

For more information contact F.L. Smidth

## PROPERTIES:

This material is used for parts which are subjected both to high temperatures and wear. The quality is not standardised, but is more resistant to sigma-phase formation than corresponding standardised qualities.

## STANDARDS:

### General requirements:

When reference to this MAT NO appears on FLS Drawing or FLS Parts List or in FLS Purchase Order the data from the Primary Standard is used as acceptance criteria.

Specific deviations in requirements made in the FLS Parts List, the FLS Purchase Order or a FLS Instruction always overrules this data sheet.

Alternatively accepted International Standards listed in this sheet may be used if the suppliers documentation covers at least the documentation required in the Primary Listed Standard. This means that supplementary tests in some cases will be necessary.

### Primary Standard:

**Material no:** None () , **MATERIAL:** . , **MATERIAL No.:** .

No International Standard Available

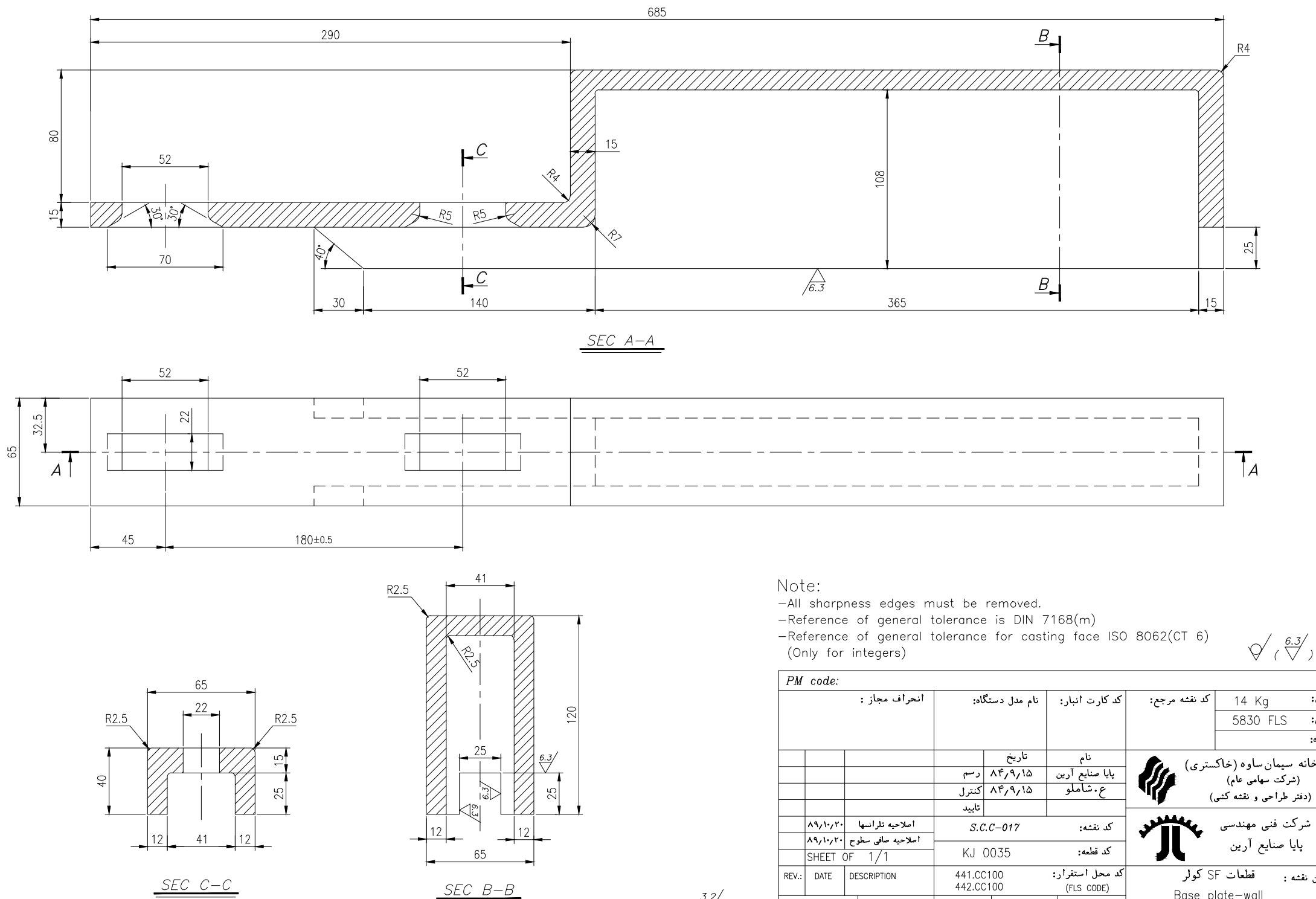
## CHEMICAL COMPOSITION:

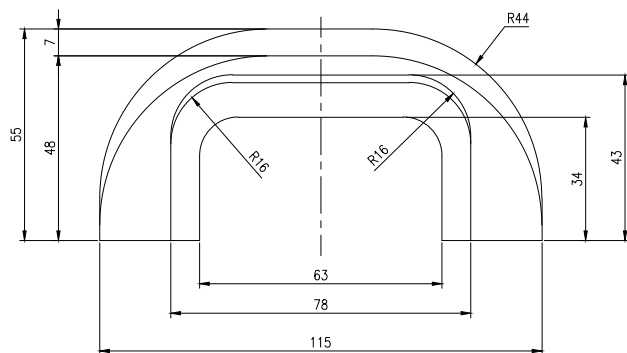
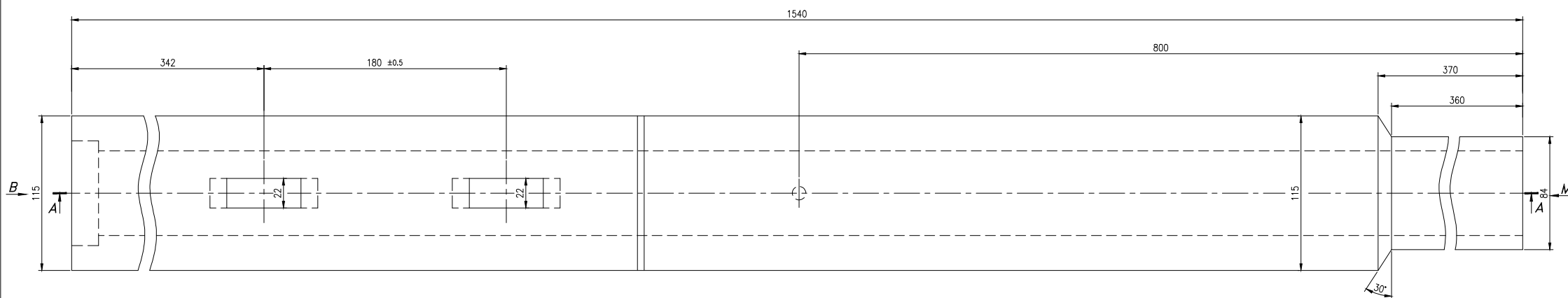
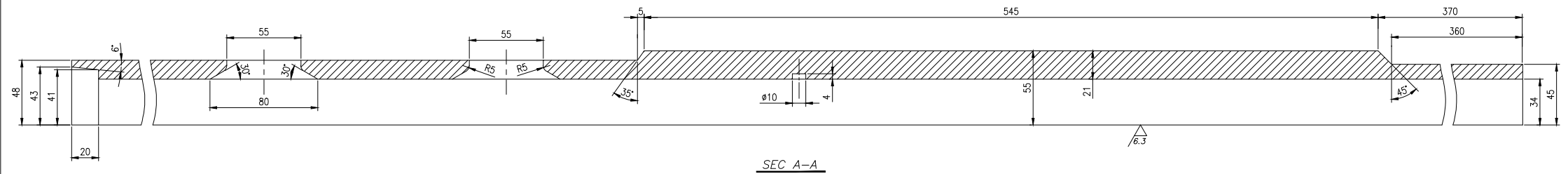
| Dim, mm | % C max<br>or range | % Si max<br>or range | % Mn max or<br>range | % P max<br>or range | % S max<br>or range | % N max<br>or range | % Al min<br>or range |
|---------|---------------------|----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|
|         | 0.7-0.9             | 1.5-2.0              | 0.6-1.0              |                     |                     | -                   | -                    |

| Dim, mm | % Cr max<br>or range | % Mo max<br>or range | % Ni max<br>or range | % V max<br>or range | % Nb max<br>or range | % Ti max<br>or range | % Cu max<br>or range | % Other max<br>or range |
|---------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-------------------------|
|         | 24.0-26.0            | -                    | 2.5-3.5              | -                   | -                    | -                    | -                    |                         |

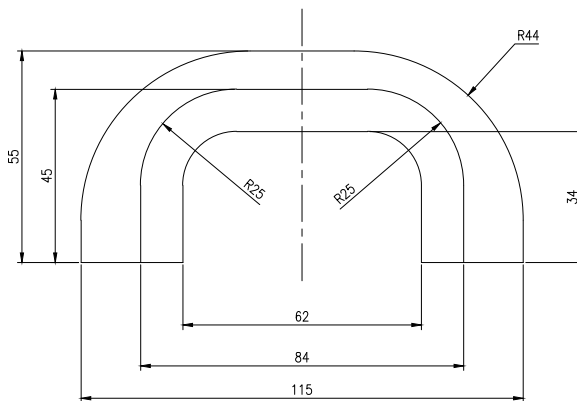
## MECHANICAL PROPERTIES AT ROOM TEMPERATURE:

| Condi-<br>tion | Dim, mm | Tensile Strength<br>MPa | Yield Strength<br>MPa | Elong.<br>% | Area<br>Reduction |                | M.Elas<br>GPa | Hardness |           |    | Imp. Energy<br>KV, min |   |
|----------------|---------|-------------------------|-----------------------|-------------|-------------------|----------------|---------------|----------|-----------|----|------------------------|---|
|                |         | Rm                      | Re                    | A5          | Z                 | Z <sub>⊥</sub> | E             | HRc      | HB        | HV | °C                     | J |
|                |         | -                       | -                     | -           | -                 | -              |               | -        | 250 - 330 | -  |                        |   |





VIEW B  
SCALE 1:1

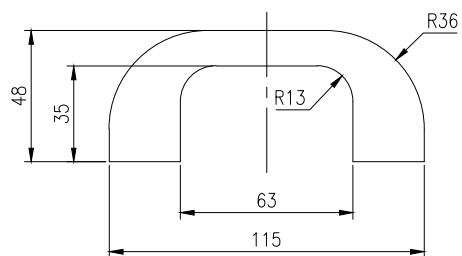
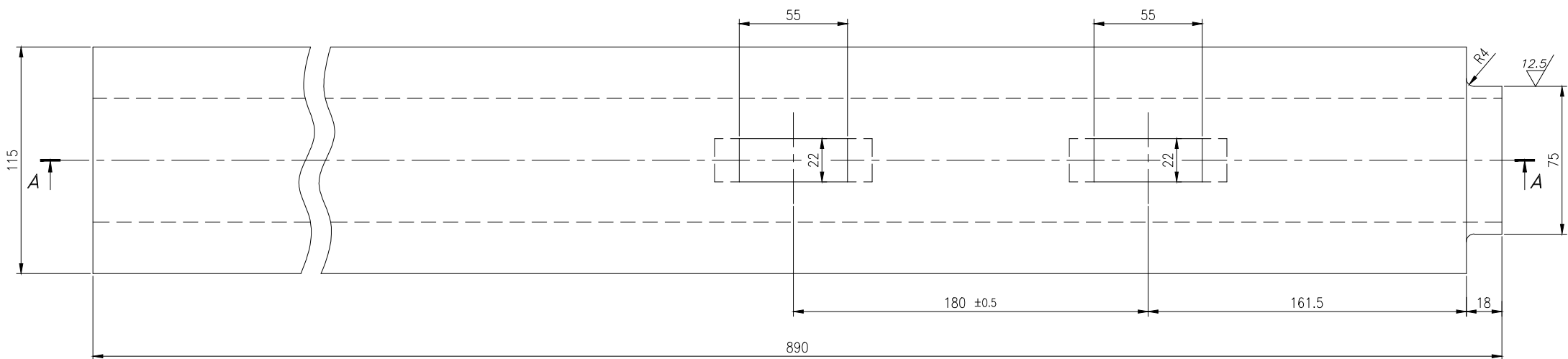
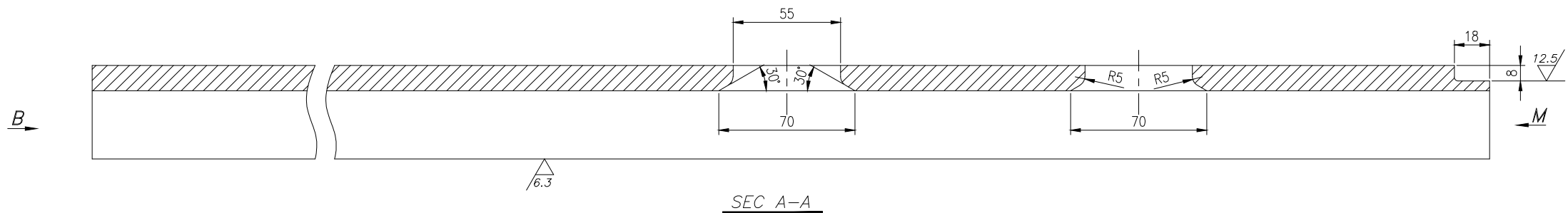


VIEW M  
SCALE 1:1

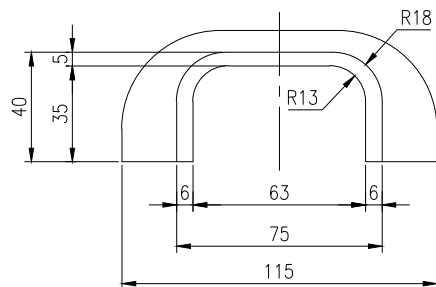
Note:  
-All sharpness edges must be removed.  
-Reference of general tolerance is DIN 7168(m)  
-Reference of general tolerance for casting face ISO 8062(CT 6)  
(Only for integers)

6.3

|               |                   |                 |               |                  |        |                                                                                       |                              |                  |               |
|---------------|-------------------|-----------------|---------------|------------------|--------|---------------------------------------------------------------------------------------|------------------------------|------------------|---------------|
| PM code:      |                   | نام مدل دستگاه: |               | کد کارت انبار:   |        | کد نقشه مرجع:                                                                         |                              | وزن: 32 Kg       |               |
| انحراف مجاز : |                   |                 |               |                  |        |                                                                                       |                              | جنس: 5830 – FLS  |               |
|               |                   |                 |               |                  |        |                                                                                       |                              | سازنده:          |               |
|               |                   |                 | تاریخ         | نام              |        |  | کارخانه سیمان ساوه (خاکستری) |                  |               |
|               |                   |                 | رسم ۸۴/۹/۱۵   | پایا صنایع آراین |        |                                                                                       | (شرکت سهام عام)              |                  |               |
|               |                   |                 | کنترل ۸۴/۹/۱۵ | ع.شاملو          |        |                                                                                       | (دفتر طراحی و نقشه کشی)      |                  |               |
| ۹۹/۱۲/۱۴      | Mat.              |                 | تایید         |                  |        |  | شرکت فنی مهندسی              |                  |               |
| ۸۹/۱۲/۲۰      | اصلاحیه ترانسها   | S.C.C-019       |               | کد نقشه:         |        |                                                                                       | پایا صنایع آراین             |                  |               |
| ۸۹/۱۲/۲۰      | اصلاحیه حلقه سطوح |                 |               | کد نقشه:         |        |                                                                                       |                              |                  |               |
| SHEET OF 1/1  |                   | KJ 0040         |               |                  |        |                                                                                       |                              |                  |               |
| REV.:         | DATE              | DESCRIPTION     | 441.CC100     | کد محل استقرار:  |        |                                                                                       |                              |                  | عنوان نقشه :  |
|               |                   |                 | 442.CC100     | (FLS CODE)       |        |                                                                                       |                              |                  | قطعات SF کولر |
| SCALE: 1:2    |                   | SIZE: A2        |               | UNIT: mm         | QTY: 6 |  |                              | U-profile inlet  |               |
|               |                   |                 |               |                  |        |                                                                                       |                              | کد قطعه: KJ 0040 |               |



VIEW B  
SCALE 1:2



VIEW M  
SCALE 1:2

Note:

- All sharpness edges must be removed.
- Reference of general tolerance is DIN 7168(m)
- Reference of general tolerance for casting face ISO 8062(CT 6)

(Only for integers)

|                            |  |  |                    |  |                  |  |                |  |                                                                                       |  |                                                                             |  |
|----------------------------|--|--|--------------------|--|------------------|--|----------------|--|---------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------|--|
| PM code:                   |  |  | انحراف مجاز :      |  | نام مدل دستگاه:  |  | کد کارت انبار: |  | کد نقشه مرجع:                                                                         |  | وزن: 19 Kg                                                                  |  |
|                            |  |  |                    |  |                  |  |                |  | 20000690                                                                              |  | جنس: 5830 FLS                                                               |  |
|                            |  |  |                    |  |                  |  |                |  |                                                                                       |  | سازنده:                                                                     |  |
|                            |  |  |                    |  | تاریخ            |  | نام            |  |  |  | کارخانه سیمان ساوه (خاکستری)<br>(شرکت سهامی عام)<br>(دفتر طراحی و نقشه کشی) |  |
|                            |  |  | رسم                |  | آرمان گستر ساروج |  |                |  |                                                                                       |  |                                                                             |  |
|                            |  |  | کنترل              |  | آرمان گستر ساروج |  |                |  |                                                                                       |  |                                                                             |  |
| 3 ۹۹۱۰۲۰ Mat.              |  |  |                    |  | تایید            |  |                |  |  |  | شرکت فنی مهندسی<br>آرمان گستر ساروج                                         |  |
| 2 ۸۹۱۰۲۰ اصلاحیه ترانسها   |  |  | S.C.C-209          |  | کد نقشه:         |  |                |  |                                                                                       |  |                                                                             |  |
| 1 ۸۹۱۰۲۰ اصلاحیه صافی سطوح |  |  | KJ 0041            |  | کد قطعه:         |  |                |  |                                                                                       |  |                                                                             |  |
| SHEET OF 1/1               |  |  |                    |  |                  |  |                |  | کد محل استقرار:<br>(FLS CODE)                                                         |  | عنوان نقشه :<br>قطعات SF کولر<br>U-profile outlet<br>کد قطعه: KJ 0041       |  |
| REV.: DATE DESCRIPTION     |  |  | 441.200<br>442.200 |  |                  |  |                |  |                                                                                       |  |                                                                             |  |
|                            |  |  |                    |  |                  |  |                |  |                                                                                       |  |                                                                             |  |
| SCALE: 1:2                 |  |  | SIZE: A3           |  | UNIT: mm         |  | QTY. 6         |  |  |  |                                                                             |  |
|                            |  |  |                    |  |                  |  |                |  |                                                                                       |  |                                                                             |  |

**Heat-Resistant Cast Steel, Cr-Ni-Alloyed**

For more information contact F.L. Smidth

**PROPERTIES:**

Austenitic heat resistant, high alloyed steel casting. The chemical composition shall be balanced very carefully in order to avoid sigma-phase formation in the temperature range 600 - 900 °C.

**STANDARDS:****General requirements:**

When reference to this MAT NO appears on FLS Drawing or FLS Parts List or in FLS Purchase Order the data from the Primary Standard is used as acceptance criteria.

Specific deviations in requirements made in the FLS Parts List, the FLS Purchase Order or a FLS Instruction always overrules this data sheet.

Alternatively accepted International Standards listed in this sheet may be used if the suppliers documentation covers at least the documentation required in the Primary Listed Standard. This means that supplementary tests in some cases will be necessary.

**Primary Standard:**

**EN 10295 (2002) , MATERIAL: G-X40 CrNiSi25-12 , MATERIAL No.: 1.4837**

Heat resisting steel castings

**CHEMICAL COMPOSITION:**

| Dim, mm | % C max<br>or range | % Si max<br>or range | % Mn max or<br>range | % P max<br>or range | % S max<br>or range | % N max<br>or range | % Al min<br>or range |
|---------|---------------------|----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|
|         | 0.3-0.5             | 1.0-2.5              | 2.0                  | 0.040               | 0.030               | -                   | -                    |

| Dim, mm | % Cr max<br>or range | % Mo max<br>or range | % Ni max<br>or range | % V max<br>or range | % Nb max<br>or range | % Ti max<br>or range | % Cu max<br>or range | % Other max<br>or range |
|---------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|-------------------------|
|         | 24.0-27.0            | 0.5                  | 11.0-14.0            | -                   | -                    | -                    | -                    |                         |

**MECHANICAL PROPERTIES AT ROOM TEMPERATURE:**

| Condi-<br>tion | Dim, mm | Tensile Strength<br>MPa | Yield Strength<br>MPa | Elong.<br>% | Area<br>Reduction |                | M.Elas<br>GPa | Hardness |    |    | Imp. Energy<br>KV, min |   |
|----------------|---------|-------------------------|-----------------------|-------------|-------------------|----------------|---------------|----------|----|----|------------------------|---|
|                |         | Rm                      | Re                    | A5          | Z                 | Z <sub>⊥</sub> | E             | HRC      | HB | HV | °C                     | J |
|                |         | 450 -                   | 230 -                 | 6 -         | -                 | -              |               | -        | -  | -  |                        |   |

For more information contact F.L. Smidth

**ALTERNATIVE INTERNATIONAL STANDARDS TO MAT 5840**

| Standard                 | Type of Material | Name of Material  | Material No. |
|--------------------------|------------------|-------------------|--------------|
| ASTM A 297/A 297M (1997) | Casting          | Gr. HH            | Type II      |
| EN 10295 (2002)          | Casting          | G-X40 CrNiSi25-12 | 1.4837       |
| JIS G 5122 (1994)        | Casting          | SCH 13            | .            |

|                                                             |                                                     |
|-------------------------------------------------------------|-----------------------------------------------------|
| ACEA: Association des Constructeurs Europeens d'Automobiles | DIN: Deutsche Industrie-Norm                        |
| AGMA: American Gear Manufacturers's Association             | EN: European Norm                                   |
| API: American Petroleum Insitute                            | IEC: International Electrotechnical Commission      |
| ASTM: American Society for Testing Materials                | ISO: International Organisation for Standardization |
| BS: British Standard                                        | JIS: Japanese Industrial Standard                   |
| CCMC: Committee of Common Market Constructors               | NLGI: National Lubricating Grease Institute         |
| DS: Dansk Standard                                          | SAE: Society of Automotive Engineers                |

**DELIVERY CONDITIONS:**

Unless otherwise agreed upon, this material shall be delivered in the as-cast condition. For central pipes, see Instruction V-4291.

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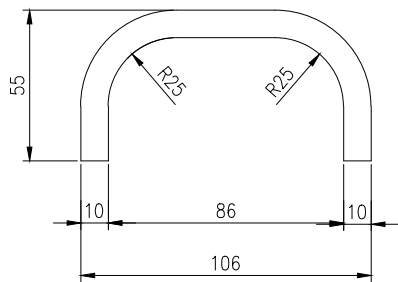
For more information contact F.L. Smidth

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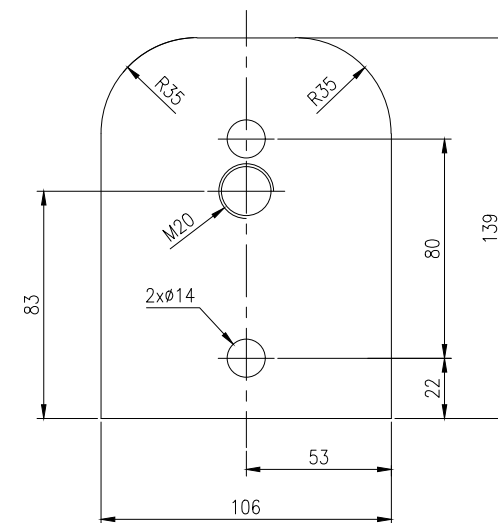
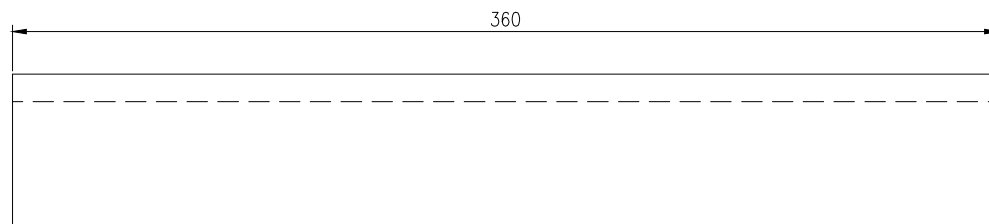
**Revisions:**

| Rev. No | Rev. Date  | Change                                                                                                                          | Responsible |
|---------|------------|---------------------------------------------------------------------------------------------------------------------------------|-------------|
| 0,60    | 10-02-2002 | Prepared & Approved changed<br>References to Alternative Standards added to supplier version.                                   | AnJo        |
| 0,70    | 12-03-2003 | Welding electrode number changed by adding 9000. Welding electrodes are transferred to Purchase Parts.                          | AsK         |
| 0,80    | 15-01-2004 | Standards updated. Chemical composition and mechanical properties updated. Ask Rev_no updated: An extra decimal place is added. |             |

|                                                       |                  |                                                                                   |          |                                          |       |                       |        |
|-------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|----------|------------------------------------------|-------|-----------------------|--------|
| Preheater<br>Casted central tube for<br>Cyclone ø7500 |                  |  |          | Parts list No. 5.565063 EE               |       | Sheet No.<br>01.01.01 |        |
|                                                       |                  | MGN Code/Id.                                                                      |          |                                          |       |                       |        |
| Designation                                           |                  | No<br>req.                                                                        | Drawing  | Code Dimension<br>Manufacturer (Pattern) | Mat   | Total<br>Kg.          |        |
| 01                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 02                                                    | Hanger           | 98                                                                                | 2.235447 | KY-0241                                  | 5840  | 1078                  |        |
| 03                                                    | Top element      | 49                                                                                | 1.242499 | KY-0239                                  | 5840  | 1519                  |        |
| 04                                                    | Normal element   | 243                                                                               | 1.242500 | KY-0240                                  | 5840  | 5589                  |        |
| 05                                                    | Lock             | 49                                                                                | 2.235446 | KY-0242                                  | 5840  | 147                   |        |
| 06                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 07                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 08                                                    | Countersunk bolt | 98                                                                                | 4.090182 |                                          | 5650  | 117                   |        |
| 09                                                    | Washer           | 98                                                                                |          | 0700.M30                                 |       | 4                     |        |
| 10                                                    | Nut              | 98                                                                                |          | 0120.M30x2                               |       | 24                    |        |
| 11                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 12                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 13                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 14                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 15                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 16                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 17                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 18                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 19                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 20                                                    | Assembly drawing |                                                                                   | 1.245856 |                                          |       |                       |        |
| 21                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 22                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| 23                                                    |                  |                                                                                   |          |                                          |       |                       |        |
| x) Line<br><br>2-5,8: Spares included                 |                  |                                                                                   |          | Date                                     |       | Sign.                 | Kg.    |
|                                                       |                  |                                                                                   |          | 06042001                                 |       | SDSi                  | 8478.0 |
|                                                       |                  |                                                                                   |          | 01                                       | 10    | 402001                | SDSi   |
|                                                       |                  |                                                                                   |          | Rev.                                     | Line. | Week.                 | Sign.  |



ITEM 1  
SCALE 1:2  
MAT:1.5415



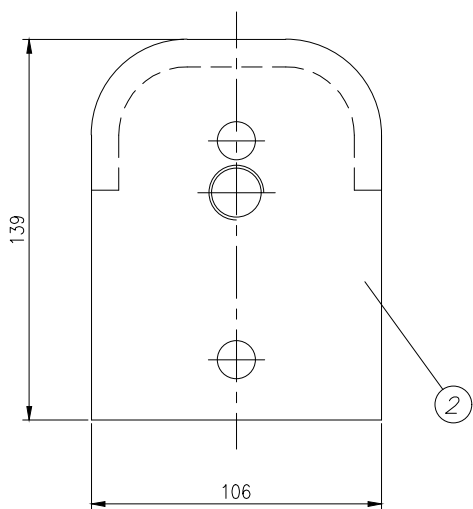
ITEM 2  
SCALE 1:2  
MAT:1.0038

6.3/

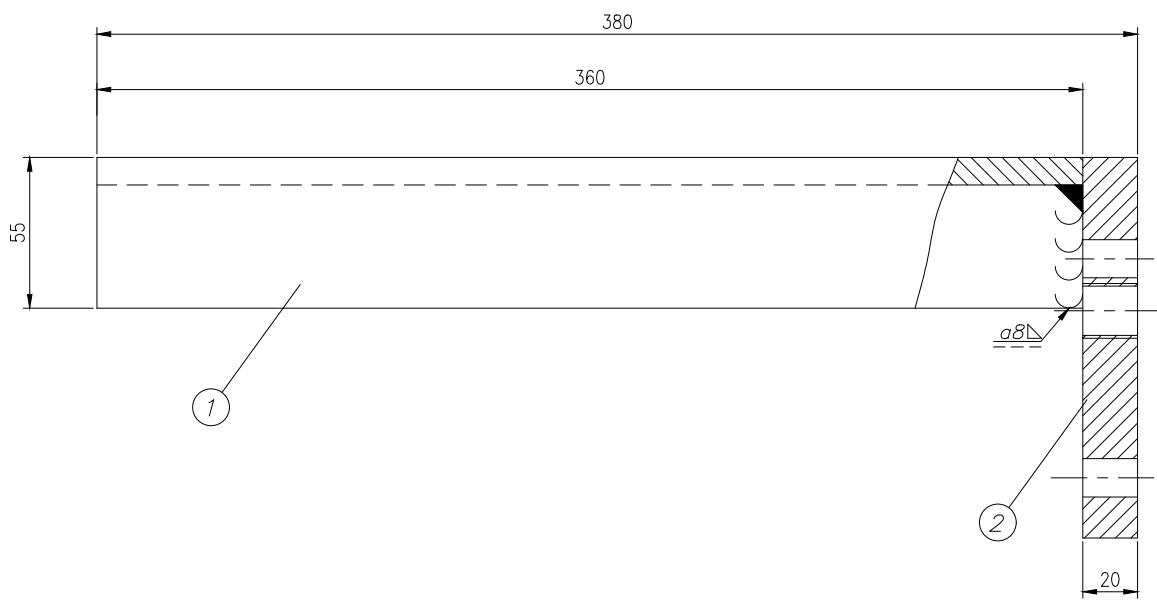
|                                               |                   |                 |                    |                  |                                                                                       |
|-----------------------------------------------|-------------------|-----------------|--------------------|------------------|---------------------------------------------------------------------------------------|
| PM code:                                      |                   |                 |                    |                  |                                                                                       |
| انحراف مجاز :                                 |                   | نام مدل دستگاه: |                    | کد کارت انبار:   | کد نقشه مرجع:                                                                         |
|                                               |                   |                 |                    |                  | 3.233336                                                                              |
|                                               |                   |                 |                    |                  | وزن: 6.5 Kg                                                                           |
|                                               |                   |                 |                    |                  | جنس: 1.5415+1.0038                                                                    |
|                                               |                   |                 |                    |                  | سازنده:                                                                               |
|                                               |                   |                 | تاریخ              | نام              |  |
|                                               |                   |                 | رسم ۸۶/۶/۲۴        | آرمان گستر ساروج |                                                                                       |
|                                               |                   |                 | کنترل ۸۶/۶/۲۴      | آرمان گستر ساروج |                                                                                       |
|                                               |                   |                 | تایید              |                  |                                                                                       |
| ۸۹/۱۰/۲۰                                      | اصلاحیه متریال    | S.C.C-208-1     |                    |                  | کد نقشه:                                                                              |
| ۸۹/۱۰/۲۰                                      | اصلاحیه صافی سطوح |                 |                    |                  | کد قطعه:                                                                              |
| SHEET OF 1/2                                  |                   |                 |                    |                  |                                                                                       |
| REV.:                                         | DATE              | DESCRIPTION     | 441.200<br>442.200 | کد محل استقرار:  |                                                                                       |
|                                               |                   |                 |                    | (FLS CODE)       |                                                                                       |
| SCALE:                                        |                   | SIZE:           | UNIT:              | QTY.             |  |
| 1:2                                           |                   | A3              | mm                 | 6                |                                                                                       |
| عنوان نقشه :<br>قطعات کولر<br>U-profile cover |                   |                 |                    |                  |                                                                                       |

Note:

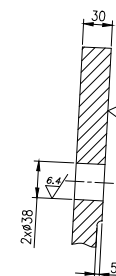
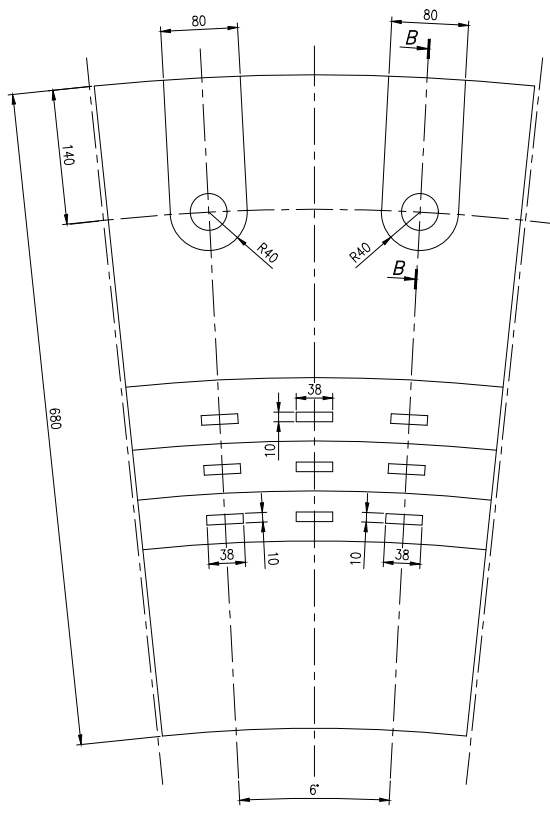
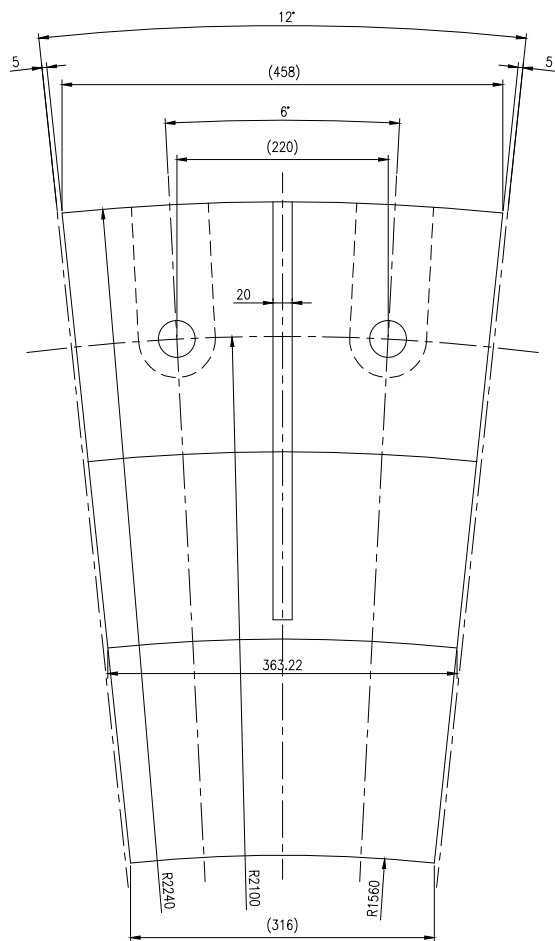
- All sharpness edges must be removed.
- Reference of general tolerance is DIN 7168(m)
- (Only for integers)



assembly view  
SCALE 1:2



|               |                   |                  |                                  |                                                                                       |                                                                                       |                    |
|---------------|-------------------|------------------|----------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------|
| PM code:      |                   |                  |                                  |                                                                                       |                                                                                       |                    |
| انحراف مجاز : |                   | نام مدل دستگاه:  |                                  | کد کارت انبار:                                                                        | کد نقشه مرجع:                                                                         | وزن: 6.5 Kg        |
|               |                   |                  |                                  |                                                                                       | 3.233336                                                                              | جنس: 1.5415+1.0038 |
|               |                   |                  |                                  |                                                                                       |                                                                                       | سازنده:            |
|               |                   | تاریخ            | نام                              |  | کارخانه سیمان ساوه (خاکستری)<br>(شرکت سهامی عام)<br>(دفتر طراحی و نقشه کشی)           |                    |
|               | رسم               | آرمان گستر ساروج | ۸۶/۶/۲۴                          |                                                                                       |                                                                                       |                    |
|               | کنترل             | آرمان گستر ساروج | ۸۶/۶/۲۴                          |                                                                                       |                                                                                       |                    |
|               | تایید             |                  |                                  |                                                                                       |                                                                                       |                    |
| ۸۹/۱۰/۲۰      | اصلاحیه متريال    | کد نقشه:         |                                  |  | شرکت فنی مهندسی<br>آرمان گستر ساروج                                                   |                    |
| ۸۹/۱۰/۲۰      | اصلاحیه صافی سطوح | S.C.C-208-2      |                                  |                                                                                       |                                                                                       |                    |
| SHEET OF 2/2  |                   | کد قطعه:         |                                  |                                                                                       |                                                                                       |                    |
| REV.:         | DATE              | DESCRIPTION      | کد محل استقرار:                  |                                                                                       | عنوان نقشه :<br>قطعات کولر<br>U-profile cover                                         |                    |
|               |                   |                  | 441.200<br>442.200<br>(FLS CODE) |                                                                                       |                                                                                       |                    |
| SCALE:        | 1:2               | SIZE:            | A3                               | UNIT:                                                                                 |                                                                                       |                    |
|               |                   |                  |                                  | mm                                                                                    |                                                                                       |                    |
|               |                   |                  | QTY.                             | 6                                                                                     |  |                    |
|               |                   |                  |                                  |                                                                                       |                                                                                       |                    |



Note:

- All fillets without dimension are R5
- All sharpness edges must be removed.
- Reference of general tolerance is DIN 7168(m)
- Reference of general tolerance for casting face ISO 8062(CT 6)

(Only for integers)

|                                                                             |      |                  |       |                       |  |
|-----------------------------------------------------------------------------|------|------------------|-------|-----------------------|--|
| <b>PM code:</b>                                                             |      |                  |       |                       |  |
| وزن:                                                                        |      | کد نقشه مرجع:    |       | نام مدل دستگاه:       |  |
| جنس:                                                                        |      |                  |       | انحراف مجاز :         |  |
| 1.4848                                                                      |      |                  |       |                       |  |
| پایزنده:                                                                    |      |                  |       |                       |  |
| کارخانه سیمان ساوه (خاکستری)<br>(شرکت سهامی عام)<br>(دفتر طراحی و نقشه کشی) |      | نام              |       | تاریخ                 |  |
|                                                                             |      | پاپا صنایع آراین |       | ۸۵٫۲٫۱۸ رسم           |  |
|                                                                             |      | ع.شاملو          |       | ۸۵٫۲٫۱۸ کنترل         |  |
| شرکت فنی مهندسی<br>پاپا صنایع آراین                                         |      | کد نقشه:         |       | S.C.C-073-1           |  |
|                                                                             |      | کد فعلیه:        |       |                       |  |
|                                                                             |      |                  |       |                       |  |
| عنوان نقشه : زیگمنت ورودی کوره                                              |      | کد محل استقرار:  |       | 31.KL100<br>432.KL100 |  |
| (Sector)                                                                    |      | (FLS CODE)       |       |                       |  |
| SCALE:                                                                      | DATE | DESCRIPTION      | UNIT: | QTY.                  |  |
| 1:4                                                                         |      | A2               | mm    | 30                    |  |