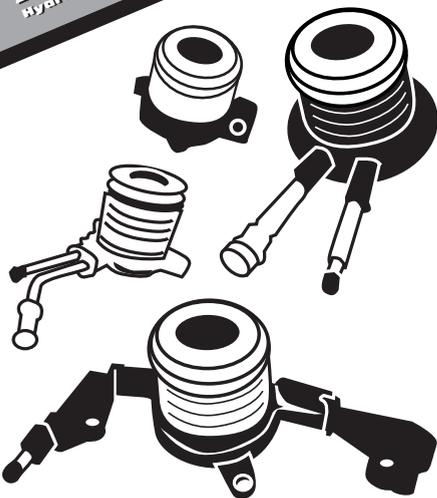


# AUTO CYLINDERS

Hydraulic cylinders for Brakes & Clutches



## SERVICE BULLETIN

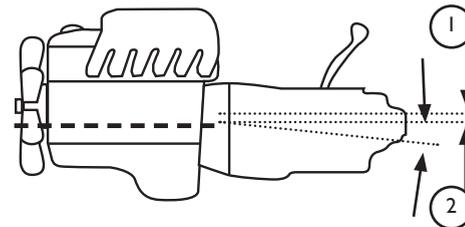
### Subject: Installation of Concentric Slave Cylinder (CSC) NIS211C

#### Tools / Parts Needed:

- Brake Fluid
- Concentric Slave Cylinder

The concentric slave cylinder (CSC) is subjected to just as much natural wear as the clutch or flywheel and should be replaced every time the clutch is changed. There are a few important things to consider during installation in order to preserve the functionality and service life of the components.

- 1. What to do:**
  - **DO NOT DEPRESS THE PEDAL SEVERAL TIMES IN SUCCESSION** when bleeding; this can cause the cylinder to overstroke and damage the end cap; depress just once and wait for hydraulic system to stabilize (risk of over pressure inside CSC)
  - **DO NOT COMPRESS THE CSC BY HAND** to replicate bearing movement before installation as the increased air pressure can cause the back plate to move out of position and as the chamber is not filled with hydraulic fluid damage can also be caused to the internal seals.
  - Do not use any cleaning agents as they may damage the gaskets or the entire cylinder.
  - Always maintain high level of cleanliness.
  - Only use brake fluid approved by the car manufacturer.
  - Clean old gaskets and clean dust from the connection piece/area.
  - Clean the transmission input shaft and verify not excessive wear on shaft seal swept area.
  - Make sure the slave cylinder is installed flat against the transmission-mounting surface
  - Ensure the adaptor is engaged before finally tightening the fixing bolts on the CSC.
  - Install the slave cylinder fixing bolts and tighten per the vehicle manufacturer requirements.
  - Fill the reservoir with an approved DOT 3 or 4 brake fluid.
  - **NEVER** bleed the CSC if the clutch and flywheel are not yet assembled (reaction load to CSC)
  - Make sure the CSC is not inclined/tilt during installation. Failure may lead to damage at the lugs or reduced service life (Refer to angular misalignment).
  - Do not over tighten bleed screw.
  - Bleed screw torque for Plastic housing (3 to 5 Nm) - for Aluminium housing (15 to 20 Nm)



## 2. Angular misalignment

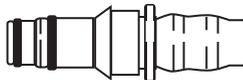
- 1: Parallel offset;
  - 2: Angular offset
- Excessive axial or angular (or both) CSC assembly error (reference to gear shaft) lead to a reduced functional and service life of CSC reducing the life of the shaft seal (gearbox input shaft seal).
  - The root cause for excessive axial or angular (or both) CSC assembly error is to be found in alignment errors between engine and shaft. Possible cause of misalignment are:
    - Centring between engine and gear box is not correct (deformation, heavy dirt or wear);
    - Other parts (e.g. grounding straps) trapped between engine and gear box during installation);
    - Flange bolts loose or not properly tightened;
    - Close-tolerance sleeves or pins missing / damaged;
    - Gearbox input shaft with no guidance as pilot bearing in the flywheel is absent or badly worn;
    - Clutch bell housing warped because attaching bolts have not been evenly tightened or deformed due to the effect of force such as dropping or striking hard when fitting
  - In case of excessive axial and angular misalignment and shaft seal wear, shaft rotation can generate mineral oil mist that could go in contact with internal CSC primary seal with high volume change leading to leakage and low service life.



# AUTO CYLINDERS

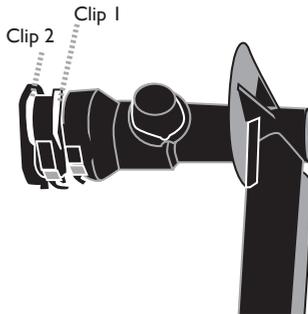
Hydraulic cylinders for Brakes & Clutches

Short flange connector



### 3. MANDATORY Bleeding Procedure Procedure for vehicle with short flange connector

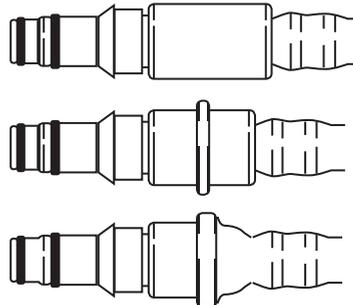
- Open clip 2
- Open clip 1
- Pull the pipe out till the first stop is reached
- Close clip 1
- Close clip 2
- Pull the pipe out until it reaches the 2nd stop
- Connect the bleeding device and switch it on
- Remove air until liquid is free of bubbles
- Push pipe back in until it reaches the stop
- Switch off the bleeding device and remove it



### Procedure for vehicle with long flange connector

- Open clip 2
- Open clip 1
- Pull the pipe out till it reaches the stop
- Connect the bleeding device and switch it on
- Remove air until liquid is free of bubbles
- Close clip 1
- Close clip 2
- Push pipe back in until it reaches the stop
- Switch off the bleeding device and remove it

### Long flange connectors



### CAUTION!

- DO NOT DEPRESS THE CLUTCH PEDAL IN QUICK SUCCESSION DURING BLEEDING.
- ALWAYS USE DOT3 OR DOT4 BRAKE FLUID AS RECOMMENDED BY SERVICE MANUAL. DO NOT USE MINERAL OIL
- DISCARD USED OIL IN ACCORDANCE TO COUNTRY REGULATION.

### 4. Brake Fluid / Clutch System/ CSC cleanliness

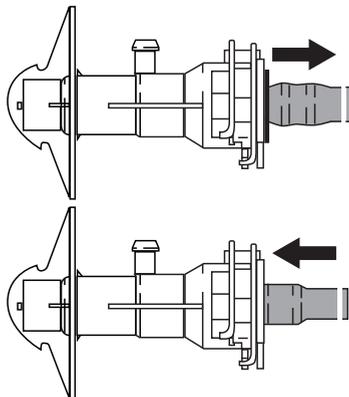
Contamination may cause sporadic leaks when dirt articles accumulate under the sealing lip and may also cause permanent leaks when the lip seal swells

### CAUTION!

- Exclusively use brake fluid with at least DOT 3. When open, do not store the fluid longer than one year.
- Change the fluid at planned interval (Refer to car owners' manual)
- Drain the used fluid and rinse the line system with sufficiently new fluid.
- Remove the compensating reservoir and clean it carefully.
- The entire CSC system must be free from oil and grease. Otherwise the lip seals swell.
- Avoid grease on hands and oil on cleaning rags.
- Avoid using silicone in assembly.
- Make sure to remedy any leaks on engine and gearbox. Make sure that the gear bell housing is sufficiently sealed.
- In order to avoid contamination during repair work, always close hydraulic and pipe connectors properly.

### Note:

Whilst every precaution has been taken to ensure the accuracy of the information given on these tables, CPD CC disclaim all liability for the consequences for any information which may be shown incorrectly.



With the connector pulled out and the clips opened, the bleed hole is open

With the connector pushed in and the clips closed, the bleed hole is closed