding sound simple. Yet of all the processes that go into building the sport aircraft we aspire to create and fly, welding may be the one construction technique that is studiously avoided by the majority of homebuilders. Purveyors of kits and even plans-built projects have catered to their customers' preference for completely finished welded parts; finish-welded engine mounts and control system parts are often available even when the remainder of the project must be built from scratch.

There's good reason for the average builder's reluctance to tackle aircraft gas welding. In the first place, welded aircraft components are often the most critical: fuselage structure, engine mount, control horns and torque tubes. Secondly, we all know that it takes months of classroom training and supervised practice before one can expect to complete a passable weld. Right?

Maybe not. There's evidence that a special welding torch invented by Australian Ed Dillon can ease the process of learning oxy-acetylene welding, can weld materials easily that are difficult with standard torches . . . and in the bargain will save up to 80% of the gases normally used in the process.

Before we proceed, one point needs to be emphasized. Despite the clear instructions provided with the Dillon Mk III welding and cutting torch and a videotape that is available from the Dillon people to illustrate the product and the process, nobody should even consider welding aircraft structures or parts without fully qualified instruction and supervision. If you are not a qualified and experienced aircraft welder, buying a Dillon outfit will not make you one, but apparently the device will ease the process of learning the art from a qualified instructor.

Our advice to an inexperienced welder who might be inclined to buy the Dillon unit: find an instructor who knows the Dillon torch or one who is willing to learn about it. Personal experience indicates that any *qualified welder* can learn to use the Dillon torch in just a few minutes of study and practice.

For me, serious interest in learning to weld was sparked by research on Ron Mason's Christavia, a highwing sport airplane described in the September, '86, KITPLANES. Mason sells only plans for the two-place and four-seat version of his airplane; except for the wing, the Christavia is largely a welding project. The two-seat Christavia, which resembles an Aeronca 7AC Champ, flies so well on low power that I have visions of building it (or the four-place model, which I've not yet flown) some day. For the steel-tube fuselage, Mason supplies a drawing that is scaled up to a chalk template on the builder's garage floor, where steel tubes are held in place with bricks for tack-welding. The fuselage sides are set upright and cross pieces welded and finish welding proceeds.

A few months after the trip to Canada to fly the Christavia, the annual KITPLANES magazine staff trek to Florida's big EAA event, the Sun 'n Fun show at Lakeland, provided an introduction to the Dillon Mk III welding torch. By the end of the week-long show, Dillon distributor Ken Woods, his wife Annie and their daughter Penny had demonstrated the torch to thousands . . . and sold out of the supply brought from their home in Washington, Missouri.

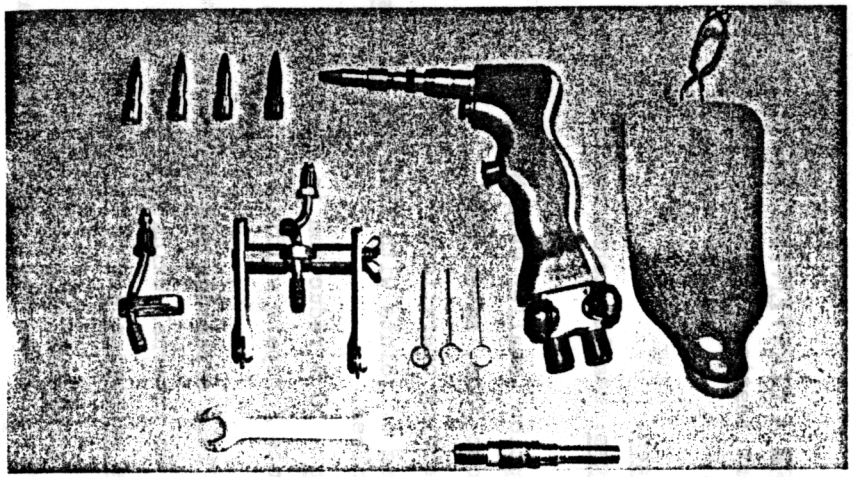
A few examples of Woods' demonstrations may indicate why there was usually a crowd surrounding the small outdoor booth.

Using a cutting torch attachment, Woods sliced through quarter-inch mild steel . . . leaving a kerf narrower than a hacksaw blade cut. He repeatedly welded together empty aluminum beverage cans . . . not the reinforced rims but the bottoms, where the metal is .002 inches thick. One of the rules for aluminum welding is that the metal must be completely free of dirt and grease. But Woods' demonstrations included welding corroded aluminum plate after squirting motor oil on the pieces.

Woods is not an aircraft welder and had not tried joining aircraft aluminum alloys such as 6061 and 2024, so we brought samples of these metals to his booth. In short order, the scraps were joined. The welds looked as good as MIG (metal/inert gas) or TIG (tungsten/inert gas) welding, which are designed to prevent oxidation by surrounding the weld site with inert gas. Of course we did not test the strength of these impromptu demonstrations, and I would want to see a certified evaluation of Dillon aluminum welding before trusting anybody's life to the result.

Ken Woods demonstrates the special capabilities of the Dillon welding and cutting torch at Florida's Sun 'n Fun airshow.

Photos: Dave Martin



A Dillon Mk III welding outfit includes the pistol-grip handpiece, four welding tips, a copper tip for cutting, a preheating attachment, tip-cleaning wires and guide wheels for precision cutting.

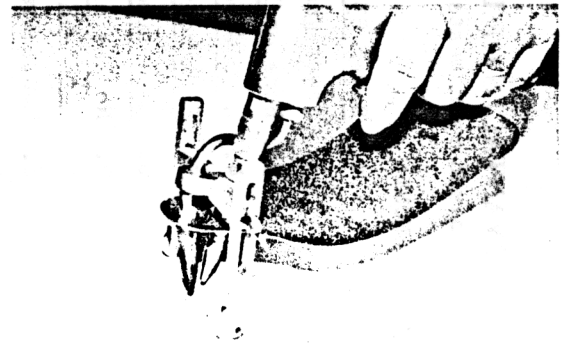
A welding demonstration in which I participated was an obvious eye-opener to the qualified welders catching Ken Woods' act one morning. The EAA sponsors various workshop projects at Sun 'n Fun, and one of them is for those wanting to learn welding. The Dillon torch having whetted my appetite to learn this new skill, I was in the welding workshop tent learning the basics, using a conventional torch (lighting the torch, starting a puddle of molten metal and pushing the puddle around a piece of metal).

A man came into the tent with an old-fashioned cast iron hand-operated grinder whose workbench clamp had broken. His question of the welding instructors: can you put this thing back together? Their collective answer: no way. At this point I turned off my torch and jumped into the conversation. "Let's take this over to Ken Woods and see what he can do with it," I volunteered.

Woods interrupted his regular routine and spent more than five minutes setting up the two pieces of the cast iron grinder. Installing his biggest welding tip, Woods spent two or three minutes joining the pieces, using a stainless steel 308 welding rod. He placed the grinder on a concrete block when he was finished. Welders in Woods' audience seemed highly impressed . . . and then aghast about two minutes later when he tossed the still-smoldering cast iron grinder in a bucket of cold water. Conventional wisdom predicts that a cast iron weld may shatter unless it is cooled slowly. The finished weld seam looked bright and strong.

Were the demonstrations the result of Ken Woods' skill, or does the Dillon Mk III offer some unique capability? The answer appears to be some of each. It may be a long time before the average welder can approach the skill Ken Woods demonstrates. But according to many sources, the Dillon torch is unique in its approach to oxy-acetylene welding. On a superficial level, the ease of using the Dillon torch was shown as Woods

For cutting, the torch is held so that the oxygen tip is perpendicular to the workpiece. Adjustable guide wheels assure the proper distance from the work for a precise cut.



WELDING

continued

guided first-time welders through the process of using the torch. He noted that experienced welders may have a bit of difficulty with the new system as they must unlearn some techniques they have used for years.

Later in the year, Ken Woods and family brought their traveling welding show to Oshkosh '86 (where they again sold all the Dillon outfits in stock), and this time they brought inventor Ed Dillon along. Dillon, who is a native of Adelaide, Australia, noted that his background was as a coppersmith. He became interested in welding, and for more than 11 years developed what is now the Dillon torch. First made available to the Australian market in 1981, the device was introduced in the U.S. at the 1982 American Welding Society Show in Kansas City, Missouri. Dillon made his first torches by hand and sold them in Australia. Addition of the cutting-torch features changed the designation to Dillon Mk II, and the complete package including guide wheels for cutting and the preheating accessory is called the Dillon Mk III. Only the Mk III has been marketed in the U.S.

Ed Dillon says he got the idea of the pistol-grip handpiece from watching his son play with a toy gun. It seemed to be a more natural way to hold a welding tool. "If you hold the handpiece alone," Dillon says, "the balance doesn't seem right. But attach the hoses, and it seems completely natural."

Woods welds a broken cast iron hand grinder brought to the Sun 'n Fun airshow by a spectator. A stainless steel welding rod was used for this ticklish operation.

Yet the really significant improvement results from internal changes. The secret to the Dillon Mk III torch is the internal mixing of oxygen and acetylene, resulting in a very small welding flame that is surrounded by an outer flame that acts as a shield, preventing oxidation. Ken Woods demonstrates the result as he heats a piece of rusty steel. In a short time, even before melting of the metal begins, the flame has burned away the iron oxide, leaving a clean piece of steel. The outer flame shields the process from further oxidation.

Thorough mixing of the two gasses within the torch permits the tiny, intense flame that results in precision welding. Four welding tips are supplied with the Dillon torch (000 to 24HT size), and the company claims these four are the equivalent of 43 different tips with a conventional torch. All four Dillon tips require a maximum of only 4 psi of both oxygen and acetylene. That compares to 20 psi of each gas required for the large tips in a conventional torch and permits Ken Woods to claim a gas savings of up to 80%. A Dillon brochure indicates that conventional equipment uses 44 cubic feet of gas per hour (cf/h) for welding and that the Dillon torch requires only four cf/h for the same job.

For preheating half-inch steel plate to the melting point, the Dillon contrast is even greater, according to the company. For this operation with a conventional torch, oxygen flow of 250 cf/h is needed, and acetylene use is 180 cf/h. The operation takes 21 seconds with a conventional torch using a 4 x 24 HT tip. The Dillon claim is as follows: 3.85 cf/h of oxygen, 3.85 cf/h of acetylene, and the job requires 9 seconds.

Another advantage of the Dillon torch is that there is no need for specialty rods or fluxes. For aluminum, Ken Woods recommends small amounts of Forney or Linde aluminum flux. He leans toward the Forney flux because it is available in smaller quantities. His procedure is to touch one side of his aluminum welding rod in the paste made by mixing a small amount of flux powder with water. Rotating the welding rod in the flux would provide more flux than is necessary.

Several side benefits result from the small Dillon welding flame. The first is that the tip of the bright blue welding flame is brought very close to the weld area. It's almost like soldering or painting with a small, pointed brush. Secondly, because the flame is so small, less of the material is heated, and that minimizes or eliminates the bending and distortion that often accompanies the process of welding sheet metal.

Are there any disadvantages to the Dillon torch? There is one, Ken Woods notes. Used as a cutting torch, the handpiece is configured with an additional tip that blows oxygen into the cutting flame when commanded by the oxygen trigger. (The trigger is disabled for welding operations.) Actually, two oxygen cutting tips are supplied with a Dillon Mk III outfit: one with the oxygen tip above the burner tip for conventional cutting, and another oxygen tip that fastens below the burner for overhead cutting of sheet metal.

The disadvantage of the Dillon cutting arrangement is that the torch will not cut sideways. Like scissors or shears, the tool must be turned to cut curves, making the cutting of a small circle difficult. If possible, turning the metal being cut might be easier than trying to turn the Dillon torch through a circular path.

If the Dillon welding torch is so great, why don't people know about it? A lot of welders do. In his brochure, Ken Woods notes that the product has been reviewed favorably by *Popular Science* and other magazines. The torch has also passed Underwriters Laboratories safety checks.

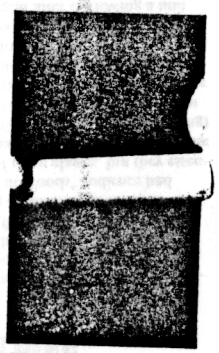
The Dillon Mk III package is not inexpensive (it sells for $329.95), but a lot comes in the package. In addition to the handpiece, four welding tips and an oxygen tip for cutting, there's a removable heat shield (useful for cutting operations) and a set of guide wheels for precision cutting. For narrowest kerf and cleanest cut, the oxygen tip is to be held about 1/16th-inch from the material. The guide wheel attachment allows setting the torch/sheet stock distance precisely.

Also included is a special tip for brazing and preheating, using either acetylene or propane. And stainless steel cleaning wires are supplied for the welding tips. With all the options included, there's little to buy except tanks, hoses and regulators. A used welding setup including a conventional torch can often be found for $200 or less. One caution: if the seller includes tanks in the deal, get a bill of sale listing the tanks by serial number. Tanks are often rented to welders by gas supply houses, and the tanks may not belong to the seller.

One option that Ken Woods does offer is the Dillon Ultra-View welding eyeshield, which takes the place of a conventional welding mask. It is lightweight, offers a large field of vision and comes with an easily inserted clear lens for grinding or other machine work where eye protection and excellent visibility are wanted. Price of the shield is $24.95.

And then there are the didymium safety spectacles. Viewers of Ken Woods' welding demonstrations are encouraged to slip on a pair of these

Metallurgist Dick Quick holds pieces of steel electrical conduit that have been fitted for practice welding with the Dillon torch.



Held in welding position with locking pliars, the electrical conduit is joined by the Dillon Mk III torch.

Here's a first weld with the new torch: not perfect, but a passable initial attempt.

WELDING

continued

spectacles when he welds aluminum. They look like ordinary shop safety glasses but completely eliminate the orange flare that accompanies gas welding of aluminum. None of the welders in Woods' audience had heard of these glasses, but they essentially change the view from an intense orange flame (where you see nothing) to a dull cherry-red glow (where you see everything). Made by Bouton, the didymium glasses are marketed by Woods for $20.

My own experience with the Dillon torch began after borrowing a unit from Ken Woods. He also sent along a 60-minute videotape that describes use of the torch including welding of thin-wall aluminum tubing, cast iron welding, cast aluminum welding, cutting galvanized steel (without burning off the galvanized coating) and brazing without the benefit of flux.

The video describes the flame adjustment procedure: after initially adjusting the oxygen and acetylene regulators for four psi each, the acetylene is turned on at the torch and lit with a flint striker. A narrow, sooty orange flame about one foot long remains until the oxygen valve on the torch is opened. Then the flame separates into three shades of blue. Oxygen is adjusted until the middle blue area, known as the feather, just disappears. This is called the just-off-feather (JOF) setting and is used for most welding operations.

Using the JOF setting, the videotape demonstrates welding 1.5mm and .8mm aluminum sheet and plate. Close-up photography shows that the flame is held only a few millimeters from the work, and that the aluminum welding rod is dipped into the flame and the pool of molten metal below and behind the flame as it is moved along the weld line.

The tape notes that the Dillon torch is held almost perpendicular to the workpiece, compared to an angle of 45° or less with a conventional torch. Also illustrated is the small amount of undercut (affected metal in the weld area) compared to both conventional and TIG welding.

Following a video presentation by Henrob (the Swiss manufacturer of the Dillon hardware), where difficult welds are handled on airplane parts plus Porsche and Rolls Royce cars, Ken Woods' demonstrations are presented

The videotape is helpful, but I found the manual that comes with the Dillon outfit to be just as clear. Woods' addendum to the manual describes slight variations and recommends fluxes for several operations.

My welding mentor for the initial sessions with the Dillon Mk III was Richard Quick, president of EAA Chapter 14 in San Diego. Quick holds a master's degree in metallurgy from the University of Michigan and attended the Hobart School of Welding in Cleveland, Ohio, where he worked in fusion and non-fusion welding and in high-temperature alloys. During a career as an airline pilot, Quick has built airplanes "and a few trailer frames." I took the Dillon outfit to his hangar at Ramona, California. Dick had heard of the Dillon torch and was anxious to try it.

Our first step was to follow guidance in the manual for setting both acetylene and oxygen regulators at four pounds. Ken Woods notes that many welding regulator gauges are inaccurate at pressures as low as four psi. Therefore the manual contains an alternative one-time setting procedure: with the Number 3 (largest) welding tip installed and the valves on the torch wide open, the regulators are adjusted. In our case, the acetylene regulator gauge was set to about four psi. The torch was lit, and the oxygen regulator was adjusted to achieve a large JOF flame. At this point, the oxygen gauge indicated a pressure of about 1.5 psi. Using that gauge setting each time for welding assures equal oxygen and acetylene supply for all Dillon welding.

Changing to the smaller Number 1 tip, Quick first tried what he describes as a difficult task: welding thin-wall steel electrical conduit. This cheap steel product is known for its poor welding qualities. No problem! After reasonable fitting of the test pieces on a grinder, welding was quick (no puns, please) and easy. Cleanup on a wire-brush wheel revealed a strong, handsome weld.

For a second try, Quick used a very dirty piece of 4130 chrome-moly steel. The sample still had paint on it. Adjusting the valves on the Dillon torch, he cut the flame length down to about ¼ths of an inch. Welding at first seemed difficult until we both noticed at the same time that he wasn't holding the torch at the recommended 70° angle to the workpiece. Holding the torch at the proper angle resulted in the start of an excellent weld joint.

"In the welding mode," Dick said, "I can keep both the heavy-stock and the lighter side of this steel sample molten, even with this small flame." He estimated that he was getting one-eighth-inch penetration into his quarter-inch steel sample.

"The cutting mode takes some getting used to," Quick says. "Anyone used to cutting with the oxygen delivery through the center of the preheat flame will have to think more about the angle of the oxygen-delivery tip on the Dillon. With this torch you can't use the flame itself as a guide for the cutting." What about the quality of the cut? I asked. "It's exceptionally good," he said. "There's very little slag, and the cut is very clean."

Dick Quick's overall assessment: "The Dillon torch is amazing to work with. It produces a beautiful weld even in mismatched materials. Even when trying to abuse the torch to do things it was not meant to do, it still produces a good-quality weld. The Dillon torch would sure make it easy to build a steel-tube fuselage."

Based on my own initial attempts to weld with the Dillon torch at Quick's hangar, he says it is a very easy torch with which to learn welding. "The amount of penetration is easily controlled through the stirring action of the puddle, and control of the puddle is easy because of the highly concentrated heat," he says. Dick Quick followed words with action; instead of sending the Dillon outfit back to Ken Woods, he and I bought the demonstrator unit and will share it. That's about as good an endorsement as a product can expect.

Until recently, the marketing of the Dillon Mk III torch was limited in the U.S. to Snap-On Tools distributors and Ken Woods and his family welding show. The product has been made by Henrob in Switzerland. A few months ago, Ken Woods, Ed Dillon and others set up a corporation to manufacture the Dillon Mk III package in the U.S. and market it more aggressively in North America. Henrob will continue to produce the Dillon torch and promote it for the European market.

Just one closing comment: for the sake of yourself, your family and sport aviation, get proper instruction and supervision for any welding, with anybody's torch, on aircraft structures. □

FOR MORE INFORMATION, contact K. Woods, Inc., Route 2, Box 230, Washington, MO 63090; phone 314/239-7415.

Classifieds:

Aircraft: 1) Parting out - Mooney M20, complete, including O-320 engine with 800 hrs, 1/2" valves constant speed zero time propeller

2) Jodel D11 kit from Falconar, fuselage built wing Kit, hipec kt, wheels kit etc. $4000.00

Parts 1) Hanlon Wilson mufflers (2) Spinner - Gramman with Back Plate

Propellers 1) Propeller for 150 hp engine

2) Propeller 1A170 with logs

3) Wooden pusher prop.

For all of the above - contact Mike Sacoutis at 729-3774

Place your ads with Andy Douma - 225 1559

Current Activies:

-Hangars are being actively, discussed - on Thursday evening Sept 24th - at Carp - Ted Slack spoke to several people about building concrete block T-hangars.
On Friday evening people came to Carp to discuss Pole and beam, rectangular structres.

-Doug is still working ont he CH250 the registration is C-GJHR.

-Dave Murray has brough his starlight to the Carp hangar and on Sunday Oct. 4th was taxiing aroung the lot.
Dave hopes to fly the winter

-Chapter Elections are coming soon - people are being approached to run for the available positions of President, Editor, Treasurer, plase inform the current executive if you are interested in taking an active part in the operation of your Chapter