Rotated Tables

90° Rotation of Tables/Illustrations

In multi-column work, allow one or more columns of text to be on the same page as a rotated table, if there is room for the text. If the table, rotated, is wider than the page depth, it should be top-, center- or bottom-aligned by user's choice. The overflow should obliterate the running foot or head if need be.

A user can rotate a table or illustration by entering "R" (or "r") in the fourth field of the LS or TS command, in addition to the normal I or O for inside/outside column. So field four may be: I, O, R, IR or OR. Or, use the new keyword form of the LS/TS commands, and add the "RO" keyword. The insert will be placed by MasterPage at the next opportunity, just as any other insert would be. The insert will be flipped counter-clockwise 90 degrees, onto its back. Width and depth of the insert are handled as follows:

The WIDTH of the insert (ie. its depth as you read it rotated) is the full page width in single-column work. In multi-column work, user must specify the width, in terms of number of columns, using a [bm-] command, just as with a normal unrotated insert. This will seem an odd use of the BM command, since it does not correspond to the measure of the table, but rather to the depth of its content. Remember, the BM command should describe how many text columns the rotated insert spans as you look at the document normally (unrotated).

The DEPTH of the insert (ie. its width as you read it rotated) is its measure, as stated with the MO command in its first line. If its first line is a tabular line, the measure is the table width defined by the DT command.

If the WIDTH and DEPTH are handled properly according to the procedures stated above, the insert will be placed just as any other illustration or table would be. If its DEPTH is less than full-column depth, other text, footnotes and inserts can flow into the remaining space. It's WIDTH, stated with the BM command, determines the number of columns it will occupy across the page.

If it's DEPTH exceeds the full-column depth, the overflow will be handled just as any other oversize insert, as follows:

—Normally it will top-align, and overflow the bottom.
—That may be overridden by use of the top-bottom-center override field, in the extended LS or TS command.

Floating Illustrations and Tables

INTRODUCTION

Automatic and intelligent placement of floating illustrations and tables is one of the core features of MasterPage/ux that make it such a powerful program. This chapter explains how the program uses your entries at the Illustrations Style menu to go about building the best possible arrangement of illustrations, tables and text on each page.

In this chapter the term ''illustration'' refers to a floating illustration ([ln, [ls, [lx) or a floating table ([tn, [ts, [tx).

In brief, the program tries to put onto a page the group of illustrations that most naturally belong there, but it will add and remove illustrations from that group if the ideal doesn't work out, until a group is found that fits. And, in trying to make each group fit, the program arranges its illustrations in a way that your placement rules indicate is best, but it will try any other arrangement allowed by your rules also, if the best arrangement doesn't work out.

The QUALITY (preference) numbers entered in all boxes of the Illustration Style menu (except where picas are called for) specify the best quality that a page will keep (starting from a perfect page of quality 1) if illustrations are placed according to the given style. For instance, a preference value of 3 for ''Stack: vertical'' means: If two illustration are placed one above the other, touching, then that page will have a quality of 3, at most. A page gets the quality numbers of all menu items that describe the way its illustrations are placed, and keeps the worst number from among them. See the section ''Definition of the ILLUSTRATION STYLE menu items'', below, for complete descriptions of all menu items, and how the items apply to a sample page.

THE CHOICES IN PLACING ILLUSTRATIONS

MasterPage gives you options, at the Illustration Style menu, for placing illustrations at any corner point or midpoint on the page, for allowing one or multiple to be placed at any of those points, and for encouraging certain esthetic patterns of placement. It also lets you govern the extent to which an illustration may be placed above or to the left of its reference point in text. By setting up different Illustration Styles for the even-page and odd-page master layouts, you can control placement over a facing-page spread just as well as within a single page.

Here are descriptions of the different things you can do in placing illustrations. The placement points you can specify are *top* of column, *bottom* of column, or *center* of column. By allowing or disallowing placement before callout, you can emphasize placement in *first column* or in *later columns*.

You can allow multiple illustrations at the same placement point, one above the other, called *vertical stacking*. You can allow illustrations to sit next to each other, at the same placement point in adjacent columns, called *horizontal stacking*.

You can allow illustrations to be placed both top and bottom in the same column, called *column staggering*. You can achieve a balanced look with one illustration at top of one column, and another at the bottom of the next column, called *page staggering*. The stagger can also go from bottom to top. Page stagger over a three column page forms a ''V'' shape, either normal or upside-down.

In a multi-column book, you can allow just *single-column-wide* illustrations, or just *multi-column* ones, in a particular page layout. Normally, both types would be allowed, mixed.

Finally, you can make it easier for the program to achieve evenly-spaced illustrations by allowing it to place them before the text reference: Above the reference in the *same column*, above or to the left of callout in the *same page*, anywhere to the left on a *facing page* spread, or anywhere at all on *any previous page*.

ARRANGING ILLUSTRATIONS FROM THE STYLE MENU

It is important to understand how the MasterPage program actually works, so that the menu can be used most effectively. The program takes the group of illustrations that are ready to be placed on a page, and spreads them out starting in column one at the quality-1 placement point (top, center or bottom). They spread through the column in order of placement-point quality, and then to the right across columns, but always in sequence from top to bottom and then left to right. So, if the quality-1 placement point is bottom, the second illustration will be also bottom of column one or in column two, never center or top of column one.

Special considerations apply to the placement of mixed single- and multi-column illustrations. Keeping inserts in sequence demands that they be placed in top-to-bottom order, which is: top to bottom within a column, and then left-to-right among columns. Usually, this placement order is maintained on the STARTING position of each insert, so that if a one-column insert is placed at the top of column two, a two-column insert may not be placed below it starting in column one. The order is eased in certain situations. The two-column insert may be placed starting in column one, if two single-column inserts are placed at the tops of columns one and two. The general rule is: A multi-column insert may be placed so that ANY piece of it is below the previous insert in sequence, as long as a second earlier insert and the multi-column one in question begin in the same column.

The program thus finds the first arrangement where all illustrations in the group are legally positioned according to style rules that have quality ‘‘1’’, or according to positioning overrides in the LS/TS commands. They are all kept in call-out sequence, except for two special cases that escape this sequence. The special LS/TS page-number argument entered as a minus number causes an illustration to always be placed on the stated page number, independent of where it is called out in text. And, Tables and Illustrations have their own call-out sequences which can sometimes be shuffled if placements are difficult. See explanation at the end of ‘‘Alternate Groupings of Illustrations’’, below.

This first arrangement is passed to full pagination, where text is flowed around the placed illustrations. If the text (along with footnotes), fits using the Vertical Spacing menu, with no failure, then the page is done. If the text won’t fit, then the program reports ‘‘Page X, Changing insert placement’’, then picks up again and finds the next legal illustration arrangement using just the quality-1 rules, and overrides. If there are other such, they are paginated also.

If the quality-1 arrangements don’t fit, or if there are none, the program starts again placing the group of illustrations from the quality-1 placement point in column 1, this time obeying placement rules that have quality 1 or 2, and LS/TS overrides. Once again, each legal quality-2 arrangement is paginated, in succession, until one is successful.

If the quality-2 arrangements don’t fit, the process is repeated for arrangements using rules of quality 1, 2 or 3 (these are quality-3 arrangements), and so on down through the quality value of ‘‘Minimum page preference’’. (In this way you can use the menu to design a comprehensive illustrations style, then access the more severe elements of it merely by changing the Minimum page preference, for troublesome units or individual pages. Each separate master layout may be given its own named illustration style.)

When the page is complete, if the final quality is less than the quality of the first legal arrangement (usually 1), then the log file reports the message ‘‘Page X had a page preference drop from 1 to #’’. This message can also appear if the page fails to fit ANY of the legal arrangements. This is because the program makes use of the page-quality system in many different aspects of page make-up, to control page re-trying. The preference-drop reported in these failure cases will be a number that is one or two lower than the Minimum page preference value. Even though such a number is probably not in your illustration style, it is assigned by the program to one of the following failure conditions: Text failed to fit using the Vertical Spacing menu; a footnote was called out on last text line, and wouldn’t fit on page; or a straddle-head did not fit that should have, or it got in the way of an illustration. To leave room for this internal program use, your value for Minimum page preference must be 7 or better.

ALTERNATE GROUPINGS OF ILLUSTRATIONS

If no arrangements of the best group of illustrations fit, the program can try the page again with more or fewer illustrations on it. There are several things which cause an illustration group to fail, so that the program must try a less desirable group:

1. Illustrations in the group have a size and shape so that they cannot be arranged to fit together, even though their combined areas are less than the page area. For instance, a table that fills 3/4 of a column, and a two-column-wide graphic that is 1/3-page deep, will not fit together.
2. Preferences entered at the Illustration Style menu do not allow much freedom in placement. For instance, if only top placement is allowed, and no stacking, then only two illustrations can be placed on a two-column page, when for instance three illustrations might be the most desirable grouping.
3. An illustration is defined with a positioning override (extra arguments in the [ls or [ts command) which forces it to the bottom or right side of the page, or even to the next page. This pushes all illustrations called out after it backward, too, since they must be placed in the same sequence in which they were called out.
4. Text that flows into the page after illustrations are placed cannot be made to fit properly using the Vertical Spacing menu. Either the menu allows too few adjustments, or there is a troublesome no-break area at a column break-point, or both. If any text piece on a page does not fit the tries, then the whole page is deemed to fail, and another arrangement or grouping of illustrations is tried.
5. Special text elements such as footnotes or straddle-heads have interfered with the normal text flow, causing text not to fit.

If a grouping does fail, the log file reports ‘‘Page X, Using alternate list of insert positions’’, and changes the group of illustrations to be placed on the page. It may remove the one that has been referenced most recently on the current or an earlier page, to make more room for text, or it may add one that is referenced on a subsequent page, in case ‘‘Place before callout’’ is allowed. Using the new group, the program once again calculates all arrangements and flows text, as above. In this way, all groupings of illustrations can be tried, ranging from none on the page to a page full of them, but ordered from most desirable grouping to least, based on distance of the illustration callouts from the start of the current page.

Here is a simplified example showing which groupings of illustrations might be used on a page, and what preference each group has. The situation is:

- The job has two columns of text. Each page is 44 picas deep.
- All illustrations are fourteen picas deep and one column wide, to keep the example clear and simple. Optimal space between illustrations is one pica. Six illustrations would completely fill a page, three in each column.
- At the start of page 34, two illustrations (called A and B) are in the queue to place, having been called out near the end of page 33.
- Page 34 has two illustration callouts on it. One is early in the page (C), the other is toward the end (D).
- Page 35 has one callout on it (E).
- There are no further callouts for several pages beyond that.

The most desirable grouping of illustrations to place on any page is the one that includes all illustrations called out on previous pages and on the current page. In this case, page 34 should ideally contain A, B, C and D. However, if D is placed on page 34 along with the other three, text containing the callout for D is pushed to page 35. Therefore, D is not included in the ideal. The illustration groupings for page 34 are ranked as follows, from most desirable to least:

1. A, B and C. This would leave the callout for D on page 34, near the end, with D itself left to be placed on page 35.
2. A and B. Based on callout positions, it is better to push C off to the next page, than to pull D back onto this page. The ranking choices made among groupings after the optimum group #1, are an internal program calculation, but are based on distance of callout from the page. An extra penalty factor is given to callouts beyond the end of page, making groups with any such callouts much less desirable.
3. A, B, C and D. The callout for D will be on page 35. This grouping will not happen if your illustration style does not allow placement before callout.
4. A only.
5. No illustrations. In fact, this possibility is not allowed when illustrations have been called out prior to the current page, as in this case.
6. A, B, C, D and E.
7. A, B, C, D, E and the next illustration called out several pages beyond. This grouping represents the entire page full of inserts, with no room for text, and would be used only if text cannot be made to fit properly into any of the better groupings. It will not be tried at all unless the menu item ‘‘Place before callout: Any previous page’’ is chosen.

In this example, with single-column, small floating illustrations, group #1 will almost certainly be successful, and the other six groups will not be considered.

Illustrations (defined with [ls) and Tables (defined with [ts) are normally kept by the program in a single queue, and placed in strictly the same order as their sequence of reference in the text. The positioning overrides, keyed as extended arguments to the [ls/[ts commands, do not escape that sequence (except for the absolute page number argument, keyed as a minus number); they may force the insert to a new position, but all inserts following it are pushed backward as a result, keeping the sequence. There is an exception to this: separation of the Illustration queue from the Table queue. This feature is implemented as an alternative-placement ‘‘escape route’’, and is not controllable directly by the user. The program will use it if the first, best grouping doesn’t fit, and if it provides good alternative groupings. In a job where inserts are not too heavy, nor too large, and your placement rules not too restrictive, so that all inserts are placed near their references, there will be no difference in sequence of placement. But if, for instance, tables are typically 3/4 to full-page in size, while illustrations are small, a table that must be pushed to the next full page will not block a smaller illustration or two (referenced after the table) from setting on the current page, nearer their points of reference. In this case, the troublesome table has been pushed backward, two steps out of sequence. The program will return to sequence at the first opportunity, because strict call-out sequence always gives the best grouping for a page. The table queue always remains in strict sequence, as does the illustration queue, but the combined queue can be shuffled a little when it is appropriate to do so. If for some reason you want to avoid this feature, then key both illustrations and tables with [ln, [ls, and [lx (or all with [tn, [ts, and [tx).

RECOMMENDATIONS FOR PRODUCTION

For work that is heavy with floating illustrations, we recommend following these guidelines for the best result:

1. The Illustration Style menu should be configured to allow multiple illustrations on each page. For single-column work, allow top or bottom placement, and vertical stacking; or top AND bottom placement and column-staggering. For multi-column work, add horizontal stacking to the vertical stacking, to get all the inserts at top or all at bottom; or change the column-staggering to page staggering; or add horizontal stacking to the column-staggering, for inserts in all four corners. For any style, to keep illustrations as close as possible to their callouts, allow placement before callout on the same column and page, and even on facing page if acceptable.

2. The Vertical Spacing menu should allow as much adjustment as possible, especially to the optimal space around inserts, and above footnotes if they are used.

3. Avoid straddle heads in multi-column work. MasterPage does the best it can to place illustrations above a straddle-head if called out above it, or below the head if called out below, but the small areas can easily render it impossible to do, leading to problem pages.

4. Let MasterPage do the work of placing illustrations, guided by appropriate style rules. Use placement overrides in the extended [ls and [ts commands ONLY as editing tools, for fine tuning difficult situations.