Technical Reference

Standard Cross Reference 1.0 – TECHNICAL REFERENCE

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Technical Reference

Contents:

1. Preface

The Standard Cross Reference is a simple tool that provides a centralized container for:

- Data elements that have a finite number of valid values, which need to be validated before being written to an application database.
- Descriptions, codes or numeric values associated with those data elements, which need to be looked up by an application program.

Many companies have adopted a “table file” or “code file” over the years as a means to consolidate random pieces of information or groups of related pieces. However many of these files contained multiple record layouts which often meant hard coding Input specs into RPG. And since the “table file” still had to be read by RPG, a significant amount of non-productive code was required by applications programs in order to use it…such as File specs, key lists, chain operations and no-hit handling.

STDXREF was born in 2006, during database modernization and refit of a line-of-business application rooted in the System/36 environment, replete with compile-time tables in the RPG36 code. Plus, many of these tables were present in multiple programs, hence a change to one table meant modifications to multiple programs (an example of Technical Debt). The refit also included a migration to ILE-RPG.

Implementing STDXREF meant eliminating countless compile time tables from the RPG code, entering data from the table entries into the STDXREF file, and replacing legacy RPG lookup operations with sleek function calls that fit new freeform RPG paradigm. It also provided a means for authorized users to update the reference tables without having to involve IT for RPG edits and compiles.

Theoretically, you could provide an individual data base file/table for each type of data relationship contained in an RPG compile-time table, but that might require a maintenance program and a listing

query for each one. Plus the RPG application programs would still require a File spec (or SQL SELECT) for each table.

Using STDXREF instead provides these advantages:

- Single point of maintenance (program STDXREFMNT).
- Single point of retrieval (STDXREFIOP functions).
- Single point of high availability replication (table STDXREF).
- Add to an application program with a single /COPY statement.
- Option for multiple instances of STDXREF on the same system.

Now that STDXREF is on GitHub, we encourage you to download and deploy it for your internal applications. Being open source, it is still a work in progress. Please consider submitting suggestions for its improvement or even contributing your technical expertise to help us improve the functionality.

Note that STDXREF is simplistic and does not contain any audit trail capabilities. An alternate version of STDXREF for Inuendo databases is under construction and will take full advantage of Inuendo's self-journaling and audit trail features. This will appear on GitHub when it is released.

2. Table structures

Table **STDXREF** – Standard Cross Reference, **STDXREFH** (V7R3 or later only).

Contains one row for each reference table header, plus one row for each table entry. The header row is differentiated by the presence of 'REFTABLE' in the Character Argument column.

Column	Type	Description
RefTable	Char(10)	Reference table name
NumArg	Integer	Numeric argument
CharArg	Char(15)	Character argument ('REFTABLE' for table header)
DateArg	Date	Date agrument
NumRes	Decimal(15,5)	Numeric result
CharRes	VarChar(50)	Character result
DateRes	Date	Date result
Hidden	Char(1)	Hide from search (Y/N)
EntityID	BigInt	Identity column. Provided for future Inuendo compatibility.
UserID	Char(18)	V7R3 or later only: DB2 user who created record.
Sys_Start	Timestamp(12)	V7R3 or later only: DB2 timestamp when record version was created.
Sys_End	Timestamp(12)	V7R3 or later only: DB2 timestamp when record version was retired.
TS_ID	Timestamp(12)	V7R3 or later only: DB2 transaction ID for temporal versioning.
Primary key	**EntityID**	
Indexes	STDXREFL1 (RefTable, NumArg, CharArg, DateArg) STDXREFL2 (RefTable, CharArg, NumArg, DateArg) STDXREFL3 (RefTable, NumRes, CharRes, DateRes) STDXREFL4 (RefTable, CharRes, NumRes, DateRes) STDXREFL5 (RefTable, DateArg) STDXREFL6 (RefTable, DateRes)	
Note	API section will refer to the column names as data types for parameters and result values.	

3. APPLICATION PROGRAM INTERFACES

- **Retrieval functions**
- **Step functions**
- **Validation functions**
- **Search functions**

Retrieval functions

These functions retrieve either the specified result value from a reference table entry. Under normal circumstances, a table entry will have only one type of argument.

Function **XrefNum** – returns *numRes*
XrefNum(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg*, **DateArg** *dateArg*) XrefNum(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg*) XrefNum(**RefTable** *refTable*, **NumArg** *numArg*, **DateArg** *dateArg*) XrefNum(**RefTable** *refTable*, **CharArg** *charArg*, **DateArg** *dateArg*) XrefNum(**RefTable** *refTable*, **NumArg** *numArg*) XrefNum(**RefTable** *refTable,* **CharArg** *charArg*) XrefNum(**RefTable** *refTable,* **DateArg** *dateArg*)

Returns the numeric result of the entry with matching arguments in the specified **RefTable.**
• If **NumArg, CharArg** and **DateArg** are specified, all must match the same row in table STDXREF.
• If less than three arguments are specified:
  ○ The missing arguments are assumed to be:
  ▪ Zero for numeric
  ▪ Blank for character
  ▪ '0001-01-01' (*LOVAL) for date.
  ○ If there is ambiguity in the combination of arguments, the first matching entry in chronological sequence is selected.

Exports for RPG & SQL	STDXREFFNC(XREFNUM) – all arguments STDXREFFNC(XREFNUMN) – numeric argument only STDXREFFNC(XREFNUMC) – character argument only STDXREFFNC(XREFNUMD) – date argument only STDXREFFNC(XREFNUMNC) – numeric and character arguments only STDXREFFNC(XREFNUMND) – numeric and date arguments only STDXREFFNC(XREFNUMCD) – character and date arguments only

Function **XrefChar** – returns *charRes*
XrefChar(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg*, **DateArg** *dateArg*) XrefChar(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg*) XrefChar(**RefTable** *refTable*, **NumArg** *numArg*, **DateArg** *dateArg*) XrefChar(**RefTable** *refTable*, **CharArg** *charArg*, **DateArg** *dateArg*) XrefChar(**RefTable** *refTable*, **NumArg** *numArg*) XrefChar(**RefTable** *refTable,* **CharArg** *charArg*) XrefChar(**RefTable** *refTable,* **DateArg** *dateArg*)

Returns the character result of the entry with matching arguments in the specified **RefTable.**
• If **NumArg, CharArg** and **DateArg** are specified, all must match the same row in table STDXREF.
• If less than three arguments are specified:
  ○ The missing arguments are assumed to be:
  ▪ Zero for numeric
  ▪ Blank for character
  ▪ '0001-01-01' (*LOVAL) for date.
  ○ If there is ambiguity in the combination of arguments, the first matching entry in chronological sequence is selected.

Exports for RPG & SQL	STDXREFFNC(XREFCHAR) – all arguments STDXREFFNC(XREFCHARN) – numeric argument only STDXREFFNC(XREFCHARC) – character argument only STDXREFFNC(XREFCHARD) – date argument only STDXREFFNC(XREFCHARNC) – numeric and character arguments only STDXREFFNC(XREFCHARND) – numeric and date arguments only STDXREFFNC(XREFCHARCD) – character and date arguments only

Function **XrefDate** – returns *dateRes*

XrefDate(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg*, **DateArg** *dateArg*)
XrefDate(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg*)
XrefDate(**RefTable** *refTable*, **NumArg** *numArg*, **DateArg** *dateArg*)
XrefDate(**RefTable** *refTable*, **CharArg** *charArg*, **DateArg** *dateArg*)
XrefDate(**RefTable** *refTable*, **NumArg** *numArg*)
XrefDate(**RefTable** *refTable,* **CharArg** *charArg*)
XrefDate(**RefTable** *refTable,* **DateArg** *dateArg*)

Returns the date result of the entry with matching arguments in the specified **RefTable.**

- If **NumArg, CharArg** and **DateArg** are specified, all must match the same row in table STDXREF.
- If less than three arguments are specified:
    - The missing arguments are assumed to be:
        - Zero for numeric
        - Blank for character
        - '0001-01-01' (*LOVAL) for date.
    - If there is ambiguity in the combination of arguments, the first matching entry in chronological sequence is selected.

Exports for RPG & SQL	STDXREFFNC(XREFDATE) – all arguments STDXREFFNC(XREFDATEN) – numeric argument only STDXREFFNC(XREFDATEC) – character argument only STDXREFFNC(XREFDATED) – date argument only STDXREFFNC(XREFDATENC) – numeric and character arguments only STDXREFFNC(XREFDATEND) – numeric and date arguments only STDXREFFNC(XREFDATECD) – character and date arguments only

Step functions

These functions retrieve the specified result type value from a reference table entry, where the associated argument is less than or equal to the specified argument. This provides a quasi-range lookup function.

Function **XrefNStep*** – returns *numRes*	
XrefNStepN(**RefTable** *refTable*, **NumArg** *numArg*) XrefNStepC(**RefTable** *refTable*, **CharArg** *charArg*) XrefNStepD(**RefTable** *refTable*, **DateArg** *dateArg*)	
Returns the numeric result of the entry in the specified **RefTable**, whose associated argument is either equal to or the nearest less than, the specified argument (**NumArg**, **CharArg** or **DateArg**), in ascending sequence. For example, if **RefTable** contains one entry with a numeric argument of 50, and another entry with a numeric argument of 60, the following expression would populate variable **MyVariable** with the numeric result of the entry with the numeric argument of 50, since 50 is the nearest argument that is less than 57: MyVariable = XREFNSTEPN(RefTable, 57);	
Exports for RPG & SQL	STDXREFFNC(XREFNSTEPN) – numeric argument STDXREFFNC(XREFNSTEPC) – character argument STDXREFFNC(XREFNSTEPD) – date argument

Function **XrefCStep*** – returns *charRes*	
XrefCStepN(**RefTable** *refTable*, **NumArg** *numArg*) XrefCStepC(**RefTable** *refTable*, **CharArg** *charArg*) XrefCStepD(**RefTable** *refTable*, **DateArg** *dateArg*)	
Returns the character result of the entry in the specified **RefTable**, whose associated argument is either equal to or the nearest less than, the specified argument (**NumArg**, **CharArg** or **DateArg**), in ascending sequence. For example, if **RefTable** contains one entry with a date argument of 2020-03-31, and another entry with a date argument of 2020-04-30, the following expression would populate variable **MyVariable** with the character result of the entry with the date argument of 2020-03-31, since 2020-03-01 is the nearest argument that is less than or equal to 2020-04-15. MyVariable = XREFCSTEPD(RefTable, '2020-04-15');	
Exports for RPG & SQL	STDXREFFNC(XREFCSTEPN) – numeric argument STDXREFFNC(XREFCSTEPC) – character argument STDXREFFNC(XREFCSTEPD) – date argument

Function **XrefDStep*** – returns *dateRes*	
XrefDStepN(**RefTable** *refTable*, **NumArg** *numArg*) XrefDStepC(**RefTable** *refTable*, **CharArg** *charArg*) XrefDStepD(**RefTable** *refTable*, **DateArg** *dateArg*)	
Returns the date result of the entry in the specified **RefTable**, whose associated argument is either equal to or the nearest less than, the specified argument (**NumArg**, **CharArg** or **DateArg**), in ascending sequence. For example, if **RefTable** contains one entry with a character argument of BOW, and another entry with a character argument of BUR, the following expression would populate variable **MyVariable** with the date result of the entry with the character argument of BOW, since BOW is the nearest argument that is less than or equal to BUDZICH. MyVariable = XREFDSTEPC(RefTable, 'BUDZICH');	
Exports for RPG & SQL	STDXREFFNC(XREFDSTEPN) – numeric argument STDXREFFNC(XREFDSTEPC) – character argument STDXREFFNC(XREFDSTEPD) – date argument

Function **IncrXrefNum** – returns *numRes*
IncrXrefNum(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg,* **DateArg** *dateArg*, **IncrVal** *numRes*)

Returns the numeric result of the entry with matching arguments in the specified **RefTable** after it has been incremented by **IncrVal**. The "NumRes" column in the matching table entry is updated with the result value.
 	
Typically used for sequential values within an application, such as last invoice number or last purchase order number, specifying 1 as the **IncrVal**. Could also be used as a fiscal accumulator, however the size of NumRes (15,5) could prove to be too restrictive.
 	
NumArg could be used to compartmentalize the value. For example, suppose there was a reference table called GLOBAL, which contained global values for an application. One entry in that table might contain a value of 2 for **NumArg,** a value of 'LASTPONO' for **CharArg** and a *LOVAL for **DateArg**, to keep track of the last purchase order number assigned for Company 2. When a new purchase order is created for Company 2, the following expression would yield the next available number to assign to that order, assuming an **IncrVal** of 1:
 	
NewPO = IncrXrefNum('GLOBAL' : 2 : 'LASTPONO' : *LOVAL : 1); // RPG
Set NewPO = IncrXrefNum('GLOBAL', 2, 'LASTPONO', DATE('0001-01-01'), 1); // SQL

Exports for RPG & SQL	STDXREFFNC(INCRXREFNUM)

Function **IncrXrefDate** – returns *dateRes*
IncrXrefDate(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg,* **DateArg** *dateArg*, **IncrVal** *numArg*)

Returns the date result of the entry with matching arguments in the specified **RefTable** after it has been incremented by **IncrVal** number of days. The "DateRes" column in the matching table entry is updated with the result value.
 	
Typically used for sequential milestone dates within an application, such as next invoice run dater, specifying 14 as the **IncrVal** if invoices are to be run every two weeks.
 	
NumArg could be used to compartmentalize the value. For example, suppose there was a reference table called GLOBAL, which contained global values for an application. One entry in that table might contain a value of 2 for **NumArg** and a value of 'NEXTINVDATE' for **CharArg**, to keep track of the next date when invoices must be run for Company 2. When the invoices are run for Company 2, the following expression would yield the next date to run invoices, assuming it is to be done every two weeks:
 	
NextInvDate = IncrXrefDate('GLOBAL' : 2 : 'NEXTINVDATE' : *LOVAL : 14); // RPG
Set NextInvDate = IncrXrefDate('GLOBAL', 2, 'NEXTINVDATE', DATE('0001-01-01'), 14); // SQL
 	
One interesting possibility would be to consider setting the Numeric Result of the matching entry to 14, and using the **XrefNum** function to retrieve it, instead of hard coding 14 in the application code. These are the types of things the STDXREF can do to help make your applications more data driven and less code driven.

Exports for RPG & SQL	STDXREFFNC(INCRXREFDATE)

Validation functions

These functions determine whether a combination of arguments exists for a specified reference table.

Function **ValidXref** – returns *boolean*	
ValidXref(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArg*, **DateArg** *dateArg*) ValidXref(**RefTable** *refTable*, **NumArg** *numArg*, **CharArg** *charArgg*) ValidXref(**RefTable** *refTable*, **NumArg** *numArg*, **DateArg** *dateArg*) ValidXref(**RefTable** *refTable*, **CharArg** *charArg*, **DateArg** *dateArg*) ValidXref(**RefTable** *refTable*, **NumArg** *numArg*) ValidXref(**RefTable** *refTable,* **CharArg** *charArg*) ValidXref(**RefTable** *refTable,* **DateArg** *dateArg*)	
Returns a true/false indicating whether the specified combination exists in the specified **RefTable.** • If **NumArg, CharArg** and **DateArg** are specified, all must match the same row in table STDXREF. • If less than three arguments are specified: o The missing arguments are assumed to be: ▪ Zero for numeric ▪ Blank for character ▪ '0001-01-01' (*LOVAL) for date. o If there is ambiguity in the combination of arguments, the first matching entry in chronological sequence is selected.	
Exports for RPG & SQL	STDXREFIOP(VALIDXREF) – all arguments STDXREFIOP(VALIDXREFN) – numeric argument only STDXREFIOP(VALIDXREFC) – character argument only STDXREFIOP(VALIDXREFD) – date argument only STDXREFIOP(VALIDXREFNC) – numeric and character arguments only STDXREFIOP(VALIDXREFND) – numeric and date arguments only STDXREFIOP(VALIDXREFCD) – character and date arguments only

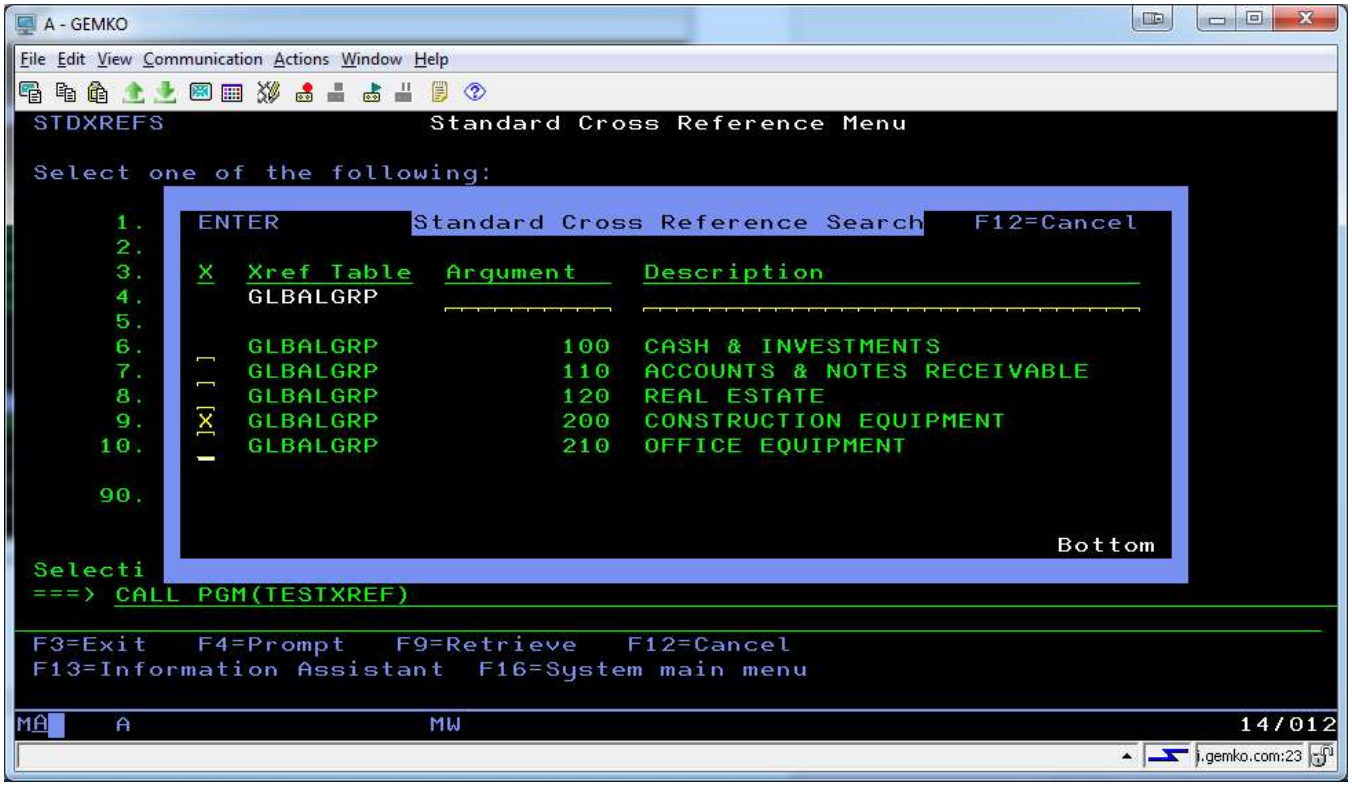
RPG Example	// Assume F1INVENCAT is a character field in a display file which is entered by the user.
	// It contains an inventory category code.
	
	If not ValidXrefC('INVENCAT' : F1INVENCAT);
	MsgTxt = 'Invalid inventory category');
	Endif;
	
	*in86 = not ValidXrefC('INVENCAT' : F1INVENCAT);

Search functions

These 5250 based functions allow the user to select an entry from the specified reference table, using a pop-up search window, and returning either the numeric or character argument.

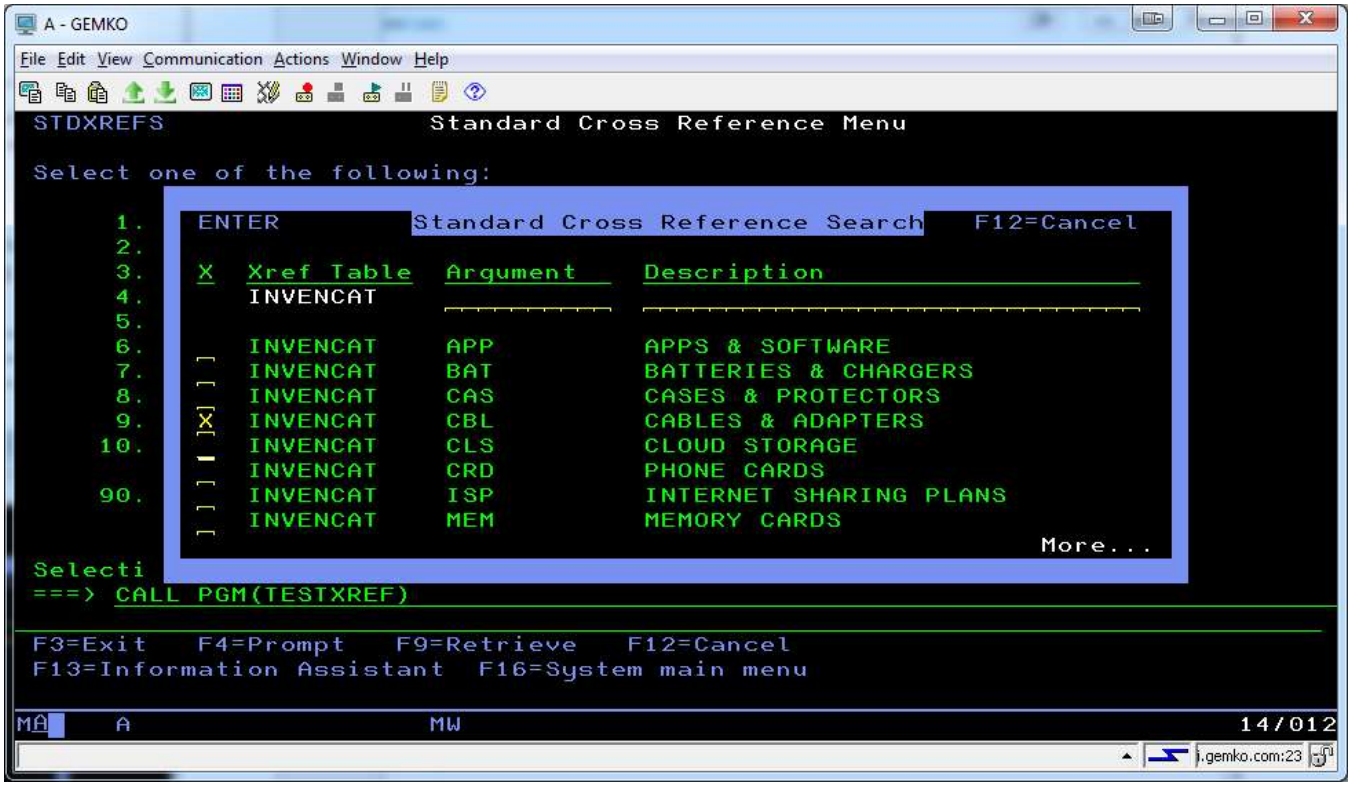
Function **FindXrefNum** – returns *numArg*
FindXrefNum(**RefTable** *refTable*, **PrevValue** *numArg*) FindXrefNum(**RefTable** *refTable*)
Pops a window showing all entries contained within the specified **RefTable** and returns the numeric argument of the entry selected by the user with an 'X'. If **PrevValue** is specified and the user exits the window without making a selection, **PrevValue** is returned. The search window contains filters in both the Argument and Description field: • Since the list is sorted by Argument, an entry in the filter will position the list to that value. • If a Description filter is provided, it is used to search for a wild card string in CharRes.

Exports for RPG	STDXREFIOP(FINDXREFNUM)
Exports for SQL	*NONE



Function **FindXrefChar** – returns char*Arg*
FindXrefChar(**RefTable** *refTable*, **PrevValue** charA*rg*) FindXrefChar(**RefTable** *refTable*)
Pops a window showing all entries contained within the specified **RefTable** and returns the character argument of the entry selected by the user with an 'X'. If **PrevValue** is specified and the user exits the window without making a selection, **PrevValue** is returned. The search window contains filters in both the Argument and Description field: • Since the list is sorted by Argument, an entry in the filter will position the list to that value. • If a Description filter is provided, it is used to search for a wild card string in CharRes. This was included because CharRes is often used to contain a description of a code.

Exports for RPG	STDXREFIOP(FINDXREFCHAR)
Exports for SQL	*NONE



4. Maintenance utility (5250 based)

Until a browser based equivalent is complete, this is the primary means to define reference tables and their associated entries in the STDXREF table. It is accessible via Option 1 on the STDXREFS menu.

The maintenance utility comes in two formats:

- ***LEGACY:** Built for the original STDXREF model, which contained only numeric and character arguments and results. At the detail level, the entries were arranged in a horizontal format, with arguments in one row and results in another.
- ***CURRENT:** Built for the new STDXREF model, which includes date arguments and results as well. At the detail level, the entries are arranged with arguments in one column and results in another, in a vertical stacked format.

***CURRENT version**

Take option 1. By default, the maintenance program will show all cross reference tables. However, you can specify a reference table name if you wish, which will take you directly to the table entries level.

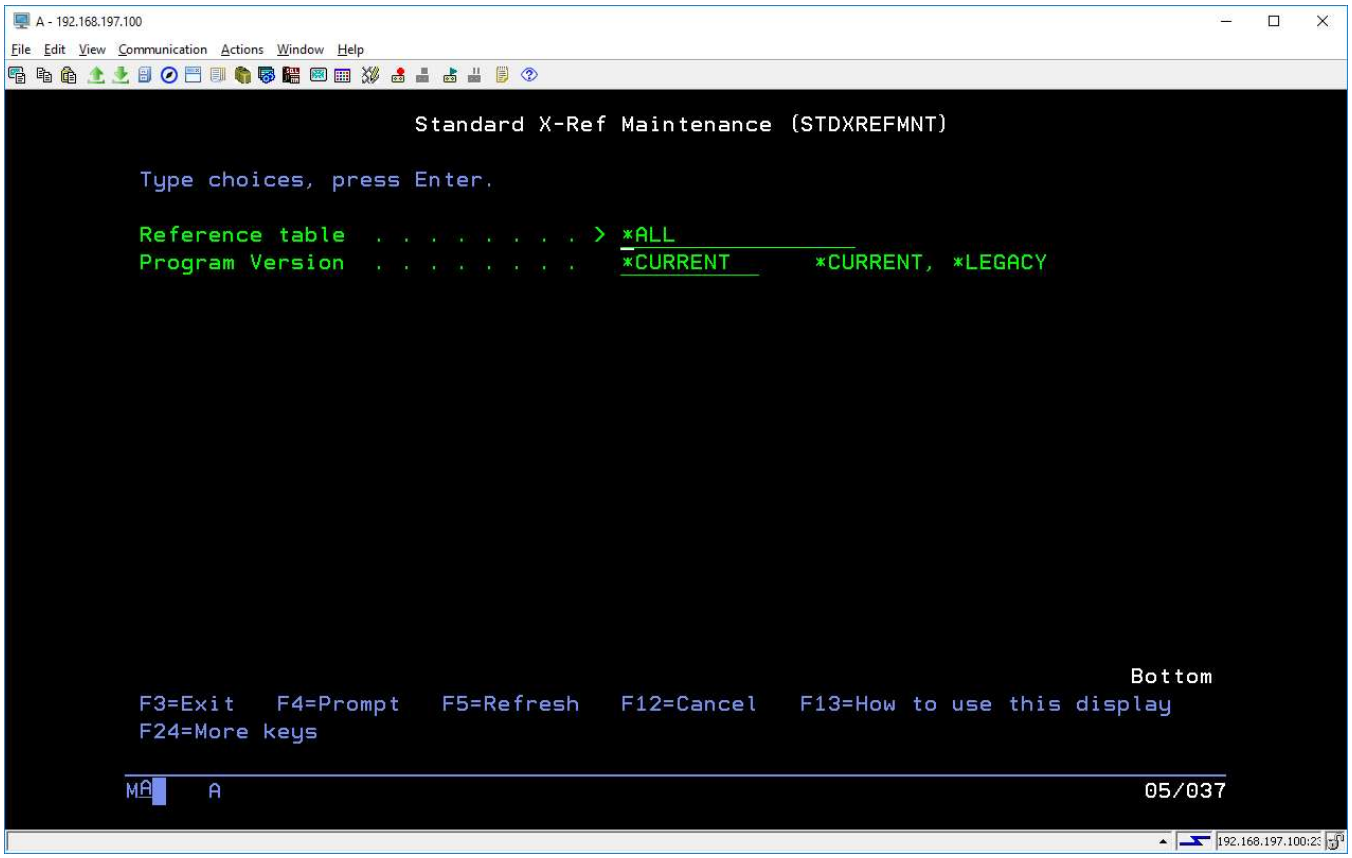
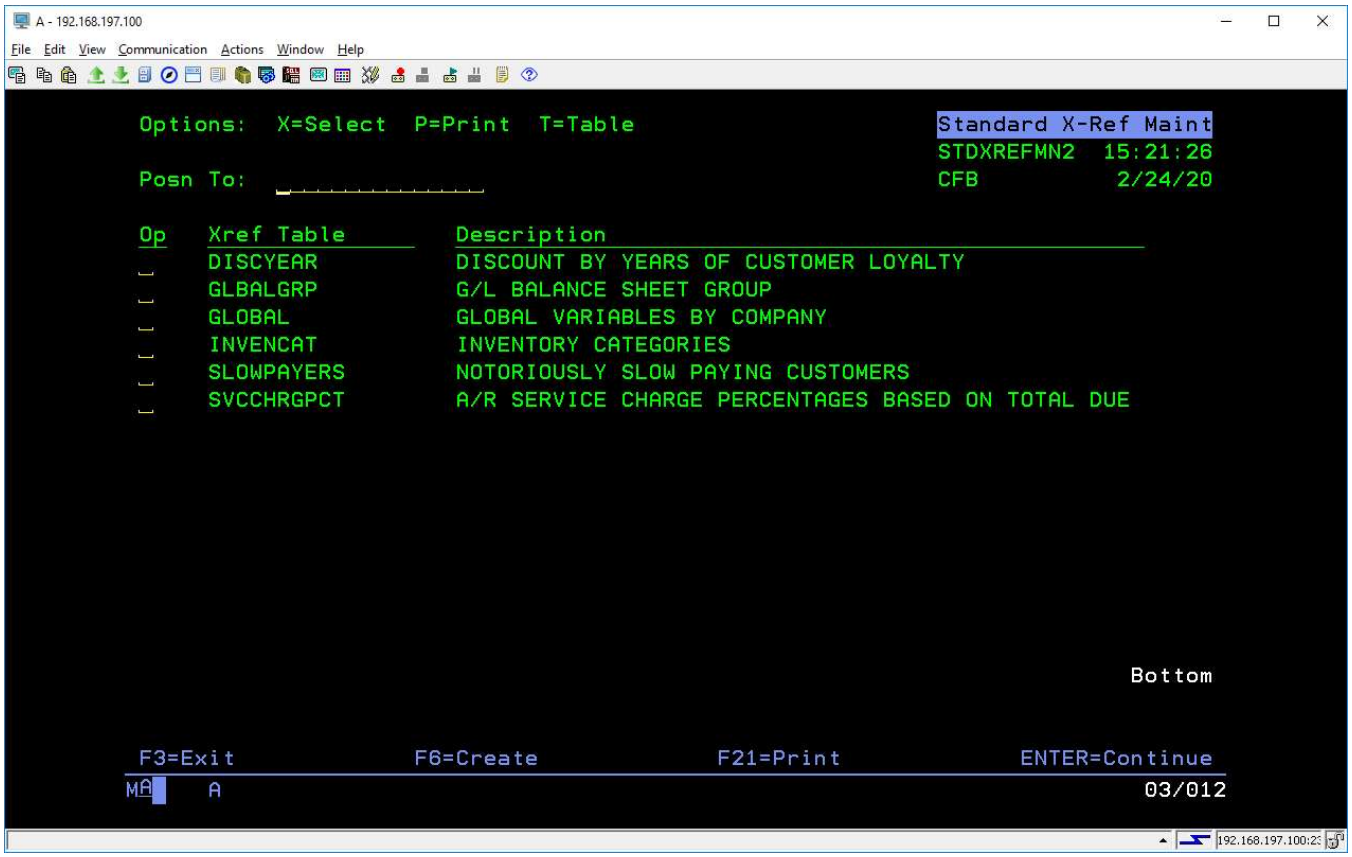


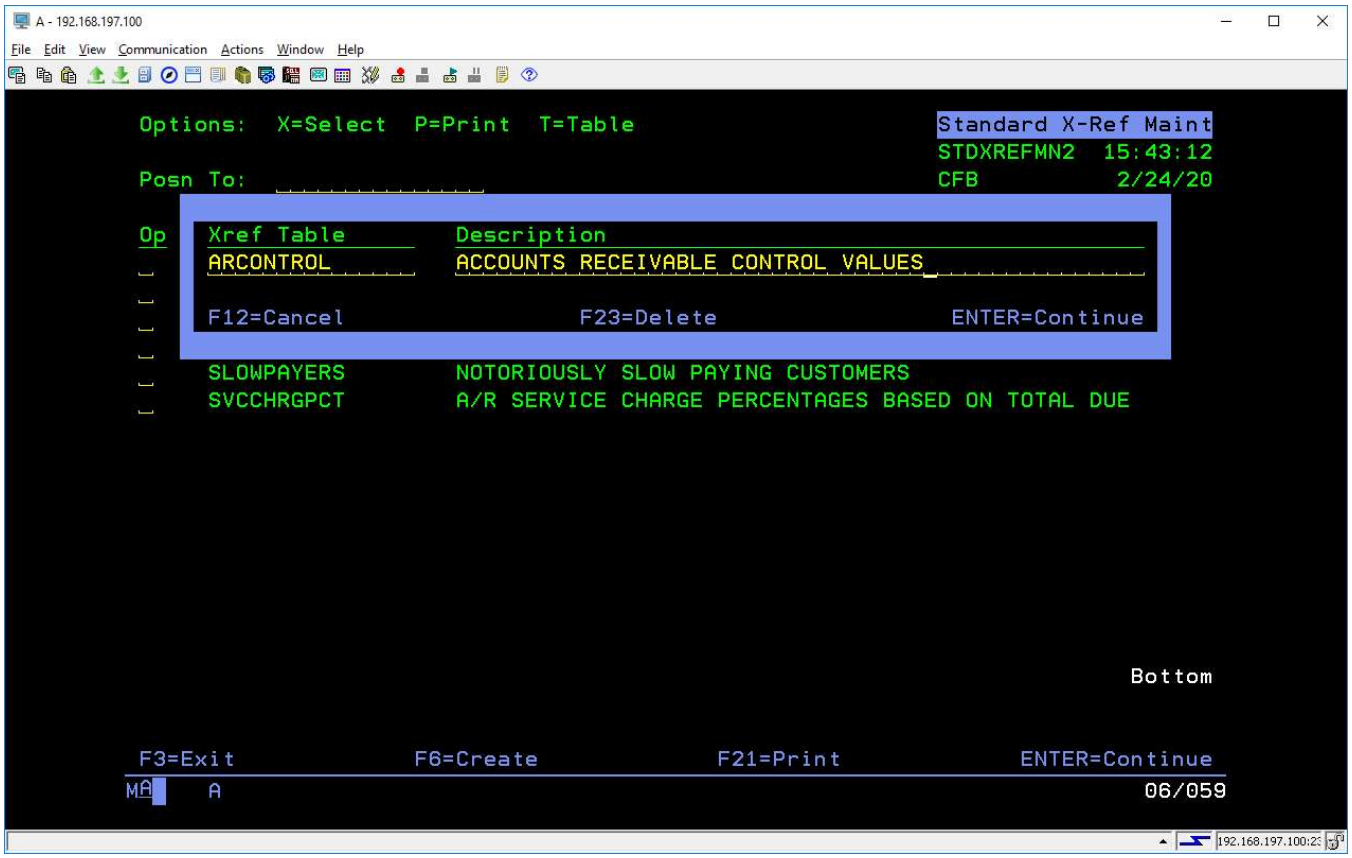
Table level screen

From this screen, you can:

- Create new cross reference tables (F6).
- Print the contents of an existing table (option P).
- Drill down to the table entries (option X).
- Maintain table descriptions (option T).
    - Includes the option to delete the table and its entries.



Press F6 to create a new table.



Provide a table name and a description. Press Enter, or F12 to cancel out of the operation.

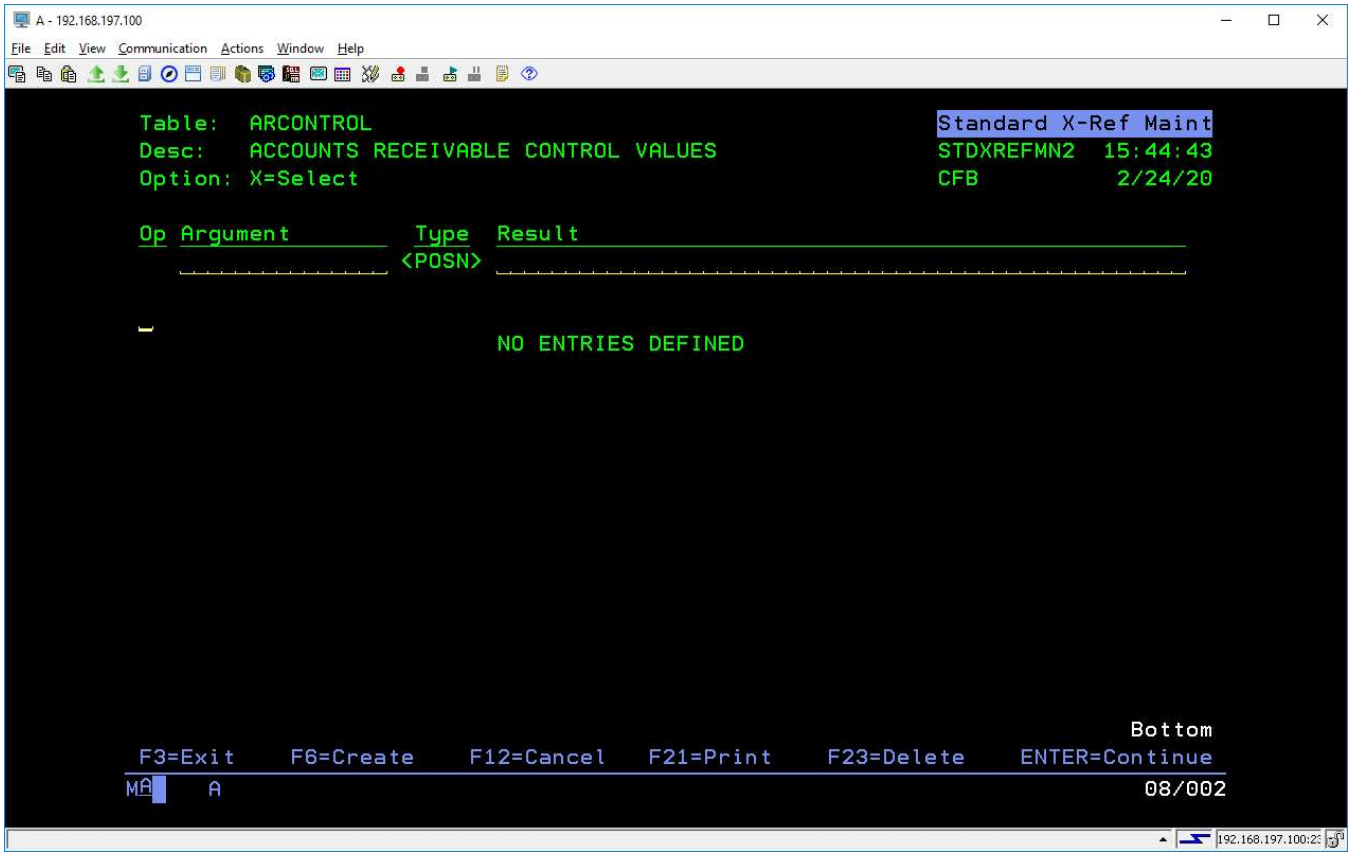
- When creating a new table, F23 works the same as F12. No reference table is created.
- When modifying an existing table, F23 deletes the table and all its entries. A confirmation window will be displayed and the user must specify “Y” in order to delete the table.
- Be cautious about deleting reference tables. Your application data files could be dependent on the values in STDXREF. There are no referential constraints defined by the installation process.

Once the user completes table creation, the reference table appears in the list. Take option X to drill down to the table entry level.

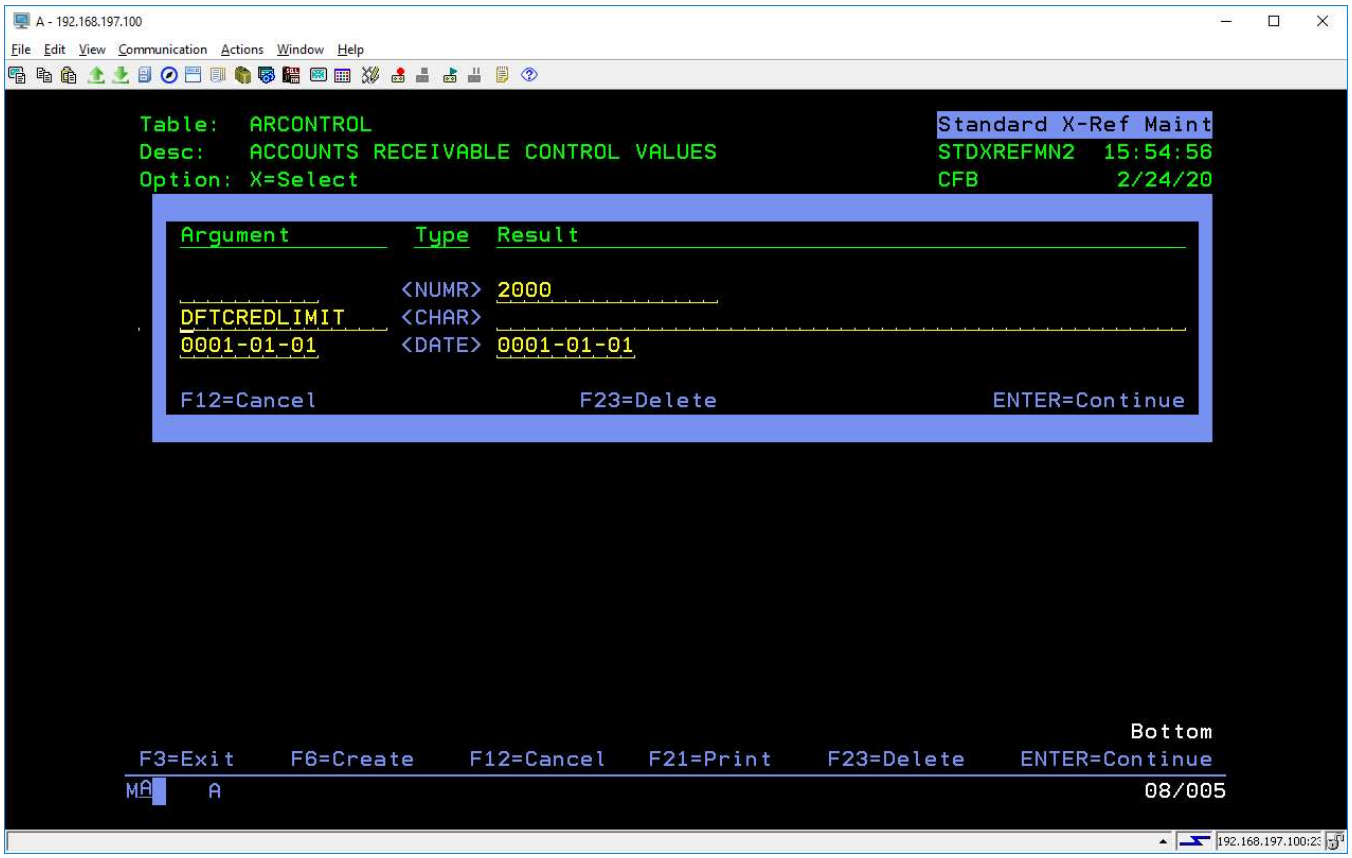
Table entry level screen

From this screen, you can:

- Create new cross reference table entries (F6).
- Edit existing table entries (option X).
    - Includes option to delete the entry, with confirmation.
- Print the contents of an existing table (F21).
- Use the positioning values to help find an entry with a desired argument or result.
    - All three types will be searched in sequence (numeric, character, date).
- Delete the entire table (F23, with confirmation).



Press F6 to create a new table entry.



Enter a numeric, character or date argument in the Argument column. You can actually enter multiple arguments, however if you do, you must also specify all of them when using the application lookup functions (XrefNum*, XrefChar*, XrefDate*). The low date values may make the window appear a little bit busy, but using actual date fields does enforce formatting rules.

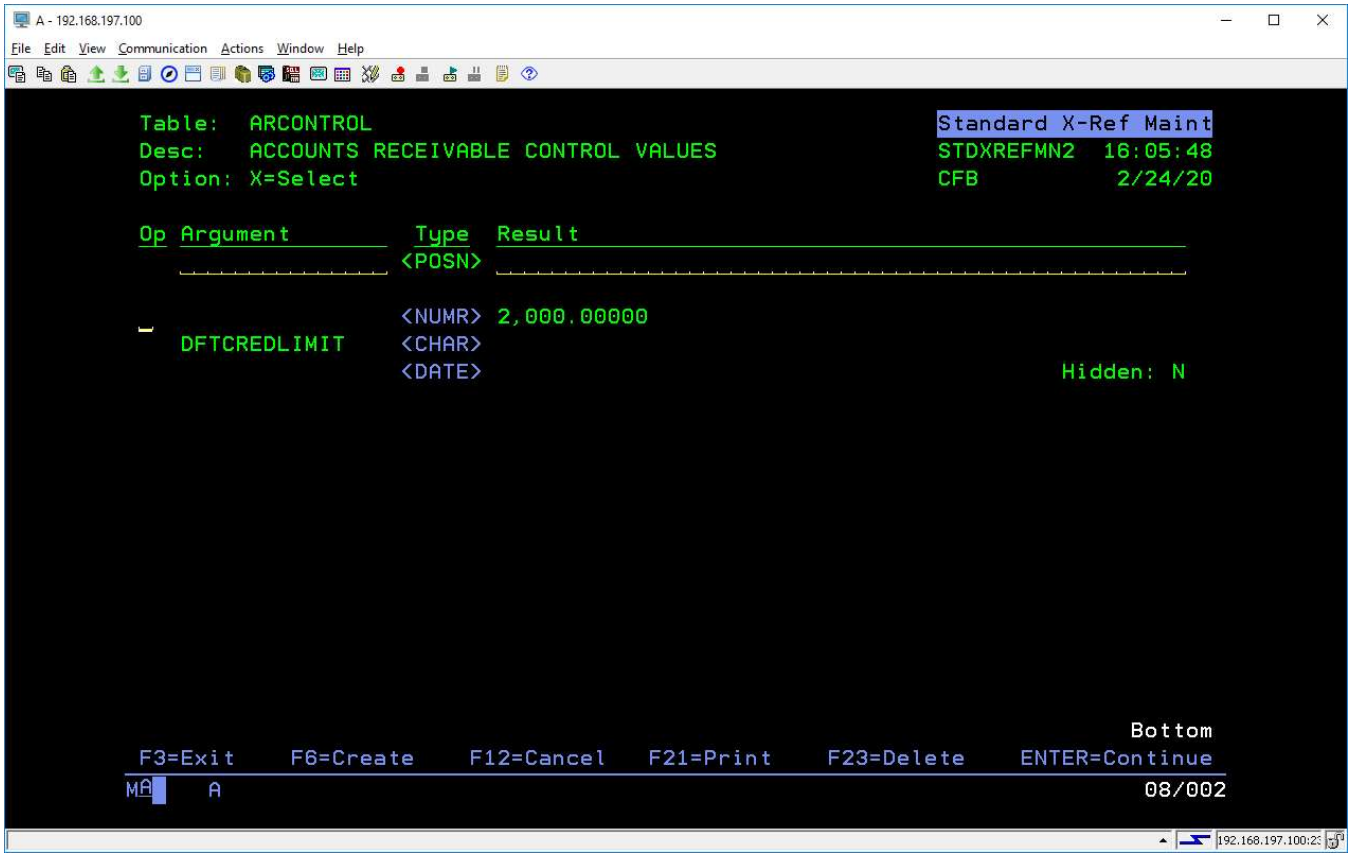
If a result is desired, enter either a numeric, character or date result in the Result column. You can specify multiple result values if you wish. Each result type has its own retrieval function. Note that a result is not required. Only an argument is required. The mere presence of an entry in this reference table may be all your application needs. In that case, the ValidXref* functions can be used to determine if a matching entry exists in the table.

When maintaining an existing entry, the Hidden flag indicates whether or not the table entry will be hidden from search windows. Typically, this will be “N” unless the entry becomes obsolete.

- When creating a new table entry, F23 works the same as F12. No table entry is created.
- When modifying an existing entry, F23 deletes the entry. A confirmation window will be displayed and the user must specify “Y” in order to delete the entry.
- Be cautious about deleting reference table entries. Your application data files may contain field values that were intended to match arguments in this reference table. Deleting the entry could result in “not found” situations. There are no referential constraints defined by the installation process.

Press Enter.

Note that if an entry contains a zero numeric argument, a blank character argument and a *LOVAL, the zero will appear in the Numeric row. Otherwise zeros are suppressed. The same is true with the result values.

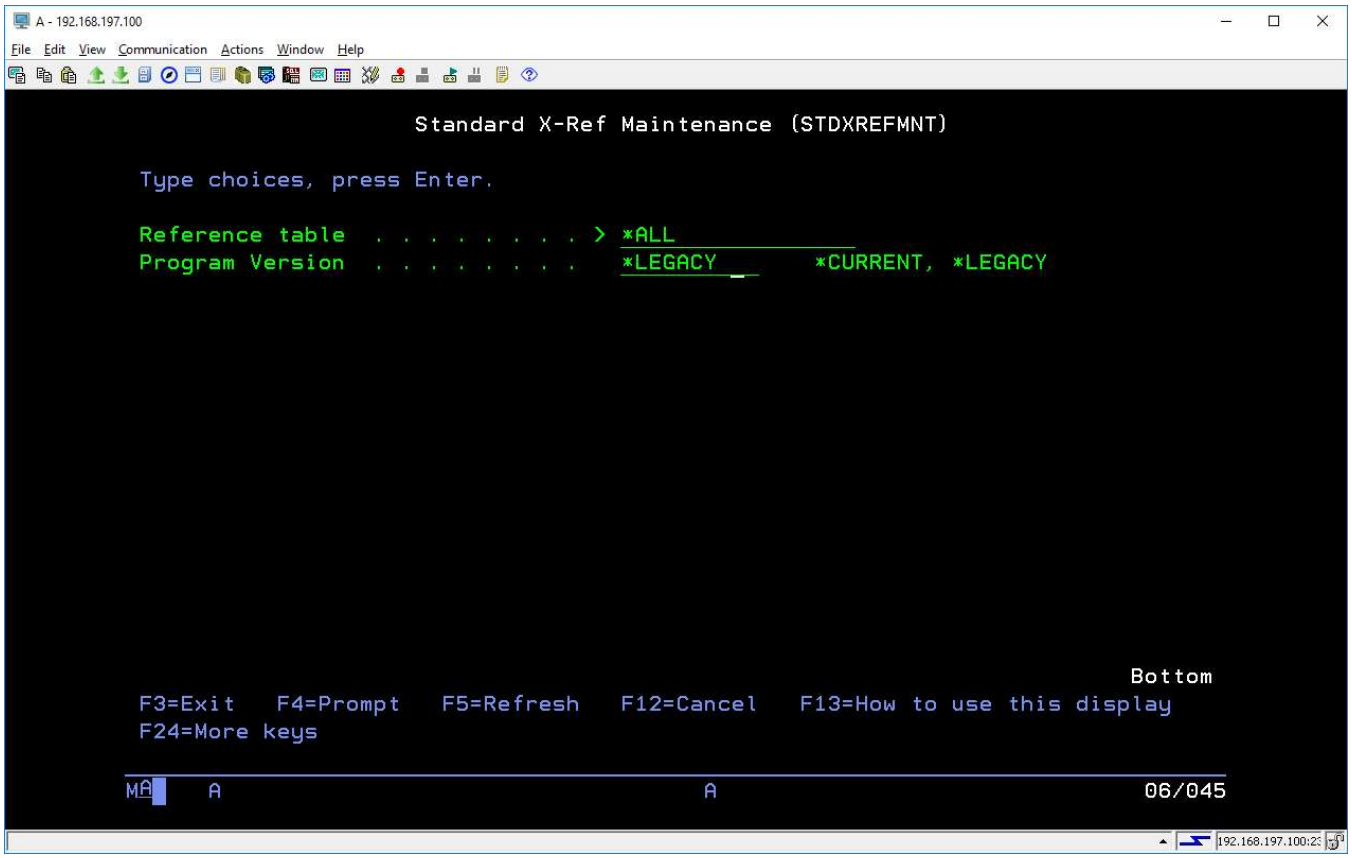


Miscellaneous:

- The entries are presented in the subfile in sequence of numeric argument, then character argument, then date argument.
- The combination of the three argument types (including those that are not specified) must be unique within a reference table.
- See the Technical Reference for RPG and SQL functions associated with STDXREF.

***LEGACY version**

Take option 1. By default, the maintenance program will show all cross reference tables. However, you can specify a reference table name if you wish, which will take you directly to the table entries level.



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From this screen, you can:

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- Print the contents of an existing table (option P).
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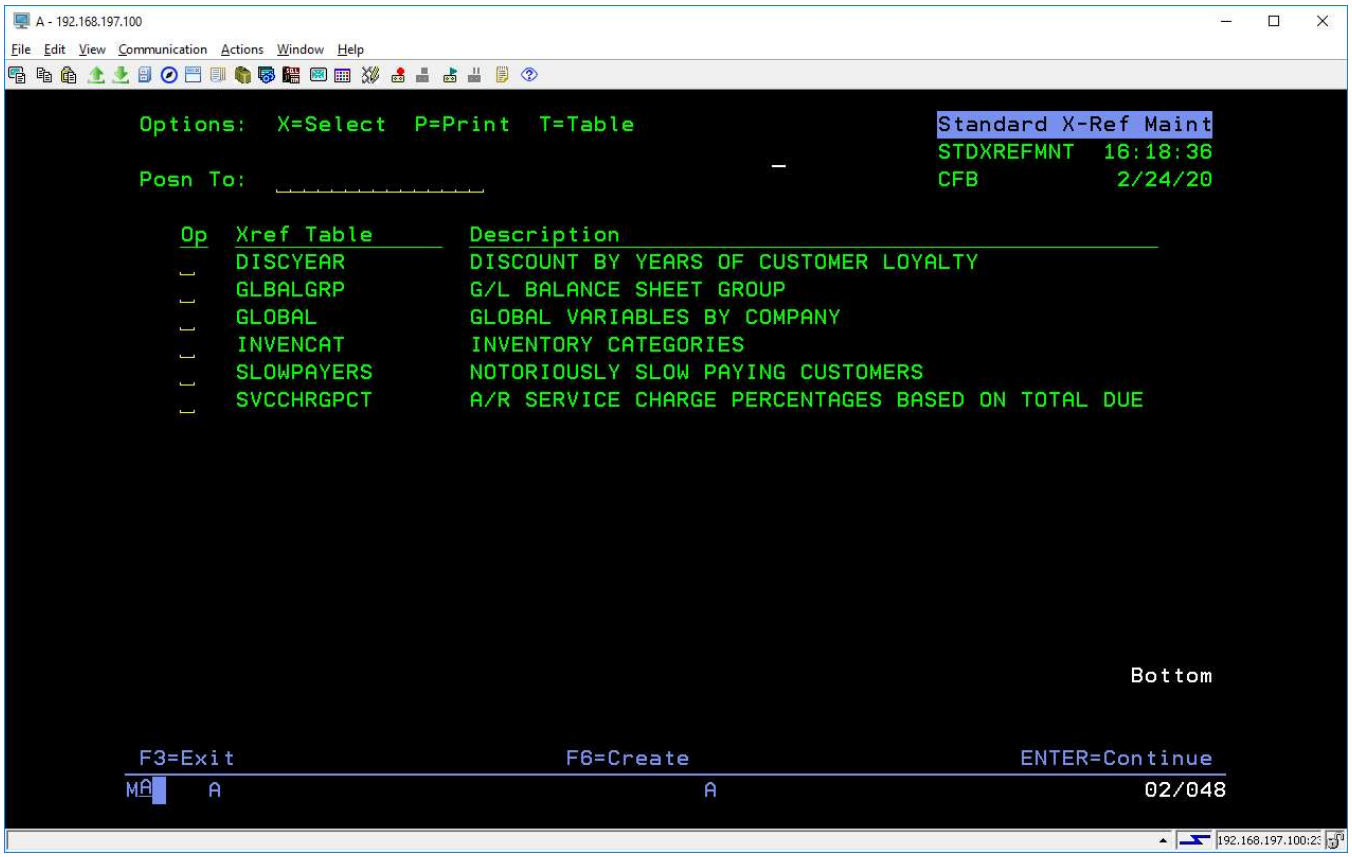
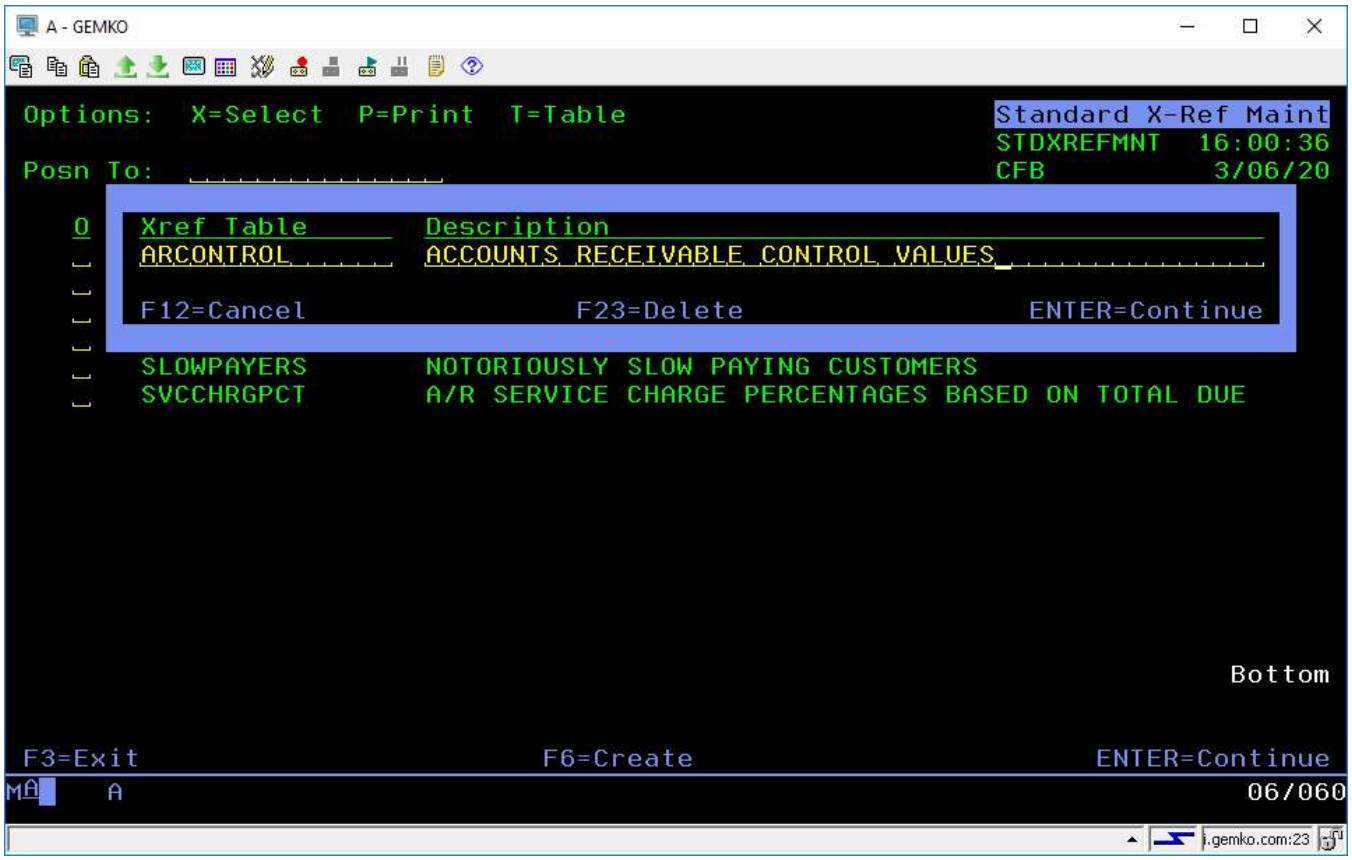
- Maintain table descriptions (option T).
    - Includes the option to delete the table and its entries.



Press F6 to create a new table.



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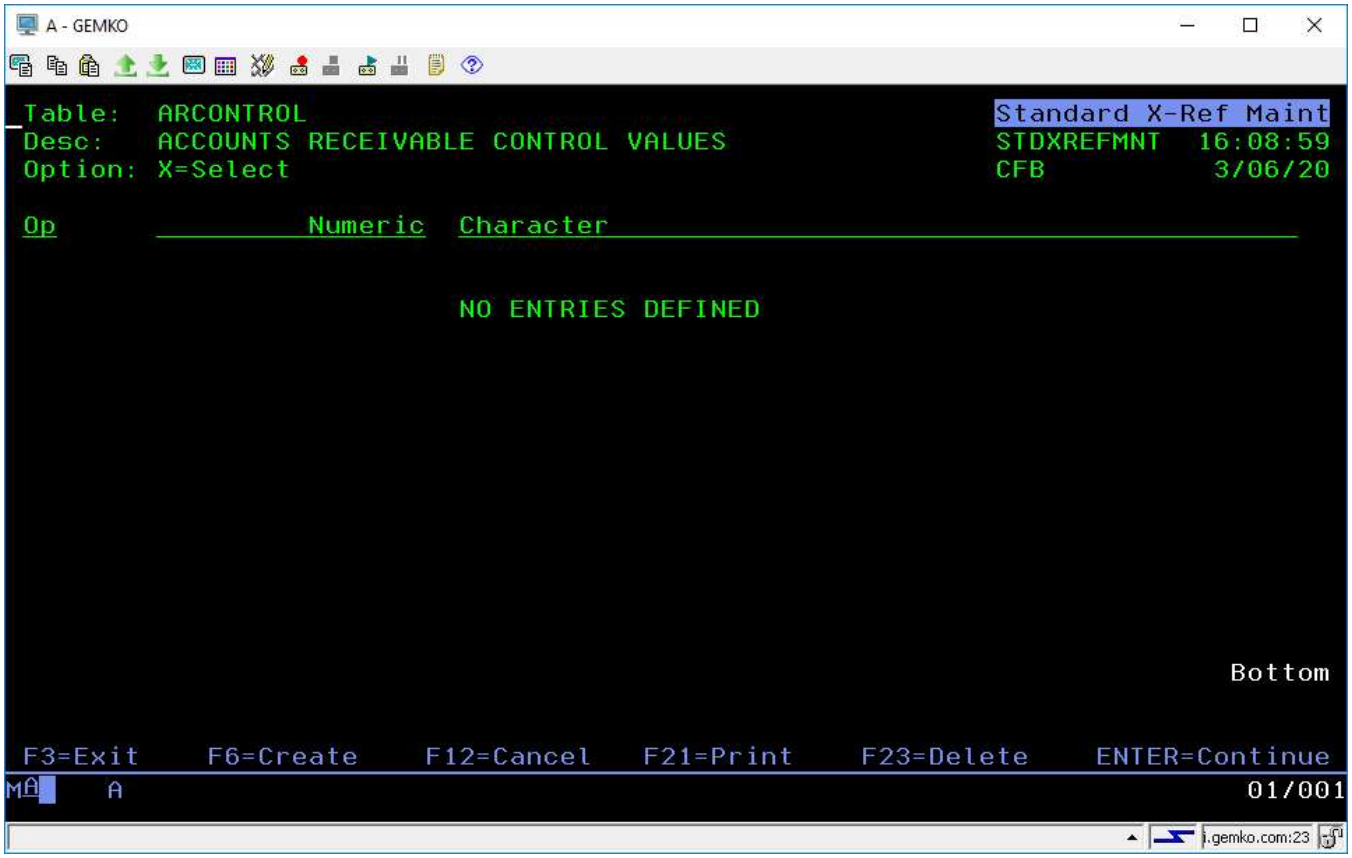
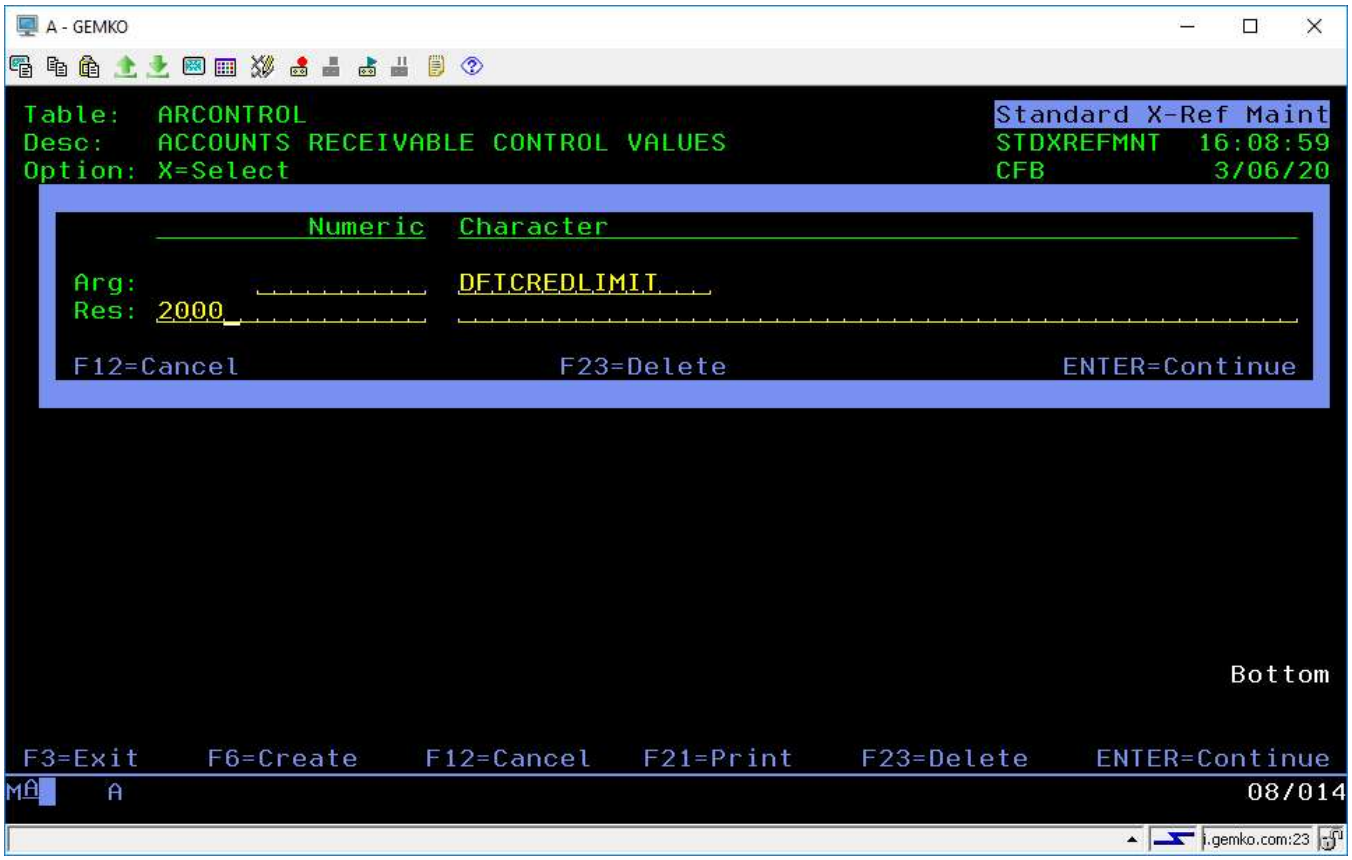
From this screen, you can:

- Create new cross reference table entries (F6).
- Edit existing table entries (option X).
    - Includes option to delete the entry, with confirmation.
- Print the contents of an existing table (F21).
- Use the positioning values to help find an entry with a desired argument or result.
    - All three types will be searched in sequence (numeric, character, date).
- Delete the entire table (F23, with confirmation).



Press F6 to create a new table entry.



Enter a numeric, character or date argument in the Argument column. You can actually enter multiple arguments, however if you do, you must also specify all of them when using the application lookup functions (XrefNum*, XrefChar*, XrefDate*). Note that the legacy version is horizontal, whereas the current version is vertical. Be aware of that if using both versions.

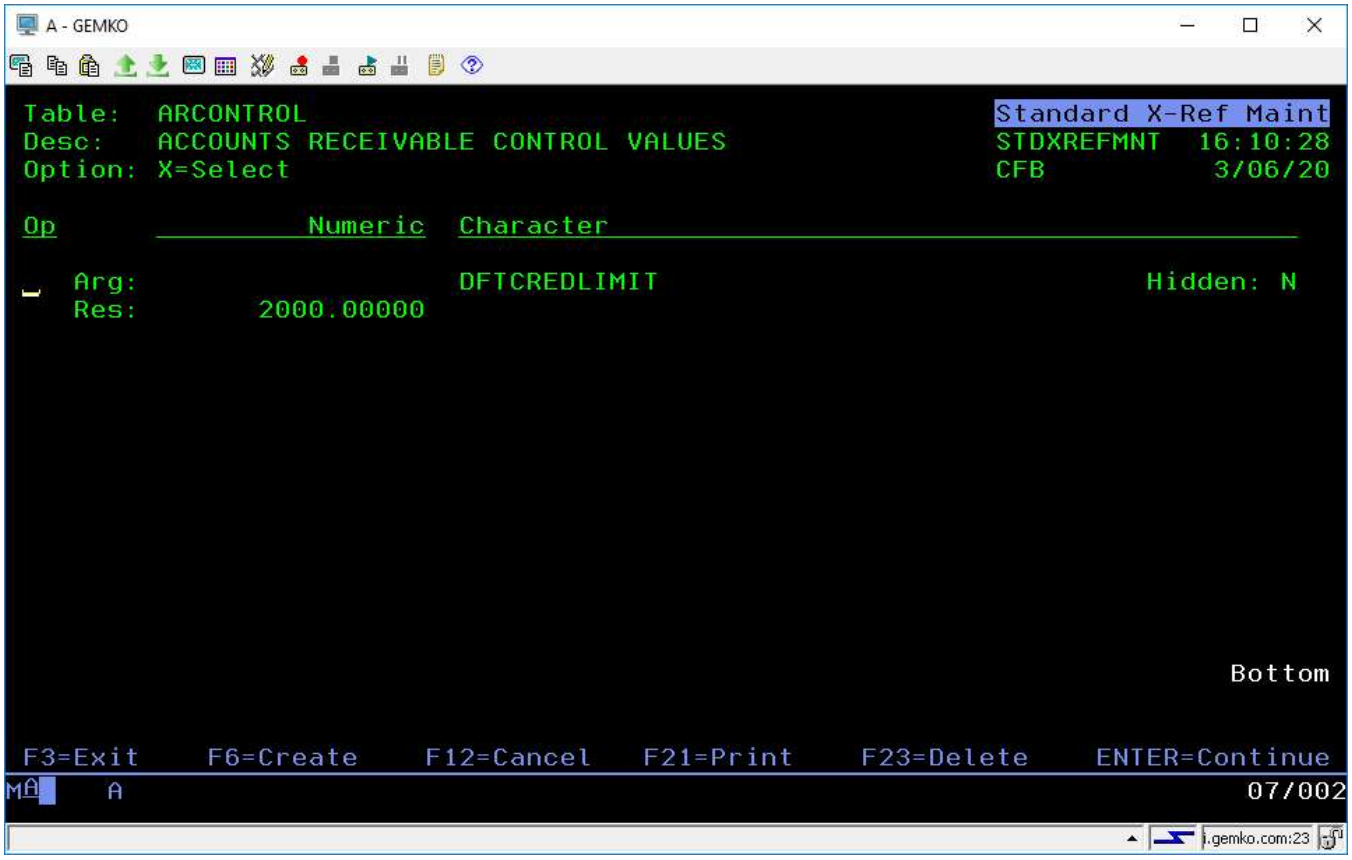
If a result is desired, enter either a numeric, character or date result in the Result column. You can specify multiple result values if you wish. Each result type has its own retrieval function. Note that a result is not required. Only an argument is required. The mere presence of an entry in this reference table may be all your application needs. In that case, the ValidXref* functions can be used to determine if a matching entry exists in the table.

When maintaining an existing entry, the Hidden flag indicates whether or not the table entry will be hidden from search windows. Typically, this will be “N” unless the entry becomes obsolete.

- When creating a new table entry, F23 works the same as F12. No table entry is created.
- When modifying an existing entry, F23 deletes the entry. A confirmation window will be displayed and the user must specify “Y” in order to delete the entry.
- Be cautious about deleting reference table entries. Your application data files may contain field values that were intended to match arguments in this reference table. Deleting the entry could result in “not found” situations. There are no referential constraints defined by the installation process.

Press Enter.

Note that if an entry contains a zero numeric argument, a blank character argument and a *LOVAL, the zero will appear in the Numeric column. Otherwise zeros are suppressed. The same is true with the result values.

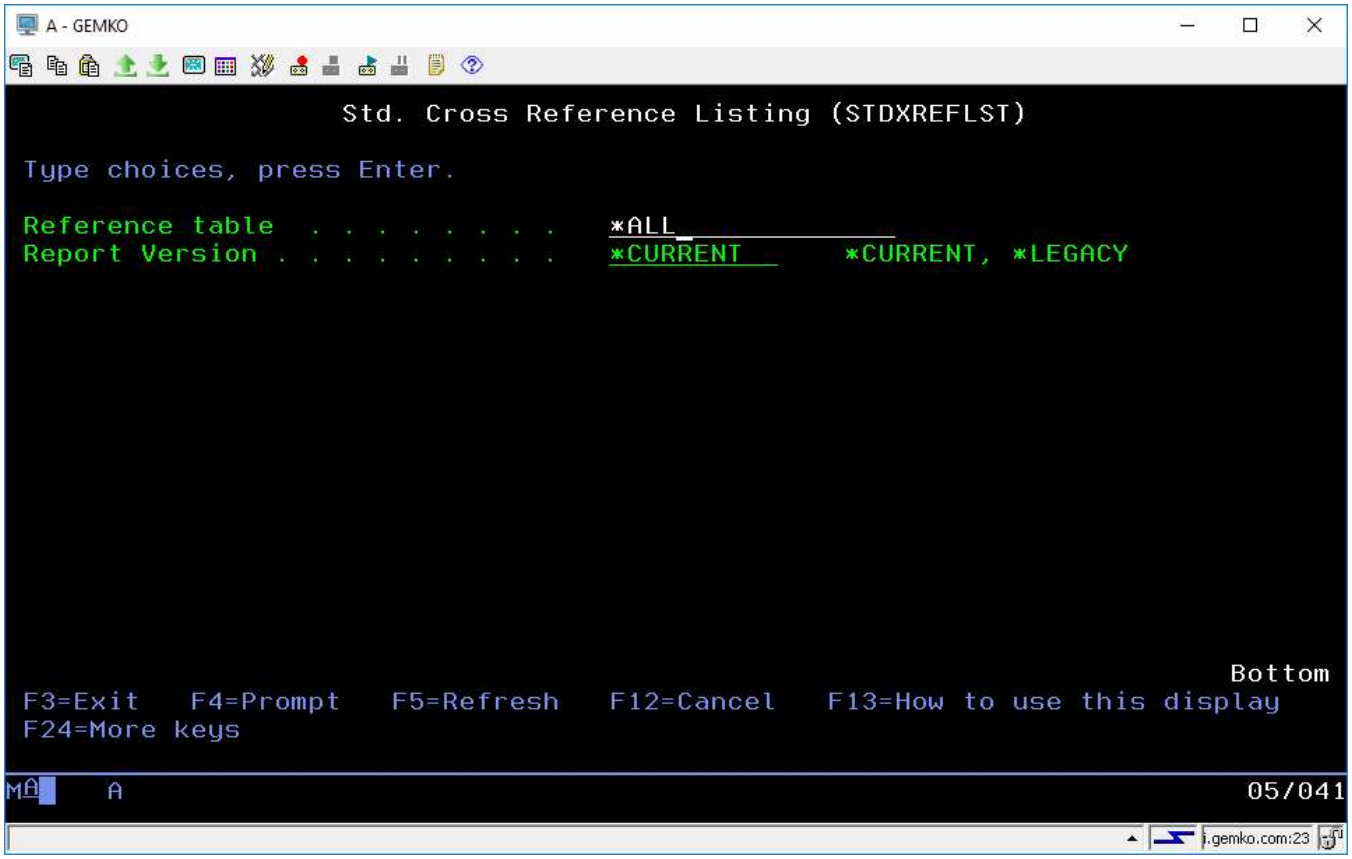


Miscellaneous:

- The entries are presented in the subfile in sequence of numeric argument, then character argument, then date argument.
- The combination of the three argument types (including those that are not specified) must be unique within a reference table.
- See the Technical Reference for RPG and SQL functions associated with STDXREF.

Reference table listing

Option 2 from the STDXREFS menu provides a means to print a hardcopy listing of either an individual reference table, or all tables. You can request either the current or legacy format. Remember that the legacy format does not include any date arguments or date results.



See the download “Sample Listing.pdf” for an example. Note that there is no zero suppression on either the numeric argument or numeric result columns. This is just a raw listing of the STDXREF table.

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Version 3, 29 June 2007

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