Calculating Space Requirements

Option **S** (Space calculation) on the **Main Menu** displays the **Space Calculation** menu:

```
02:33:21          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                            -  Space Calculation  -                 PSP0002

                             Code    Service
                             ----    ------------------
                              A      ASSO
                              C      Cluster-Cache/Lock
                              D      DATA
                              F      DDFILEA
                              S      SORT
                              T      TEMP
                              W      WORK
                              ?      Help
                              .      Exit
                             ----    ------------------
               Code .......... _
               Database ID ... 1955   (WIS1955)



Command ==>
PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                        Menu
```

The space calculation function is a planning tool for adding new components or recalculating existing space requirements. Each calculation provides a block or cylinder estimate according to information you provide. In general, you must provide the:

- maximum estimated record count;
- average number of MU or PE occurrences, when used as descriptors;
- average descriptor, compressed record, or normal record length;
- estimated padding factor;
- device type where the Adabas component being estimated resides.

In many cases, the results are "best guess" estimates; other than a device type, no defaults are assumed. Because no values are actually changed by the Space Calculation function, unrealistic estimates cause no harm.

Calculations are provided in both cylinders and blocks. In some cases, the block values are required by other Adabas Online System/Basic Services functions such as Define New File or Modify File Parameters. All values are lost when you exit from the estimating function, regardless of the cause of the exit. You may want to write down any values you wish to use later.

By changing individual estimated values one at a time, you can see the effect on the calculated result. For example, you can change the device type without re-entering the other values; the revised estimate for that device appears when you press Enter.

There are equivalent direct commands for each space calculation function.

Space calculations are selectable by code and include:

Code	Function
A	*Estimating Associator Space*
C	*Estimating Sizes for Directory and Data Structures in a Cluster Environment*
D	*Estimating Data Storage Space*
F	*Estimating Space for the DD/FILEA Sequential Data Set*
S	*Estimating Sort Data Set Space*
T	*Estimating Temp Data Set Space*
W	*Estimating Work Data Set Space*

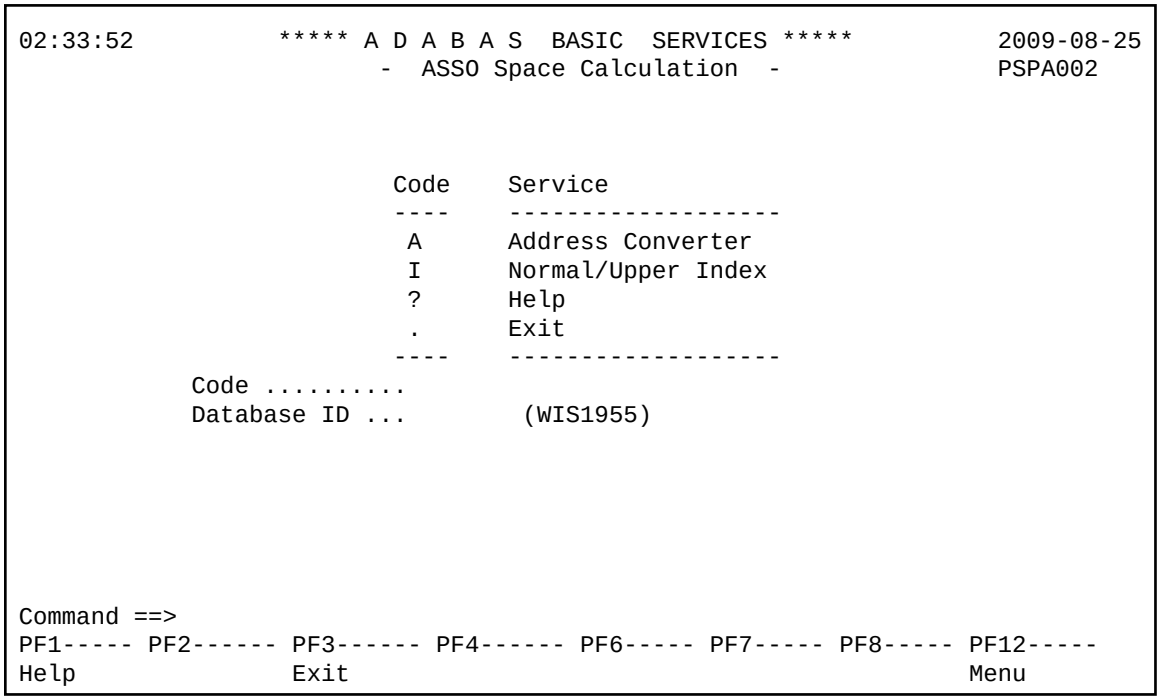
Estimating Associator Space

Option **A** (ASSO) on the **Space Calculation** menu calculates one of two Associator component values: the address converter (AC) space, or the normal (NI) and upper (UI) index space.

The equivalent direct command is

```
CALCULATE ASSO
```

The **ASSO Space Calculation** menu appears.



AC space is based on the device type and the estimated number of records in the related Data Storage file.

```
02:35:35          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
DBID 1955                    -  Address Converter  -                PSPAA02




 Maximum number of records ... 0
 ASSO Device-Type ............ 3390
 Block Size .................. 2544

 Required number of blocks ... 0
 Required number of cyls. .... 0









PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                          Menu
```

NI/UI calculates index values for a *single* descriptor, requiring you to estimate such things as the average descriptor length, the number of multiple descriptors you expect to have, the total number of unique descriptor values for that field, an Associator padding factor, and a device type if other than the default.

```
02:36:02          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
DBID 1955                    -  Normal/Upper Index  -                PSPAI02

Computation for one Descriptor  -

    Maximum number of records for the file ........ 0
    Average number of DE-values per record ........ 1.0
    Average length of DE-value in bytes ........... 0
    Number of different DE-values in the file ..... 0

    Padding factor for ASSO ....................... 10 %
    ASSO Device Type .............................. 3390
    ASSO Block Size ............................... 2544

                               I Normal Index I Upper Index I
    I----------------------------------------------------------
    I Required number of blocks I            0 I           0 I
    I Required number of cyls.  I            0 I           0 I
    I----------------------------------------------------------
                                                    Use ? for Help

PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                          Menu
```

Estimating Sizes for Directory and Data Structures in a Cluster Environment

Option **C** (Cluster-Cache/Lock) on the **Space Calculation** menu calculates the estimated sizes for directory and data structures in a cluster environment. The cache structure should be made large enough to provide sufficient space:

- for tracking all blocks kept in the buffer pools of all connected cluster nuclei (directory elements) and
- for keeping all changed blocks until they are written to the database (data elements).

The assignment of total cache space into directory and data elements is done via the DIRRATIO and ELEMENTRATIO ADARUN parameters.

```
02:38:45          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
DBID 1955             -  Cache Structure Calculator  -              PSPC002

Smallest block size in DB ....... 2544
Largest block size in DB ........ 5724
Buffer pool size (LBP) .......... 107520______
Size proper for caching blocks .. 100000______
Max nuclei in cluster ........... 3
Directory element size .......... 400
Cache structure size (in KB) .... _________

For minimum calculation, leave cache structure size field empty.
Modify values, press Enter to provide estimates below.

Cache CFRM SIZE/INITSIZE ........ 2662        ( 2.5        MB)
ADARUN DIRRATIO ................. 41
ADARUN ELEMENTRATIO ............. 24
Cache directory elements ........ 165
Cache data elements ............. 97
Cache data element size ......... 1024

PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit      Lock                                 Menu
```

Input fields:

Field	Description
Smallest block size	Value between 1024 and 32768. Default taken from current AOS DBid.
Largest block size	Value between 1024 and 32768. Default taken from current AOS DBid. If Smallest block size exceeds this value, then Smallest block size is swapped in.
Buffer pool size	Value between 80,000 and 999,999,999,999. Default taken from LBP parameter of current AOS Dbid.
Size proper for caching blocks	Value between 100000 - 999,999,999,999. Default taken from LBP parameter of current AOS Dbid, rounded down to nearest 100000. "Size proper" means that this does not include the overhead in the cache structure required for administering these blocks. Thus this value specifies how much space should be available in the cache structure for keeping changed blocks between buffer flushes and for buffering blocks so that the cluster nuclei do not have to read them from the database.
Max Nuclei in cluster	Value between 2 and 32. Defaults to 3.
Directory element size	Value between 100 and 999. Specifies how much space (including the overhead for the access paths) each directory element will take in the cache structure. Defaults to 400.
Cache Structure size	Blank for minimum calculation, or a value between 100 and 999,999,999 (KB). Although this value is given as an output field, you may want to propose a cache structure size, to see how to allocate the cache space (dir & data elements).

Output fields:

Field	Description
Cache CFRM SIZE/INITSIZE	The recommended cache structure SIZE or INITSIZE specification in the coupling facility resource management policy.
ADARUN DIRRATIO/ELEMENTRATIO	The recommended ADARUN parameter settings for the cluster nuclei.
Cache directory/data elements	The estimated directory and data element counts resulting from the SIZE/INITSIZE, DIRRATIO, and ELEMENTRATIO settings.
Cache data element size	This (accurate) value depends only on the largest Asso/Data/Work block size in the database.

By pressing PF4, you can use the Lock Structure Calculator.

Lock Structure Calculator

The Lock Structure Calculator screen calculates an estimated size for the Cache CFRM SIZE or INITSIZE specification in the coupling facility resource management policy.

The lock structure must be made large enough to provide sufficient space

- for keeping the lock record elements for all locks held at the same time, and
- for avoiding too much false contention on lock structure size as an input field.

The Number of lock table entries and record elements are shown for comparison with the related cluster nucleus message (ADAX70) and to aid users' own calculations.

```
02:40:14          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
DBID 1955              -  Lock Structure Calculator  -              PSPL002

Max files in database (MAXFILES) ...... 1000
Max number of parallel users (NU) ..... 200_____
Number of hold queue elements (NH) .... 400
Unique descriptor pool size (LDEUQP) .. 50000
Lock record element size .............. 260
Lock structure size (in KB) ...........

For minimum calculation, leave lock structure size field empty.
Modify values, press Enter to provide estimates below.

Lock CFRM SIZE/INITSIZE ............... 2738      ( 2.6       MB)
Number of lock table entries .......... 32768
Number of lock record elements ........ 7852       Required min .. 7975




PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit      Cache                               Menu
```

Input fields:

Field	Description
Max files in database	Value between 3 and 5000. The same as MAXFILES parameter of ADADEF and ADAORD. Taken from the current AOS DBid.
Max number of parallel users	Value between 20 and 16,777,215. Default taken from NU parameter of current AOS DBid.
Number of hold queue elements	Value between 20 and 16,777.215. Default taken from NH parameter of current AOS Dbid.
Unique descriptor pool size	Value between 1 and 999,999,999. Default taken from LDEUQP parameter of current AOS Dbid.
Lock record element size	Value between 100 and 999. Specifies how much space (including the overhead for the access paths) each lock record element will take in the lock structure. Defaults to 260.
Lock structure size	Blank for minimum calculation, or a value between 100 and 9,999,999 (KB). Although this value is given as an output field, you may want to propose a lock structure size, to see the estimated number of lock table entries and lock table elements.

Output fields:

Field	Description
Lock CFRM SIZE/INITSIZE	The recommended lock structure SIZE or INITSIZE specification in the coupling facility resource management policy.
Number of lock table entries	The calculated count of lock table entries resulting from the SIZE/INITSIZE setting.
Number of lock record elements	The estimated count of lock record elements resulting from the SIZE/INITSIZE setting. One has to actually start a cluster nucleus with the specified parameters to see how many lock record elements it gets from the lock structure. The number on the right side is the minimum number of lock record elements that the starting cluster nuclei require to be available.

Estimating Data Storage Space

Option **D** (DATA) on the **Space Calculation** menu calculates Data Storage based on values you provide for estimated maximum record count, the average length of a compressed record, a Data Storage padding factor, and device type. Results are specified in both blocks and cylinders.

The equivalent direct command is

```
CALCULATE DATA
```

The Data Storage screen appears.

```
11:21:46          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
DBID 1955                      -  Data Storage  -                   PSPD002



 Maximum number of records for the file .. 0_________
 Average compressed record length ........ 0
 Padding factor for DATA ................. 10 %
 DATA device-type / blk. size ............ 3390 /  5064


 Required number of blocks ............... 0
 Required number of cyls. ................ 0









PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                          Menu
```

Estimating Space for the DD/FILEA Sequential Data Set

Option **F** (DDFILEA) on the **Space Calculation** menu calculates the space required for the DD/FILEA sequential data set when it is used with the ADAORD utility. (The data set is also used with the ADALOD utility.)

The equivalent direct command is

```
CALCULATE DDFILEA
```

The DDFILEA Storage screen appears.

```
11:26:04          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                            -  DDFILEA Storage  -                  PSPF012
                  Code  Reorder                  Maximum Space Required
                  ----  -------------            ----------------------
DB -Function   :   A    Asso
                   B    Data                     Bytes .....
                   C    DB                       Blocks ....
                   D    Restruct DB              Cylinder ..

FILE -Function :   E    FAsso                    Blocksize ..
                   F    FData
                   G    File
                   H    Restruct File
                   .    Exit
                  ---- --------------
        Code ..... _
        File .....
        Device ... 3390
        DB-ID .... 1955   (WIS1955)


PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                        Menu
```

Estimating Sort Data Set Space

Option **S** (SORT) on the **Space Calculation** menu displays the **SORT Storage** menu:

```
11:27:55          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                              -  SORT Storage  -                   PSPS002

                         Code    Service
                         ----    -------------
                          I      ADAINV
                          L      ADALOD load
                          U      ADALOD update
                          ?      Help
                          .      Exit
                         ----    -------------


            Code ......... _
            File Number ..
            Database ID .. 1955   (WIS1955)




Command ==>
PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                        Menu
```

The functions on this menu are used to estimate the storage needed on the sort data set for the utility function chosen.

This section covers the following topics:

- ADAINV Sort Size
- ADALOD LOAD Sort Size
- ADALOD UPDATE Sort Size

ADAINV Sort Size

Option **I** (ADAINV) on the **SORT Storage** menu displays the **Sort Storage - ADAINV** screen. The storage needed on SORT for the ADAINV utility function is estimated using this screen.

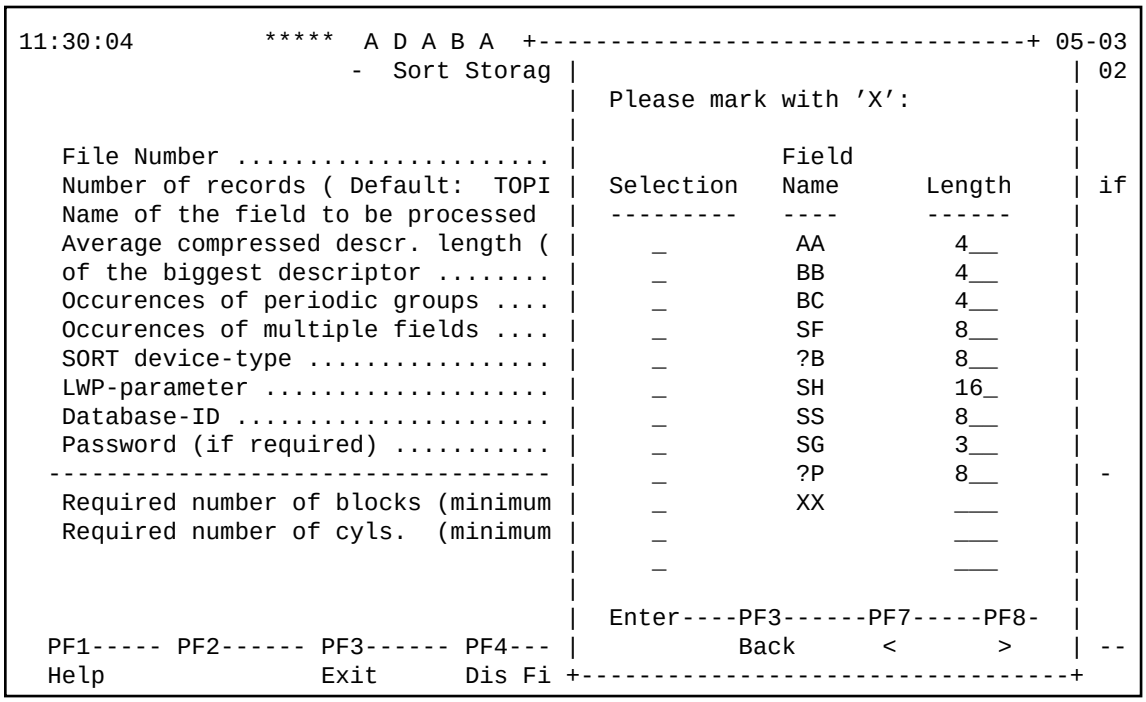
```
11:30:04          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                     -  SORT Storage     - ADAINV -     -           PSPSS12


 File Number ................................. 29
 Number of records ( Default:  TOPISN ) .......             (reduce number
 Name of the field to be processed ...........               if field is NU)
 Average compressed descr. length (in Bytes)
 of the biggest descriptor ...................
 Occurences of periodic groups ................ 1
 Occurences of multiple fields ................ 1
 SORT device-type ............................. 3390
 LWP-parameter ................................ 1000000
 Database-ID .................................. 1955
 Password (if required) .......................
------------------------------------------------------------------------
 Required number of blocks (minimum) ..........
 Required number of cyls.  (minimum) ..........



PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit      Dis Field                           Menu
```

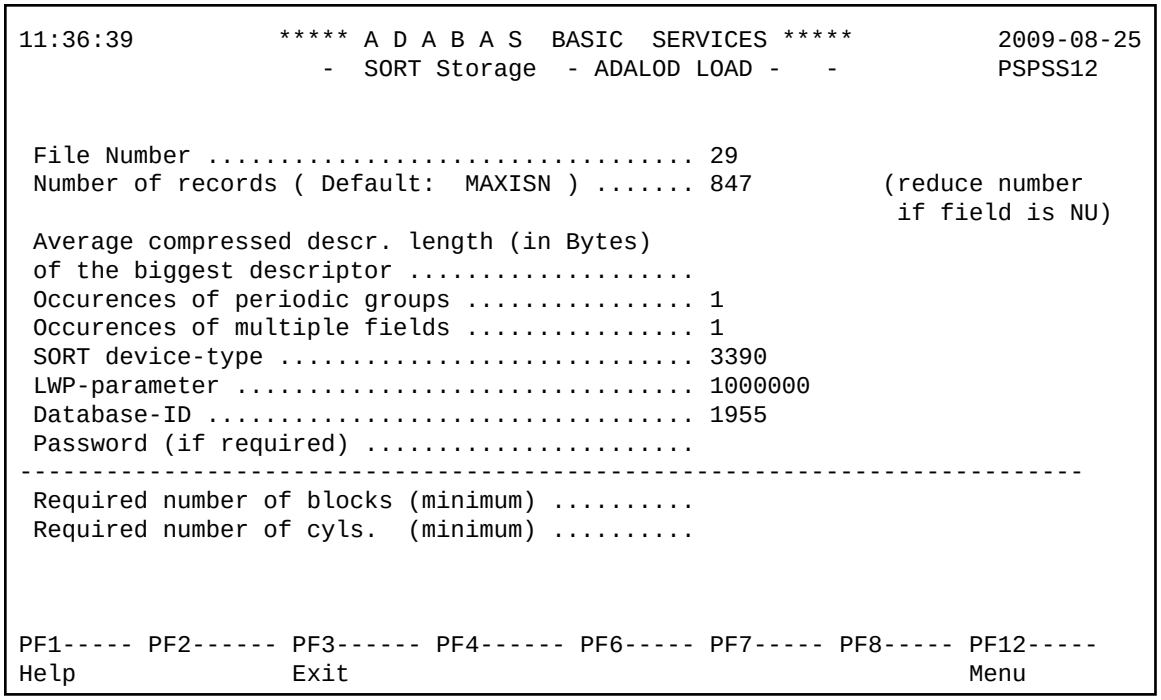
PF4 (Dis Field) invokes a field selection window:



ADALOD LOAD Sort Size

Option **L** (ADALOD load) on the **SORT Storage** menu displays the **Sort Storage - ADALOD LOAD** screen. .

For the ADALOD LOAD calculation, the default number of records is MAXISN rather than TOPISN as it is for the ADAINV function.



ADALOD UPDATE Sort Size

Option **U** (ADALOD update) on the **SORT Storage** menu displays the **Sort Storage - ADALOD UPDATE** screen. .

For the ADALOD UPDATE calculation, the default number of records is 0:

```
11:37:59          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                     -  SORT Storage - ADALOD UPDATE -  -           PSPSS12


 File Number ................................. 29
 Number of records ( Default:  0      ) .......              (reduce number
                                                              if field is NU)
 Average compressed descr. length (in Bytes)
 of the biggest descriptor ...................
 Occurences of periodic groups ................ 1
 Occurences of multiple fields ................ 1
 SORT device-type ............................. 3390
 LWP-parameter ................................ 1000000
 Database-ID .................................. 1955
 Password (if required) .....................
------------------------------------------------------------------------------
 Required number of blocks (minimum) ..........
 Required number of cyls.  (minimum) ..........



PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                        Menu
```

Estimating Temp Data Set Space

Option **T** (TEMP) on the **Space Calculation** menu displays the **TEMP Storage** menu:

```
11:40:58          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                             -  TEMP Storage  -                    PSPT002

                          Code    Service
                          ----    ------------------
                           I      ADAINV
                           L      ADALOD load/update
                           U      ADALOD delete
                           ?      Help
                           .      Exit
                          ----    ------------------

            Code ......... _
            File No. ....: 29
            Database ID .. 1955   (WIS1955)




Command ==>
PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                        Menu
```

The functions on this menu are used to estimate the storage needed on TEMP for the utility function chosen.

This section covers the following topics:

- ADAINV Temp Size
- ADALOD LOAD/UPDATE Temp Size
- ADALOD DELETE Temp Size

ADAINV Temp Size

Option **I** (ADAINV) on the **TEMP Storage** menu displays the TEMP Storage - ADAINV screen:

```
11:47:55          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                    -  TEMP Storage - ADAINV -           -          PSPTI12


File Number ................ 29
Field-Name to be inverted ..
Average descriptor-length ..             ( Default = Field-Length )
Max. Number of records .....             ( Default = TOPISN       )

Device Type ................ 3390
No. of records to delete ...             ( ADALOD Delete only     )
DBID ....................... 1955         (WIS1955)
Password (if required) .....

---------------------------------------------------------------

Required TEMP-Blocks ......
              Cylinder ....



PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit      Dis Field                           Menu
```

PF4 (Dis Field) invokes a field selection window

ADALOD LOAD/UPDATE Temp Size

Option **L** (ADALOD load/update) on the **TEMP Storage** menu displays the **TEMP Storage - ADALOD LOAD** screen.

The TEMP Storage - ADALOAD LOAD screen differs from the TEMP Storage - ADAINV screen in that a message is added reminding the user to multiply TOPISN by *all* occurrences of periodic groups and multiple value fields:

```
11:50:15          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                    -  TEMP Storage - ADALOD LOAD -      -          PSPTI12


File Number ................ 29
Field-Name to be inverted ..
Average descriptor-length ..             ( Default = Field-Length )
Max. Number of records .....             ( Default = TOPISN       )
 Make sure to multiply TOPISN by ALL occurences of PE and/or MU
Device Type ................ 3390
No. of records to delete ...             ( ADALOD Delete only     )
DBID ....................... 1955         (WIS1955)
Password (if required) .....

---------------------------------------------------------------

Required TEMP-Blocks ......
              Cylinder ....



PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                          Menu
```

ADALOD DELETE Temp Size

Option **U** (ADALOD delete) on the **TEMP Storage** menu displays the **TEMP Storage - ADALOD DELETE** screen.

```
11:51:01          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
                    -  TEMP Storage - ADALOD DELETE -    -          PSPTI12


File Number ................ 29
Field-Name to be inverted ..
Average descriptor-length ..             ( Default = Field-Length )
Max. Number of records .....             ( Default = TOPISN       )

Device Type ................ 3390
No. of records to delete ...             ( ADALOD Delete only     )
DBID ....................... 1955         (WIS1955)
Password (if required) .....

---------------------------------------------------------------

Required TEMP-Blocks ......
              Cylinder ....



PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                        Menu
```

The TEMP Storage - ADALOD DELETE screen is identical to the TEMP Storage - ADAINV.

Estimating Work Data Set Space

Option **W** (WORK) on the **Space Calculation** menu displays the **Work Storage** screen.

The Work data set requires the most estimating. Although many initial values may be arbitrary, keep a record of them to ensure that subsequent tuning of the Work parameters has a realistic basis. Results comprise block estimates for the three parts of the Work area. A total of these values in blocks and cylinders is also provided.

```
11:55:33          ***** A D A B A S  BASIC  SERVICES *****          2009-08-25
DBID 1955                      -  Work Storage  -                    PSPW002

 Average compr. record length of an updated record ... 0
 Average number of descr. updated per update cmd. .... 0
 Average length of an updated descriptor value ....... 0

 Average number of update cmds. per second ........... 0
 Average duration of a transactions in seconds ....... 0

 TOPISN of the biggest file in the database .......... 0

 WORK device type / WORK blk. size ................... 3390 /  5724

 Required space (blocks) :   Protection Area (LP) ....        0
 -------------------------   Intermediate ISN lists           0
                             Resulting ISN lists ....>        0
                                                   ? ---------
                           Total (Blocks / Cyls.)....          0 /  0
                                                    + LTPET + LREPL

PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help               Exit                                        Menu
```