YOUDEN PLOT

PURPOSE
Generates a Youden plot.

DESCRIPTION
A Youden plot is a graphical data analysis technique for carrying out an interlab comparison where each lab has made 2 runs on the same product or 1 run on 2 different products. The Youden plot answers the question: "Are the labs in the study all behaving as if from the same population?" It consists of:

Vertical   axis =   data from run 1;
Horizontal axis =   data from run 2.

The various labs in the study are encoded by the plot character within the plot. In the ideal case (all labs from same population), the Youden plot will have a structureless "random shotgun patter." Any structured deviation from this "shotgun pattern" suggests one or another lab is "different from the rest." The advantage of the Youden plot is 2-fold:

1. Between-lab differences are easy to detect (shifts along the diagonal for a given lab);

2. Within-lab differences are easy to detect (displacement drawn with a fixed size and with the base).

Typically the Youden plot has no connecting lines between the data points and it has the lab identification imbedded in the plot characters. For example, if there are 8 labs, enter the following commands:

LINES BLANK ALL
CHARACTERS 1 2 3 4 5 6 7 8

or

LINES BLANK ALL
CHARACTERS B R S A T G B X

SYNTAX
YOUDEN PLOT <y1> <y2> <lab>   <SUBSET/EXCEPT/FOR qualification>
where <y1> is the first response variable;
      <y2> is the second response variable;
      <lab> is the coded laboratory variable;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES
YOUDEN PLOT Y1 Y2 LAB
YOUDEN PLOT Y1 Y2 LAB SUBSET MONTH 4
YOUDEN PLOT Y1 Y2 LAB SUBSET MATERIAL 1 TO 5

DEFAULT
None

SYNONYMS
PLOT Y1 Y2 TAG is a synonym for YOUDEN PLOT Y1 Y2 TAG.

RELATED COMMANDS
CHARACTERS	=	Sets the type for plot characters.
LINES	=	Sets the type for plot lines.
BIHISTOGRAM	=	Generates a bihistogram.
QUANTILE-QUANTILE PLOT	=	Generates a quantile-quantile plot
PLOT	=	Generates a data or function plot.
MULTIPLOT	=	Allows multiple plots per page.
T-TEST	=	Carries out a 2 sample t test.
ANOVA	=	Carries out an ANOVA.

REFERENCE
"Graphical Methods for Data Analysis," Chambers, Cleveland, Kleiner, and Tukey, Wadsworth, 1983.

APPLICATIONS

Interlaboratory Analysis

IMPLEMENTATION DATE

88/9

PROGRAM

```
SKIP 25
READ UGIANSKY.DAT Y1 Y2 LAB
.
CHARACTERS 1 2 3 4 5 6 7 8 9
CHARACTER SIZE 4 ALL
LINES BLANK ALL
LIMITS 0 5.5
TITLE AUTOMATIC
Y1LABEL SAMPLE 1 DAYS TO FAILURE
X1LABEL SAMPLE 2 DAYS TO FAILURE
LEGEND 1 CHAR = LAB ID
YOUDEN PLOT Y1 Y2 LAB
```